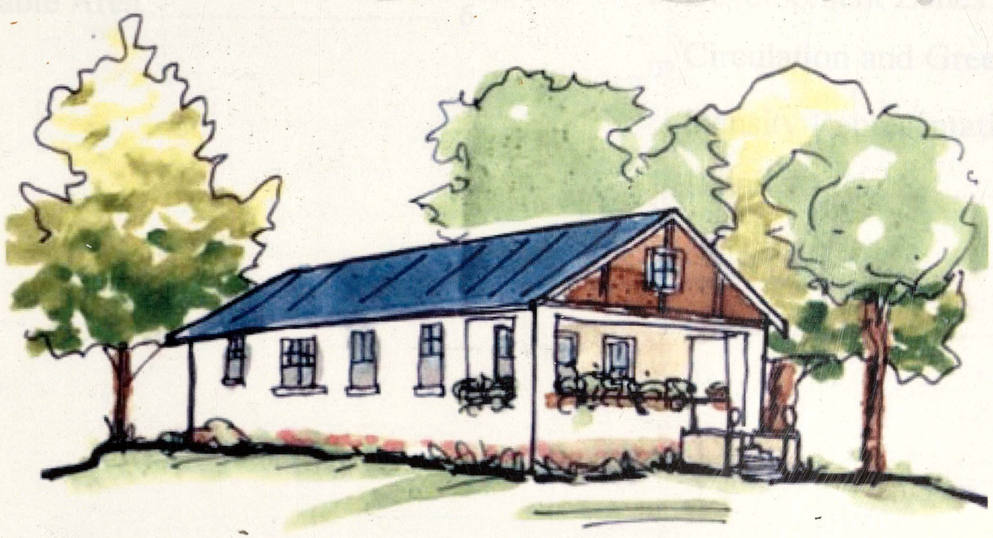
GEORGIA

DALTON VILLAGE



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College of Environment and Design
University of Georgia

April 28, 2004

DALTON VILLAGE

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DALTON VILLAGE

Project Statement

The Northeast Dalton Village Workforce Housing Project is a venture sponsored by the City of Dalton. Known as the "Carpet Capital of the World", Dalton's industrial growth has been unparalleled in the state. Although this economic vitality is welcome, it presents challenging issues that will require careful planning and a visionary approach to the future.

In response to an increasing demand for workforce housing, the City of Dalton has given a 178 acre tract of land to the Community Development Corporation. As students in an urban design studio, we have explored ideas for developing this site as an innovative neighborhood that encourages architectural creativity in the design, promotes a sense of community, and safeguards the environment.

Objectives

Provide creative housing solutions in the price range of $85,000- $100,000.

Offer a variety of aesthetic design choices for homes.

Include design elements that encourage community activities.

Plan for pedestrian and bicycle access.

Explore on-site sewage treatment options.

Design innovative and effective storm water management systems.

Preserve existing wooded areas to the extent possible.

Minimize grading by building with existing topography.

Include watershed buffers on all streams.

Provide shared greenspaces that encourage recreation without compromising the integrity of the environment.

Design Considerations

The site location, its physical attributes, and the current cultural implications offer many challenges to a developer. Some of these concerns may be adequately addressed by a creative and intentional site design. However, we recognize that this project offers a complex array of issues that will extend beyond the actual design.

* Due to the steep terrain and extensive stream system, only a small percentage of this tract is suitable for building. Costs associated with road construction, installation of utilities and lot grading will be increased. Additionally, this will not allow for the building density hoped for on this site.

* Creative design and construction techniques can address many of the building challenges on the site. However, it may be necessary to review and change current zoning regulations in order to fully utilize these new technologies.

* The soil depth across the site is shallow, with extensive layers of rock underneath. This factor, combined with the relatively small lot sizes, will prevent the use of septic tanks in this neighborhood. Connection to city sewerage lines will be costly, yet necessary.

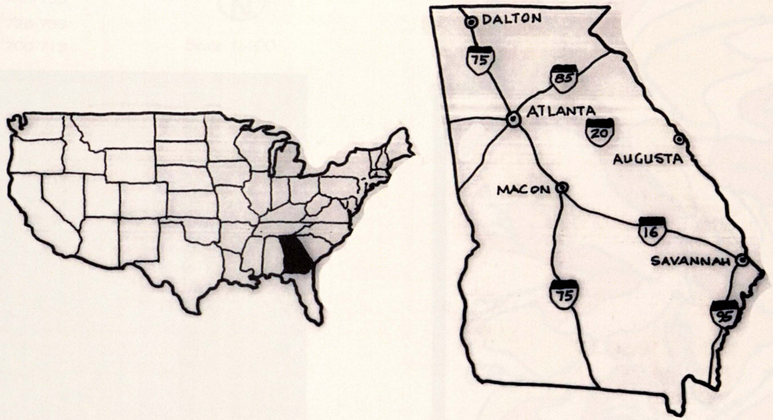
* With a former municipal refuse site located within the property boundaries and a potential "Super Fund" tract adjacent to the site, testing for toxic substances will be needed to assure the safety of future residents.

* As a development that will attract first-time homeowners, a lack of public transportation may be an obstacle for potential buyers. Since the site is located well outside of Dalton's industrial area, residents without cars may find it difficult to live here.

* Consideration must be given to the effect this development will have on the local school system. Not only will numbers increase, but additional services may be needed to accommodate the targeted multi-cultural population.

* Although it is recognized that the Latino workforce in Dalton is currently under-represented in owner-occupied homes, we recommend targeting a diverse population for ownership within the development.

Context Maps



To the North

Established neighborhood of single-family homes, bungalows, mill houses and vinyl-sided homes. This edge is geographically closest to the city of Dalton.

To the South

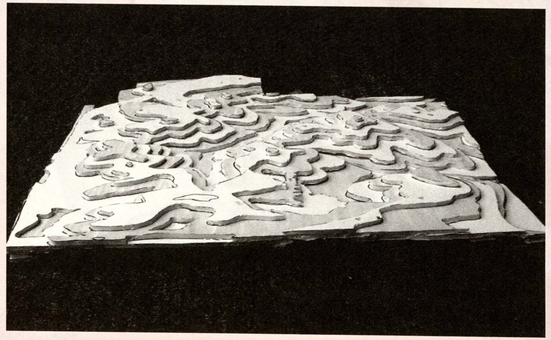
Scattered residential development.

To the East

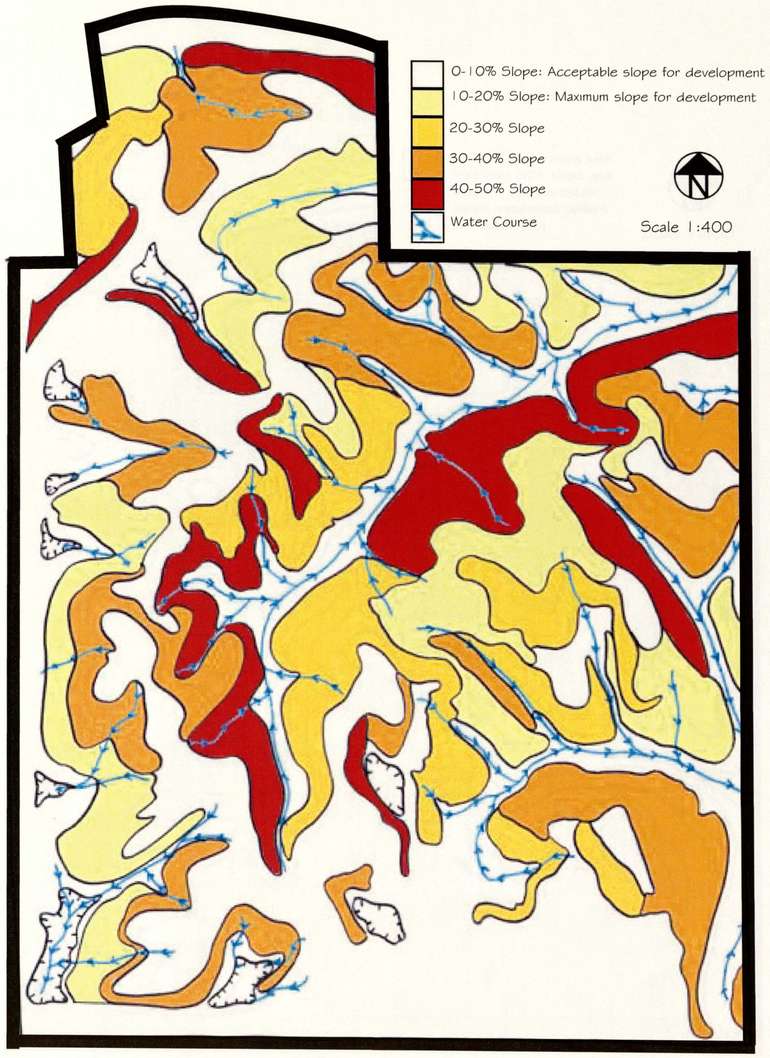
Established low-density residential with large tracts of undeveloped watershed.

To the West

Undeveloped area with potential for future building projects.



TOPOGRAPHY



SLOPE ANALYSIS

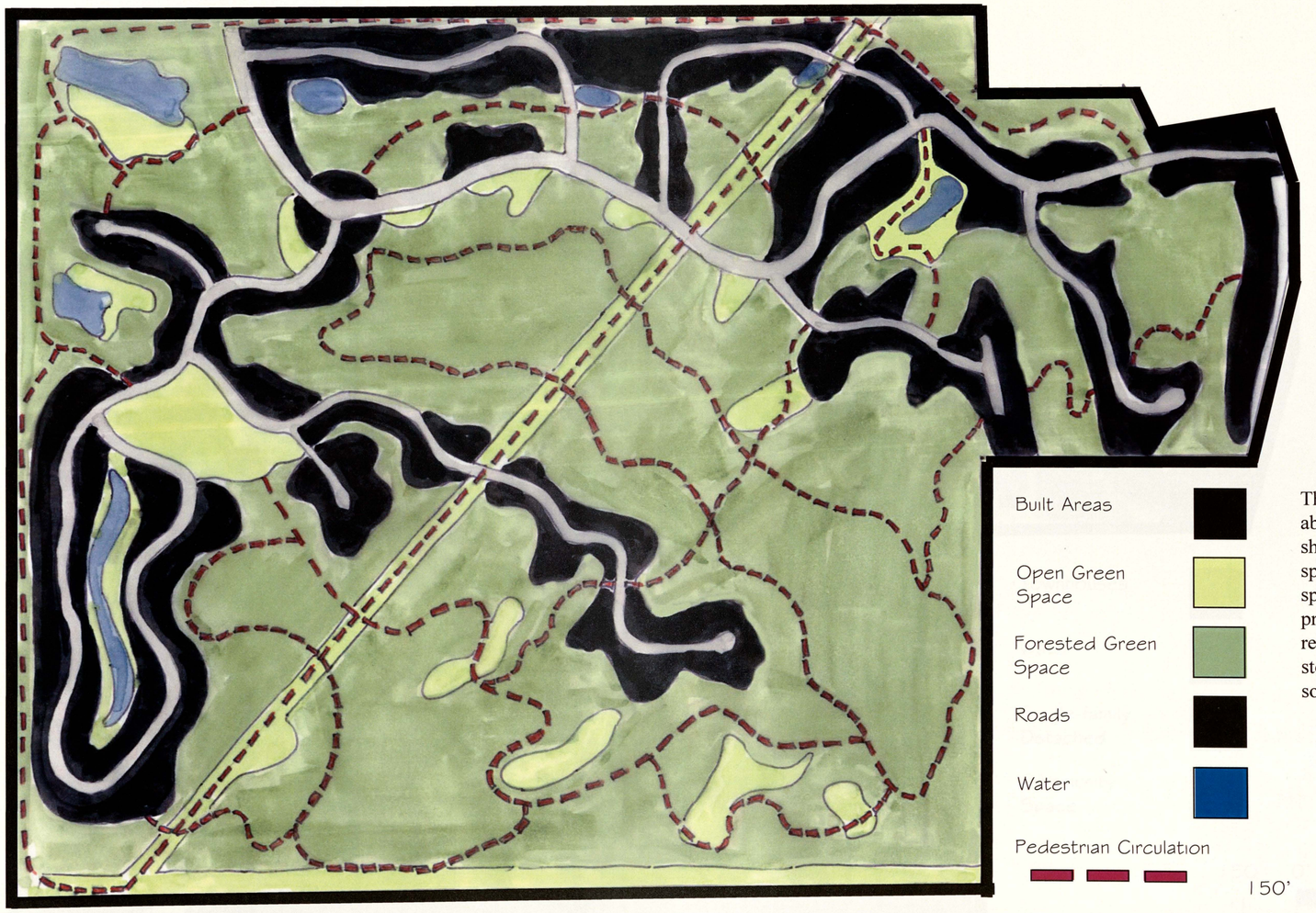
BUFFERS AND EASEMENTS

BUILDABLE AREA

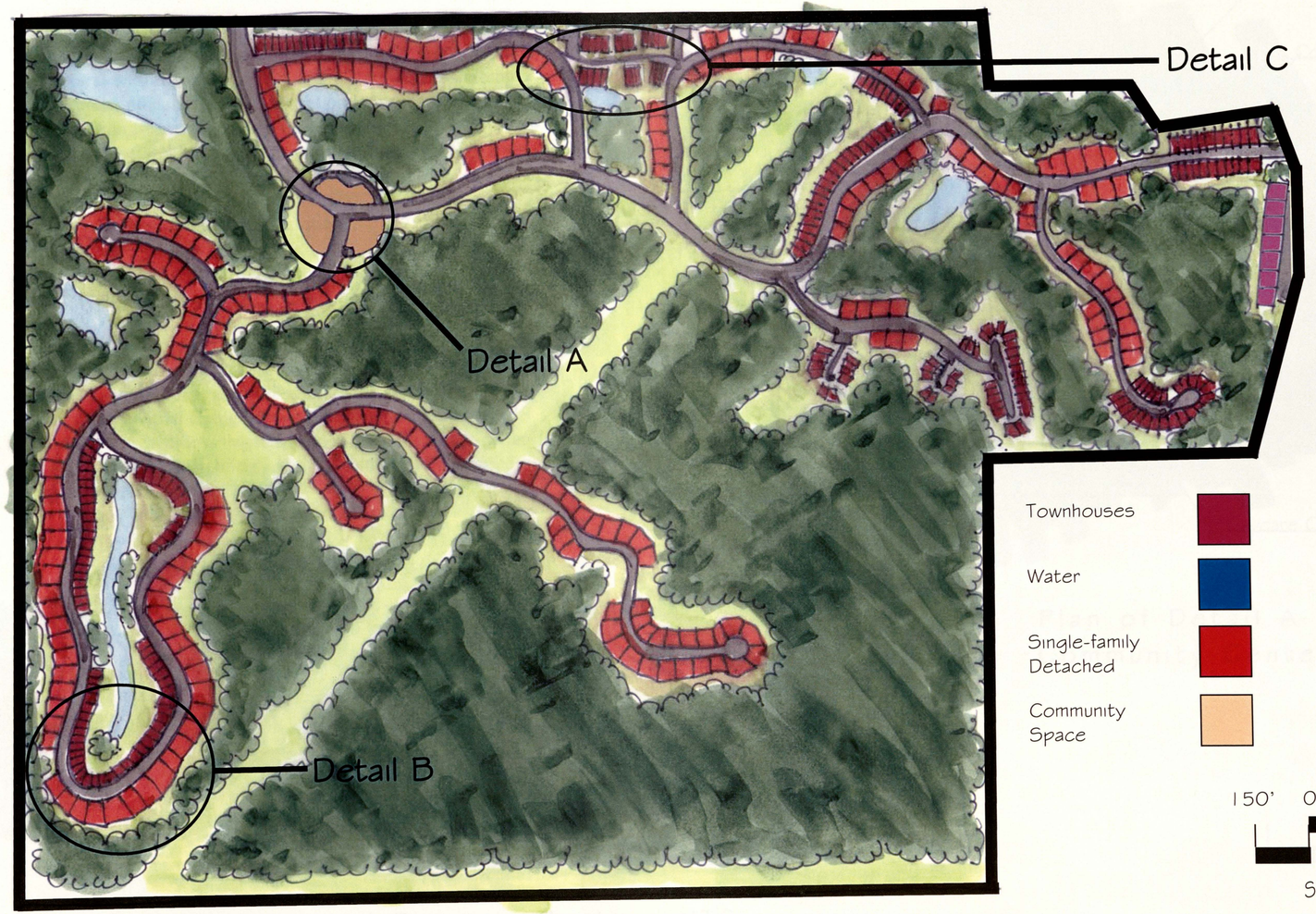
DALTON VILLAGE

BUFFERS, EASEMENTS AND BUILDABLE AREA

This map illustrates the buildable zones, therecommended types of structures for each, and proposed road configurations.



This map illustrates the buildable zones and their relationship to the surrounding green space. This expansive green space has been allocated to provide watershed buffers, recreational areas,and stormwater management solutions.



Townhouses

Water

Single-family Detached

Community Space

This plan illustrates a potential development density for Dalton Village. A total of 455 units are broken down as follows; 219 townhome lots and 236 detached lots. This flexible plan allows for variations in unit placements.

N

150' 0' 300' 600'

SCALE: 1" = 300'

DALTON VILLAGE

DENSITY REPRESENTATION

Detail A

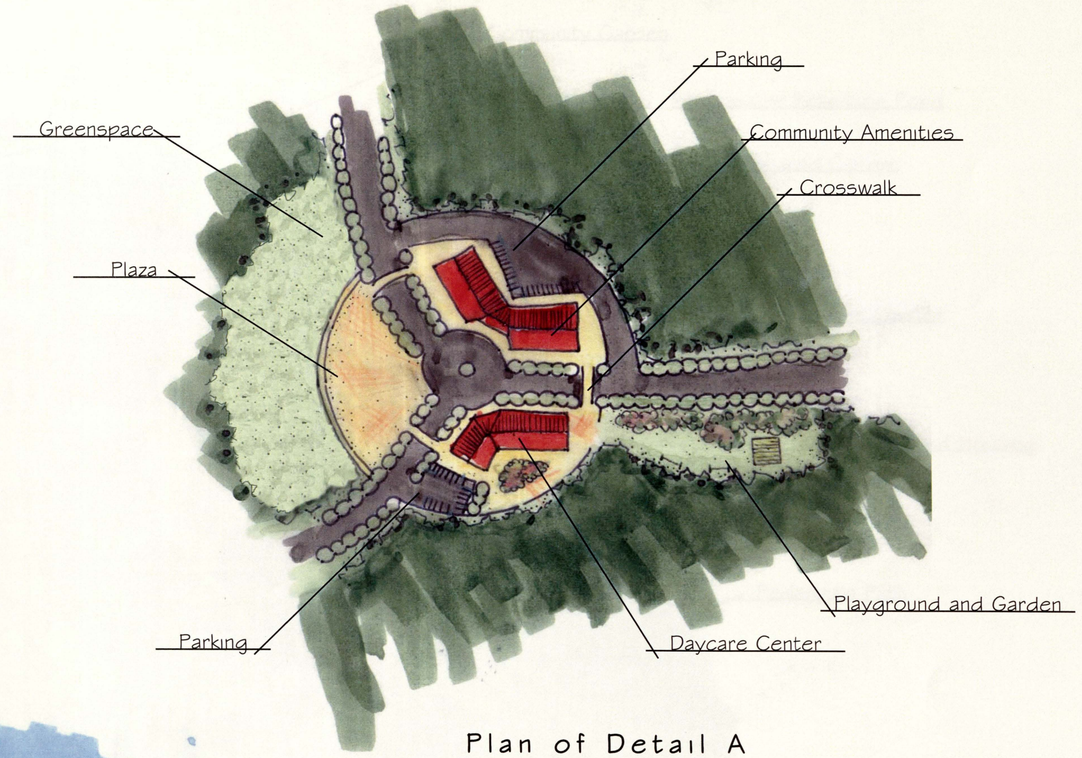
The Community Center of Dalton Villiage is located at the juncture of the two major vehicular corridors. This location is central within Dalton Village and is easily accessible by foot, bike and car. Its central location is ideal for a number of community amenities such as a gathering hall, plaza, incubator offices, market, laundry facilities, and daycare.

The plaza is suitable for open-air markets as well as other community gatherings and festivities.

The daycare is adjacent to an open space, which may serve as a small play area and garden for children.

Because the community center is at the crossing of two major roads, drivers must be aware that they are within a pedestrian zone. Measures that alert drivers include the following; crosswalks with a change in paving pattern, speed bumps, a round-about with low vegetation, parking outside the pedestrian areas, proper lighting and a tree buffer between road and sidewalks.

View of Community and Daycare Centers NTS



Plan of Detail A
Community Center

50' 0' 100' 200'

SCALE: 1" = 100'

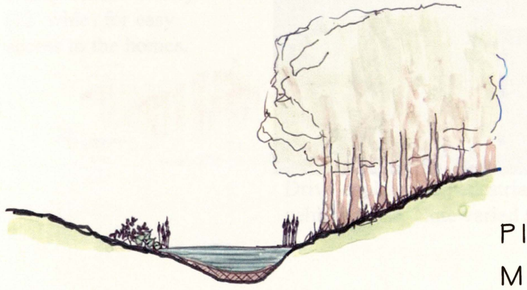
Detail B

This plan detail is an example of design arrangements for both single family detached housing as well as townhome clusters. This particular area of housing options encompasses a central greenspace where stormwater management is revealed through a large detention pond. This naturalized space also houses community gardens and shared cisterns for watering and outdoor use.

Pedestrian access encircles the area and also links up with the major pedestrian corridor along the gas line easement.

In order to decrease costs, driveways can be poured as single slabs that extend between two homes.

The road through this area is 30 feet wide with 24 feet allowed for two-way traffic. Additionally, a two foot strip of wildflower plantings buffers the four foot sidewalk.

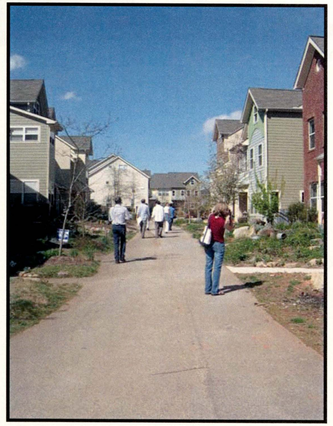


Typical Detention Pond NTS

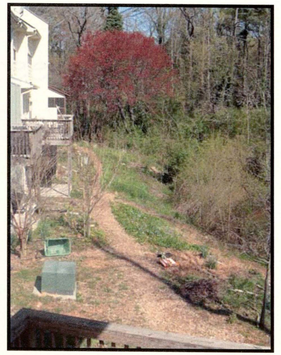
Plan of Detail B
Mixed Residential with Shared Detention Pond

Unpaved central drive

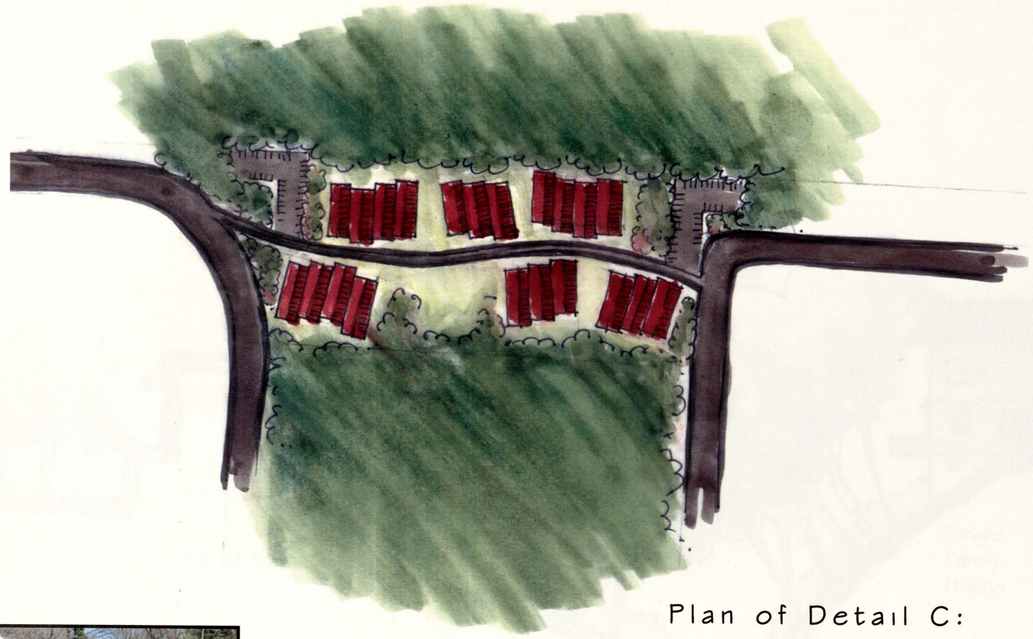
Located in Atlanta, East Lake Village is a long-running example of a pedestrian village community. Parking for townhomes occurs in strategic locations, with a drop-off drive/alley (12' wide) for easy access to the homes.



Drive doubles for pedestrian and vehicular use. Note varied setbacks



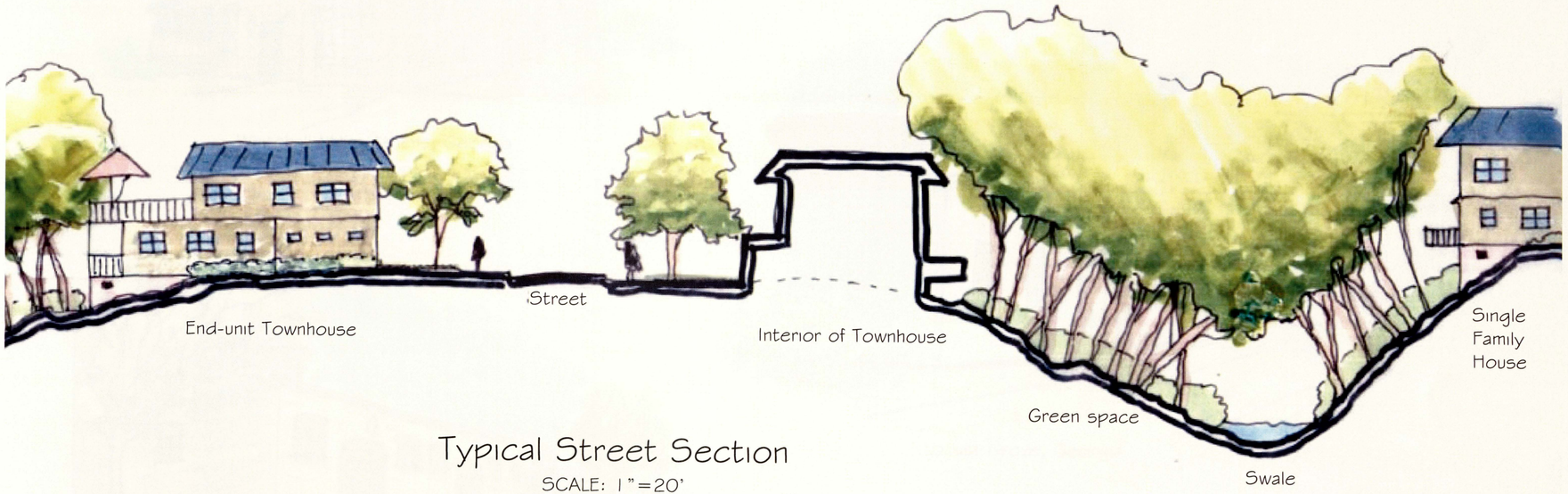
Path behind townhomes



Plan of Detail C: Pedestrian Village

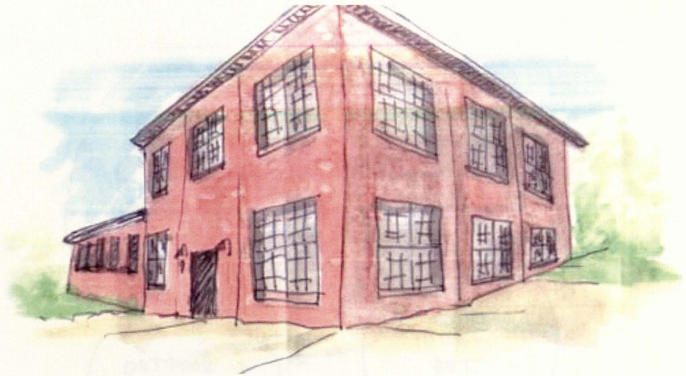
50' 0' 100' 200'

SCALE: 1" = 100'

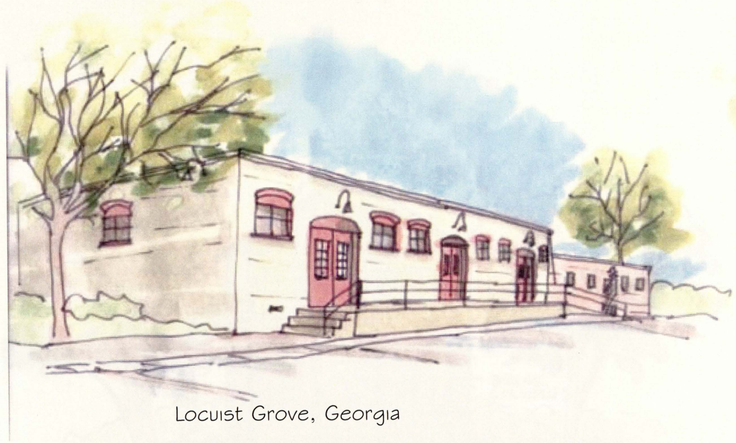


Typical Street Section

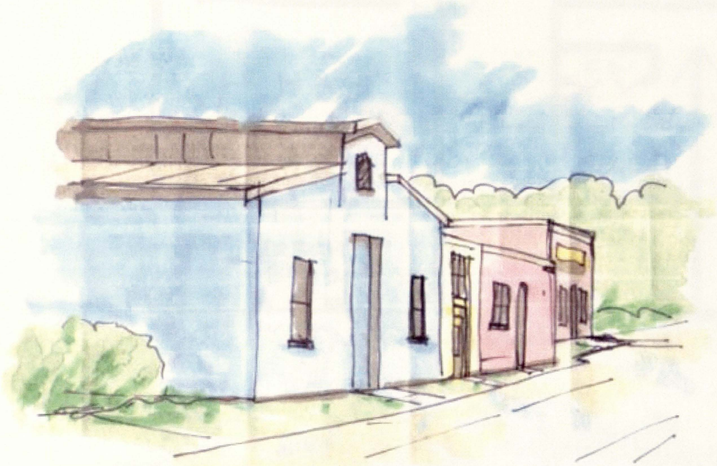
SCALE: 1"=20'



Whitehall Mills, Athens, Georgia



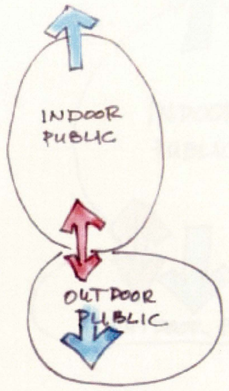
Locuist Grove, Georgia

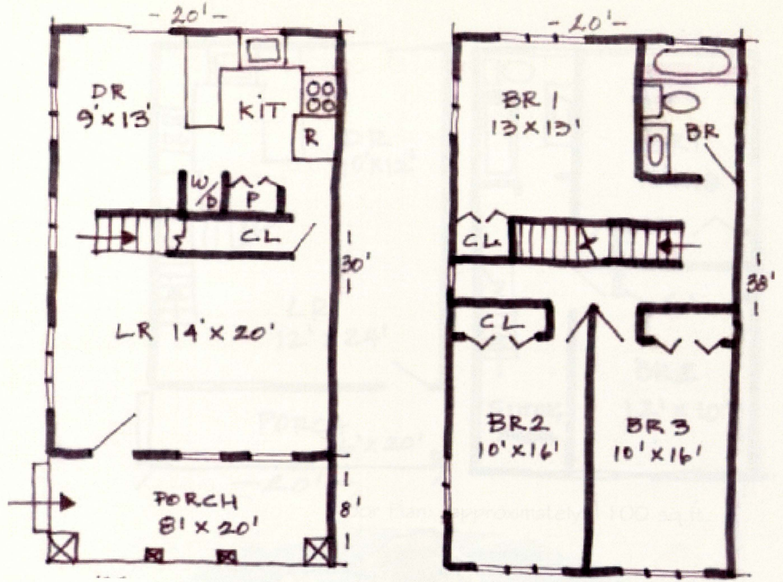


Locust Grove, Georgia

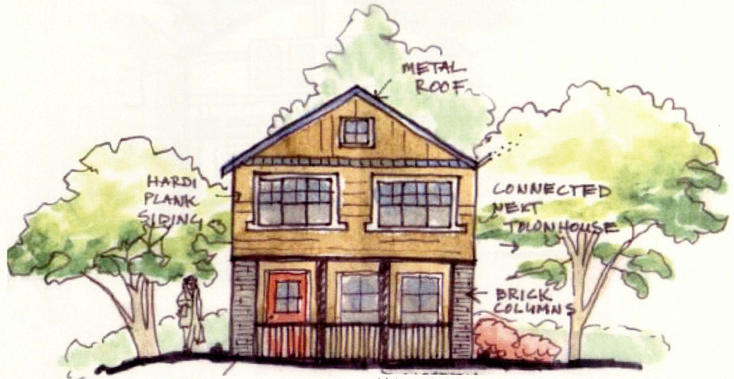
Old Warehouse Models for Public Buildings

The suggested commercial and retail building design options were inspired from old railroad warehouse and mill buildings. Since Dalton began as amill town, this style seems appropriate. The buildings should be clad in brick, 'Hardiplank', or stucco for longevity and their floor plans should be flexible in order to accommodate a variety of uses. Future uses might include day-care facilities, incubator offices for starter businesses, laundry facilities, community educational offices, small retail stores and a cooperative exchange.





Floor Plan: approximately 1200 sq.ft.



Build on foundation wall or post & beam.

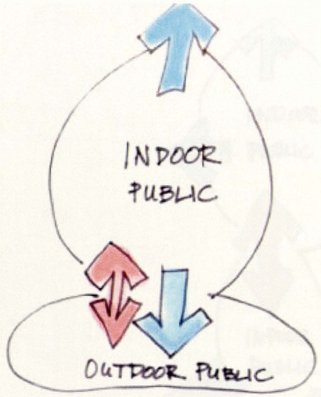
Wooden Columns

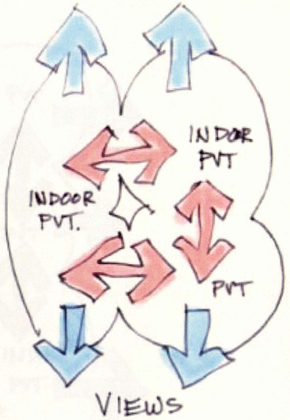
Perspective

D A L T O N V I L L A G E

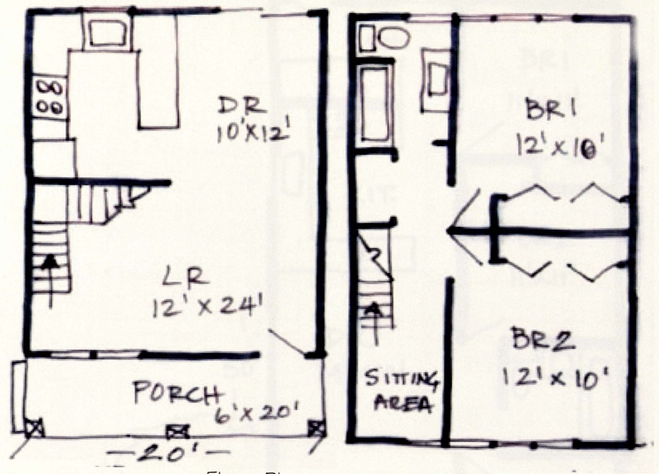
TOWNHOUSE END UNIT

SCALE: 1/8" OR 8' = 1"





Townhouse
Front Facade, Middle Unit



Floor Plan: approximately 1100 sq.ft.

Perspective

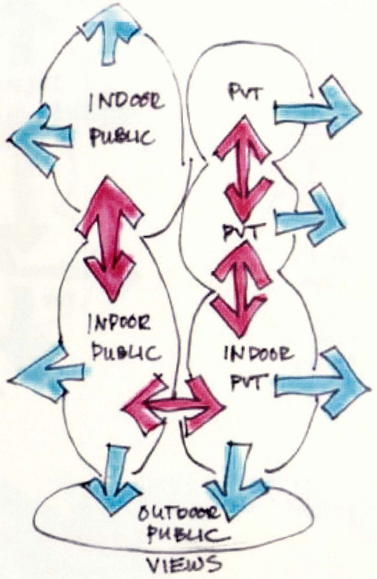
DALTON VILLAGE

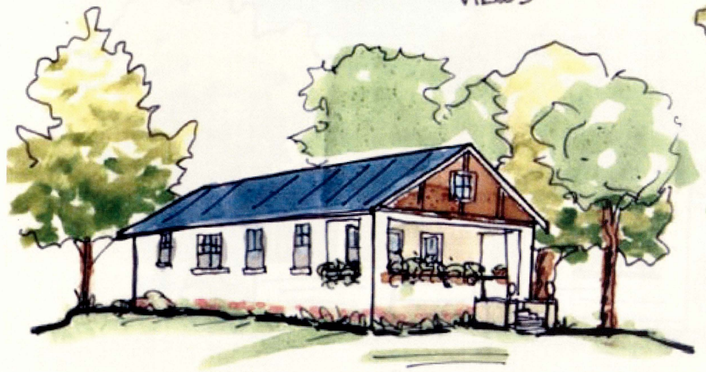
TOWNHOUSE MIDDLE UNIT

SCALE: 1/8" OR 8' = 1"

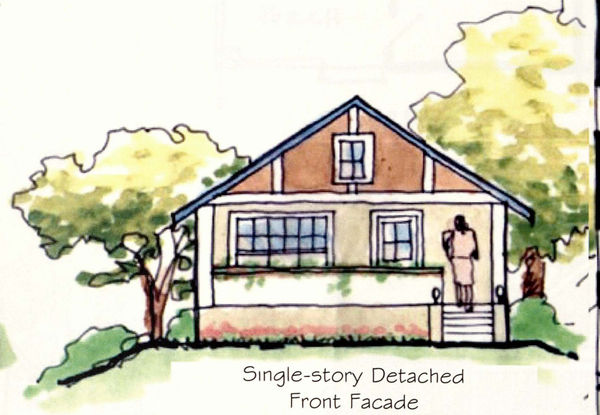
SINGLE STORY HOUSE

SCALE: 1/8" OR 8' = 1"



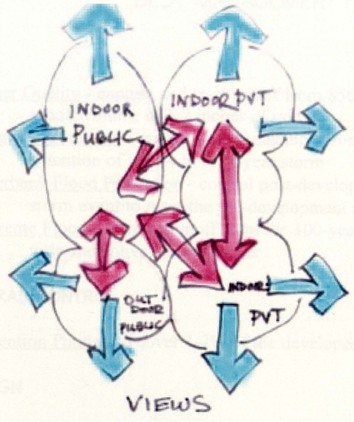


Perspective

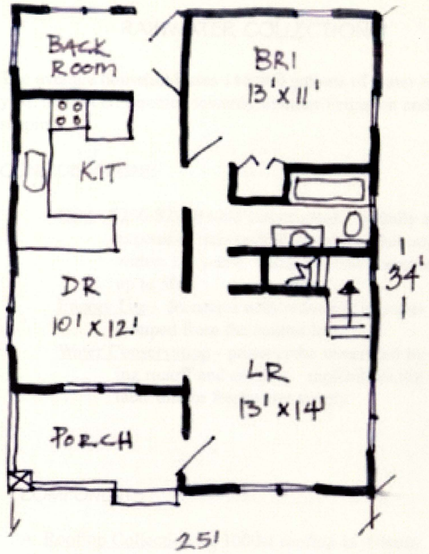


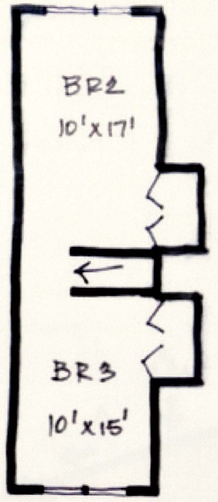
Single-story Detached
Front Facade

Floor Plan: approximately 1200 sq.ft.



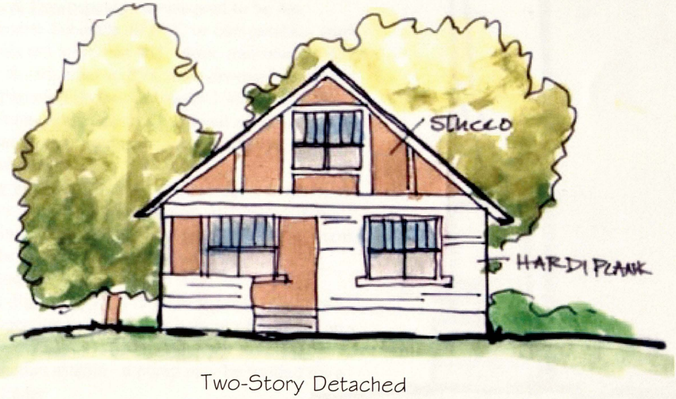
VIEWS





Floor Plan: approximately 1100 sq.ft.

Perspective



Two-Story Detached
Front Facade

DALTON VILLAGE

SCALE: 1/8" OR 8' = 1"

TWO STORY HOUSE

BEST MANAGEMENT PRACTICES

GOALS

Water Quality - capture and treat runoff from 85th percentile storm depth (in Georgia, the runoff volume of 1.2 inches of rain)
Channel Protection - protect stream channels from erosion and instability via extended detention of the 24-hour, 1-year storm
Overbank Flood Protection - control post-development peak discharge for the 25-year storm event to meet the pre-development rate
Extreme Flood - manage runoff from the 100-year, 24-hour storm event via structural con trols and conveyance systems

STRUCTURAL CONTROL

Detention Ponds - to cover 1-2% of the developed drainage area

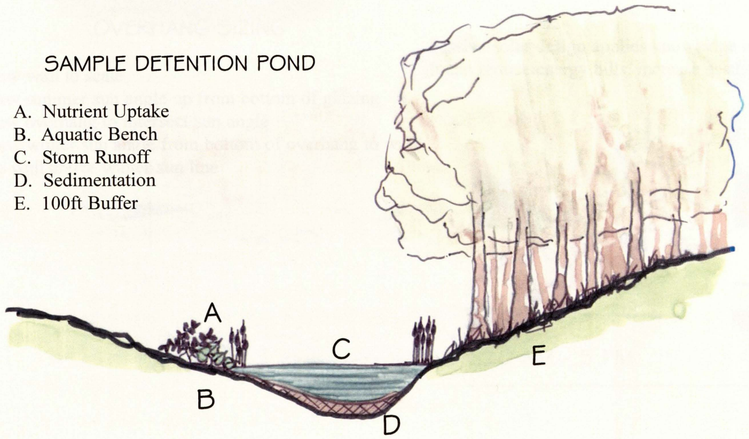
SITE DESIGN

Conservation - preservation of existing stream system with 100ft stream buffers
Lower-Impact Design - minimal earthwork, minimal clearing, rainwater harvest, native landscapes
Impervious Cover Reduction - minimize roadways and parking
Use of Natural Features- existing depressions as detention ponds, existing vegetation retained as much as possible

Source: *Georgia Stormwater Manual*

SAMPLE DETENTION POND

A. Nutrient Uptake
B. Aquatic Bench
C. Storm Runoff
D. Sedimentation
E. 100ft Buffer



RAINWATER COLLECTION

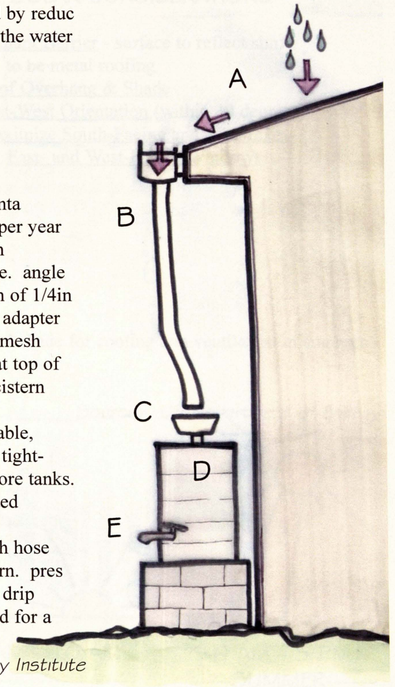
The average household uses 146,000 gallons of water each year, about half directed towards summer irrigation and landscaping.

CONSIDERATIONS

Cost - $250-$2000 total construction. initially more expensive than central water use, but payback within 1-2 years. water bill can decrease by up to 50%
Energy Use - decreases with reduction in water pumped from the central line
Water Conservation - protects the watershed by reduc ing runoff and erosion.. replenishes the water table and/or freshwater supply

COMPONENTS

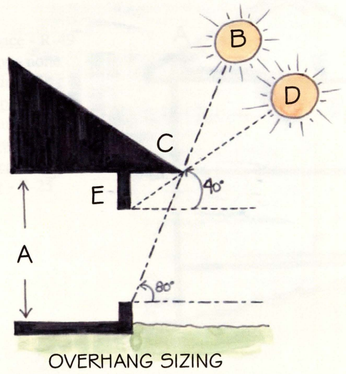
A Rooftop Collection - a 1000sf rooftop in Atlanta has a catchment of about 28,652 gallons per year
B. Gutters & Downspouts - downspout to be 4in diameter Schedule 40 PVC or comparable. angle bends not to exceed 45*. slope minimum of 1/4in per ft. fit gutter to PVC with downspout adapter
C. Large-Particle Filter - continuous 1/4in wire mesh in frame above gutters. optional screen at top of downspouts. stocking-type filter above cistern head
D. Storage in Cistern - must be water-tight, durable, have a clean smooth interior, and have a tight-fitting cover. materials vary. use 2 or more tanks. to be out of direct sun on a sturdy, elevated foundation
E. Gravity-Run Delivery - to include faucet with hose connection installed near bottom of cistern. pres sure generated supports a soaker hose or drip irrigation system. a pump may be needed for a sprinkler



Source: *Southface Energy Institute*

ENERGY COSTS

Low income families may spend over 15% of their income on energy. Simple improvements can cut costs by over 40%. … An Atlanta community found that annual energy bills for new, affordable homes averaged over $1200. Increasing energy efficiency saved over $400 a year and added less than $500 to construction costs.



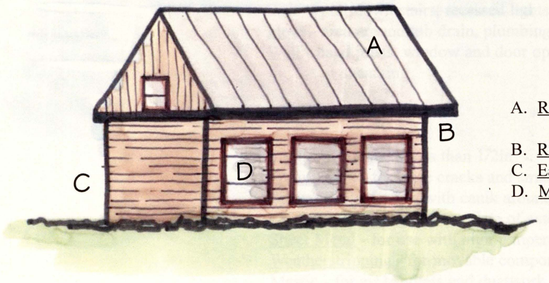
OVERHANG SIZING

A. Draw wall to scale
B. Draw summer sun angle up from bottom of glazing
C. Draw overhang to intersect sun angle
D. Draw winter sun angle from bottom of overhang to wall
E. Use wall above winter sun line

APPLIANCES & FIXTURES

All - to be efficient as rated by Energy Star program
Water Heater - *a family of four can spend more for hot water than heating or cooling.* heater and pipes to be insulated
Climate Control - size equipment for area. heat pump recommended
Lighting - fluorescent bulbs for fixtures used more than 4 hours a day

Source: *Southface Energy Institute*



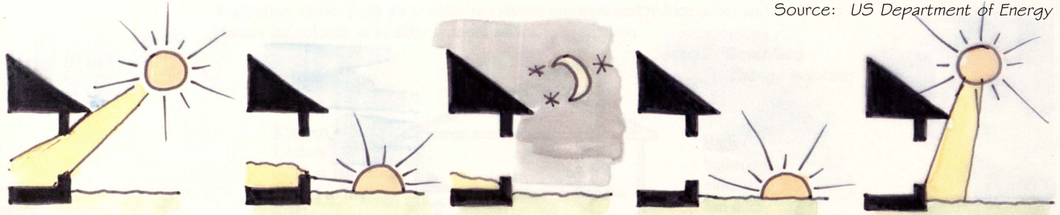
SOLAR CONSIDERATIONS

A. Radiant Barrier - surface to reflect sun. to be metal roofing
B. Roof Overhang & Shade
C. East-West Orientation (within 30 degrees)
D. Maximize South-Facing and Minimize East- and West-Facing Windows

PASSIVE SOLAR DESIGN

Passive solar design applies knowledge of solar geometry to use sunlight for heat and light in winter and shade for cooling and ventilation in summer. It can reduce energy bills, increase aesthetics, and improve comfort.

Source: *US Department of Energy*

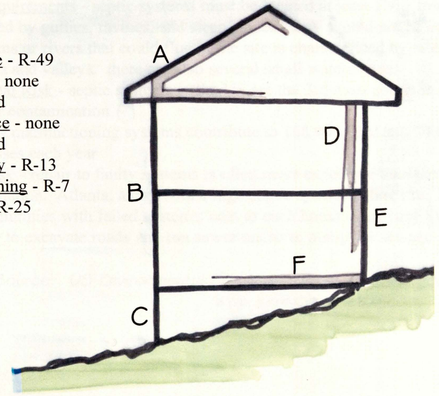


INSULATION

Insulation helps ensure efficient climate control. When installing, it is vital to avoid gaps and compressed areas. While the Model Energy Code mandates minimum standards, it is often cost-effective to exceed these. Following recommendations as determined for the Dalton region.

Source: Oak Ridge Nat'l Laboratoy, US Dept. of Energy

A. Attic Space - R-49
B. 2nd Floor - none required
C. Crawl Space - none required
D. Wall Cavity - R-13
E. Wall Sheathing - R-7
F. 1st Floor - R-25



WINDOWS

Energy-efficient windows can reduce heating and cooling needs enough to allow smaller, cheaper HVAC equipment and ductwork. They also reduce condensation, which protects building materials and reduces mold growth

Source: US Department of Energy

AIR SEALING

Infiltration can account for 30% or more of a home's heating and cooling costs and contribute to problems with moisture, noise, dust, and entry of pollutants and pests. Air sealing reduces infiltration by sealing holes and seams to form a continuous air barrier. Sealing the average home to 1995 Model Energy Code standards typically costs less than $200 and does not require specialized labor.

TYPICAL INFILTRATION SITES

Attic - drop ceilings, kitchen soffits, ductwork and plumbing chases, access points and pull-down stairs, recessed lights, holes, and wiring penetrations
Floor - area around tub drain, plumbing, HVAC, and wiring penetrations
Wall - band joists, window and door openings, penetrations through drywall and exteri or sheathing

EFFECTIVE SEALANTS

Caulk - for gaps of less than 1/2in
Spray Foam - for large cracks and small holes. not for high-temperature use
Backer Rod - for use with caulk around window and door rough openings
Gaskets - for under bottom plate of exterior wall or sealing drywall to framing
Sheet Metal - for use with high-temperature caulk around high-temperature components
Weatherstripping - for movable components, ie doors, windows, attic accesses
Mastic - for air handlers and ductwork

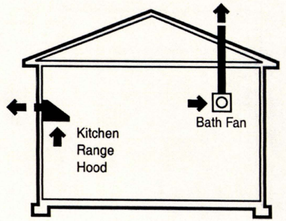
Source: Southface Energy Institute & US Department of Energy

VENTILATION

Ventilation allows fresh air to enter to exhaust moisture and reduce odors and stuffiness. Homes are not safe or healthy without adequate ventilation.

Source: Southface Energy Institute

Kitchen - kitchen exhaust fan ducted to the outside; typically in therange hood



Bath - bathroom exhaust fan ducted to the outside

SEWER

Extension of Dalton's main sewer line to the development site is highly recommended.

REASONING AGAINST SEPTIC

Land Requirements - Georgia recommends a minimum of 1/2 acre of land per home on a septic system. plots as designed on the site are much smaller.
Soil Requirements - soil must have enough depth and percolation to be suitable for septic. Dalton and, particularly, the site have bedrock outcrops and shallow bedrock depth that will limit the applicability of septic systems.
Location Requirements - septic systems must be located at least 100ft from wells and are limited by gullies, ravines, and steep slopes. they should not be installed near streams or rivers that could flood. the site is characterized by steep slopes forming ridges and valleys. there are also several small watercourses.
Environmental Risk - septic systems in the US are the 3rd most common source of ground water contamination
Health Risk - malfunctioning systems contribute to 168.000 viral and 34.000 bacterial illnesses each year
Financial Risk - repair to faulty systems is often more expensive than the cost of sewer installation. Atlanta, a city with a high septic system failure rate, has had entire communities with failed systems; cost to each homeowner runs $15.000-$30,000 or more to excavate roads and run sewer mains to pump the sewage

Source: *US Environmental Protection Agency. www.georgiaplanning.com. www.septicprotector.com. www.bae.ncsu.edu*

DEVELOPMENT BY-PRODUCTS

Soil - to be conserved and retained for fill and/or supplementing yards
Stone - to be retained for fill or crushed for aggregate
Timber - to be conserved. any cut to be sold, with proceeds to supplement community or to be credited towards development cost

ADVANCED WALL FRAMING

Advanced wall framing, or Optimum Value Engineering (OVE), is a collection of framing techniques that reduces lumber consumption and waste generation in wood-frame home construction.

BENEFITS

Environment - less timber cut per home built. less waste and pollution generated
Material Cost - fewer materials used results in savings of about $500 for a 1200sf house
Labor Cost - less time required results in savings of 3-5%
Waste Disposal Cost - less waste generated results in reduced disposal cost
Heating/Cooling Cost - improved energy efficiency results in annual savings of up to 5%
Energy Efficiency - practices of replacing lumber with insulation, reducing thermal bridging in framing, and maximizing insulated wall area increase the whole-wall R-value

TECHNIQUES INCLUDE

2-Foot Modules - make best use of common sheet good sizes. reduce waste and labor
Wall Stud Spacing - up to 24in on center
Floor Joist & Roof Rafter Spacing - up to 24in on center
2-Stud Corners & Drywall Clips/Scrap - for increased insulation levels and drywall backing instead of studs
Non-Load Bearing Walls - eliminate headers
In-Line Framing - floor, wall, and roof members vertically aligned so loads are transferred directly down
Single Lumber Headers & Top Plates - when appropriate

Source: *US Department of Energy*