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2.0 PLANNING PRINCIPLES

2.1 SMART GROWTH

As defined by the American Planning Association (APA) “smart growth means using comprehensive planning to guide, design, develop, revitalize and build communities for all that:

- Have a unique sense of community and place;
- Preserve and enhance valuable natural and cultural resources;
- Equitably distribute the costs and benefits of development;
- Expand the range of transportation, employment and housing choices in a fiscally responsible manner;
- Value long-range, regional considerations of sustainability over short term incremental geographically isolated actions; and
- Promotes public health and healthy communities.
- Compact, transit accessible, pedestrian-oriented, mixed use development patterns and land reuse

epitomize the application of the principles of smart growth.

In contrast to prevalent development practices, Smart Growth refocuses a larger share of regional growth within central cities, urbanized areas, inner suburbs, and areas that are already served by infrastructure. Smart Growth reduces the share of growth that occurs on newly urbanizing land, existing farmlands, and in environmentally sensitive areas. In areas with intense growth pressure, development in newly urbanizing areas should be planned and developed according to Smart Growth principles.”

The development of the site into a walkable community embraces the principles in this widely accepted definition of smart growth. The Community Design Strategy chapter provides an overview of the development vision that utilizes these principles.

***Smart growth** is an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices.*

***Smart growth** values long-range, regional considerations of sustainability over a short-term focus. Its goals are to achieve a unique sense of community and place; expand the range of transportation, employment, and housing choices; equitably distribute the costs and benefits of development; preserve and enhance natural and cultural resources; and promote public health.*

www.wikipedia.org



2.2 SUSTAINABLE COMMUNITY DESIGN

Sustainable communities that also incorporate the principles of smart growth and green building technologies better serve the needs and desires of today's residents and the needs of future residents. The Dumbarton TOD recognizes the importance of an economically viable community, which provides for the means to implement and maintain sustainability and fosters opportunities for residents to establish, maintain and advance themselves financially. In its Policy Guide on Planning for Sustainability, the American Planning Association identifies four objectives for sustainability: Planning for sustainability requires a systematic, integrated approach that brings together environmental, economic and social goals and actions directed toward the following four objectives:

Objective 1

Reduce dependence upon fossil fuels, extracted underground metals and minerals. Reason: Unchecked, increases of such substances in natural systems will eventually cause concentrations to reach limits — as yet unknown — at which irreversible changes for human health and the environment will occur and life as we know it may not be possible.

The Dumbarton TOD can meet this objective by:

- Creation of a walkable community, minimizing the need to drive to neighborhood serving retail, recreational uses, and public services;
- Provision of a variety of community uses within walking biking and walking distance of each other;
- A pedestrian/bikeway system that encourages the

use of non-motorized modes of transportation;

- Creation of human-scaled and pedestrian friendly development;
- Landscape and park elements that utilize drought tolerant vegetation; and,
- The use of energy efficient light fixtures throughout the site design.

Objective 2

Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature. Reason: Same as before.

The Dumbarton TOD can meet this objective by:

- Creation of landscape and park elements that minimize the use of pesticides and herbicides;
- Provision of proper disposal and recycling facilities for demolition and construction waste; and,
- Utilization of alternative and innovative construction techniques and materials that are environmentally friendly.

Objective 3

Reduce dependence on activities that harm life-sustaining ecosystems. Reason: The health and prosperity of humans, communities, and the Earth depend upon the capacity of Nature and its ecosystems to reconcentrate and restructure wastes into new resources.

The Dumbarton TOD can meet this objective by:

- Redevelopment of previously disturbed land;
- Provision of low-flow water fixtures and water conserving irrigation systems;
- Management of retention of storm water in a way that restores the quality of on-site runoff;
- Minimization of impervious paving surfaces through narrow streets and paseos;
- Creation of a greenspace network within the community;
- Incorporation of native and drought tolerant landscaping;
- Provision of sewage infrastructure; and,
- A sensitive approach to site grading design that respects the existing land form.

Objective 4

Meet the hierarchy of present and future human needs fairly and efficiently. Reason: Fair and efficient use of resources in meeting human needs is necessary to achieve social stability and achieve cooperation for achieving the goals of the first three guiding policies.

The Dumbarton TOD can meet this objective by:

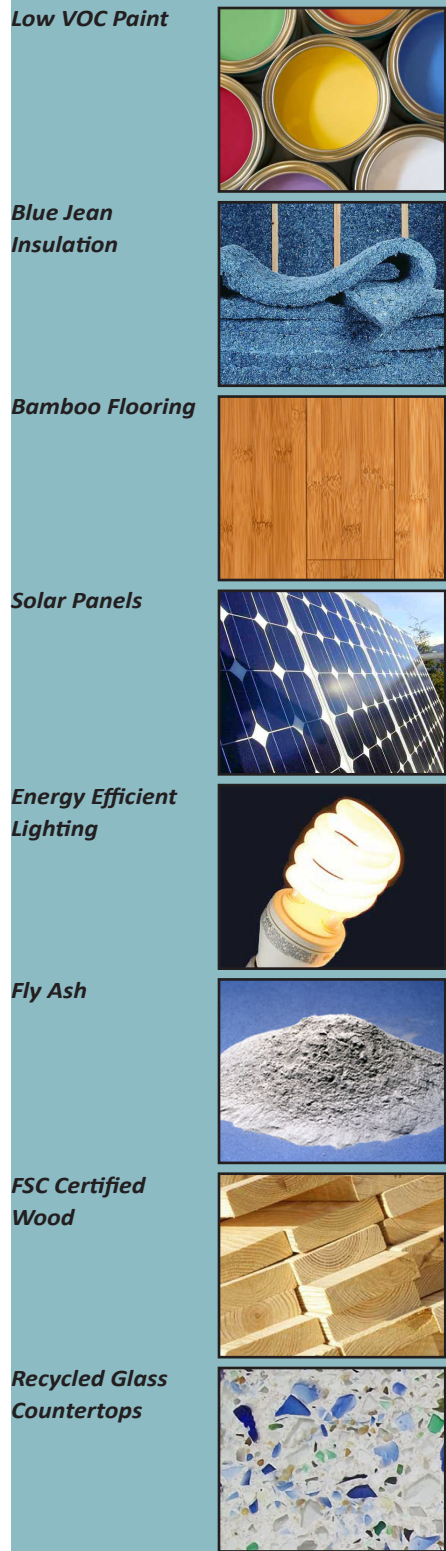
- Provision of a range of housing options including affordable housing; and,
- Location of housing near services and recreational opportunities.

While sustainability is defined by the American Planning Association as “the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs by preserving and protecting the area’s ecosystems and natural resources,” its ecological and energy conscious objectives can be implemented in such a way as to foster a more livable community.

Creative implementation of the sustainable principles listed above will create a community at the Dumbarton TOD where the mix of land uses are amenities for each other, as well as for the overall community of Newark.

These livability design aspects include:

- A unique sense of community and place;
- Land uses where services are provided near residents;
- Utilizing narrow pedestrian oriented streets and traffic calming elements such as roundabouts, making the circulation experience pleasant and non-intrusive to residents and visitors;
- Linking a compact community with greenbelts and bicycle connections to promote walkability;
- Providing linkages to the surrounding community wherever possible;
- Providing shopping and recreational opportunities within a 5-10 minute walk can reduce dependence on the automobile;
- Clustering of retail, service and high-density



housing uses within easy walking distance of each other; and,

- Providing a range of housing opportunities to fairly meet the needs of different lifestyles.

2.3 GREEN BUILDING

Green building techniques can enhance the success of a community. They can influence the design and construction of high-profile public spaces. Emphasis placed on public space planning and design that maximizes solar exposure, while minimizing the effects of frequent winds, can enhance the experience of the space. Materials and energy systems that are earth friendly can be incorporated, as well as recycled materials.

The technology exists to create buildings that are smarter, more energy efficient and healthier than those of the past. Homes and commercial buildings built within the Dumbarton TOD should incorporate some of the finest building and energy saving techniques available. All new homes will be constructed to meet Energy Star requirements for energy efficiency.

Green building techniques for the Dumbarton TOD project area can include items such as:

- Recirculating hot water systems that can reduce water consumption;
- High Efficiency Clothes Washers: Known as

High Efficiency, Front Loading, or Horizontal Axis, these clothes washers all produce dramatic water conservation as well as energy savings. “Front loaded washers can easily save \$100 per year on energy costs and use half as much water. Because they use less water, they also require up to 68% less electricity to heat the water, resulting in more energy savings.” (www.eartheasy.com)

- High Efficiency Dishwashers: “As of August 11, 2009, ENERGY STAR qualified dishwashers are required to use 5.8 gallons of water per cycle or less. Older dishwashers use much more water than newer models. A dishwasher purchased before 1994 uses about 8 additional gallons of water in each cycle compared to a new ENERGY STAR qualified model.” (www.energystar.com) This Green Building feature could save a substantial amount of water over the course of a year. If the average household runs the dishwasher every other day, it could save over 400 gallons of water per year.

Additional green building techniques may include the following:

- Fly ash in Concrete: Fly ash is a by-product of coal burning power plants and can be an environmentally friendly substitute for a portion of the Portland cement used in concrete. Some manufacturer’s proprietary fly ash cement is considered a non-shrink material with advantages in workability, water retention, and strength.

Because fly ash mixes with less water, it is less likely to crack. An industrial by-product that is otherwise waste, fly ash is environmentally friendly because it is recycled and has low embodied energy. (www.toolbase.org)

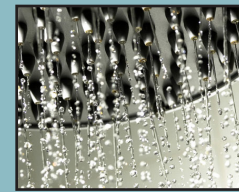
Use of fly ash as a partial replacement for Portland cement is generally limited to Class F fly ashes. It can replace up to 30% by mass of Portland cement, and can add to the concrete's final strength and increase its chemical resistance and durability. Recently concrete mix design for partial cement replacement with High Volume Fly Ash (50 % cement replacement) has been developed. For Roller Compacted Concrete (RCC) [used in dam construction] replacement values of 70% have been achieved with POZZOCRETE (processed fly ash) at the Ghatghar Dam project in Maharashtra, India. Due to the spherical shape of fly ash particles, it can also increase workability of cement while reducing water demand.[16] The replacement of Portland cement with fly ash is considered by its promoters to reduce the greenhouse gas "footprint" of concrete, as the production of one ton of Portland cement produces approximately one ton of CO₂ as compared to zero CO₂ being produced using existing fly ash. New fly ash production, i.e., the burning of coal, produces approximately twenty to thirty tons of CO₂ per ton of fly ash. Since the worldwide production of Portland cement is expected to reach nearly 2 billion tons by 2010, replacement of any large portion of

this cement by fly ash could significantly reduce carbon emissions associated with construction, as long as the comparison takes the production of fly ash as a given. (www.wikipedia.org)

- **Formaldehyde-Free Insulation:** There are two options; cellulose insulation made of recycled newspapers which contain no formaldehyde and can be blown into wall cavities wet or dry, and fiberglass insulation free of formaldehyde that can contain up to 25% recycled glass. Cellulose is made from waste newspaper, cardboard and other waste paper. Cellulose has several advantages from the environmental perspective over other insulation materials. Cellulose has the lowest embodied energy of any insulation product because it contains upward of 90% post-consumer recycled newspaper and cellulose offers an "itch free" installation. (www.greenerbuilding.org). Both types meet stringent fireproofing standards.

Additional commitment to green building should involve a series of options provided to the home buyer. These options can include environmentally preferable upgrades that promote the use of recycled content materials, more energy efficient heating systems and renewable energy systems. Other items, such as the ones listed below, are also good options to include:

- Countertops of recycled glass, concrete, or bio-based products, etc.;



Low Flow Fixtures



Cork Flooring



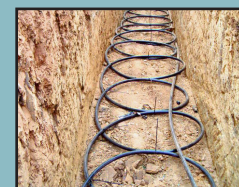
Wind Power



Recycled Carpet



Green Roofs



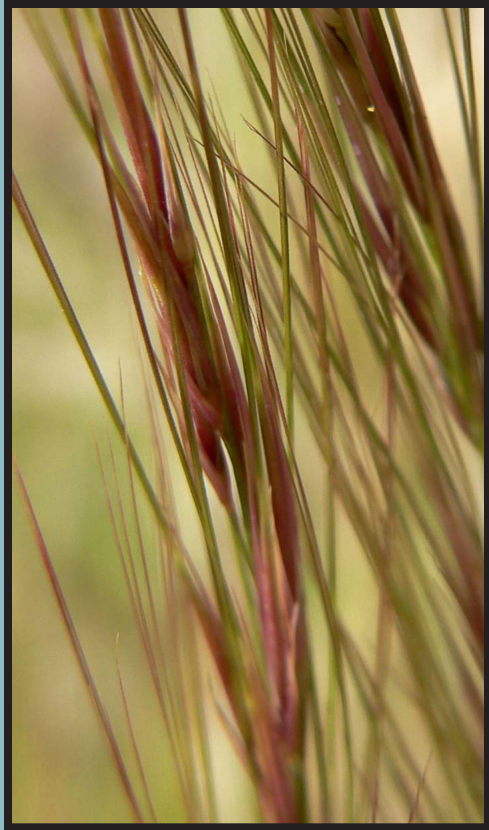
Geothermal



Recycled Glass Walls



High Efficiency Appliances



California Native, *Aristida Purpurea*

- Floors of bamboo, natural linoleum, salvaged wood, recycled content carpets, etc.;
- LED Light fixtures of dimmable compact fluorescent lamps and occupancy controls;
- Dual flush toilets;
- HVAC options for higher efficiency equipment, and;
- Low voltage exterior lighting.

2.4 SUSTAINABLE LANDSCAPING PRINCIPLES

The desire to create community in accordance with green building principles, influences decisions regarding the landscape design, recreational programming, and physical layout of each development area. The selection of construction materials, planting, and irrigation design are inspired by the need to design in response to the climate and environmental conditions present in the City of Newark. This constraint also create an opportunity to create an aesthetic that reflects the unique beauty and sense of place that is one of the main attraction to living next to the San Francisco Bay.

The example plant materials identified in the Design Guidelines chapter have been selected to have low water requirements and that thrive in the conditions present on the site. Extensive use of native and naturalizing species is encouraged, which will reduce water demands and adapt well to the soil, wind and salt conditions. This plant palette will quickly establish the community as an integral part of the City of Newark, yielding benefits in terms of visual quality and biological integration.

Outdoor areas should be landscaped using predominantly native and drought tolerant plants, with a minimal use of turf. Irrigation controls will be utilized to minimize water usage. Significant amounts of water are conserved by irrigating at the rate and schedule required to meet a plant's needs rather than the typical clock schedules now in common use. Efficient controllers are available from a variety of suppliers and can be installed in residential, commercial and municipal applications.

Park Design Concepts

The parks should be designed to provide a variety of recreation opportunities in close proximity to residential uses to encourage walking to those sites. The active parks can use turf for active sports and playfields. This reflects the commitment to provide high quality recreation facilities to meet the use requirements of the community while minimizing the use of limited water and maintenance resources. Portions of the parks should include native vegetation to blend with the environment and create shelter for passive uses. The intent is to have irrigation systems help establish these plantings, that would later be established enough to grow and thrive without supplemental watering.

The design guidelines for site furnishing should incorporate recycled materials wherever possible. Innovative green materials, such as permeable reinforced crushed stone paving, is one of the encouraged materials for the parking lots and pathways within the park system.

Landscape Drainage

The landscape design intent endeavors to incorporate the site drainage and infiltration as an integral part of the site development. The goal is to improve the water quality as storm water is filtered through planted areas wherever possible. The project may use permeable pavements, bioswales and water retention areas to reduce the need for conventional storm drainage piping systems. They also provide extensive use of progressive methods to improve environmental quality and reduce the impact of site development on the existing infrastructure.

Recycled Materials

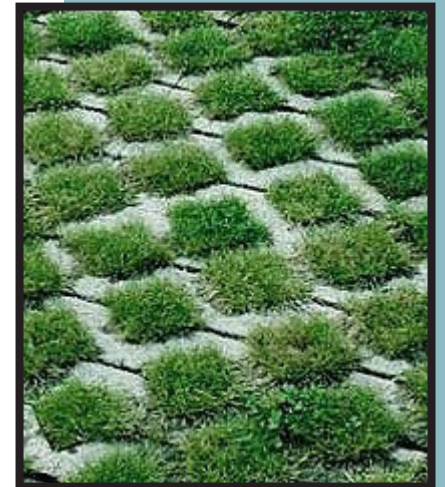
Developers are encouraged to utilize the resources of the Alameda County Greenbuilding Program at www.stopwaste.org.

Lighting Design

The goal for the lighting design for the project is to provide a comfortable level of illumination that meets the communities need for use and safety. High efficiency fixtures and sophisticated optics can be used to direct light where it is needed without creating excessive glare. Energy efficient lamps can also be used to minimize energy use and lamp replacement.

Lights should be placed where they are needed for specific uses, rather than to a continuous foot-candle requirement across the site, allowing for the appreciation of the dark sky in the residential neighborhoods. The result is that the quantity of fixtures and the total energy required is reduced

over conventional communities. This has a benefit of creating a better quality of life, an improved aesthetic, all the while preserving precious energy and maintenance resources.



Examples of Drought Tolerant Landscapes and Permeable Surfaces