Introduction


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Ed Koch
Queensboro Br
Lower Roadway
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Use E 61 St
ONLY
ONLY

Introduction


West 33rd St
ONE WAY
SECURITY

Purpose

The *Street Design Manual* is New York City's resource on street design policies, principles, processes, and best practices. It aggregates a broad range of resources—from nationally recognized engineering and design guidelines and standards to federal, state, and local laws, rules, and regulations—to provide information on treatments that are allowed and encouraged on New York City streets. The Manual's intended audience is diverse, consisting of design professionals, city agency staff, elected officials, community groups, and private developers.

The *Street Design Manual* supplements rather than replaces existing engineering and environmental standards, requirements, or guidelines, such as the *Manual on Uniform Traffic Control Devices* (MUTCD), AASHTO *Policy on Geometric Design of Highways and Streets*, and *2010 ADA Standards for Accessible Design*. In a city with as many varied and complex conditions as New York, designs must be tailored to the needs and opportunities created by the local context, uses, and dimensions of streets. The *Street Design Manual* leaves ample room for choice, and all designs remain subject to case-by-case DOT approval based on established engineering standards and professional judgment, with the safety of all street users being of paramount importance.

ABOVE: *Fulton Street, Brooklyn*

LEFT: *Herald Square, 6th Avenue and W 33rd Street, Manhattan*

This Manual is New York City's resource on street design policies, principles, processes, and best practices.

Background

The New York City Department of Transportation (DOT) first published the *Street Design Manual* in 2009 to better communicate design policy and methods and streamline project delivery to facilitate design excellence. The document was part of a broader effort to transform the city's streets from a network designed primarily for automobiles into one that supported safe and convenient travel using a diversity of modes.

In the ten years since the release of the First Edition, the city has made unprecedented investments in policies and projects that have collectively reshaped how New Yorkers and tens of millions of annual visitors experience its streets. Building on efforts that began in the early 2000s and accelerated in 2014 under Vision Zero—the city's initiative to eliminate traffic deaths and serious injuries—DOT and its partners have redesigned hundreds of corridors and intersections across the five boroughs to encourage safe driving, separate pedestrians and cyclists from motorists, and create dedicated space for buses and their riders.

LEFT *and* **RIGHT:** *Before and after capital reconstruction: Cropsey Avenue and Bay 37th Street, Brooklyn*

These projects have included hundreds of new miles of bike lanes with just over 125 miles of protected lanes, which, along with the launch and expansion of the Citi Bike bike share system, have brought cycling into the mainstream. For transit riders, a growing network of bus lanes and bus stop enhancements on routes crisscrossing the city have made taking the bus a faster and more comfortable experience.

Perhaps most importantly, by focusing on pedestrians in the street design process, the city has made walking—New Yorkers' primary mode of transportation—safer, easier, and more pleasant. DOT has widened sidewalks, shortened crossing distances, and installed pedestrian ramps with highly visible detectable warning surfaces at corners across the city. The NYC Plaza Program has taken the car-dominated Times Square and dozens of stretches of underutilized roadway and turned them into pedestrian-focused neighborhood destinations. And in 2019, the agency partnered with 54 organizations to hold over 100 event days of Weekend Walks, and hosted Summer Streets

for the twelfth year, welcoming more than 300,000 people to enjoy a seven mile car-free route over three Saturdays in August.

Further, efforts to enhance sustainability and resiliency have harmonized with citywide improvements for pedestrians. For example, DOT has nearly completed the transition to LED street lights citywide, creating a more hospitable nighttime experience while conserving energy. And NYC Parks, in collaboration with civic and community groups, has planted one million new trees, expanding urban tree cover by almost 20 percent between 2007 and 2015.

Though meaningful progress has been made toward safer, more inclusive, and more sustainable streets, much work remains. While we've seen sustained decreases in traffic-related deaths since the city adopted Vision Zero in 2014, too many people are still killed and injured on city streets. DOT is engaged in a substantial effort to provide accessible pedestrian ramps at all of New York's more than 160,000 street corners, so that people of all abilities, as well as people with strollers, can navigate the sidewalks. And evolving challenges like the explosive growth of e-commerce, the urgent threats of sea-level rise and stronger storm surges, and the rapid introduction of new mobility technologies will require new regulatory strategies and creative design thinking.

Like its predecessors, this Third Edition of the *Street Design Manual* is practical, flexible, and aspirational.

Like its predecessors, this Third Edition of the *Street Design Manual* is practical, flexible, and aspirational. DOT and its partners will continue to refine proven methods and experiment with new ones to create a transportation network and streetscape fit for the challenges of this decade and beyond.

Street Design Policy

Planning and designing streets in accordance with the goals and principles of this section will contribute to a consistent level of quality and functionality for New York City's streets. Along with a project's planning framework, the goals and principles should be used to resolve conflicting priorities for limited street space.

Goals & Principles

Demand for street space in New York City will always outstrip supply, and it is DOT's responsibility to design streets and allocate space to encourage the transportation modes that move people and goods most efficiently. Accordingly, consistent with the city's *OneNYC 2050* plan, the city prioritizes walking, cycling, and transit when redesigning streets and allocating use of the streetscape. In applying this framework, projects must also consider freight operations.

Practitioners should adhere to the following goals and principles when designing city streets, with an eye to achieving the highest possible aesthetic standards.

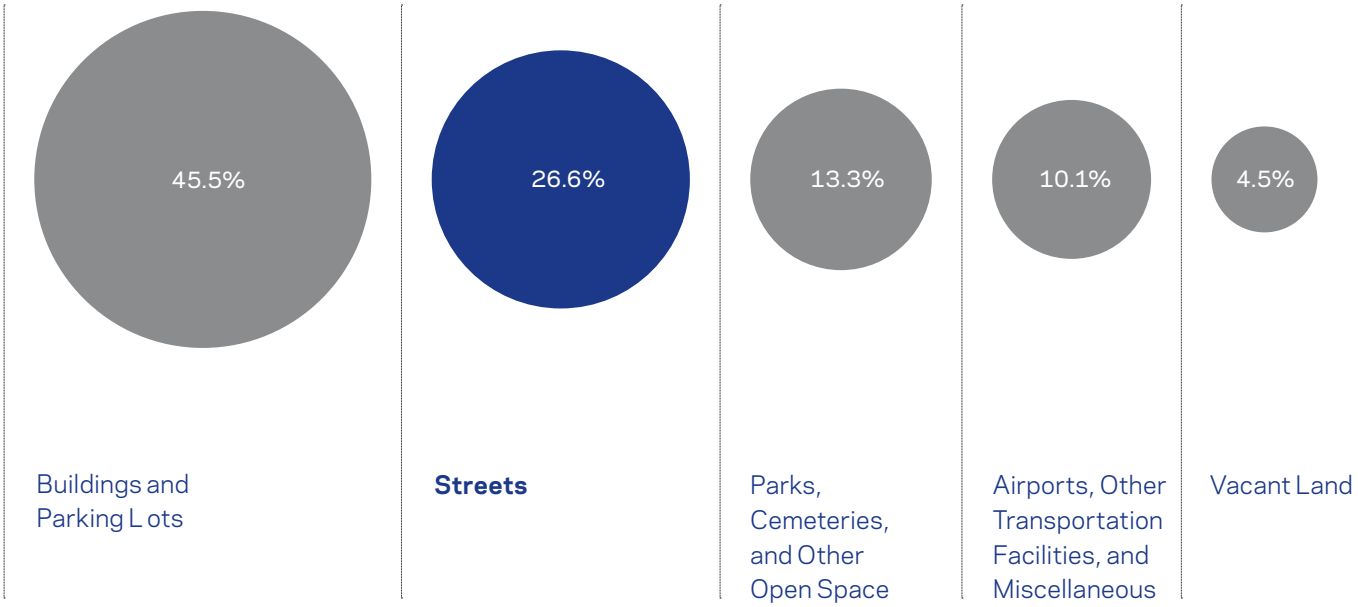
DOT seeks to design streets that are:

1. **Safe**
2. **Balanced and Inclusive**
3. **Vibrant**
4. **Contextual**
5. **Sustainable and Resilient**
6. **Cost-effective and Maintainable**

Moving People Efficiently

Percent of New York City Land Area by Use

Streets make up over 25% of the city's land area. (Source: PlaNYC Sustainable Stormwater Management Plan, 2008)



Safety enhancements: Flatbush Avenue and Atlantic Avenue, Brooklyn

Roadway design for multiple modes: 1st Avenue, Manhattan

Dance performance at Rudin Plaza: Summer Streets 2019 Uptown Rest Stop, Manhattan

1

Safe

In 2014, the city introduced its Vision Zero campaign to enhance street safety through engineering, education, and enforcement. These efforts have contributed to a decrease in the number of traffic fatalities and serious injuries. Designing safe streets will continue to be the first priority for DOT.

- **Prioritize walking, cycling, use of** mobility devices for those with disabilities, and other non-automotive modes.
- **Design streets for slower speeds** to discourage speeding and increase driver attention.
- **Use crash data to assist with** decision-making.
- **Research, test, and evaluate** innovative safety treatments, particularly those successfully adopted in other cities.
- **Provide consistent lighting for all** users to ensure safe operation of streets and sidewalks.

2

Balanced and Inclusive

Street designs should enable the movement of street users of all ages and abilities, prioritizing space-efficient modes capable of providing mobility to the largest number of people. Streets should balance the needs of people and vehicles within neighborhoods and movement through them.

- **Provide convenient and** comfortable facilities for walking, cycling, and transit, particularly on designated routes and at critical network connections.
- **Meet or exceed 2010 ADA** Standards for Accessible Design.
- **Accommodate delivery of goods** for businesses and residents.
- **Ensure emergency vehicle access.**

3

Vibrant

Beyond their use for moving people and goods, streets comprise an extensive network of public open spaces that facilitate social, civic, and economic interactions.

- **Expand usable public open space** by reallocating underutilized roadway space.
- **Encourage physical health and** activity for all ages and populations by making walking, cycling, and transit safe, attractive, and convenient.
- **Design streets to be flexible and** allow for multiple activities and public programming.
- **Install public seating and bike** parking.
- **Encourage temporary and** permanent public art installations.
- **Maximize street trees and other** plantings.

Granite block roadway: Washington Street, Brooklyn

Bioswale: Dean Street, Brooklyn

Raised median: Grand Concourse, Bronx

4

Contextual

Streets help define the character of neighborhoods. Both standard and distinctive design treatments—including furniture, materials, lighting, and landscape—should relate to the surrounding context, including its history, land uses, and nearby landmarks.

- **Preserve the unique character of** neighborhoods.
- **Maintain design consistency** within neighborhoods and corridors.
- **Reduce clutter of structures and** signs that are outdated or no longer necessary.
- **Support connections to adjacent** land uses by providing gathering spaces and pedestrian access to and from major destinations.

5

Sustainable and Resilient

Streets present an extraordinary opportunity to improve the environmental health of the city. When designed to be resilient, streets can help communities withstand and bounce back from climate-related events.

- **Collaborate across agencies in** testing, evaluating, and standardizing new materials so that streets are constructed in an increasingly environmentally-sound way, and respond effectively to climate threats.
- **Plan for resiliency by analyzing** the risks associated with sea-level rise, coastal storms, and extreme precipitation and heat.
- **Minimize impermeable surfaces** and maximize plantings and stormwater capturing installations.
- **Utilize resilient materials that can** withstand periodic temporary inundation.
- **Reduce streets' rate of heat** absorption by maximizing tree canopy cover.
- **Minimize the overall lifecycle** energy use and pollution associated with projects, including the extraction, transportation, construction, maintenance, and replacement of materials.

6

Cost-effective and Maintainable

Reconstruction of city streets requires substantial financial resources. The list of worthy projects competing for a limited pool of funding is extensive. Street designs need to be cost-effective and maintainable for the long-term.

- **Consider lifecycle costs and** maintenance needs in addition to up-front capital costs.
- **Ensure interagency coordination** on projects that impact streets to reduce redundancy.
- **Design streets to meet the city's** future needs. Because streets are reconstructed infrequently, consider future conditions and demands during the planning process.
- **Maintain a clear and consistent** design-review process to reduce change orders and the time it takes to complete projects.
- **Establish well-considered and** clearly defined goals early in project development, and focus on meeting those goals throughout planning and design.
- **Pilot and evaluate new materials** and treatments likely to reduce construction and operating costs.

Design Considerations

To define context, set project goals, and help give appropriate thought to the full range of factors that should inform a street's design, refer to this list of design considerations. While this is not an exhaustive list, projects submitted to DOT for approval will be reviewed with respect to these topic areas.

Use

Streets must accommodate many different users and serve a variety of functions.

- Buses and paratransit
- Cycling
- Emergency vehicles and access
- Flood protection/coastal surge barrier
- Motor vehicles
- Programming and special events
- Public space
- Sanitation
- School buses
- Stormwater management practices
- Trucks and goods movement
- Walking

Community Context

Each street is unique and streets should be planned and designed with an understanding of their role in both the local and larger planning contexts.

- Combined Sewer Overflow (CSO) Priority Areas
- Commercial corridors
- Community Boards and elected representatives
- Contamination and remediation
- DCP Neighborhood Studies, proposed zoning studies, and anticipated density change
- FEMA Flood Zones and floodplains
- Historic districts and special zoning
- Land uses, e.g., commercial/retail, industrial, park/open space, single-family residential
- Maintenance partners and capacity
- Neighborhood character
- Proximity to transit
- School- or senior-safety zones
- Trip generators, e.g., prominent landmarks; public spaces; commercial, cultural, and civic institutions
- Wetlands, coastlines, and designated conservation areas

Performance

The operational conditions of a street both respond to and inform street design.

- Access and circulation (e.g., one-way or two-way)
- Conflict and length of exposure of pedestrians and cyclists to vehicular traffic
- Crash history
- Curb cuts
- Curbside demand, e.g., meter and non-metered parking, loading zones
- Multimodal Conflict Points
- Pedestrian, cyclist, and vehicular volumes
- Pedestrian and vehicular level of service (LOS)
- Roadway and sidewalk condition
- Role of a street in transportation network, e.g., residential street, commercial street
- Traffic controls

Physical Constraints

Some physical elements and characteristics are costly, challenging, or impossible to change or relocate, creating constraints for the design process, while others are less costly and challenging.

- Building ingress/egress
- Column supports for elevated structures
- Comfort levels, e.g., wind, access/protection from sun
- Daylighting and sightlines
- Grading and drainage
- Healthy trees
- Lights
- Poles
- Retaining walls
- Roadway width and variations in roadway width
- Sewer catch basins
- Soil structure and permeability
- Street grid
- Turning radii
- Utilities, e.g., underground gas, sewer, water

Streetscape Elements

Furnishings on the sidewalk or in curbside lanes serve a variety of functions and enhance streetscape vibrancy.

- Bike parking
- Plantings and green infrastructure
- Public art
- Seating
- WalkNYC Wayfinding

The Planning Framework

This section provides an overview of the larger planning framework for streets, which includes the street design considerations outlined in the previous section. It establishes the context and priorities for each street project and considers the ongoing management and operation of the completed project. DOT evaluates the costs and effectiveness of treatments and management strategies to inform future designs and initiatives. APPENDIX B includes a number of useful resources for best planning practices for streets.

Planning

Every street is inseparable not only from its surrounding community and land uses but also from the larger transportation network of the city and region. Streets should be designed with an understanding of their role in both local and larger planning contexts. The planning of street projects should begin with the setting of clearly defined goals. Projects should seek to address not only pre-existing issues that have been identified by the community or the city, but also policy objectives or other needs of the city and stakeholders. Appropriate stakeholders should be involved in projects from conception to implementation.

Design

The *Street Design Manual*'s design guidance includes options for geometric, material, lighting, furnishing, and landscape treatments (Chapters 2–6); in most cases it does not prescribe which specific treatments must be used and in which combination. It also does not dictate which treatment should receive priority when there is a conflict between design alternatives. Rather, it gives users the flexibility to determine which overall design is most appropriate and practical in light of the goals and priorities established through the planning process and the policies enumerated in this Manual. The Design Considerations list in the previous section can be a particularly helpful tool for this decision-making process.

Management

Well-functioning, high-quality streets are not just a product of their planning and design; the way a street is operated and managed once built is just as important as its design. For example, curbside regulations and traffic controls (signs, signals, and markings) are a central factor in determining how streets operate and the quality of the public realm. Likewise, access to a street, sidewalk, or plaza can be limited to pedestrian traffic or specific public programming on certain days or for certain hours, and vehicular traffic can be limited to transit and/or commercial vehicles some or all of the time. Finally, maintenance of street materials, furnishings, and plantings is critical to the long-term success of street designs.

Community planning workshop for Citi Bike expansion in Community Board 1: Astoria, Queens

Using This Manual

Applicability

The policies and guidelines in the *Street Design Manual* are the foundation of designs for all projects that impact public and private streets in New York City, including roadways, sidewalks, and plazas. They should be used by agency staff, design professionals, community groups, and other entities involved in the planning and design of streets. DOT uses the Manual to review projects for quality and consistency.

Examples of applicable projects include operational and capital projects, such as street reconstructions and resurfacings; operational and traffic control treatments; street work associated with new or renovated buildings; and other public or private construction projects that include roadways, sidewalks, and plazas.

The guidance presented in the *Street Design Manual* does not supersede any existing federal, state, or city laws, rules, and regulations. All projects remain subject to relevant statutes—including, but not limited to, the Zoning Resolution and the City Environmental Quality Review (CEQR)—and appropriate reviews and approvals of oversight agencies such as PDC, LPC, and OMB.

Public workshop for DOT's Citywide Transit Plan at Elmhurst Hospital Center: Elmhurst, Queens

Public workshop for Jamaica NOW! at the Jamaica Center for Arts and Learning: Jamaica, Queens

The Manual provides assistance in four areas:

1. **Setting Appropriate Goals for Each Project**
2. **Providing a Framework for Design Decisions**
3. **Establishing a Clear and Consistent Design Review Process**
4. **Serving as a Central, Comprehensive Reference Guide**

Organization

The *Street Design Manual* is structured with seven chapters and two appendices. Chapters 2 through 6 contain the bulk of the Manual's design guidance, and Chapter 7 provides information on activating streets and public spaces through public programming.

Chapter 1: Process

How DOT projects are conceived, planned, designed, and implemented.

Chapter 2: Geometry

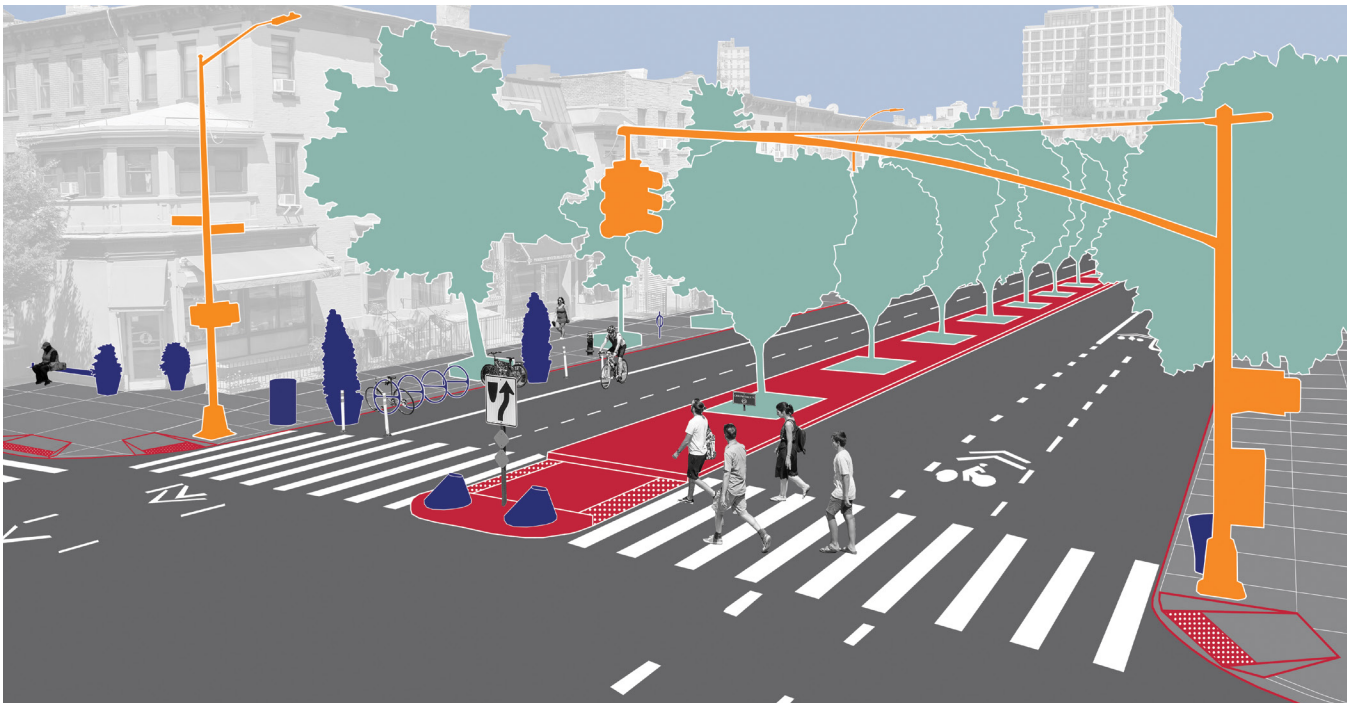
A "toolbox" of geometric street treatments that focus on safety, mobility, and sustainability.

Chapter 3: Materials

Materials with recommendations for use and references to appropriate specifications.

Chapter 4: Lighting

Street and pedestrian lights that meet energy efficiency, technical, and visual quality criteria.



Chapter 5: Furniture

Standard outdoor furniture, including DOT's Coordinated Street Furniture Franchise, and a selection of items being tested by the agency.

Chapter 6: Landscape

Guidance on plant selection, design, installation, and maintenance.

Chapter 7: Programming

Processes and considerations for community and city-initiated public programming.

Glossary

Definitions of frequently used terms and abbreviations.

Appendix A: Agency Roles on the City's Streets

Agency responsibilities for particular street operations and infrastructure.

Appendix B: Legal & Design Guidance References

Reference to laws, regulations, and reference sources.

Appendix C: Acknowledgments: Previous Editions

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Page Structure

The guidance in Chapters 2 through 7 follows a consistent template, as outlined below.

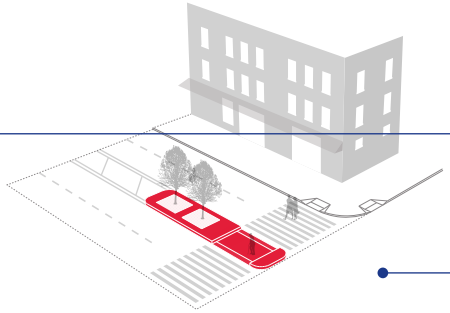
GEOMETRY: SIDEWALKS & RAISED MEDIANS

2.2.6 Pedestrian Safety Island

Pedestrian Safety Island

Usage: Wide

A raised area located at crosswalks that serves as pedestrian refuge separating traffic lanes or directions, particularly on wide roadways. Also known as a "median refuge island." Used at pedestrian crossings when a full raised median is not feasible. A pedestrian safety island confers most of the same benefits as full raised medians at pedestrian crossings. Full raised medians should be used rather than pedestrian safety islands wherever possible. See GEOMETRY: RAISED MEDIAN.



211th Street and 23rd Avenue, Queens

Riverside Drive, Manhattan

Benefits

Enhances pedestrian safety and accessibility by reducing crossing distances and providing refuge for pedestrians to cross road in stages

Calms traffic, especially left turns and through-movements, by narrowing roadway at intersection

Reduces risk of vehicle left-turn and head-on collisions at intersection

Can green and beautify the streetscape with trees and/or vegetation, potentially including stormwater source controls

Trees increase the visibility of the island, potentially enhancing safety

Considerations

May impact underground utilities

Landscaping (excluding street trees) or stormwater source controls require a partner for ongoing maintenance, including executing a maintenance agreement

If there is a maintenance partner, design should consider the inclusion of irrigation system for long term maintenance

Application

See application guidance for GEOMETRY: RAISED MEDIAN

Design

See design guidance for GEOMETRY: RAISED MEDIAN

Typical island accommodates two street trees and, where appropriate, safety bollards. See LANDSCAPE: TREE BEDS and LANDSCAPE: RAISED MEDIAN (CURB HEIGHT). Street trees must not block vehicles' line of sight to the traffic signal

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Title and usage type

Description of element

Schematic descriptive diagram

Examples

Benefits, Considerations, Application and Design Guidelines