



A New Mindset Around Accessibility in Transportation

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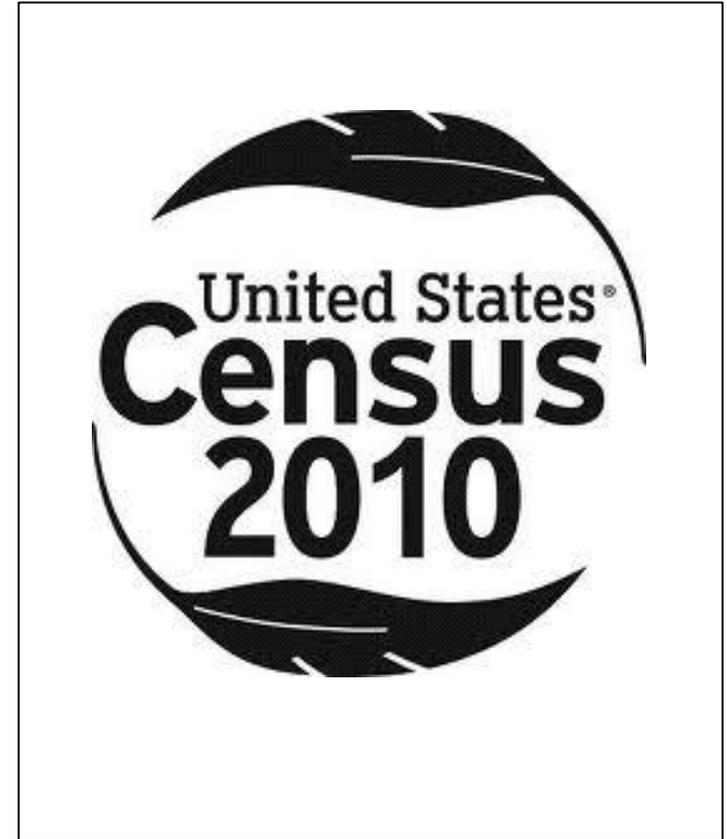


BACKGROUND

Disability has and will continue to be a normal part of the human condition.

- US Census Bureau, July 2012 Report: 18.7% of Americans have a disability – over 61 million people:
- 8.6% under age 65
- 10.1% age 65 and over
- Total number is expected to double in the next 20 years, primarily due to aging population & advances in health care.

Diversity is normal and expected. Diversity within the disability community is wide.

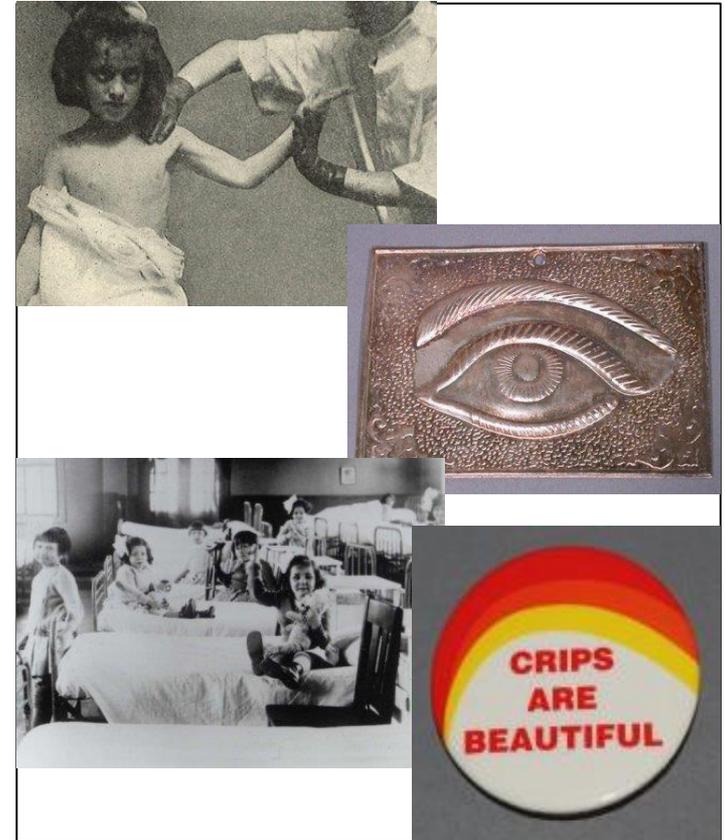


BACKGROUND

Civil rights for persons with disabilities are relatively new. Four social models of disability:
(Deborah Kaplan, World Institute on Disability)

1. Moral; oldest – associated with shame & guilt.
2. Medical; sickness or defect to be cured.
3. Rehabilitation; – training, therapy, counselling to make up for deficiency.
4. Disability; disability as a normal aspect of life, not as a deviance. Basis of modern Civil Rights.

Disability model rejects the notion that persons with disabilities are in some inherent way "defective."
Focuses the construct of disability on a continuum from enablement to disablement (maximum independence).

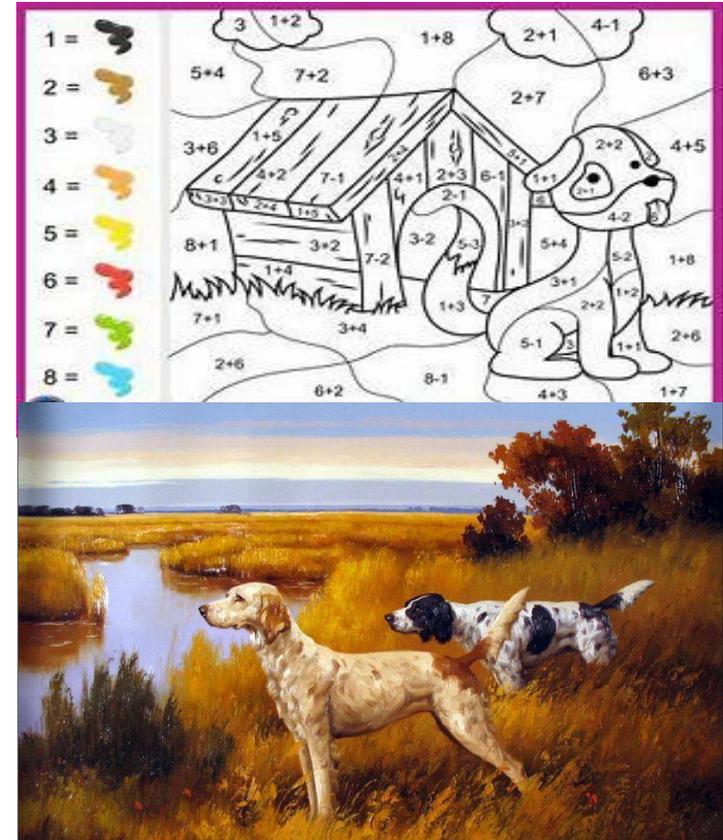


DISABILITY AND REGULATION

Codes are and always will be incomplete and inadequate to address all possible situations.

1. Basic protection of the Public's health, safety and welfare by describing minimum criteria.
2. They are not a design manual for how to design for persons with disabilities.
3. Current aspirational goals of urbanism, including; Complete Streets, Vision Zero, Social Sustainability, Safe Routes to Schools, etc. are not limited or defined by codes. Why should accessibility?

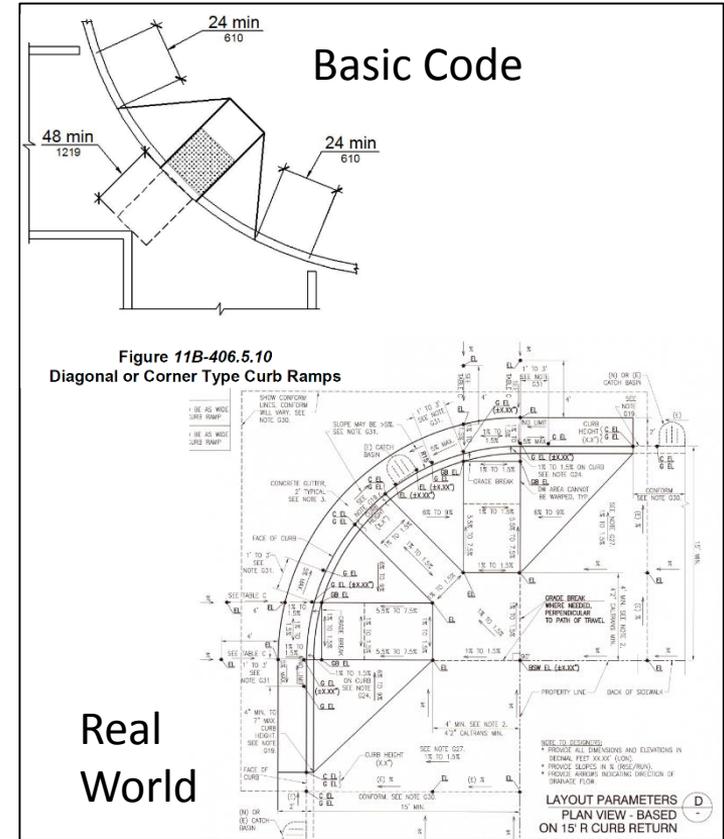
Good design does not fall out of code books in the way that a good painting is not produced by using a paint-by-numbers kit.



DISABILITY AND REGULATION

Regulations do allow for creativity and innovation.

- 1. 2010 ADA Standards, Section 103** Equivalent Facilitation: *"Nothing in these requirements prevents the use of designs, products, or technologies as alternatives to those prescribed, provided they result in substantially equivalent or greater accessibility and usability."*
- 2. 2016 California Building Code, Section 1.2.2** Alternative materials, design and methods of construction... *"...An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, ... durability and safety."*



DISABILITY AND REGULATION

Federal Agencies encourage and foster creativity and innovation through policy statements, best practices, special reports, guidance and research.

1. USDOT-FHWA:

- Accessibility Resource Library
- Bicycle and Pedestrian Program
- Joint Technical Assistance with US DOJ
- Designing Sidewalks and Trails for Access
- Much more...

2. US DOJ:

- ADA Best Practices Toolkit
- Technical Assistance Documents

3. US Access Board US DOJ:

- Public Right of Way Accessibility Guideline (PROWAG)
- Guidance and Research



Memorandum
U.S. Department of Transportation
Federal Highway Administration
Office of the Administrator
Washington, DC 20590

“...DOT encourages transportation agencies to go beyond the minimum requirements, and...utilize universal design characteristics when appropriate. Transportation programs and facilities should accommodate people of all ages and abilities...”

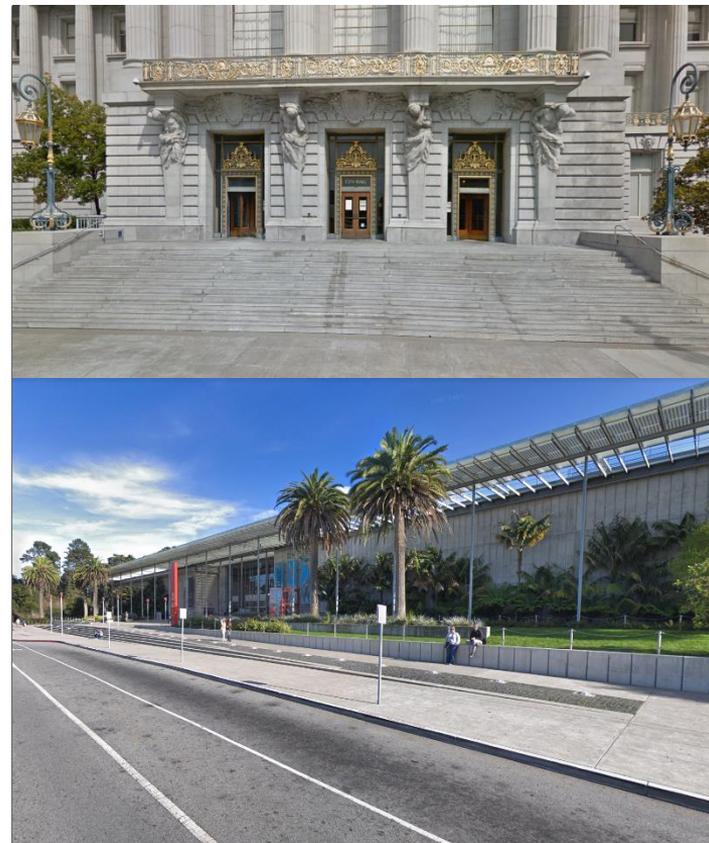
“The ADA Policy promotes universal design and the development of a fully accessible transportation system. This document calls for mainstreaming facilities for people with disabilities in our nation's transportation system.”

DISABILITY AND DESIGN

Historical models of design and urban development lack accessibility, similar to older models of disability.

New models of urban development are needed for those that aspire to meet the needs of all users. Planners and designers should look to best practices and contemporary research to better assure the civil rights of person with disabilities.

Striving to meet only adopted regulatory minimums and searching for exceptions will probably not result in such an outcome.



DISABILITY AND DESIGN

Principles of Universal Design (Ron Mace, et. al., Center for Universal Design at North Carolina State University) *“The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.”*

- 1. Equitable Use.** The design is useful and marketable to people with diverse abilities.
- 2. Flexibility in Use.** The design accommodates a wide range of individual preferences and abilities.
- 3. Simple and Intuitive Use.** Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.
- 4. Perceptible Information.** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.
- 5. Tolerance for Error.** The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- 6. Low Physical Effort.** The design can be used efficiently and comfortably and with a minimum of fatigue.
- 7. Size and Space for Approach and Use.** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of a user’s body size, posture or mobility.

THE 7 PRINCIPLES OF UNIVERSAL DESIGN

- 1. EQUITABLE USE**
a. Privacy, security, & safety should be equally available to all users.
b. Make the design appealing to all users.
- 2. FLEXIBILITY IN USE**
a. Provide choice in methods of use.
b. Accommodate right- or left-handed access and use.
c. Provide adaptability to the user's pace.
- 3. SIMPLE AND INTUITIVE USE**
a. Eliminate unnecessary complexity.
b. Be consistent with user expectations and intuition.
- 4. PERCEPTIBLE INFORMATION**
a. Provide enough contrast between essential info & around it.
b. Differentiate elements in ways that can be described.
- 5. TOLERANCE FOR ERROR**
a. Provide warnings of hazards and errors.
b. Provide fail safe features.
- 6. LOW PHYSICAL EFFORT**
a. Allow user to maintain a neutral body position.
b. Minimize sustained physical effort.
- 7. SIZE AND SPACE FOR APPROACH AND USE**
a. Make all components comfortable for seated or standing users.
b. Accommodate variations in hand and grip size.

Infographic presented by:
ACCESS-SOLUTIONS-OF-FLORIDA.COM

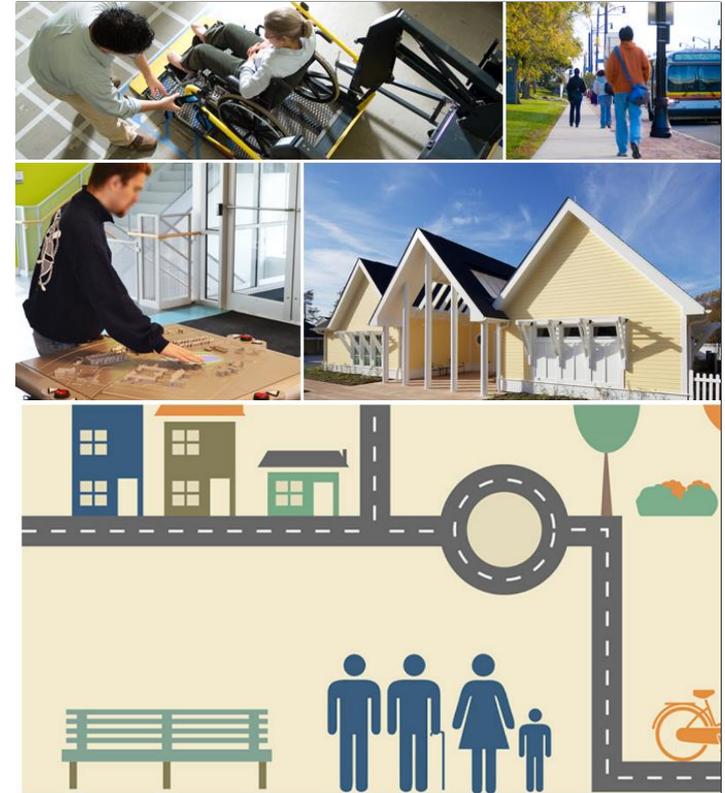
DISABILITY AND DESIGN

Universal Design Goals (IDeA Center, SUNY Buffalo, Steinfeld and Maisel)

“A process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation.”

1. **Body fit.** Accommodating a wide a range of body sizes and abilities.
2. **Comfort.** Keeping demands within desirable limits of body function.
3. **Awareness.** Insuring that critical information for use is easily perceived.
4. **Understanding.** Making methods of operation and use intuitive, clear, and unambiguous.
5. **Wellness.** Contributing to health promotion, avoidance of disease, and prevention of injury.
6. **Social integration.** Treating all groups with dignity and respect.
7. **Personalization.** Incorporating opportunities for choice and the expression of individual preferences.
8. **Cultural appropriateness.** Respecting and reinforcing cultural values and the social, economic and environmental context of any design project.

“The broader one’s understanding of the human experience, the better design we will have.” – Steve Jobs.



Evaluating The Impact of Complete Streets Initiatives

UNIVERSAL	ACCESSIBLE
One directional curb ramp at each end of each crosswalk.	One non-directional curb ramp at the apex of the curb return (street corner) that serves two crosswalks.
Pedestrian refuge medians and islands with directional curb ramps or cut-throughs with directional returned curbs. Detectable warnings provided.	Pedestrian refuge medians and islands with no clear edges for detection or direction. Detectable warnings provided.
6 feet or wider accessible pedestrian throughway zone provided along sidewalk. (sfbetterstreets.org) Detectable edges and boundaries provided along each side. No weaving required along accessible route.	Pedestrians must weave between and around objects arranged haphazardly and inconsistently along the sidewalk. Bare minimum clear width, 3-4 feet provided.
A no step building entry that everyone can use easily and together. (SF BOS Ordinance 51-16)	A building entry with a ramp at the side that is out of the way for all visitors but is accessible by code
Gently sloping walks or ramps provided for everyone to use. Accessible route is not separate.	Separate 8.3% slope ramp or platform lift provided for level changes, even though space is not constrained.

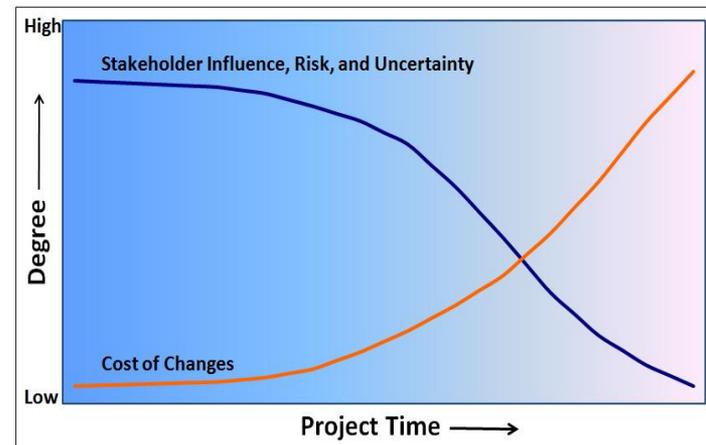
UNIVERSAL	ACCESSIBLE
Seating provided with back rests, arm rests and wheelchair/scooter user seating spaces positioned for side-by-side shoulder-to-shoulder alignment with fixed seating.	No seating provided, or only seating blocks provided with no back or arm support. No provision for wheelchair or mobility scooter users.
Strong visual contrast along pedestrian routes to promote good perception of edges and boundaries.	Little or no visual contrast provided along boundaries of pedestrian routes.
Walking surfaces smooth but slip-resistant. Joints minimized in frequency and width. Low vibration surface provided. (US Access Board - Completed Research - Development of Surface Roughness Standard)	Walking surfaces irregular, maximum allowable vertical offsets of ¼ to ½ inch. Frequent joints.
Ambient noise controlled. Surfaces and spaces designed for acoustical feedback that is distinctive and useful as a wayfinding tool.	Acoustical environment confusing and sound environment masks needed information.

UNIVERSAL	ACCESSIBLE
Amenities grouped to make them easier to find and use, such as drinking fountains, fare machines, service desks, restrooms.	Amenities not organized, but located along an accessible route.
Playgrounds that include integrative play experiences throughout, incorporating ground level and elevated play elements.	Playgrounds that provide ground level play elements only. Minimal variety of play experience for children with disabilities, friends, or family members.
Playground fall zone surfaces that require low maintenance, such as rubber or “playground turf.”	Playground fall zone surfaces that require frequent maintenance; wood chips or engineered wood fiber.
Good non-glare lighting and non-specular surfaces. Lighting at intersections and along pedestrian routes and spaces follow best practices. (FHWA Crosswalk Lighting Informational Report & Lighting Handbook)	Lighting is provided. Signs provide high contrast content with eggshell, matte or other non-glare finish.
Automatic powered exterior doors and gates provided throughout.	Manual doors and gates with automatic closers set to maximum allowable force and closing speed.

UNIVERSAL	ACCESSIBLE
<p>Roundabouts provided with clear and detectable channelized pedestrian routes with refuge medians. (US Access Board - Completed Research – Pedestrian Access to Modern Roundabouts)</p>	<p>Roundabouts not provided with clearly detectable pedestrian routes, especially to blind or low-vision users. Roundabouts provided regardless of number and type of pedestrians present or expected.</p>
<p>Shared-Use Paths provided with detectable physical separation between pedestrian and bicycle use areas.</p>	<p>Shared-Use Paths provided with no detectable physical separation between pedestrian and bicycle use areas.</p>
<p>Bollards provided only where necessary and unavoidable. Bollards height 42 inches to prevent overturning pedestrians. Clear width between bollards at least 60 inches. Bollards do not interfere with pedestrians entering or exiting crosswalks. Line of bollards cross pedestrian routes at 90 degrees.</p>	<p>Bollards placed in an unorganized manner, requiring pedestrians to weave. Clear width between bollards is 3-4 feet only.</p>
<p>Shared Streets: Clear detectable and meaningful demarcation between pedestrian routes and vehicle ways are provided. (American Council of the Blind Resolution 2009-08)</p>	<p>Continuous 3 feet wide band of truncated dome detectable warnings are provided for the use of blind, visually impaired and other persons with a disability.</p>

PROJECT & PROGRAM PLANNING

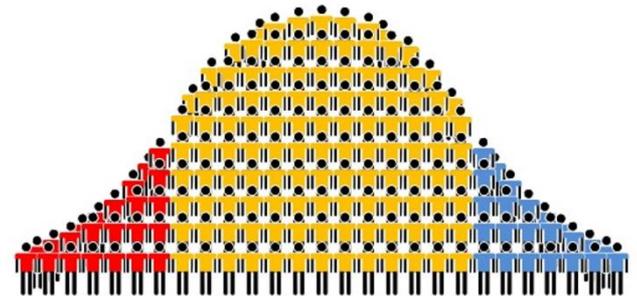
- Accessibility begins with including it into the scope of virtually everything we do at the very beginning: capital plans, funding projections and requests, city and regional planning.
- If not included from the outset it is often seen as taking away from the intended scope of work when added later in the process.
- Opportunities for design solutions decrease when not included at the outset. Cost of changes higher or quality lower when added later.
- New projects “remodeled” for accessibility while still in design or construction, possibly resulting in more expensive and less desirable outcomes. At worst, unwelcoming, ugly, stigmatizing and segregating.



“Plan to Fail if you Fail to Plan.”
– Someone, probably an ex-boss.

PROJECT & PROGRAM PLANNING

- Work closely with the community. People with a disability are keenly aware of the effect the physical environment has on their daily lives.
- Design for a wider demographic and anthropometric range, not the mean. Similar to designing for extreme hazards due to fire, weather, earthquakes, etc. (bell curve).
- In design and construction, pay attention to the little things, because the little things often turn out to be really big things.
- QA/QC policies and procedures are essential to success from design through construction and ongoing maintenance. Good practice: American Public Works Association (APWA) Agency Accreditation.



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“First, we shape our buildings; thereafter, they shape us.” – Sir Winston Churchill

For the first time in human history, the majority of the world’s population lives in cities. By shaping the built environment we shape lives. For many of us, our work is a calling. We are called to build a better world that is more inclusive, equitable and sustainable. More than ever, the world demands that we do envision that brighter future for everyone, everywhere.

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