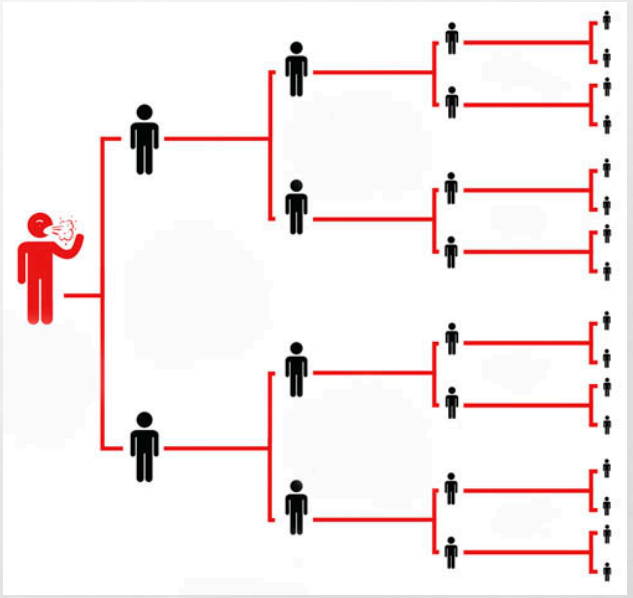
DESIGNING FOR PANDEMICS

COMMUNICABLE DISEASES

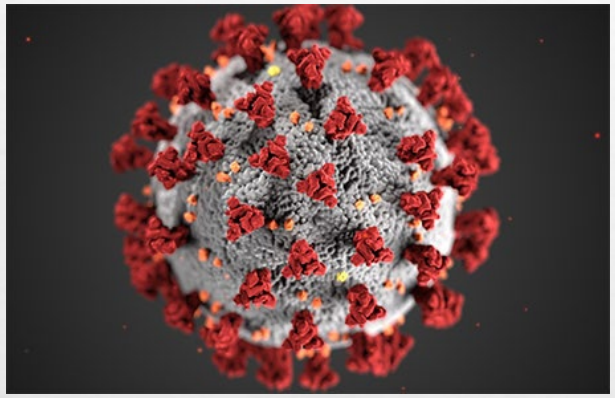
- WHAT ARE COMMUNICABLE DISEASES? (*)
  - A COMMUNICABLE DISEASE IS ONE THAT IS SPREAD FROM ONE PERSON OR ANIMAL TO ANOTHER, THROUGH:
    - PHYSICAL CONTACT WITH AN INFECTED PERSON – TOUCH, SALIVA, DROPLETS
    - CONTACT WITH A CONTAMINATED SURFACE OR MEDIUM
      - OBJECTS, FOOD, BLOOD, WATER, AIR
    - INSECT AND ANIMAL BITES

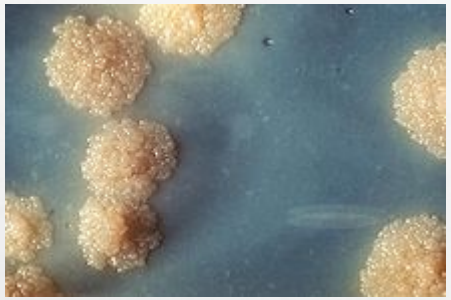


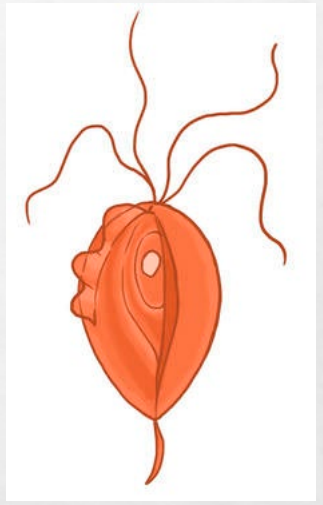
(*) SOURCE: ALAMEDA COUNTY PUBLIC HEALTH DEPARTMENT

COMMUNICABLE DISEASES

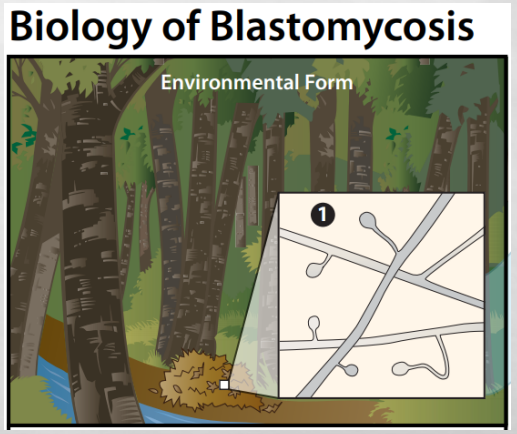
- CAUSED BY MICROORGANISMS: VIRUSES, BACTERIA, FUNGI, PROTISTS







- DISEASE TYPES - AIRBORNE, WATERBORNE, FOODBORNE, ENVIRONMENTAL



COMMUNICABLE DISEASES

- WHY DO PLANNERS CARE ABOUT THEM?
  - INFECTION RATES, TRANSMISSION, AND MORTALITY RATES
  - ARCHITECTURE AND URBAN DESIGN CAN ENHANCE OR IMPEDE THE SPREAD OF DISEASE

- HOW DO COMMUNICABLE DISEASES BECOME A PUBLIC HEALTH PROBLEM
  - INFECTION RATES – HOW MANY PEOPLE BECOME SICK
  - TRANSMISSION – HOW QUICKLY DOES THE DISEASE SPREAD AND HOW FAR DOES IT SPREAD
  - MORTALITY RATES – HOW MANY PEOPLE DIE FROM THE DISEASE PER FIXED POPULATION
  - THE PRIMARY GOAL IS TO AVOID UNCONTROLLED SPREAD

COMMUNICABLE DISEASES

- MITIGATING THE IMPACT OF COMMUNICABLE DISEASE DEPENDS ON
  - THE TYPE OF MICROORGANISM
  - THE TYPE OF TRANSMISSION
  - CHOOSING AN EFFECTIVE RESPONSE

- PLANNERS USUALLY FOCUS ON TRANSMISSION MITIGATION WITH DESIGN APPROACHES
  - ZONING SETBACKS FOR AIR CIRCULATION – LET THE WIND DO ITS JOB AND BLOW THE DISEASE AWAY

WHAT IS A PANDEMIC?

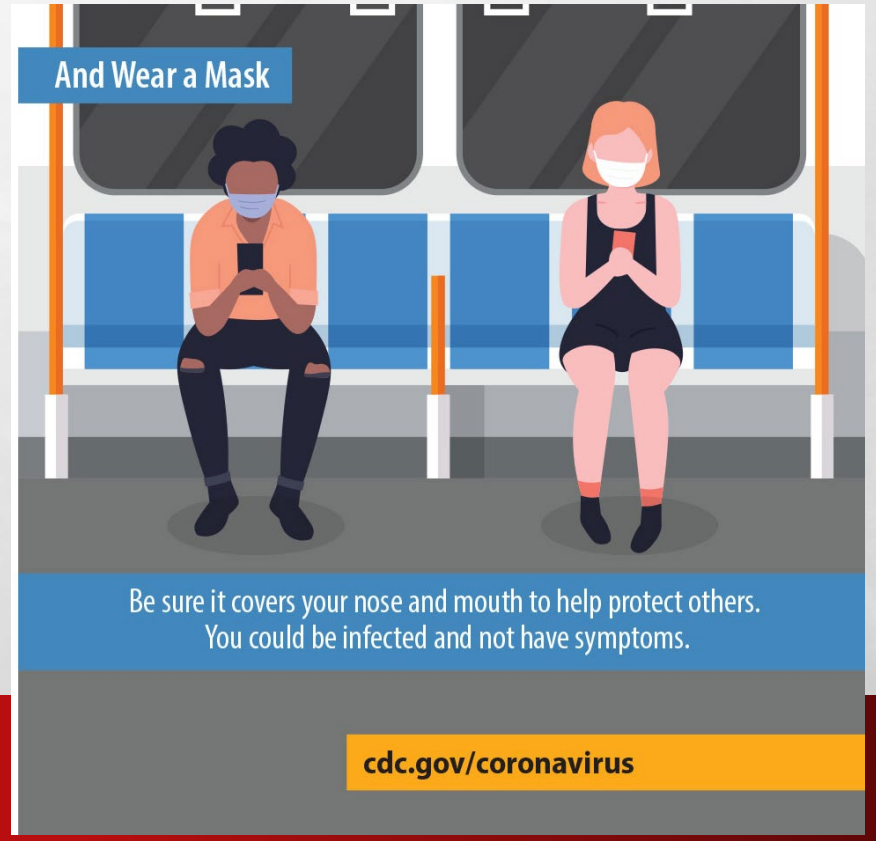
- EPIDEMIC VERSUS PANDEMIC – DEFINITIONS FROM THE WORLD HEALTH ORGANIZATION:
  - EPIDEMIC = "AFFECTING MANY PERSONS AT THE SAME TIME, AND SPREADING FROM PERSON TO PERSON IN A LOCALITY WHERE THE DISEASE IS NOT PERMANENTLY PREVALENT" (OCCURRING IN A REGION OR COMMUNITY)
  - PANDEMIC = "A WORLDWIDE SPREAD OF A NEW DISEASE" (OCCURRING WORLDWIDE OR CONTINENTWIDE)
- WHAT IS "ENDEMIC"?
  - ENDEMIC = A DISEASE THAT IS RESTRICTED TO A PARTICULAR LOCATION, REGION, OR POPULATION (TROPICAL)
- HOW OFTEN DO PANDEMICS OCCUR?
  - FLU PANDEMICS OCCUR EVERY 30-35 YEARS, BASED ON THE 10 FLU PANDEMICS IN THE LAST 320 YEARS
  - COVID-19 IS THE FIRST PANDEMIC CAUSED BY A CORONAVIRUS

MITIGATING AIRBORNE DISEASES

- SOCIAL DISTANCING
  - MAINTAIN A 6 FOOT DISTANCE BETWEEN EACH PERSON
  - LIMIT OR PROHIBIT GROUPS AND INDOOR GATHERINGS/USES (EXAMPLE: RESTAURANTS/BARS/CONCERTS)
  - TELEWORK
  - USE DELIVERY INSTEAD OF IN-PERSON SHOPPING/DINING

MITIGATING AIRBORNE DISEASES

- AIR FILTRATION/DILUTION
  - FACE COVERINGS
  - HEATING, VENTILATION, & AIR CONDITIONING (HVAC) CIRCULATION AND FRESH AIR INTAKE RATIO
  - OUTDOOR SEATING, OUTDOOR SALES, OUTDOOR FITNESS



MITIGATING AIRBORNE DISEASES

- CHEMICAL AND ULTRAVIOLET TREATMENT

IMPLICATION FOR DESIGN STRATEGIES

- SOCIAL DISTANCING – IN-PERSON ACTIVITIES
  - 6 FOOT DISTANCE BETWEEN PEOPLE
    - SIDEWALKS AND PATHS
    - BIKE LANES VS. CYCLE TRACKS
    - ENTRANCES – NEED LARGER VESTIBULES AND SIDEWALK AREAS FOR LINES OF PEOPLE WAITING TO COME IN
  - DELIVERY – NEED MORE SHORT-TERM PARKING FOR DELIVERY VEHICLES, AND SPACES MAY NEED TO BE LARGER
  - PICK-UP – NEED MORE SHORT-TERM PARKING FOR PICKING UP ONLINE AND PHONE ORDERS

IMPLICATION FOR DESIGN STRATEGIES

- SOCIAL DISTANCING - TELEWORK
  - INTERNET INFRASTRUCTURE IS CRITICAL (LANDLINE AND WIRELESS/WIFI)
  - REDUCED TRAFFIC, LOWER POLLUTION, FEWER ROADS, LESS TRANSIT, REDUCED PARKING DEMAND?
  - LIVE ANYWHERE, SO INCREASED SPRAWL, SEGREGATED USES, AND DECENTRALIZATION?

IMPLICATION FOR DESIGN STRATEGIES

- AIR FILTRATION
  - HVAC CIRCULATION – SEPARATE PRIVATE AREAS FROM COMMON AREAS (RESIDENTIAL, OFFICE, LAB, R&D)
  - OUTDOOR SEATING – SIDEWALKS, REMOVAL OF PARKING

- ULTRAVIOLET TREATMENT – SOLAR GLASS WALLS WITH OR WITHOUT HVAC INTEGRATION

SOCIAL DISTANCING - DESIGN CHALLENGES

- APARTMENT BULDINGS
  - ENTRANCES – OPEN OR ENCLOSED? / UNIT ENTRANCES – FOYER/SPACE TO DROP/SEPARATE "OUTSIDE" STUFF
  - PRIVATE OUTDOOR SPACE: BALCONIES, PATIOS, ROOF-TOP DECKS
  - AIR CIRCULATION – SEPARATE FOR PRIVATE AND COMMON AREAS? MORE FRESH AIR?
  - DENS/LOFTS/WALK-IN CLOSETS – HOME OFFICE SPACES

SOCIAL DISTANCING - DESIGN CHALLENGES

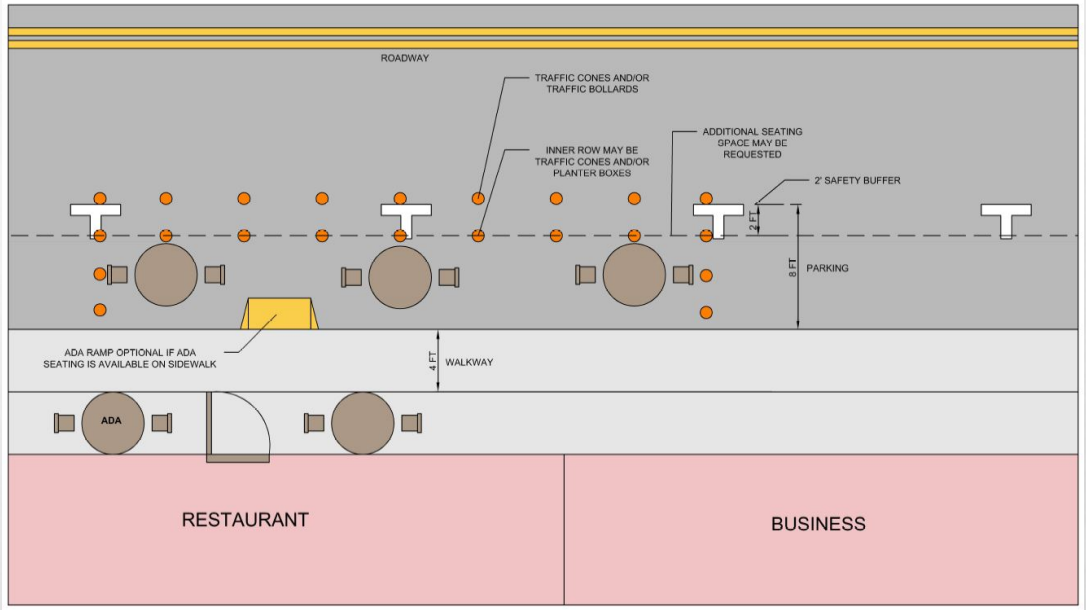
- COMMERCIAL BUILDINGS
  - VESTIBULES, COVERED ENTRANCES, ARCADES
  - OUTDOOR EMPLOYEE SPACE FOR EATING, EXERCISING, SOCIALIZING/COLLABORATING FROM A DISTANCE
- RESTAURANTS
  - OUTDOOR SEATING – ADJACENT SIDEWALKS , PARKING LOTS, NEARBY PARKS/OPEN SPACE
  - COLD WEATHER/INCLEMENT WEATHER

SOCIAL DISTANCING – DESIGN IMPLEMENTATION CHALLENGES

- INFRASTRUCTURE
  - SIDEWALKS, PATHS, ON-STREET PARKING CONVERSION
  - WIRELESS NETWORKS FOR TELEWORKING/DELIVERY – PRIVATE VERSUS PUBLIC
- COSTS
  - WHO SHOULD PAY FOR DESIGN CHANGES AND NEW/ALTERED INFRASTRUCTURE?
  - OUTDOOR EMPLOYEE SPACE FOR EATING, EXERCISING, SOCIALIZING/COLLABORATING FROM A DISTANCE
- APPROVALS/TIME/DELAYS
  - PERMITS FOR OUTDOOR SEATING
  - PLANNING COMMISSION APPROVALS FOR SITE PLAN CHANGES

OTHER DESIGN CHALLENGES

- WHAT HAPPENS WHEN THE PANDEMIC ENDS?
  - FLEXIBILITY IS KEY TO SUCCESSFUL DESIGN APPROACHES THAT WILL BE PRACTICAL AND USEABLE BEFORE, DURING, AND AFTER A PANDEMIC



- WHAT ABOUT CLIMATE CHANGE?
  - DESIGN SHOULD SEEK TO ADDRESS MULTIPLE GLOBAL CHALLENGES

OTHER DESIGN CHALLENGES

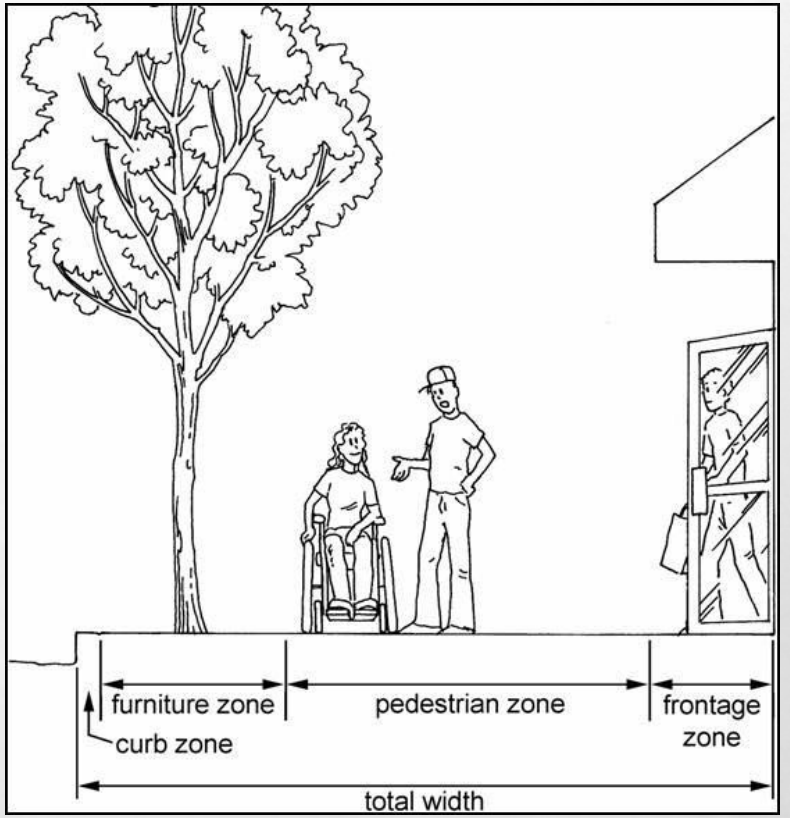
- GENERAL DESIGN STRATEGIES
  - AVOID DESIGNING IN A VACUUM
  - AVOID DESIGN THAT CAN ONLY BE USED FOR A SPECIFIC CRISES OR WITHIN A CONSTRAINED TIME PERIOD
  - DESIGN APPROACHES THAT INCORPORATE FLEXIBILITY AND MULTIPLE APPLICABILITY ARE KEY

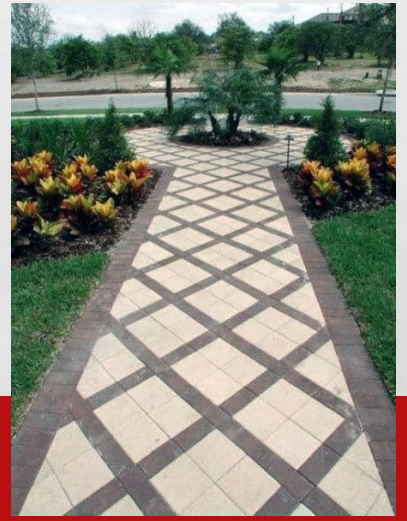
SIDEWALK DESIGN

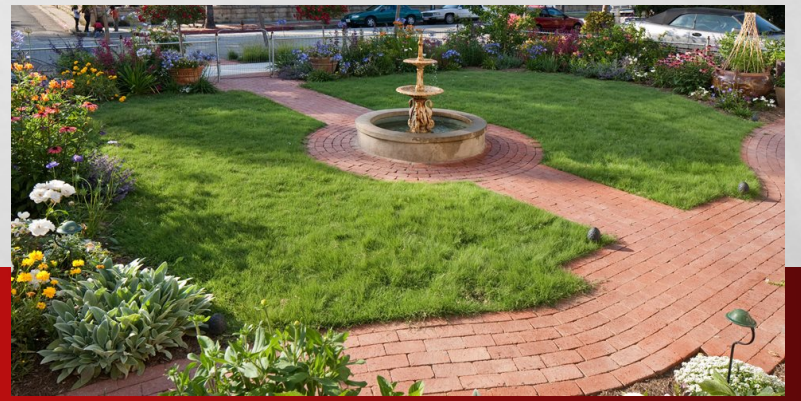
- SIDEWALKS ARE USED BY PEDESTRIANS, AND SERVE OTHER PURPOSES
  - OUTDOOR SEATING AND FURNITURE
  - BUS SHELTERS
  - OUTDOOR DINING AREAS
  - GREENERY (TREES, STORMWATER MANAGEMENT, GRASS, ETC.)
  - VENDORS (FOOD TRUCKS, NEWS STANDS, ETC.)
  - MICROMOBILITY STATIONS (SCOOTERS, BIKES, ETC.)
  - SAFETY/DEFENSE (BOLLARDS, LIGHTS, FENCES, ETC.)

SIDEWALK DESIGN

- SIDEWALK WIDTH DEPENDS ON SEVERAL FACTORS
  - ADJACENT AND SURROUNDING LAND USES
    - "CONNECTION" SIDEWALKS VERSUS "MULTIUSE" SIDEWALKS
    - MINIMUM "CONNECTION" WIDTH OF 6 FEET FOR SOCIAL DISTANCING?
  - PEDESTRIAN TRAFFIC VOLUME
  - SPACE NEEDED FOR OTHER FUNCTIONS (SEATING, VENDORS, ETC.)
  - SPACE FOR UTILITIES, PUBLIC SIGNS, AND TRAFFIC CONTROL
  - PLACE-MAKING CONSIDERATIONS:
    - PAVEMENT TYPE / UNIQUE PATTERNS
    - EXCLUSIVE AMENITIES / FURNITURE / GREENSPACE





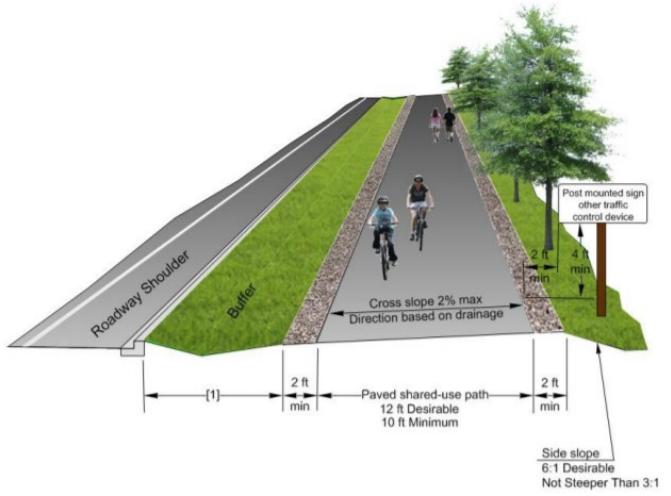


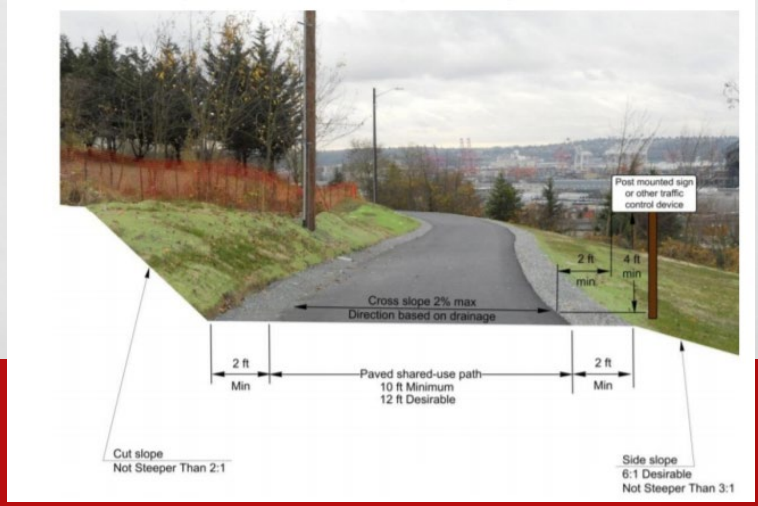
MULTIUSE PATH DESIGN

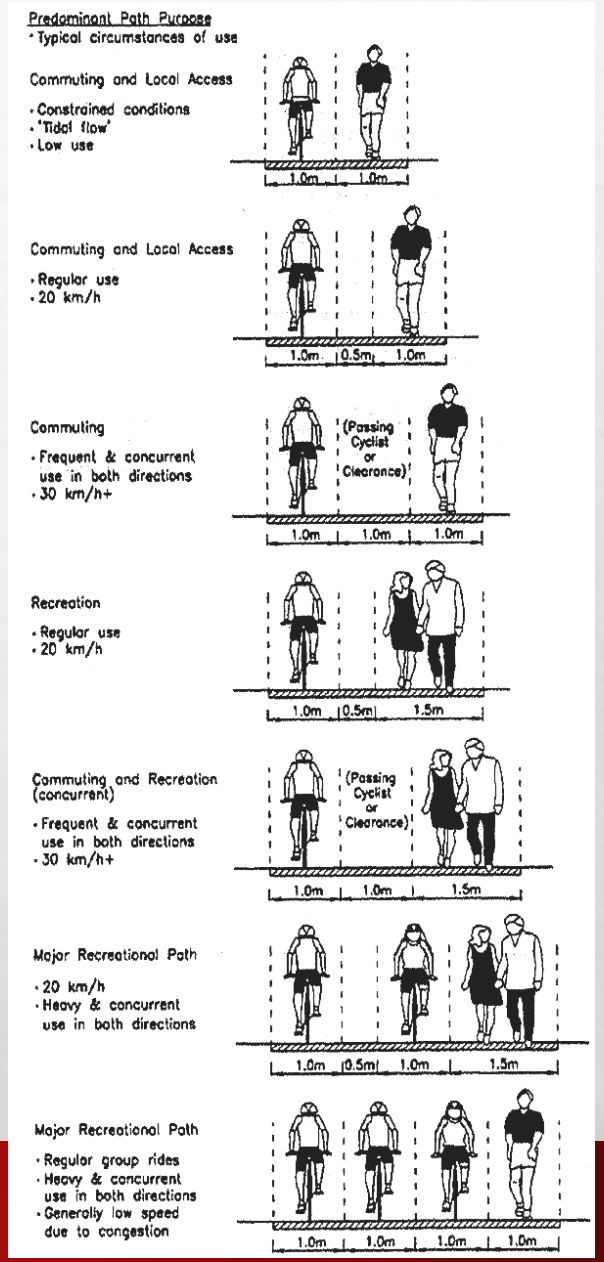
- BICYCLES AND PEDESTRIANS USE THESE PATHS
  - SIGNS AND FURNITURE ARE USUALLY OFF TO THE SIDE OF THE PATH
  - MAY INCLUDE PAVEMENT MARKINGS, MILE MARKERS, ETC.
  - CAN BE ON-STREET OR OFF-STREET

MULTIUSE PATH DESIGN

- PEDESTRIANS: FOOTPRINT IS 1.5 FEET IN WIDTH
  - 2 PEDESTRIANS = 3 FEET + 6 FEET FOR SOCIAL DISTANCING = 9 FEET
  - BUT PEDESTRIANS CAN WALK ON GRASS, DIRT,, ETC., SO PAVED WITH OF 6 FEET IS OK
- BICYCLES: FOOTPRINT IS 3 FEET IN WIDTH, SO THIS WILL GOVERN THE DESIGN
  - 2 BIKES = 6 FEET IN WIDTH + 6 FEET FOR SOCIAL DISTANCING = 12 FEET WIDE
  - EXISTING PATHS IN GAITHERSBURG RANGE FROM 8 FEET TO 10 FEET
  - HIGHER SPEEDS REQUIRE ADDITIONAL WIDTH







RESOURCES

- BALTIMORE CITY'S DESIGN FOR DISTANCING
  - HTTPS://STATIC1.SQUARESPACE.COM/STATIC/5EC2E7939CCFE46B4D0946B4/T/5F45462926664655FBB1F1C7/1598375472180/DFD_IDEAS-GUIDEBOOK.PDF
- NEW YORKER ARTICLE ABOUT ARCHITECTURAL DESIGN RESPONSES TO THE PANDEMIC
  - HTTPS://WWW.NEWYORKER.COM/CULTURE/DEPT-OF-DESIGN/HOW-THE-CORONAVIRUS-WILL-RESHAPE-ARCHITECTURE
- CONVERSION OF PARKING
  - HTTPS://WWW.AXIOS.COM/THE-FUTURE-OF-PARKING-GARAGES-98AE0851-885F-4BA8-A910-255C751CC38C.HTML
  - HTTPS://6ABC.COM/WEPARK-WEPARK-WORKING-IN-PARKING-SPACES-SAN-FRANCISCO/5282482/

RESOURCES

- SIDEWALK DESIGN
  - HTTPS://SAFETY.FHWA.DOT.GOV/PED_BIKE/UNIVCOURSE/PDF/SWLESS13.PDF
- MULTIUSE PATH DESIGN
  - HTTPS://WSDOT.WA.GOV/PUBLICATIONS/MANUALS/FULLTEXT/M22-01/1515.PDF
  - HTTPS://WWW.MASS.GOV/DOC/MASSDOT-DESIGN-GUIDE-CHAPTER-11-SHARED-USE-PATHS-AND-GREENWAYS/DOWNLOAD
- PANDEMIC FREQUENCY
  - HTTPS://WWW.CDC.GOV/FLU/PANDEMIC-RESOURCES/BASICS/PAST-PANDEMICS.HTML
  - HTTPS://WWW.CIDRAP.UMN.EDU/NEWS-PERSPECTIVE/2007/02/SEVERE-PANDEMIC-NOT-OVERDUE-ITS-NOT-WHEN-IF

QUESTIONS?

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