

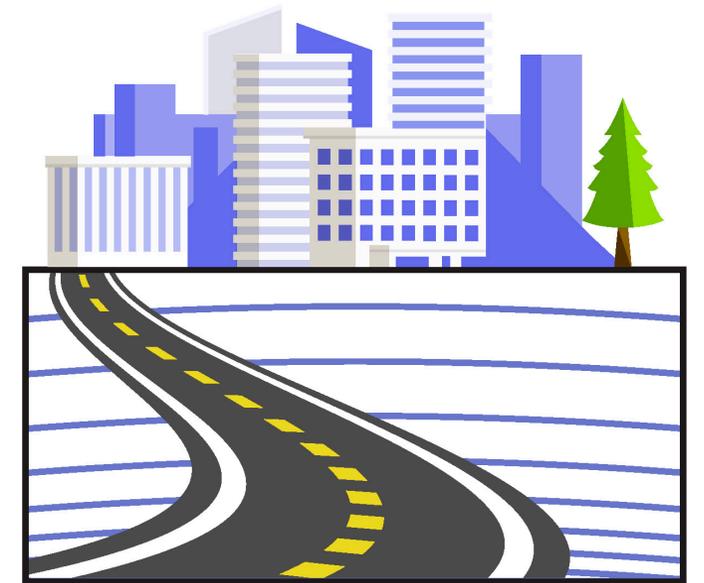
Street Standards – Creating a Baseline

Brandon Telford, P.E.

Engineering Manager

PM&E

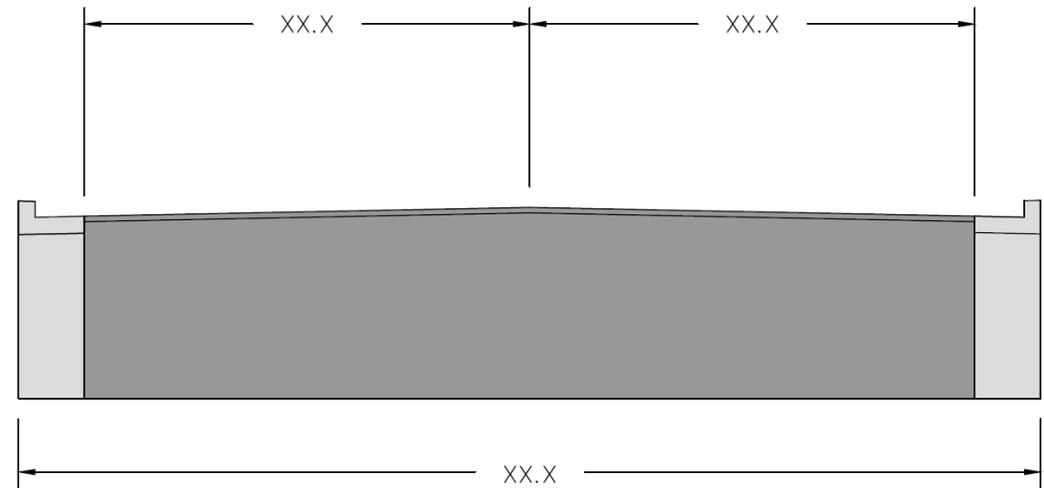
PM&E



PROJECT MANAGEMENT
& ENGINEERING

Overview

- How is ROW used
- Design Vehicle Characteristics
 - Managed, Design, & Control Vehicles
 - Busses/Transit
 - Emergency Apparatus
 - Maintenance
- Stormwater Management
 - Ditches vs Curb & Gutter
- Road Width and Speed
 - Improving Safety Through Lower Speeds
 - Local Road Widths



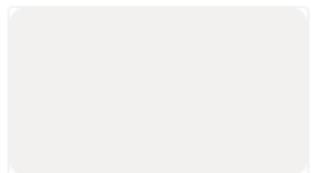
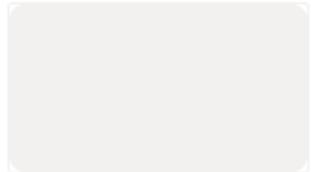


Menti

SAG #1: DCM Questions



Choose a slide to present



How is ROW Used

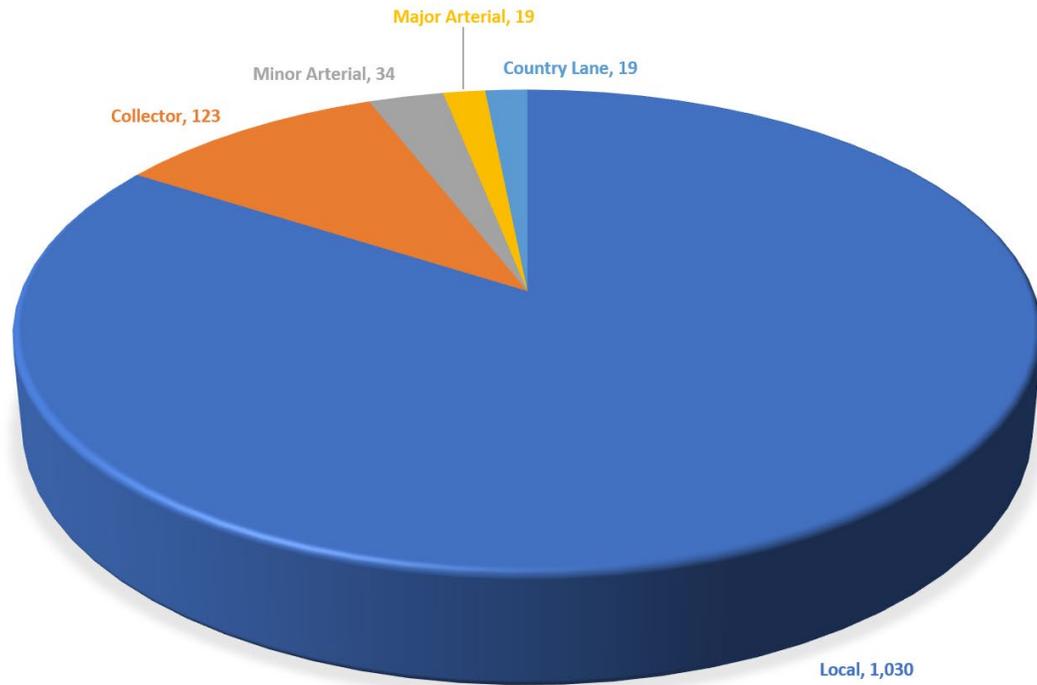
- Travel
 - Motorized
 - Non-motorized
 - Transit
 - Uber, Lift
- Commerce
 - Freight
 - Deliveries (USPS, Fed Ex, UPS, Amazon, Doordash, Uber Eats, Grubhub)
 - Vendors
 - Markets
- Community Events
 - Parades
 - Fairs
- Emergency Response
- Recreation
- Solid Waste Disposal
- Storage (parking)
- Traffic Control
 - Signage
 - Signalization
- Lighting
- Utilities
 - Stormdrain
 - Water
 - Sewer
 - Natural Gas
 - Electric
 - Communications
 - Pipelines



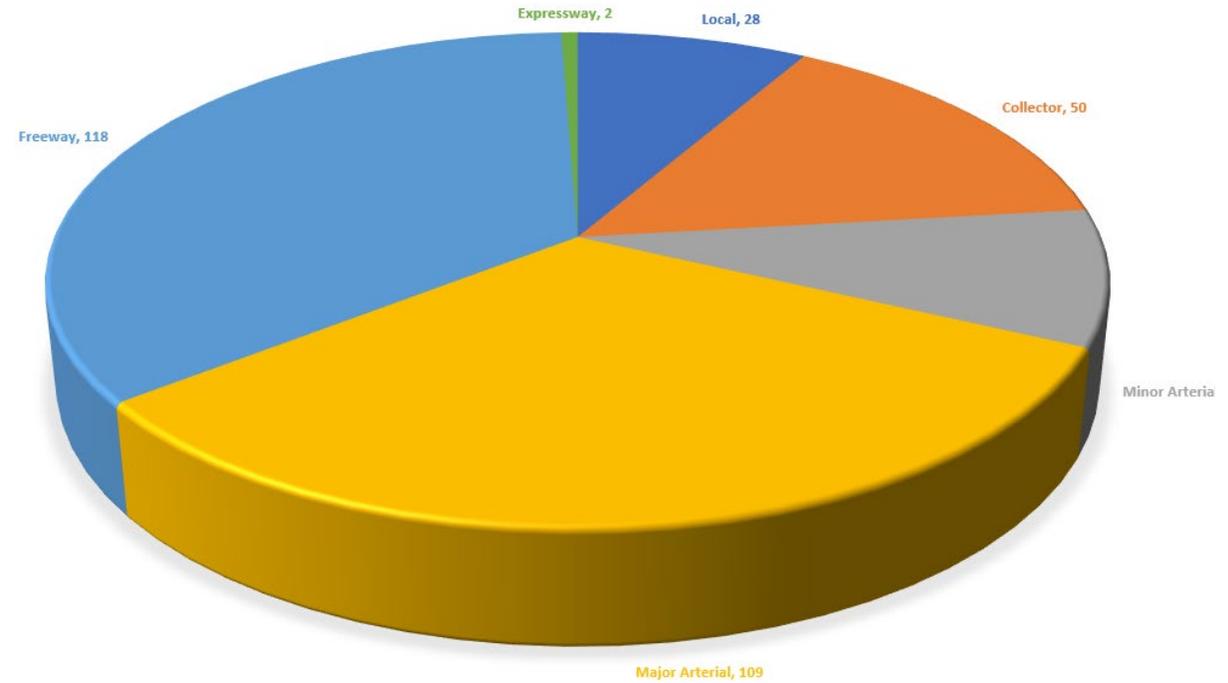
How is ROW Used

Image source: Global Designing Cities Initiative

MOA Owned Streets by Functional Classification (miles)



AK DOT Owned Streets by Functional Classification (miles)



Road Ownership by Functional Classification

MOA Owned Streets by Functional Classification (miles)

Managed, Design, & Control Vehicles



Managed Vehicle

Most Frequent Users

Road geometry may include mountable aprons designed to slow managed vehicles while accommodating design vehicles

Should stay within lane when making turns



Design Vehicle

Largest Vehicle to Regularly Use a Road

Road geometry accommodates regular use by design vehicle

May encroach on adjacent lanes and mount aprons when making turns



Control Vehicle

Largest infrequent vehicle user.

Street geometry accommodate occasional use by control vehicle.

May use whole intersection to make turns, stop bars may need to be set back to accommodate encroachment.

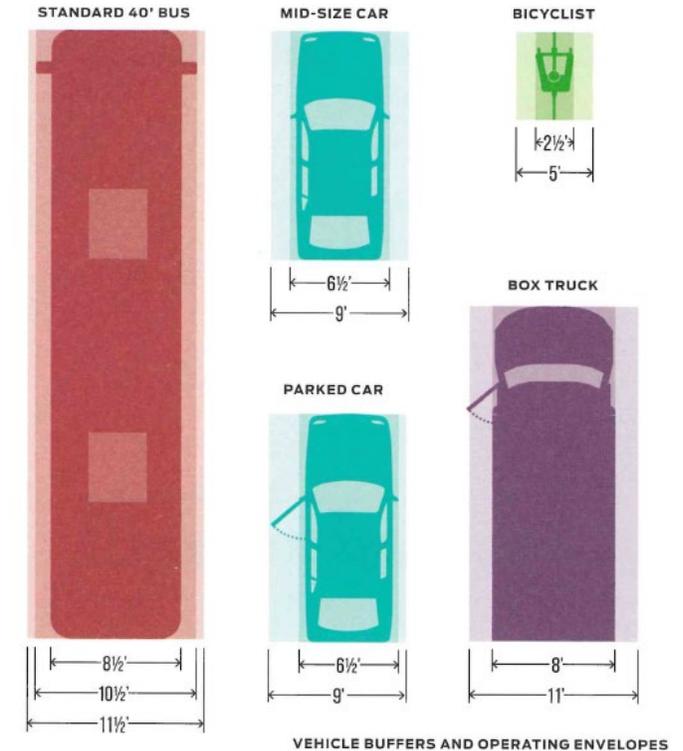


Adapted From NACTO Urban Bikeway Design Guide, Third Edition

Design Vehicles – Passenger & Delivery

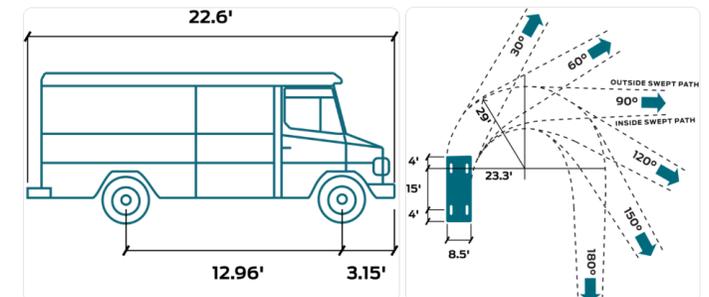
- AASHTO Design Vehicles
 - Doesn't account for mirrors
 - Passenger Car (P)
 - Width: 7'-0"
 - Box Truck (SU-30, SU-40)
 - Width: 8'-0"
 - Tractor Trailer (WB-40)
 - Width: 8'-0"
 - Motor Home (MH)
 - Width: 8'-0"
- NACTO Design Vehicle for Urban Streets
 - DL-23
 - Width: 8'-6"
- Current DCM Design Vehicles
 - WB-50
 - CITY-BUS

NACTO Transit Street Design Guide

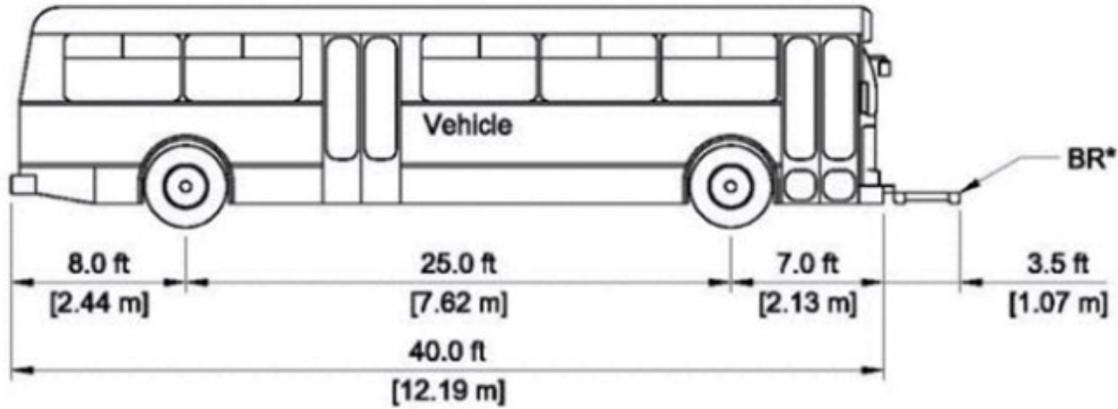


NACTO Urban Street Design Guide

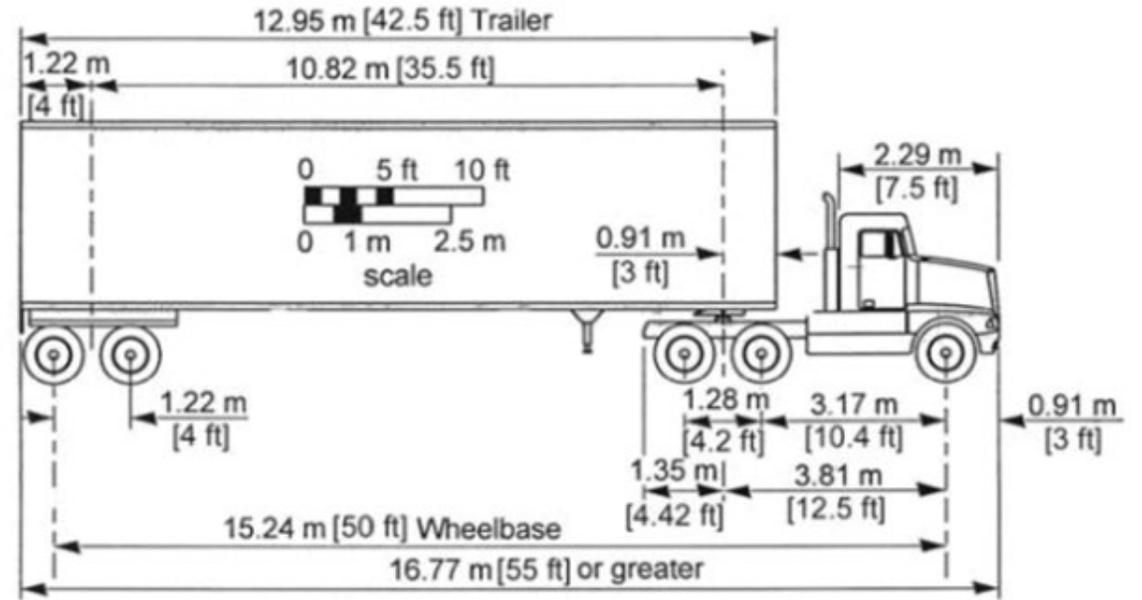
The largest frequent user of urban streets is the DL-23.



City Bus



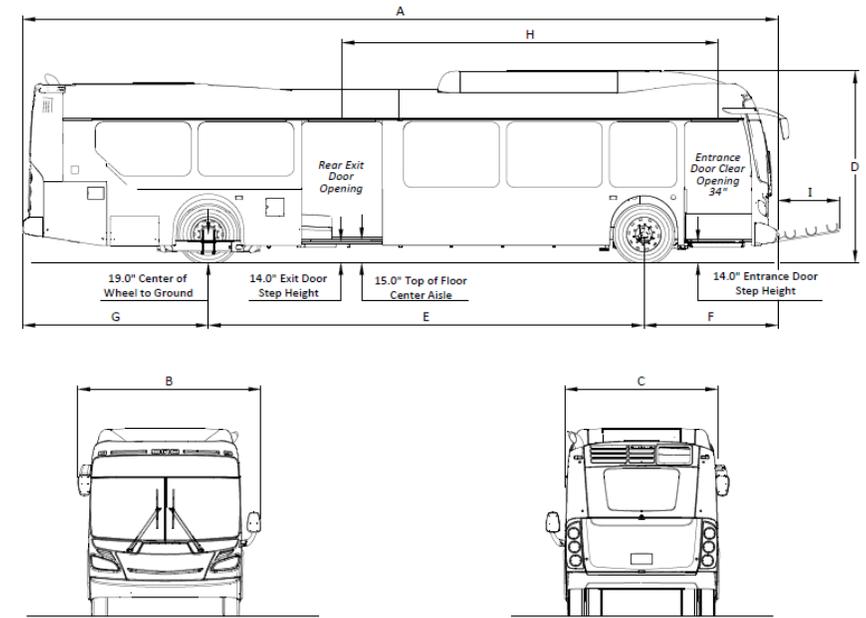
WB-50



Design Vehicles –
2007 DCM Design Vehicles

Design Vehicles – Busses & Transit

- AASHTO Design Vehicles
 - School Bus (S-BUS-36, S-BUS-40)
 - Width: 8'-0"
 - Intercity Bus (BUS-40, US-45)
 - Width: 8'-6"
- NACTO Design Vehicle
 - Standard 40' Bus
 - Width: 8'-6"
- People Mover Bus
 - Width of Body: 8'-6"
 - Width with Mirrors: ±9'-11"



BUS DIMENSIONS (NEW FLYER)		
A.	Overall Length	41'-0"
B.	Overall Width (W/ Mirrors)	± 9'-11"
C.	Overall Width (W/Out Mirrors)	8'-6"
D.	Overall Height	10'-3"
E.	Wheelbase Length	19'-11"
F.	Front Overhang	7'-3"
G.	Rear Overhang	10'-1"
H.	Door to Door (center)	26'-6"
I.	Front Bike Rack Extension Length	3'-4"

NOT TO SCALE

Figure 7-1: City Transit Bus (41-foot Bus)

Design Vehicles – Busses & Transit



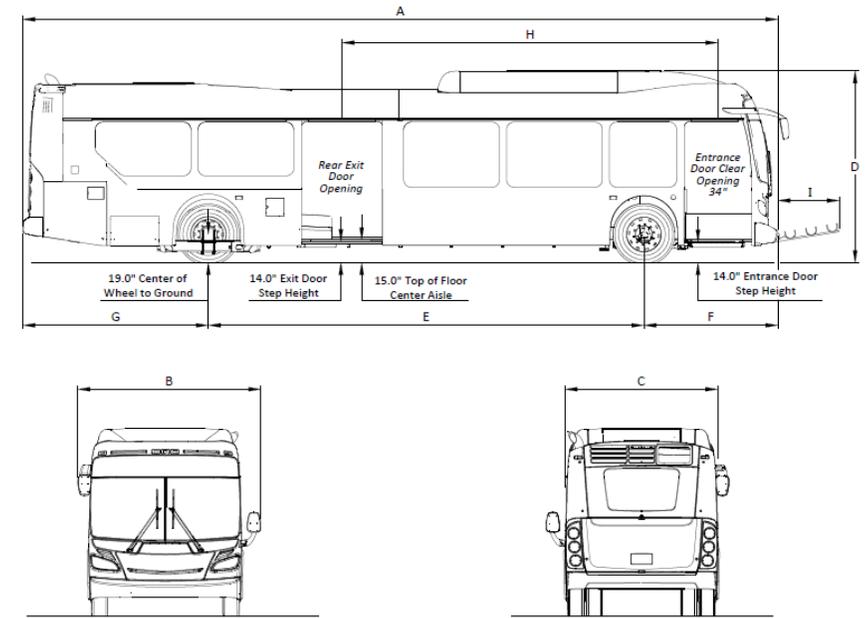
- Anchorage School District
 - 116 Buses
 - 8,900 students per day
 - 840,826 annual miles
 - (source 2021 audit)



- People Mover
 - Average weekday ridership 9,000-12,000
 - 14 routes
 - Peak Bus Service
 - 39 (40-foot) buses
 - 6 (22-foot) buses
 - (source Transit on the Move, 2020 Transit Plan)

Design Vehicles – Busses & Transit

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NOT TO SCALE

Figure 7-1: City Transit Bus (41-foot Bus)

Design Vehicles – Busses & Transit

- The Influence of Lane Width on Bus Crashes (Dai et al, 2019)
 - Combination of literature review, peer agency interviews, and data analysis.
 - Key Finding:
 - Supportive of a **standard lane width of 11 to 12 feet** for travel lanes that carry buses.
 - Wider width is particularly relevant when lane is adjacent to a barrier (curb, parked cars, etc.)
 - Recommendations minimize sideswipe, fixed object, and mirror-to-mirror bus crashes.
- NACTO Transit Street Design Guide
 - Recommendation
 - Bus lanes may be 10-11 feet wide when offset, and **11-12 feet** when configured curbside or in transitway adjacent to an opposing lane of bus traffic.

Every Public
Street is a Fire
Apparatus
Access Road



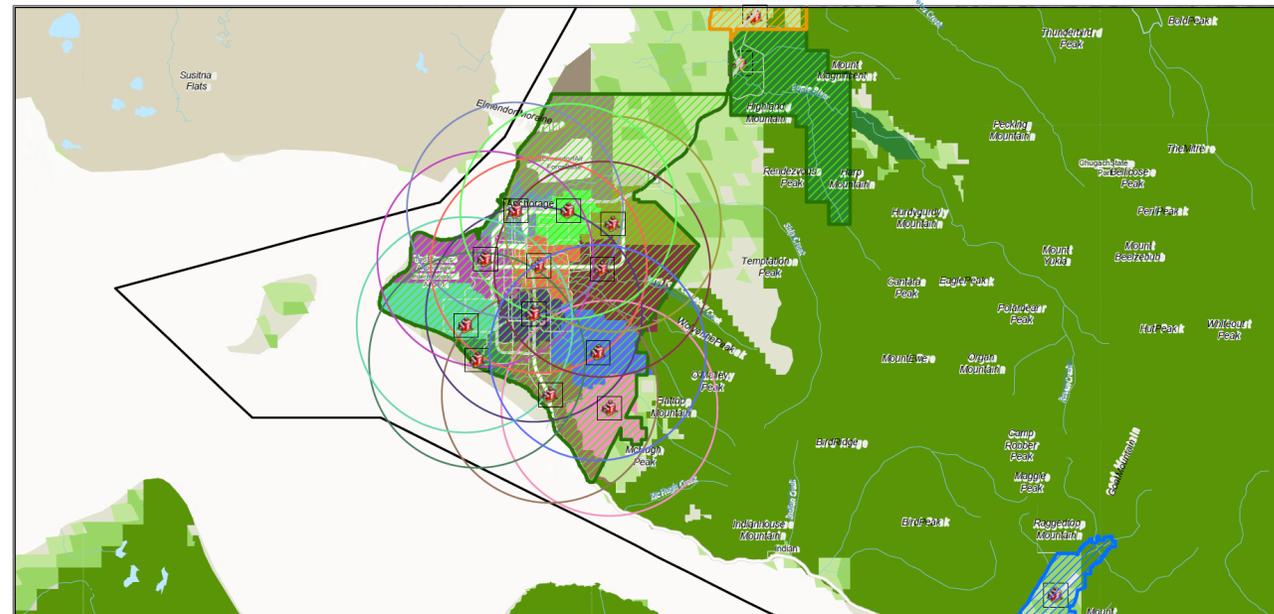
Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- Adequate fire apparatus access is needed for fire suppression and emergency medical response.
 - First on-scene apparatus on emergency medical calls is often not an ambulance
 - Response = vehicle yielding
 - Suppression = **scene staging/operations**
 - Hydrant connection
 - Stabilizer spread



Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- The Anchorage Area has an Insurance Service Office (ISO) rating of Class 1 (highest) for homes within 5 miles of a recognized fire station.
- Anchorage has one of the highest cardiac arrest survival rates in the country.
 - Median advanced life support (ALS) unit response time: 6.1 minutes



6/20/2024, 11:42:47 AM

FireStations_Hosted	AFD Station 05	AFD Station 10	FireServiceAreas_Hosted
FireResponseAreas_Hosted	AFD Station 06	AFD Station 11	Anchorage Fire Department
AFD Station 01	AFD Station 07	AFD Station 12	Chugiak Volunteer Fire and Rescue Company, Inc.
AFD Station 03	AFD Station 08	AFD Station 14	Girdwood Volunteer Fire & Rescue, Inc.
AFD Station 04	AFD Station 09	AFD Station 15	MOA Boundary

0 2.5 5 10mi
0 4.25 8.5 17km

1:478,296

Kenai Peninsula Borough, Matanuska-Susitna Borough GIS, Municipality of Anchorage, State of Alaska, Esri, TomTom, Garmin, SafeGraph, FAO, METINASA, USGS, EPA, NPS, USFWS, Esri, USGS

MOA GIS
Esri, USGS | Kenai Peninsula Borough, Matanuska-Susitna Borough GIS, Municipality of Anchorage, State of Alaska, Esri, TomTom, Garmin, SafeGraph, METINASA, USGS, EPA, NPS, USDA, USFWS |

Design
Vehicles –
Every Public
Street is a Fire
Apparatus
Access Road

AMBULANCE



TILLER TRUCK



BRUSH TRUCK



ENGINE



HEAVY RESCUE



FORESTRY ENGINE



LADDER TRUCK



TANKER/TENDER

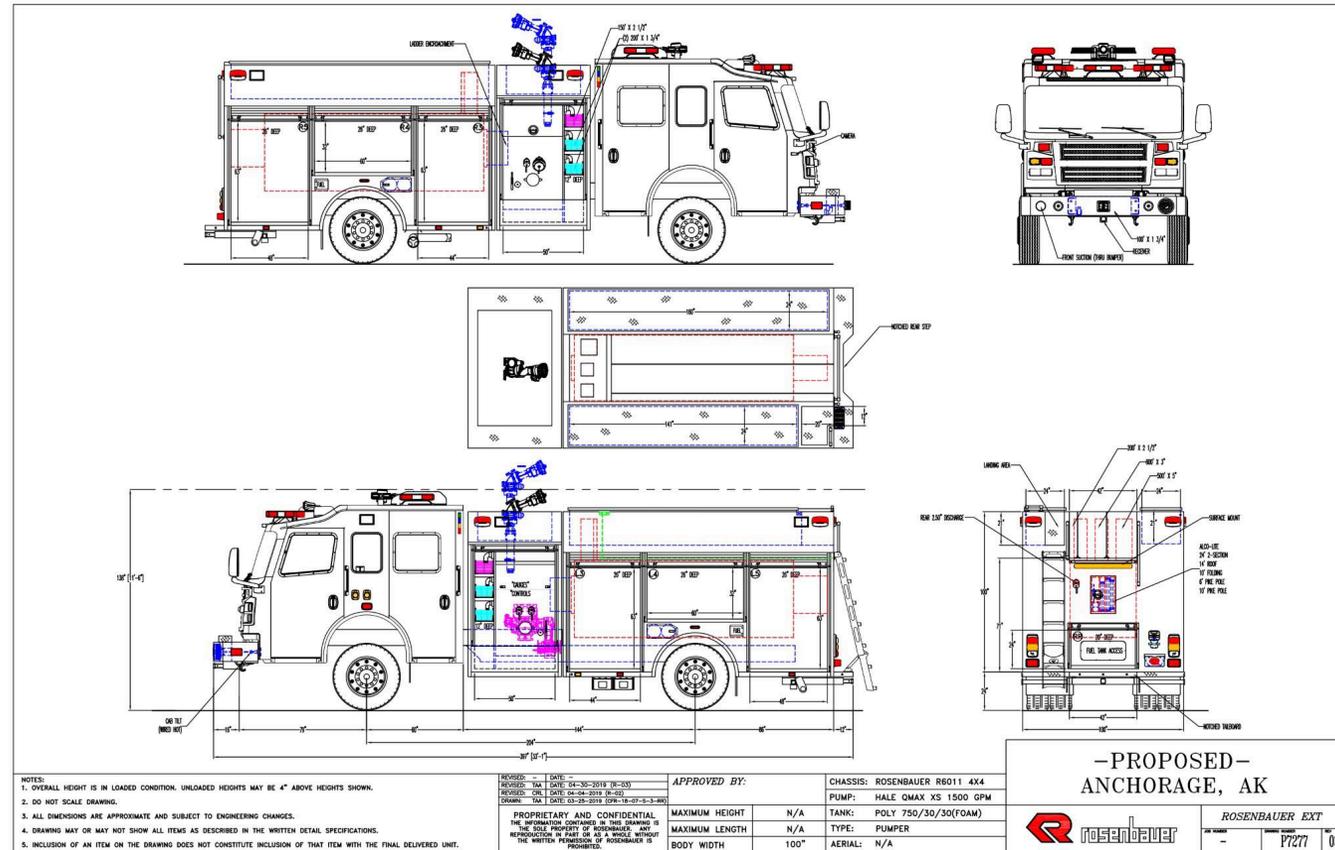


Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- AFD Truck 1
 - Dispatched from Station 1 (Downtown)
 - Length: 61'
 - Assumed Width: 8'-0"
 - **Stabilizer Spread: 17'**
 - Height: 11'-2"
 - Vertical Reach: 107'
 - Horizontal Reach: 100'



Design Vehicles – Every Public Street is a Fire Apparatus Access Road



Dimension	AFD Engine 11	AFD Truck 12	CAT 14 Grader	People Mover Bus
Length	33'-1"	43'-9"	35'-10"	41'-0"
Width	8'-4"	8'-4"	10'-0"	8'-6"
Height	10'-4"	11'-7"	11'-8"	10'3"

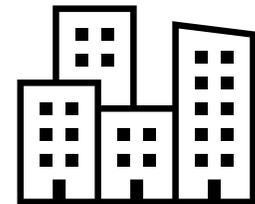
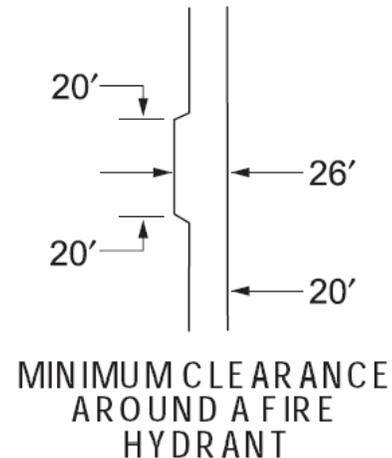
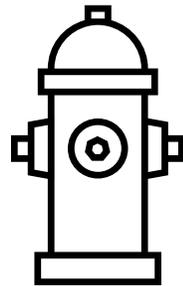
Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- International Fire Code adoption
 - Anchorage (AMC 23.05.010)
 - Alaska (13AAC50.025)
- From International Fire Code, Chapter 2, Definitions:

FIRE APPARATUS ACCESS ROAD. A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as *fire lane*, public street, private street, parking lot lane and access roadway.

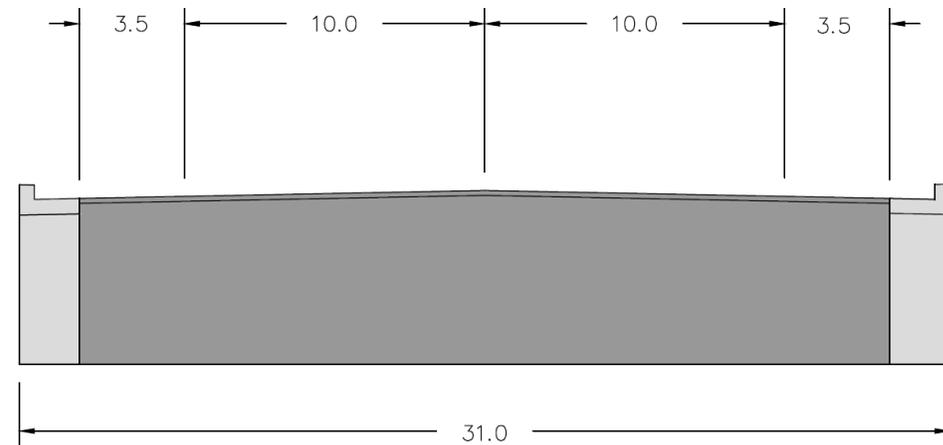
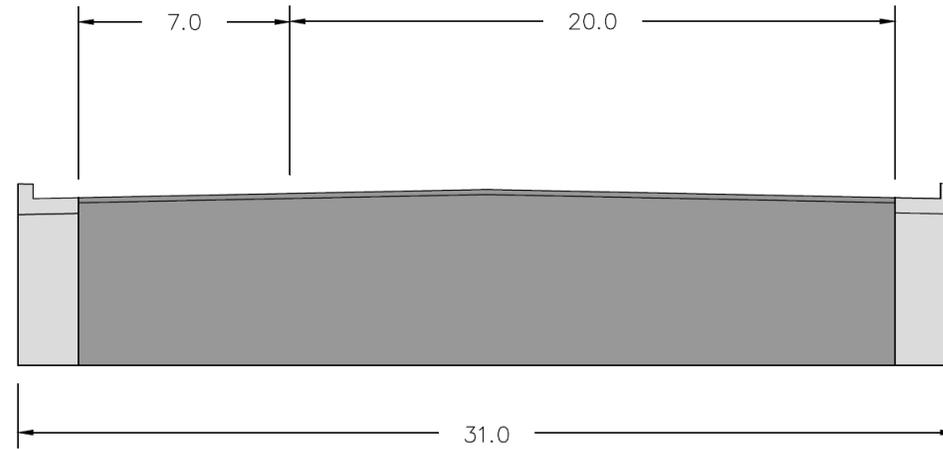
Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- Fire Apparatus Access Road Width (unobstructed)
 - Minimum 20-feet
 - Minimum 26-feet when:
 - Dead-End with a length over 500-feet.
 - Where highest roof surface of adjacent building exceeds 30-feet
 - When adjacent to a hydrant
 - **No parking within unobstructed width**
 - May be required to be signed “No Parking” if less than 32-feet wide.
 - Signed Both Sides 20 to 26-feet
 - Signed One Side 26 to 32-feet



Design Vehicles – Every Public Street is a Fire Apparatus Access Road

- 2007 DCM Local Street (0-300 vpd)

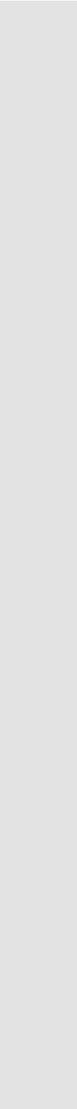
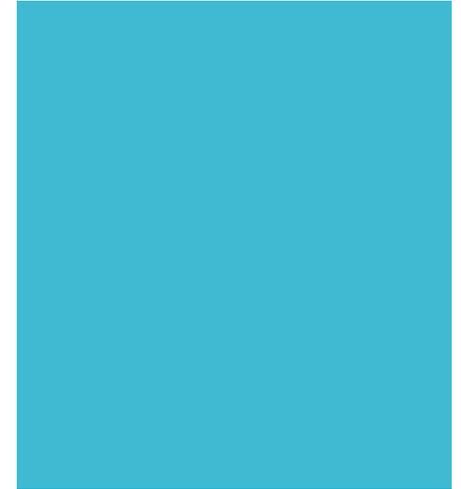


Design Vehicles – Maintenance



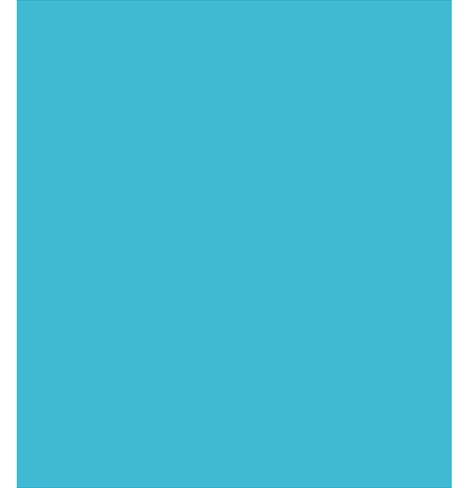
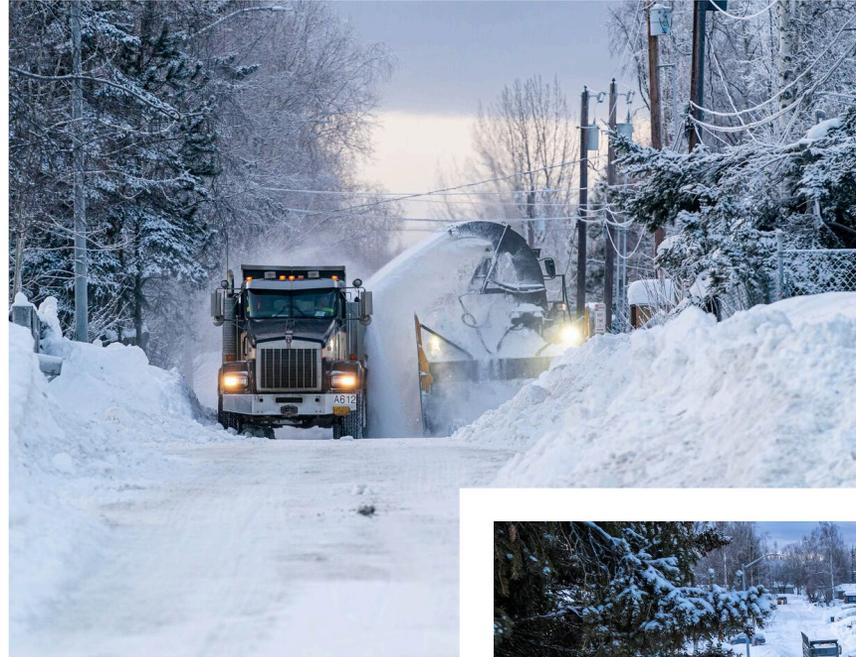
Design Vehicles – Maintenance

- Snow Plowing Operations
 - Graders
 - Vehicle Travel Lanes
 - Blade Width 14'-0"
 - Length 35'-10"
 - Height 11'-8"
 - Width Over Tires 10'-0"
 - Trackless
 - Sidewalks & Paths
 - Blower Width 5'



Design Vehicles – Maintenance

- Snow Hauling Operations
 - Low Volume Residential Streets
 - Blower with dump trucks
 - Collector and Arterial Streets
 - Graders stage snow for blower with dump trucks
 - Dump trucks haul snow to snow disposal sites.
 - Requires two lanes, one for the blower one for the dump truck.



Design Vehicles – Maintenance

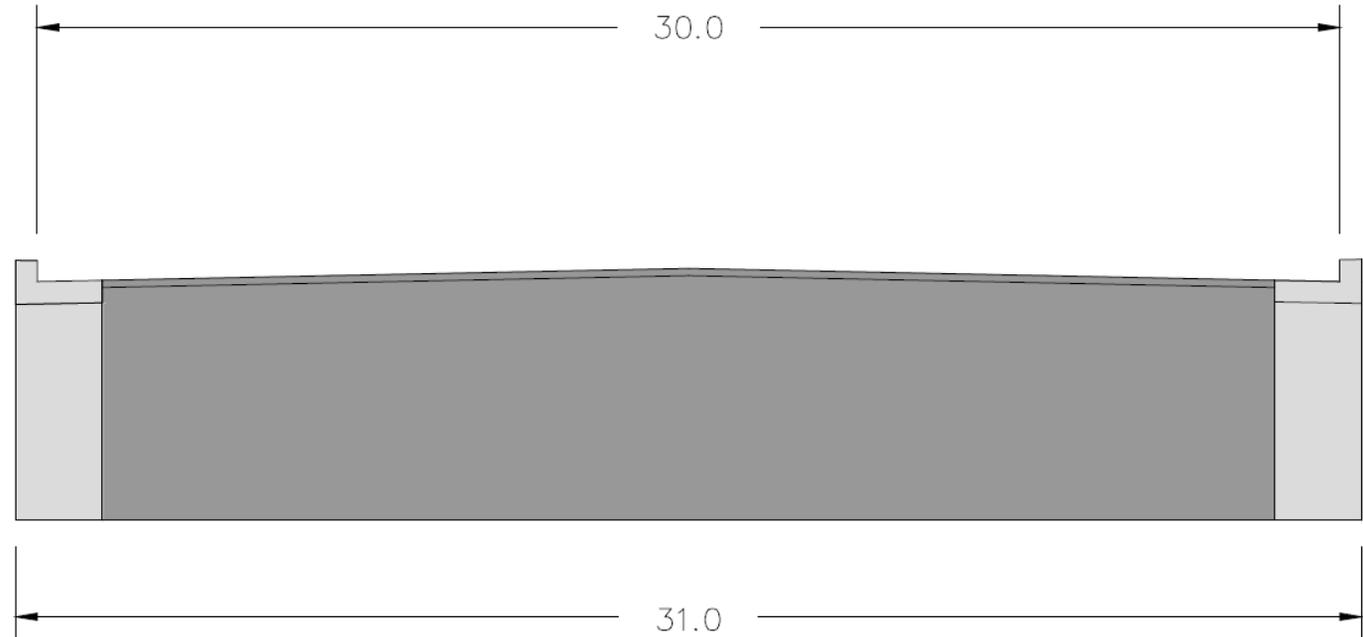
- Maintaining Anchorage roads is accomplished through a combination of road graders, trackless vehicles, snow blowers, and dump trucks.
 - Motor grader blade width 14'
- Corridors that lack area for snow storage must be hauled at a more frequent interval.
 - O&M resources are maxed out and increasing the number of routes being hauled adds workload



Design Vehicles – Maintenance

- Snow Hauling Operations
 - Requires a curb-to-curb width of 28 to 30-feet to operate without closing street to traffic

- 2007 DCM Local Street (0-300 vpd)



Design Vehicles – Maintenance

- Grader
 - 14-foot Width
- Sweeper
 - 12-foot Width
- Vactor
 - Assumed 8-foot Width
- Dump
 - Assumed 8-foot Width



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