Welcome to Austin

- Capital of Texas
- University of Texas
- Highland Lakes
- Live Music Venues
- Wildflowers Should Be Abundant
- Innovative, Livable City

Fire Service Issues

- Response Time Impacts
- Turning Radii
- Phased Development, street continuity
- Movement of equipment beside/past deployed apparatus, parking
- Room for Equipment Deployment
- Biological vs Clinical Death – Time Critical EMS Issues
- Fire Development Scenarios, Flashover, Exposures


307
E 16 ST
F.D.N.Y.
12
FDNY


AUSTIN
FIRE/RESCUE
21
21


21
ENGIN
21


21


21
AUSTIN
827-925


ENGINE
21


ENGINE
21


21

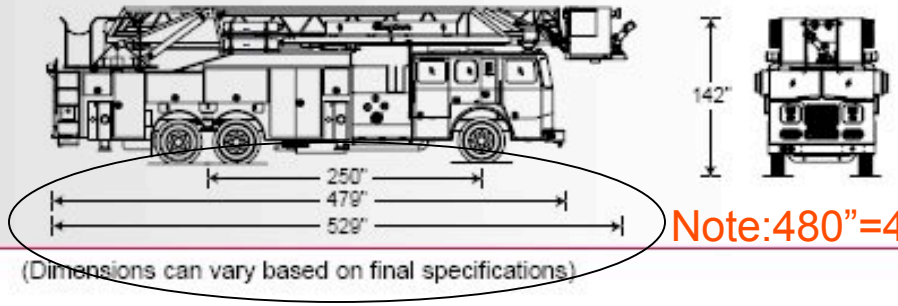

17
17
FIRE RESCUE

Specifications

TowerMax 104'

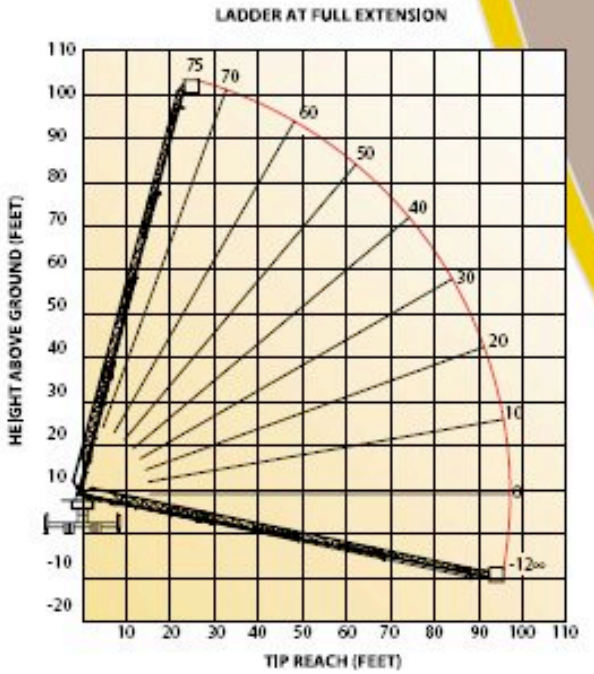
Elevation:	-12° to 75°
Reach:	97' @ 0° (horizontal)
	104' @ 75°

	Ladder Widths	Handrail Heights
Base:	39"	28"
Lower mid:	32"	23"
Upper mid:	27"	19"
Fly:	22"	15"



(Dimensions can vary based on final specifications)

Note:480"=40'



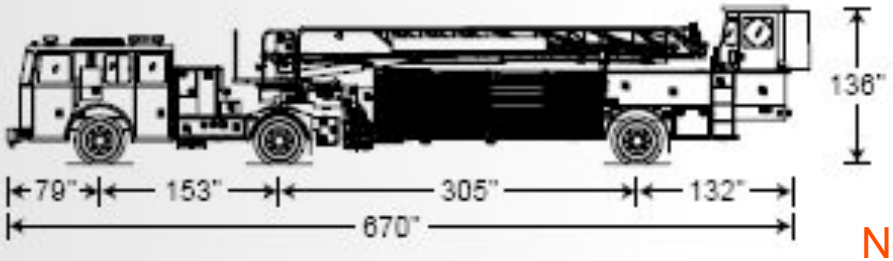
Specifications for a Seagraves TowerMax Aerial Apparatus, **Image Used With Permission** **http://www.seagrave.com/index.cfm, Copyright Seagrave Fire Apparatus Company**

Specifications

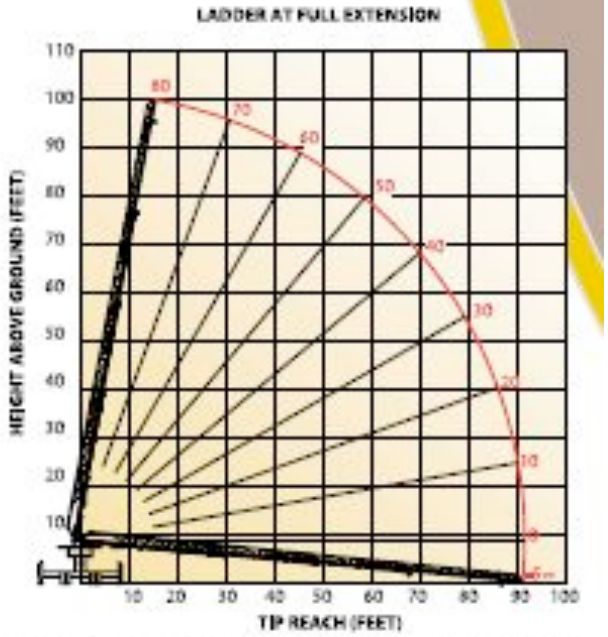
100' 500 lb Tip Load – 1,000 GPM

Elevation:	-5° to 80°
Reach:	91' @ 0° (horizontal)
	100' @ 80°

	Ladder Widths	Hand Rail Heights
Base:	31"	25"
Lower Mid:	28"	22"
Upper Mid:	24"	18"
Fly:	21"	15"



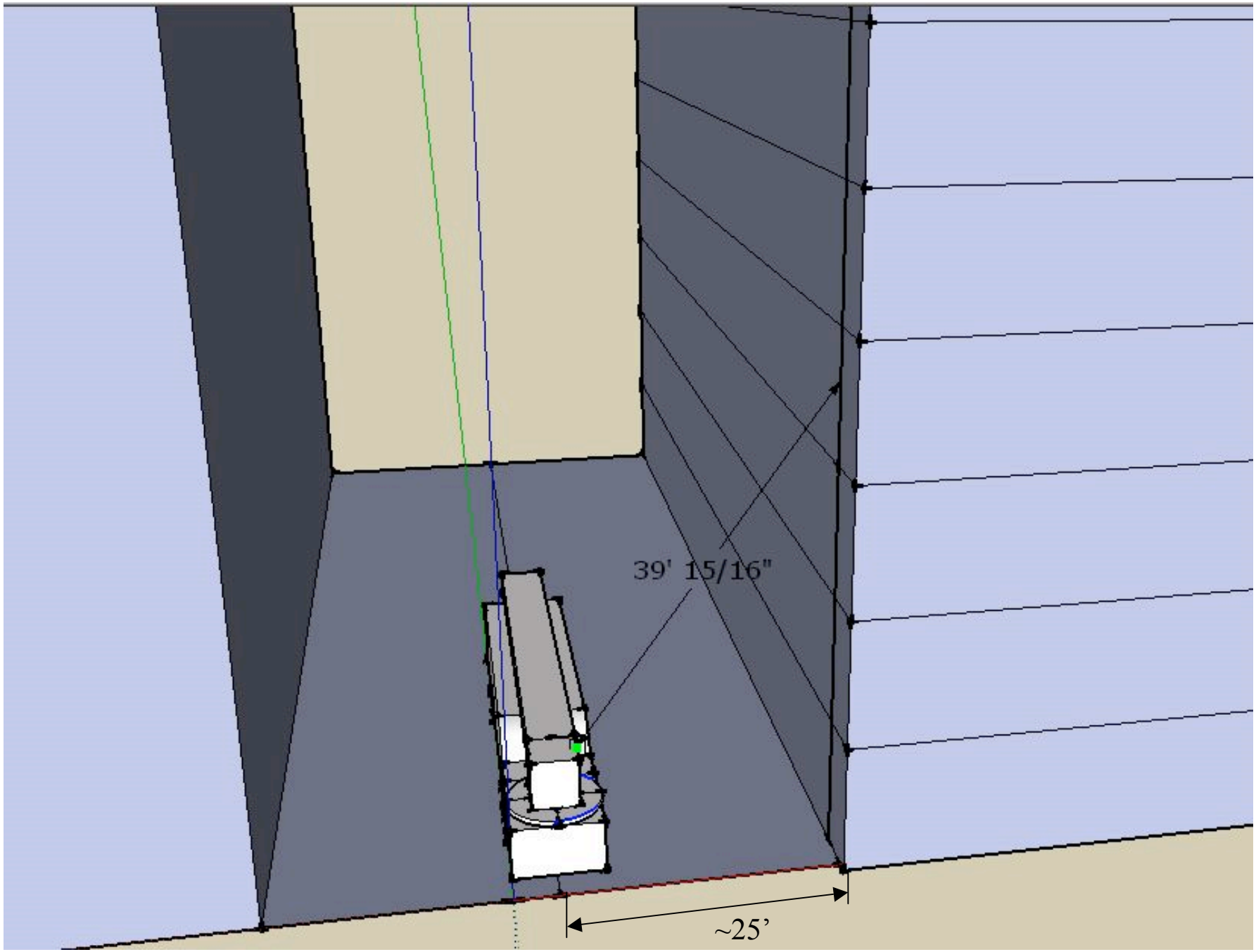
(Dimensions can vary based on final specifications)

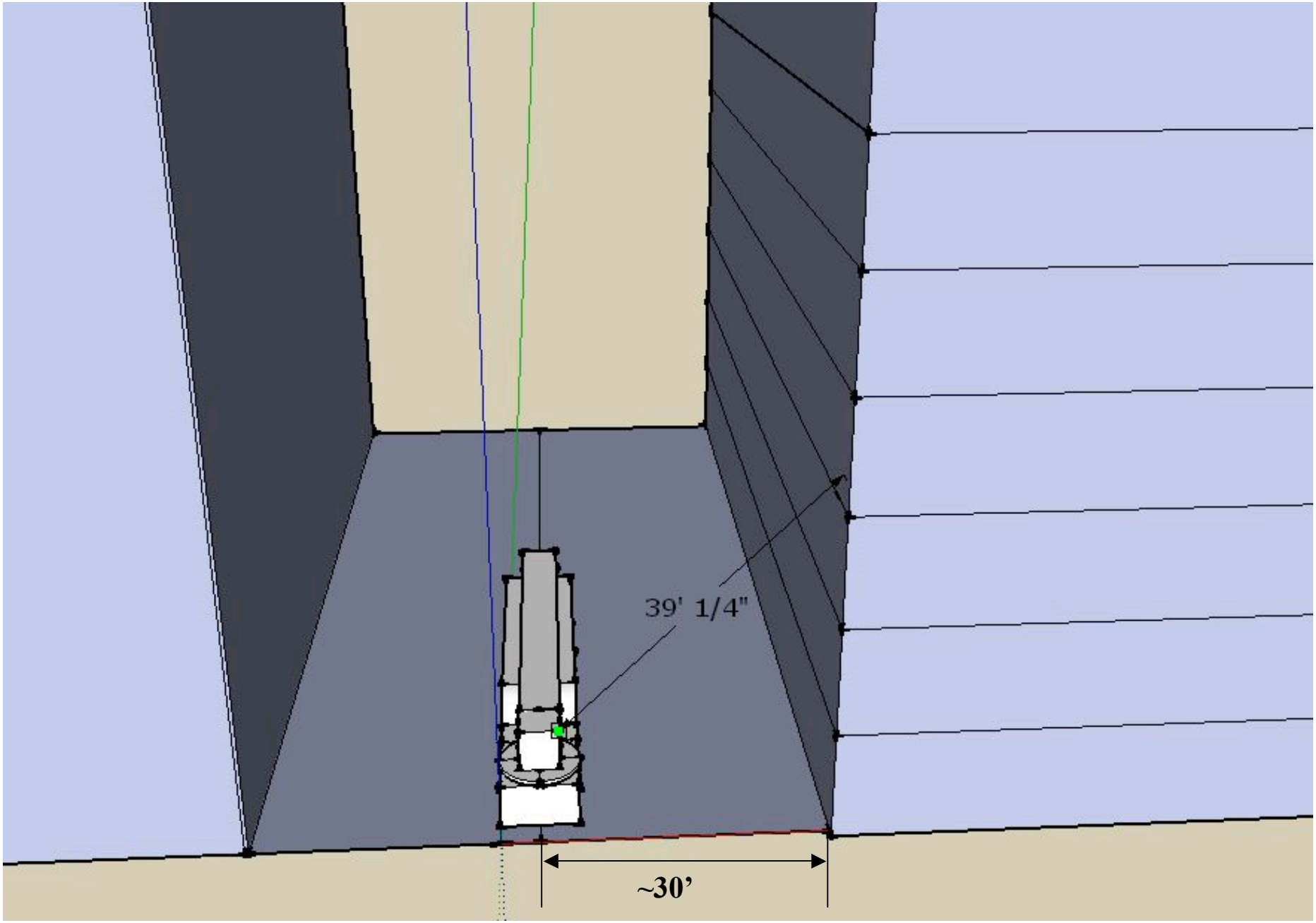


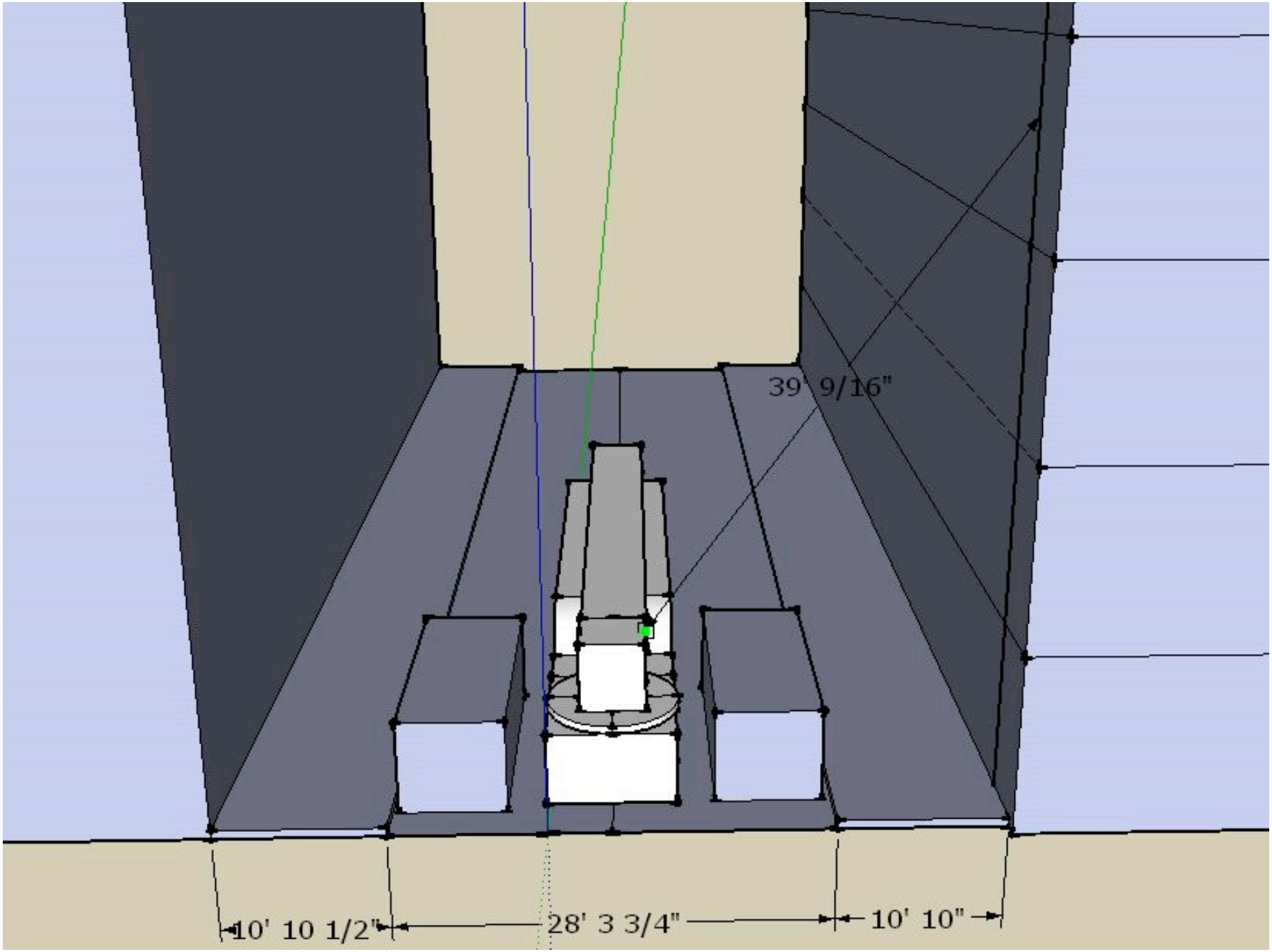
500 lb (two men) at tip while flowing 1,000 GPM of water at any extension, any angle.

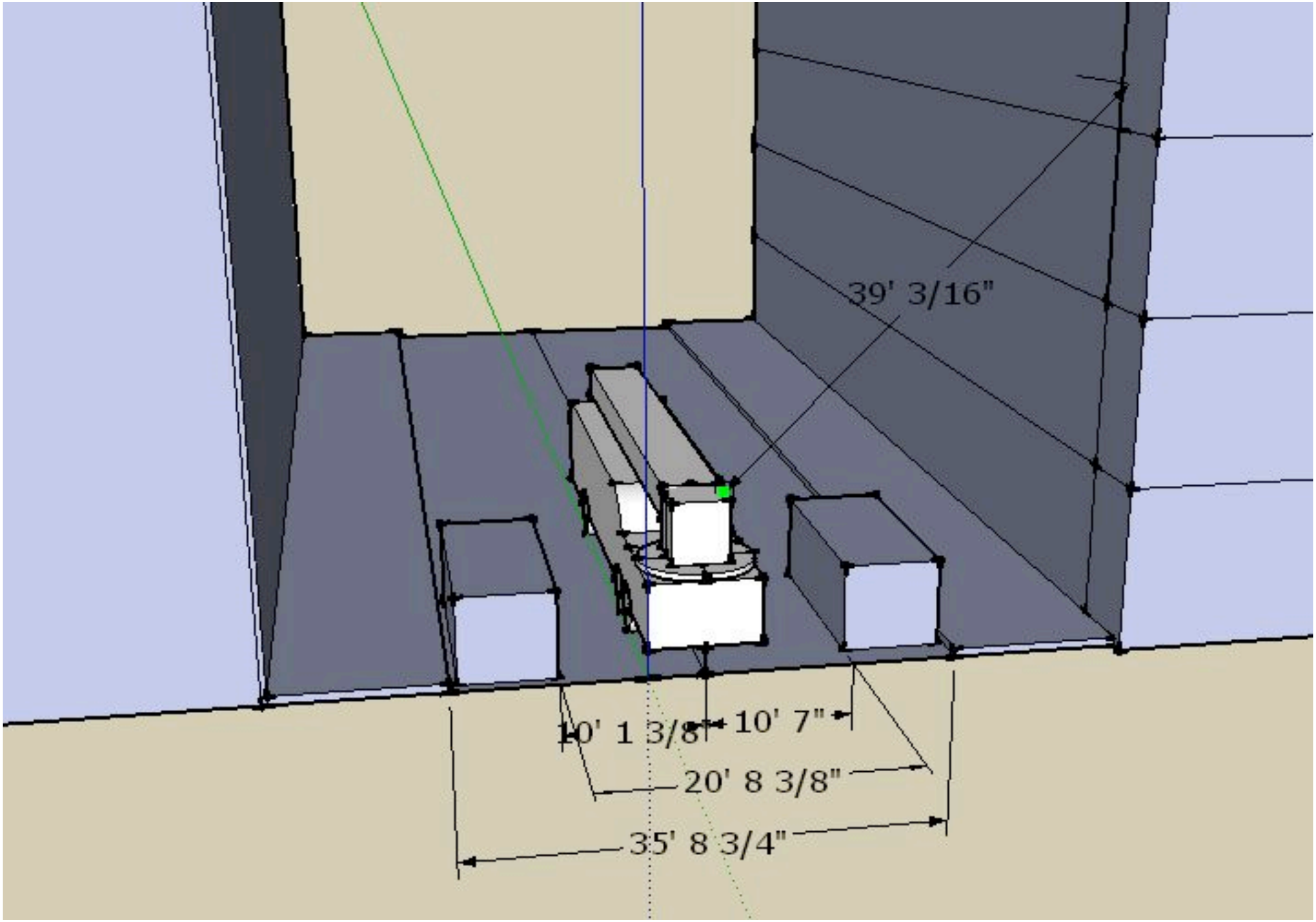
Note: 360"=30'

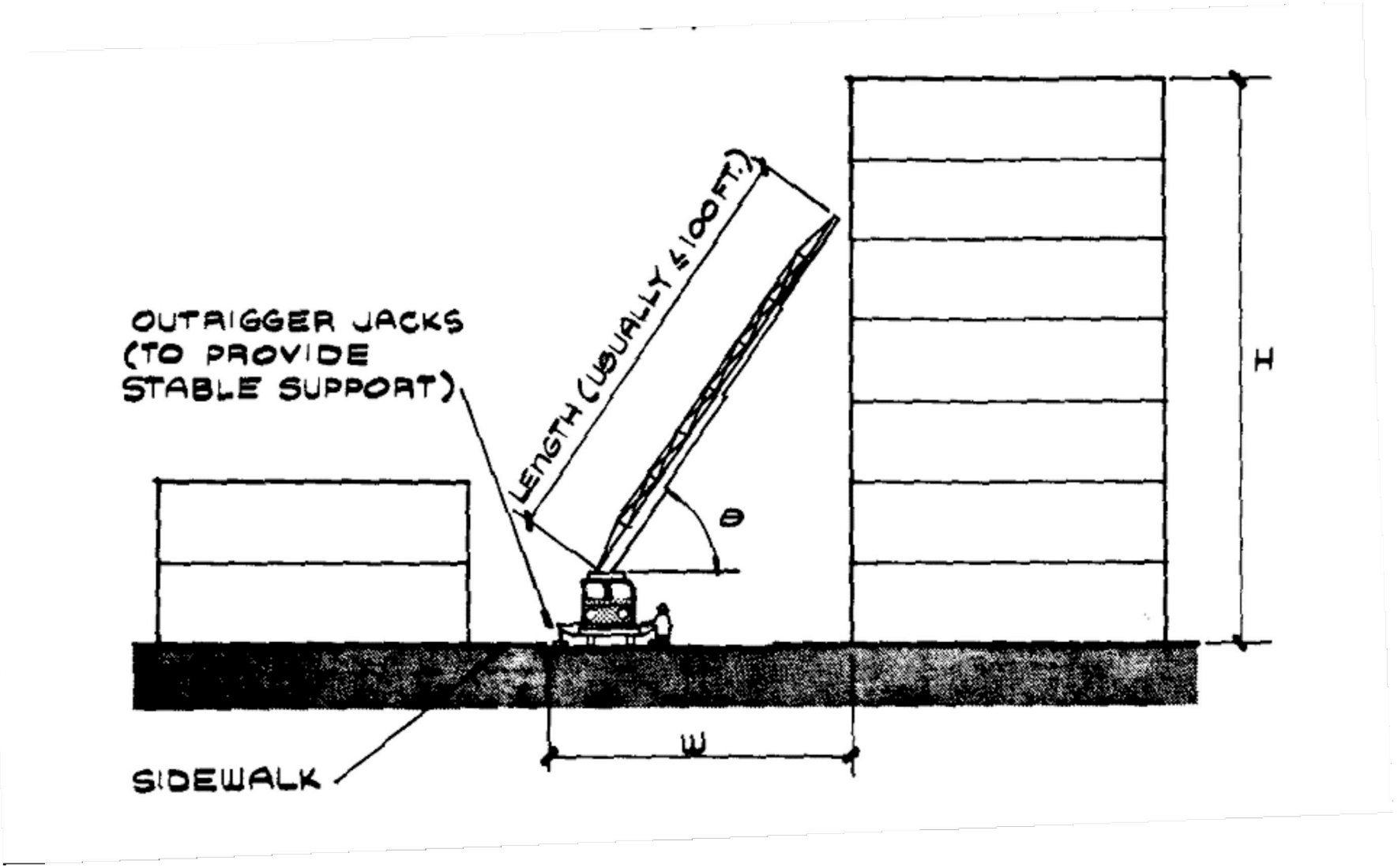
Specifications for a Seagrave Tractor Drawn Aerial, Images Used With Permission http://www.seagrave.com/index.cfm, Copyright Seagrave Fire Apparatus Company

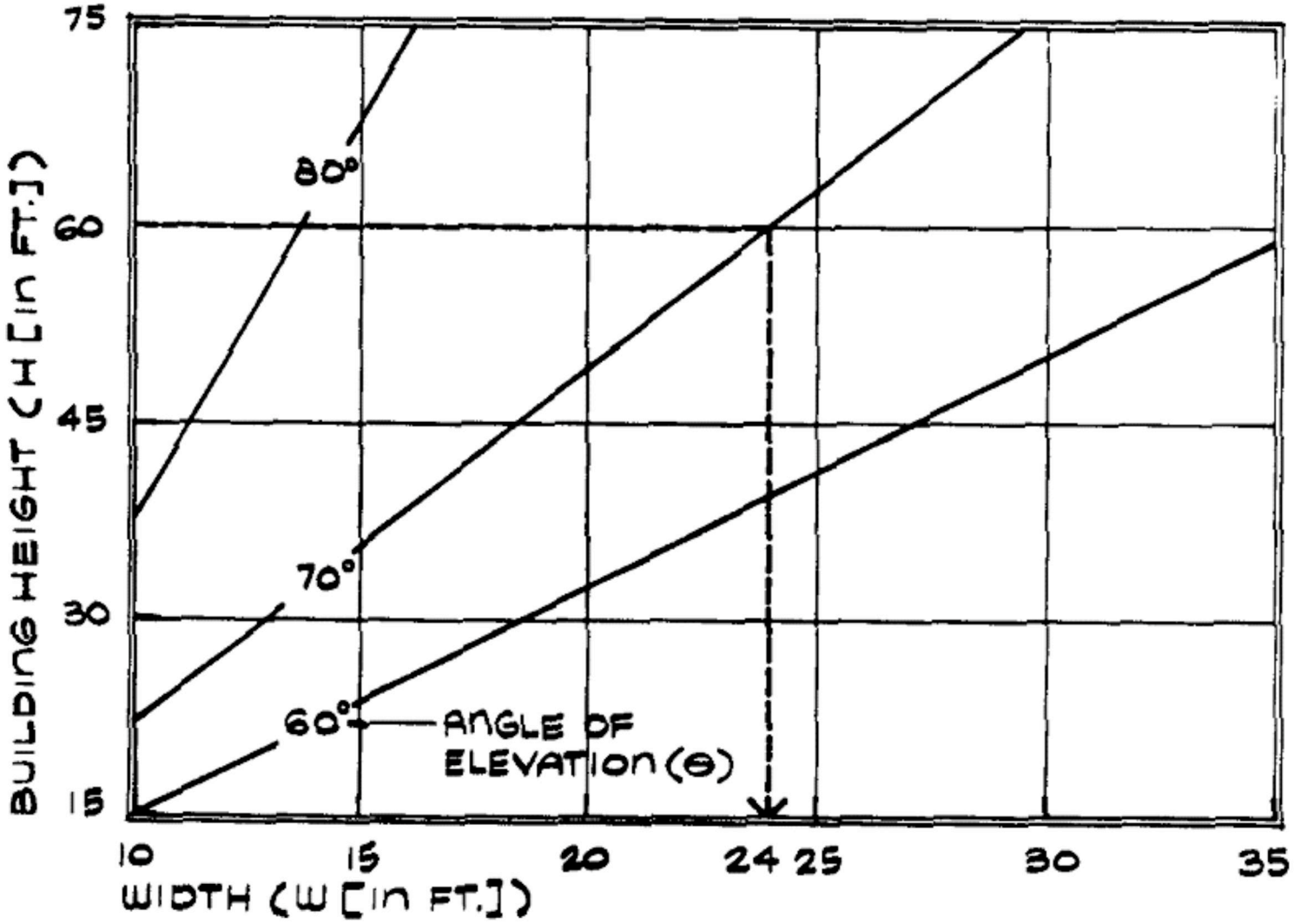

39' 15/16"
~25’

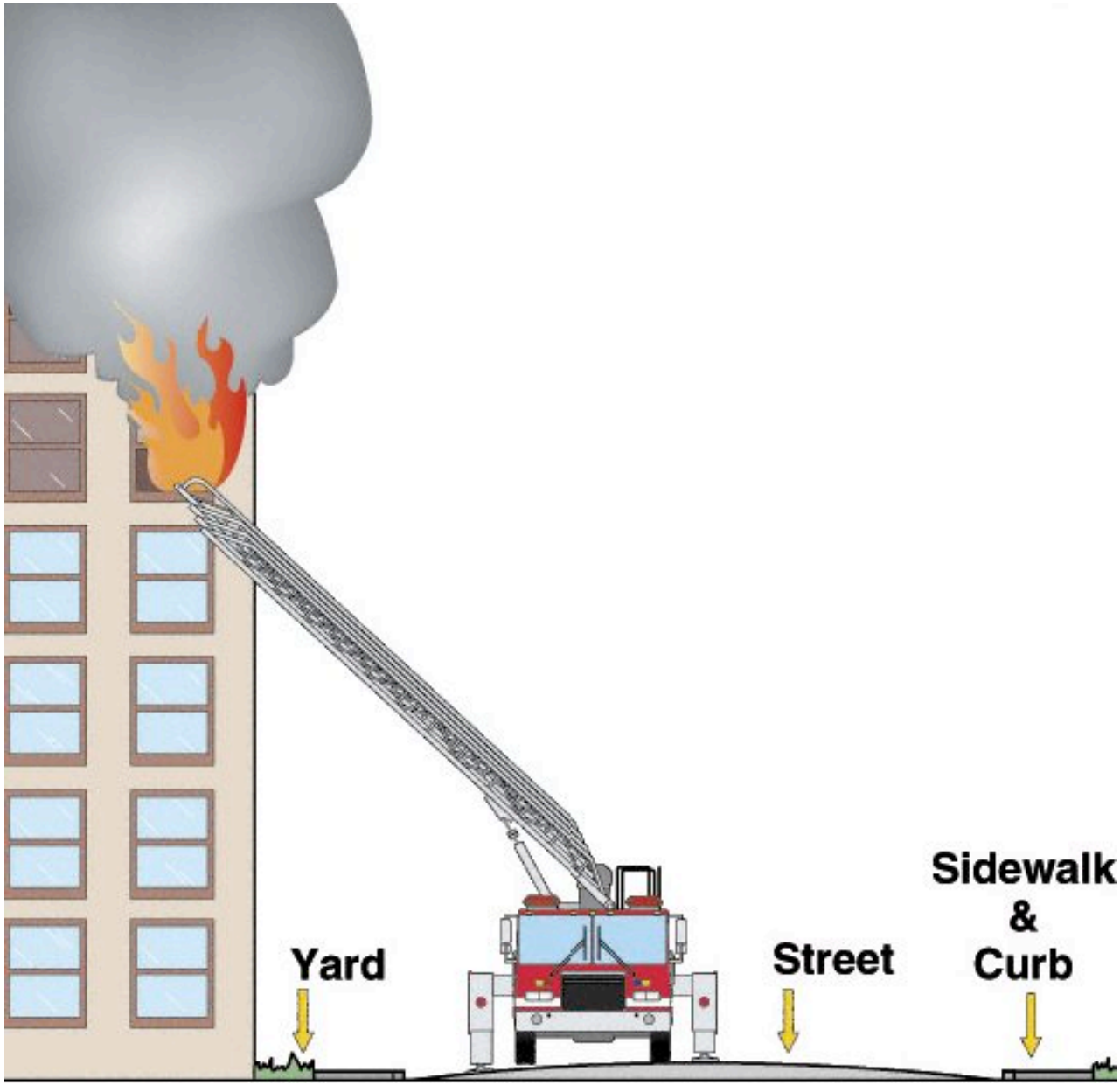

39' 1/4"
~30'


39' 9/16"
10' 10 1/2"
28' 3 3/4"
10' 10"


39' 3/16"
10' 1 3/8"
10' 7"
20' 8 3/8"
35' 8 3/4"


OUTRIGGER JACKS
(TO PROVIDE
STABLE SUPPORT)
LENGTH (USUALLY ≤ 100 FT.)
θ
H
W
SIDEWALK


75
60
45
30
15
BUILDING HEIGHT (H [IN FT.])
80°
70°
60°
ANGLE OF ELEVATION (θ)
10
15
20
24
25
30
35
WIDTH (W [IN FT.])


Yard
Street
Sidewalk
&
Curb

Worcester Fire - Dec99
Burnout - 6 story unbraced walls

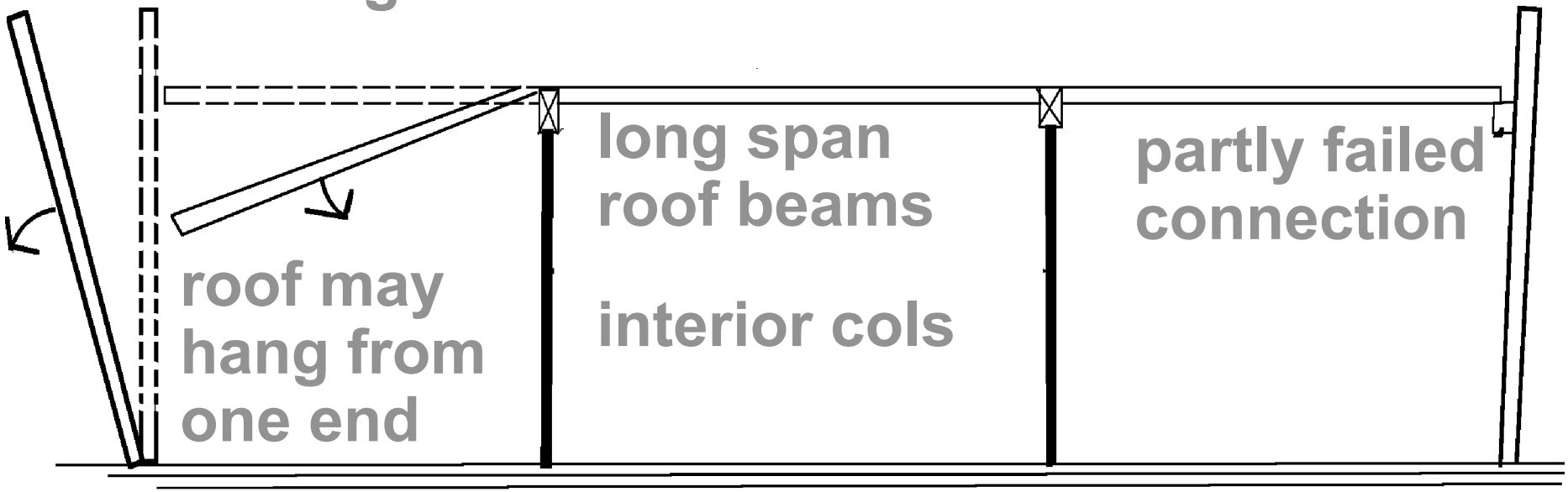
Illegal remodel - URM collapse

22 story S-2 Collapse - Weak Column

Typical Front & Parapet Collapse

Heavy Wall Collapse Patterns
Concrete Tilt-Up & RM Walls

if wall falls it will project it's full height away from the building face



Typical Failure of Roof to Wall Conn.

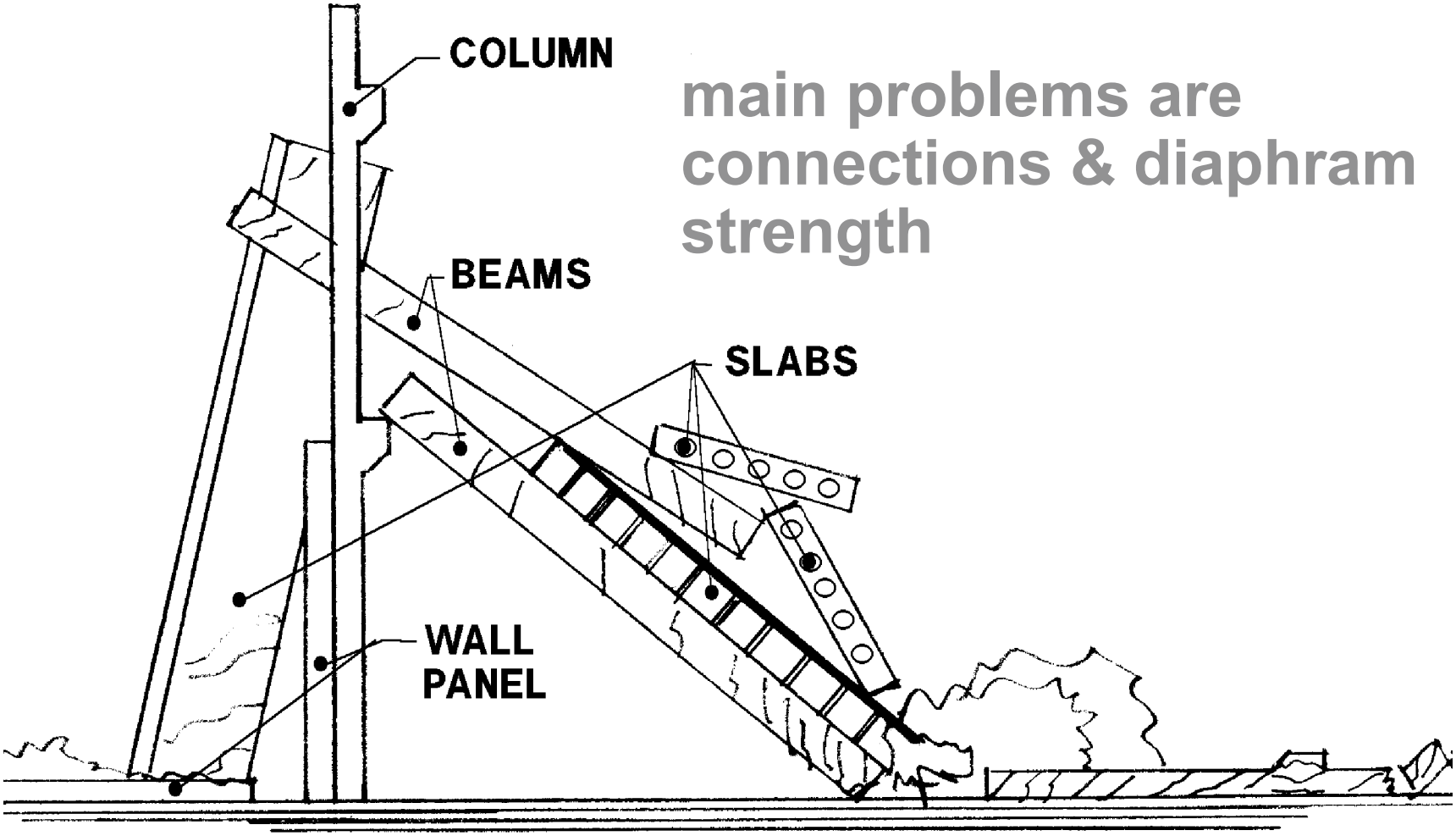
(large wall & roof sections collapse)

Overturned Collapse - Taiwan 99 E.Q.

DH-1-18

Overturned Collapse - Taiwan 99 E.Q.

Precast Conc Collapse Patterns



main problems are connections & diaphram strength

collapse pattern varied & difficult to predict since poorly connected parts separate & fall due to gravity & collisions w/other parts.

5s

Hurricane Andrew
Typical wood house damage


W 25th
PEARL

Centennial Condominium Fire

Friday December 13, 1996

STATION NIGHTCLUB FIRE

Ways Designers Can Impact Fire & Life Safety

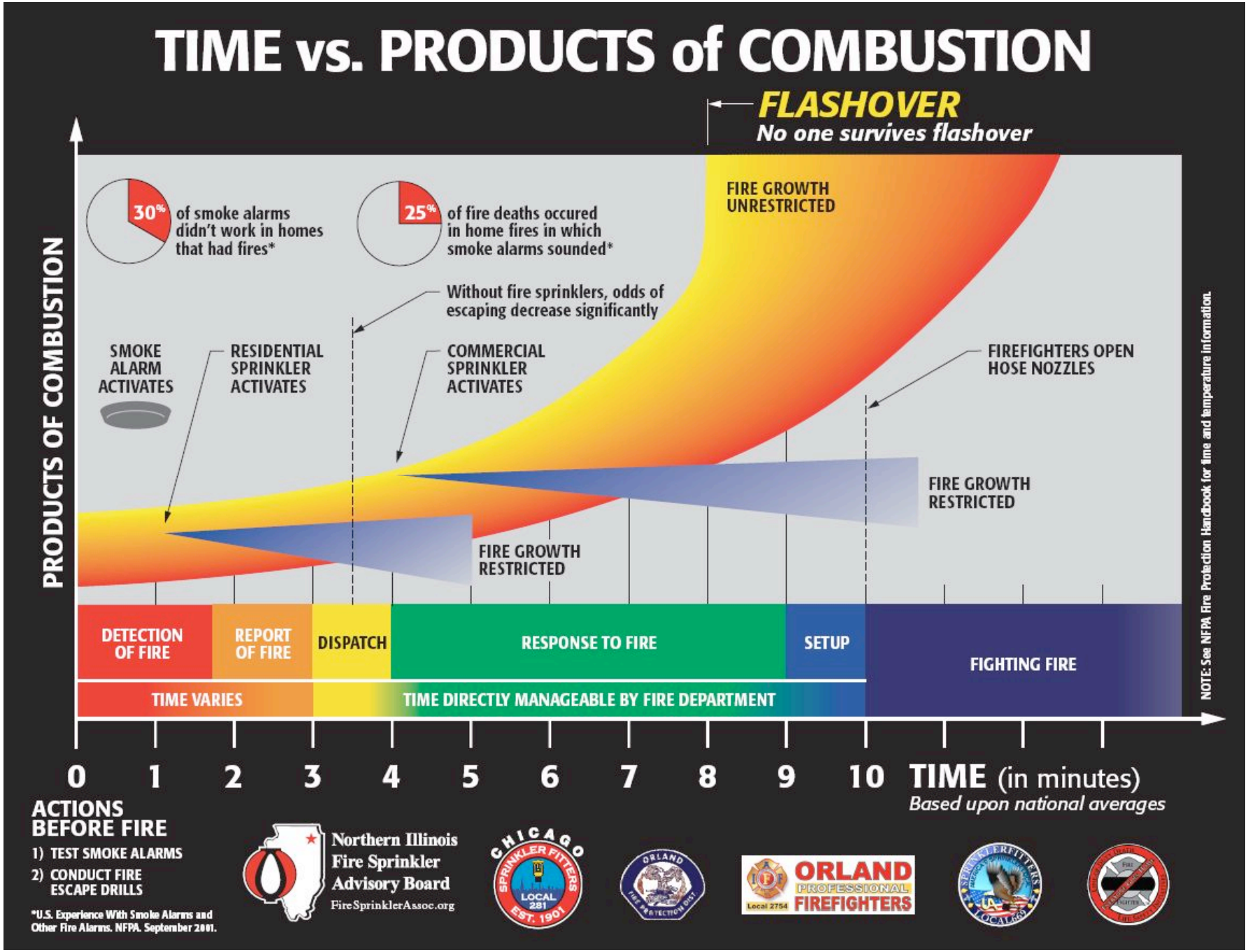
Consider the abilities and resources of firefighting and rescue personnel near your projects and be realistic.

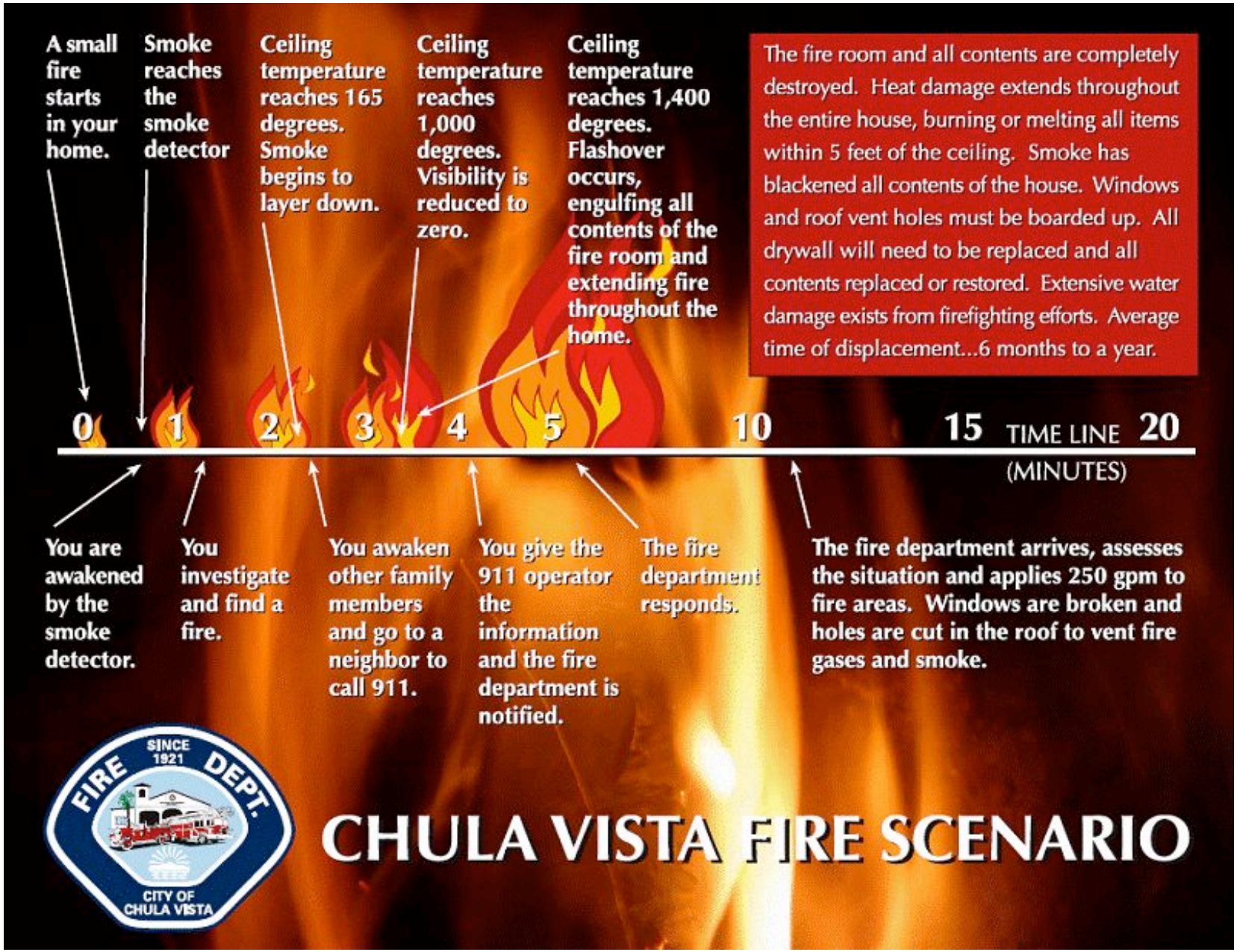
Kinney Court Subdivision, Kinney Oaks CT, Austin, Texas


FOXGLEN
BARTON HILLS
BARTON
WESTRIDGE
G21
AROLE
ARTHUR
RABB
WILKE
WESTRIDGE

Life & Death Timelines

- **Clinical death is simply when a person has stopped breathing. This results in oxygen not entering the body. Clinical death eventually results in the death of body tissues and cardiac arrest.**
- **Brain Damage Timeline**
  - **Within 4-6 minutes of clinical death, some brain damage is possible.**
  - **Within 6-10 minutes of clinical death, brain damage is likely.**
  - **After 10 minutes of clinical death, irreversible brain damage is certain.**
  - **Under special circumstances, such as severe hypothermia, biological death may be delayed.**
  - **Never assume someone is beyond help. Never stop your rescue attempts until paramedics arrive and they tell you to stop. Pronouncing someone dead can only be done by a medical doctor or coroner.**


TIME vs. PRODUCTS of COMBUSTION
FLASHOVER
No one survives flashover
PRODUCTS OF COMBUSTION
30% of smoke alarms didn't work in homes that had fires*
25% of fire deaths occured in home fires in which smoke alarms sounded*
FIRE GROWTH UNRESTRICTED
Without fire sprinklers, odds of escaping decrease significantly
SMOKE ALARM ACTIVATES
RESIDENTIAL SPRINKLER ACTIVATES
COMMERCIAL SPRINKLER ACTIVATES
FIREFIGHTERS OPEN HOSE NOZZLES
FIRE GROWTH RESTRICTED
FIRE GROWTH RESTRICTED
DETECTION OF FIRE
REPORT OF FIRE
DISPATCH
RESPONSE TO FIRE
SETUP
FIGHTING FIRE
TIME VARIES
TIME DIRECTLY MANAGEABLE BY FIRE DEPARTMENT
NOTE: See NFPA Fire Protection Handbook for time and temperature information.
0 1 2 3 4 5 6 7 8 9 10 TIME (in minutes)
Based upon national averages
ACTIONS BEFORE FIRE
1) TEST SMOKE ALARMS
2) CONDUCT FIRE ESCAPE DRILLS
*U.S. Experience With Smoke Alarms and Other Fire Alarms. NFPA. September 2001.
Northern Illinois Fire Sprinkler Advisory Board
FireSprinklerAssoc.org
CHICAGO SPRINKLER FITTERS LOCAL 281 EST. 1901
ORLAND FIRE PROTECTION DIST
ORLAND PROFESSIONAL FIREFIGHTERS Local 2754
SPRINKLER FITTERS LOCAL 669


A small fire starts in your home.
Smoke reaches the smoke detector
Ceiling temperature reaches 165 degrees. Smoke begins to layer down.
Ceiling temperature reaches 1,000 degrees. Visibility is reduced to zero.
Ceiling temperature reaches 1,400 degrees. Flashover occurs, engulfing all contents of the fire room and extending fire throughout the home.
The fire room and all contents are completely destroyed. Heat damage extends throughout the entire house, burning or melting all items within 5 feet of the ceiling. Smoke has blackened all contents of the house. Windows and roof vent holes must be boarded up. All drywall will need to be replaced and all contents replaced or restored. Extensive water damage exists from firefighting efforts. Average time of displacement...6 months to a year.
0
1
2
3
4
5
10
15
TIME LINE
20
(MINUTES)
You are awakened by the smoke detector.
You investigate and find a fire.
You awaken other family members and go to a neighbor to call 911.
You give the 911 operator the information and the fire department is notified.
The fire department responds.
The fire department arrives, assesses the situation and applies 250 gpm to fire areas. Windows are broken and holes are cut in the roof to vent fire gases and smoke.
SINCE 1921
FIRE DEPT.
CITY OF CHULA VISTA
CHULA VISTA FIRE SCENARIO


NIST
National Institute of Standards
and Technology
Technology Administration
U.S. Department of Commerce


Room A
NIST
NIST


NIST