

Site Design

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Sponsored by: CANDO Education and Outreach

Site Design Session Overview

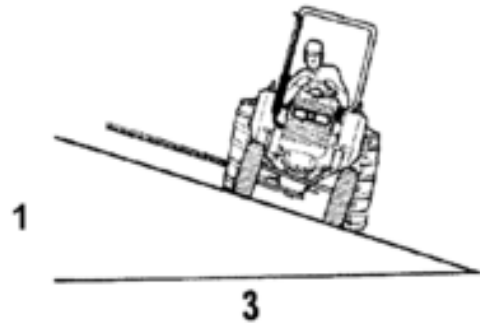
1. Introductions
2. Basic Platting
3. Surveying Basics
 - a. Bearings and Distances
 - b. Easements
4. Planning and Zoning
 - a. Zoning
 - b. Land Use
5. Lot Configuration
 - a. Topography
 - b. Soils/Geotechnical
 - c. Flood Plane
 - d. Drainage
6. Building Orientation
 - a. Visibility/Aesthetics
 - b. Wind
 - c. Sun
 - d. Snow
 - e. Vehicle Access
 - f. Pedestrian Access
 - g. Setbacks
7. Space Utilization
 - a. Building
 - b. Yard Space
 - c. Parking
 - d. Truck Access
 - e. Landscaping
 - f. Outdoor Space
8. Utilities
 - a. Public – Water and Sewer
 - b. Private – Gas, Electric, Phone, Cable, etc.
9. Work Session – Acme Rockets

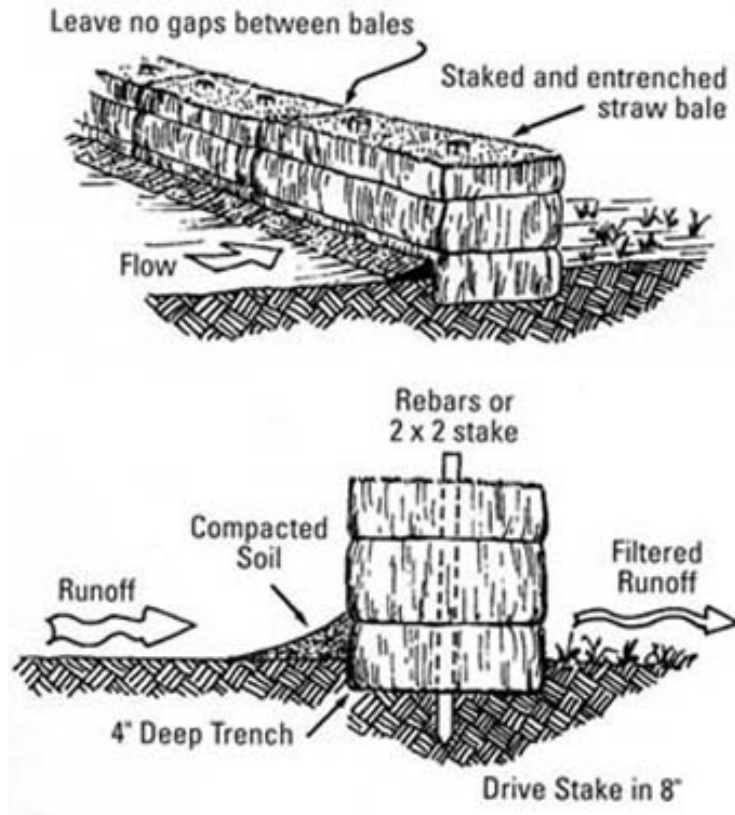
Platting and Surveying Basics

1. Elements of a Plat
 - a. Lots
 - b. Blocks
 - c. Streets
 - d. Easements
2. Platting Process
 - a. Surveying
 - b. Geometric Layout
 - c. Municipal Review and Approval
3. Survey Basics
 - a. Basis of Bearings
 - i. Assumed
 - ii. State Plane
 - iii. Local Coordinate System
 - b. Basis of Elevations
 - i. NGVD 1929
 - ii. NAVD 1983
 - c. Distance
 - d. Bearing
 - i. 360 Degrees – 0- North, 90 - East, 180 – South, 270 – West
 - ii. Degrees, Minutes (60' per degree), Seconds (60" per minute)
 - e. Curves
 - i. Radius
 - ii. Point of Curvature
 - iii. Point of Tangency
 - iv. Curve Length

Lot Topography and Drainage

1. Lot Grading
 - a. Contours and Contour Interval
 - b. Slopes
 - i. Grades (percent)
 - ii. Slope (1:4)
 - iii. Converting: $1:3 = 33\%$
 - iv. $1:12 = 8.3\%$
 - v. $1:100 = 1\%$
 - c. Minimum Design Grades
 - i. Away from building – 2%
 - ii. Concrete – 1%
 - iii. Asphalt – 2%
 - iv. Earthen Drainages - 2%
 - d. Maximum Design Grades
 - i. ADA – 2% cross slope
 - ii. Streets 6% to 8%
2. Stormwater Basics
 - a. 10 –year Storm
 - b. 100-year Storm
 - c. Rainfall Intensity
 - d. Rainfall Duration
 - e. Site Permeability
 - f. $Q = CiA$
 - g. Historic Discharge vs. Developed Discharge
 - h. Stormwater Detention
 - i. Maximum 24 Hour Detention
 - ii. Discharge Historic Rate
 - iii. Regional vs. Lot by Lot
 - i. Stormwater Routing
 - i. Pipes
 - ii. Open Channels
 - j. Flood Plain Maps (FEMA/FIRM)
3. Erosion Control
 - a. Required for sites over 1 acre
 - i. DEQ Submittal for sites over 5 acres
 - b. Erosion Control Measures
 - i. Straw Bales
 - ii. Silt Fence
 - iii. Inlet Protection
 - iv. Site Checks and Maintenance
 - v. Seeding and Mulching







Building Orientation and Location

1. Visibility/Aesthetics
 - a. Customers
 - b. Deliveries
 - c. Signage
2. Wind
 - a. Doors
 - b. Windows
 - c. Drifting
 - d. Parking
 - e. Power Generation?
3. Sun
 - a. Snow Removal
 - b. Icing
 - c. Passive Solar
 - i. Heat
 - ii. Lighting
 - d. Active Solar
 - i. Power
 - ii. Water Heat
4. Setbacks
5. Vehicle Parking and Access
 - a. Customer Parking
 - b. Employee Parking
 - c. Deliveries
 - d. Design Considerations
 - i. Handicap Parking Spaces (number and size)
 - ii. Parking Spaces
 1. Number
 2. Size
 - iii. Drive Lanes
 1. one-way vs. two way traffic
 2. curves
 - iv. Landscaping
 - e. Pedestrian Access
 - i. ADA
 - ii. Bus drop-off
 - iii. Connectivity to Pathways and Sidewalks

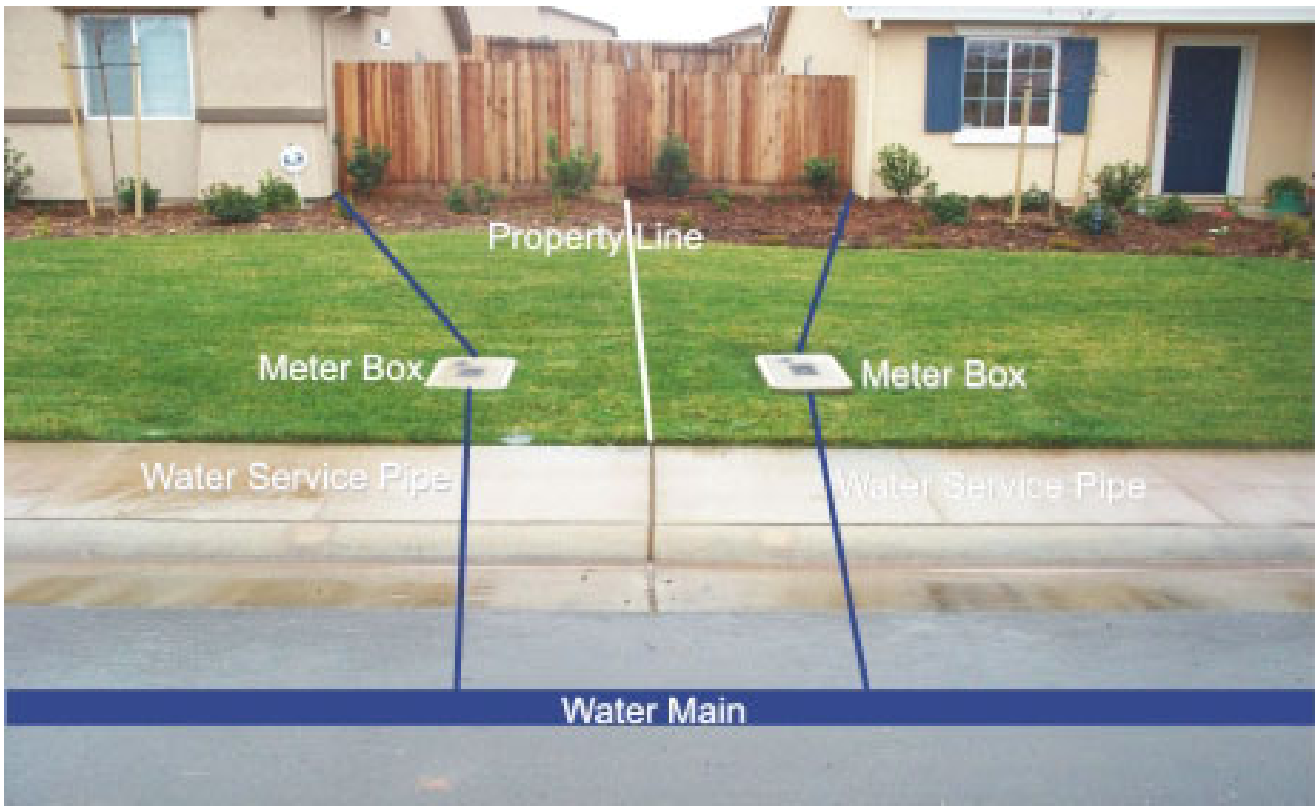
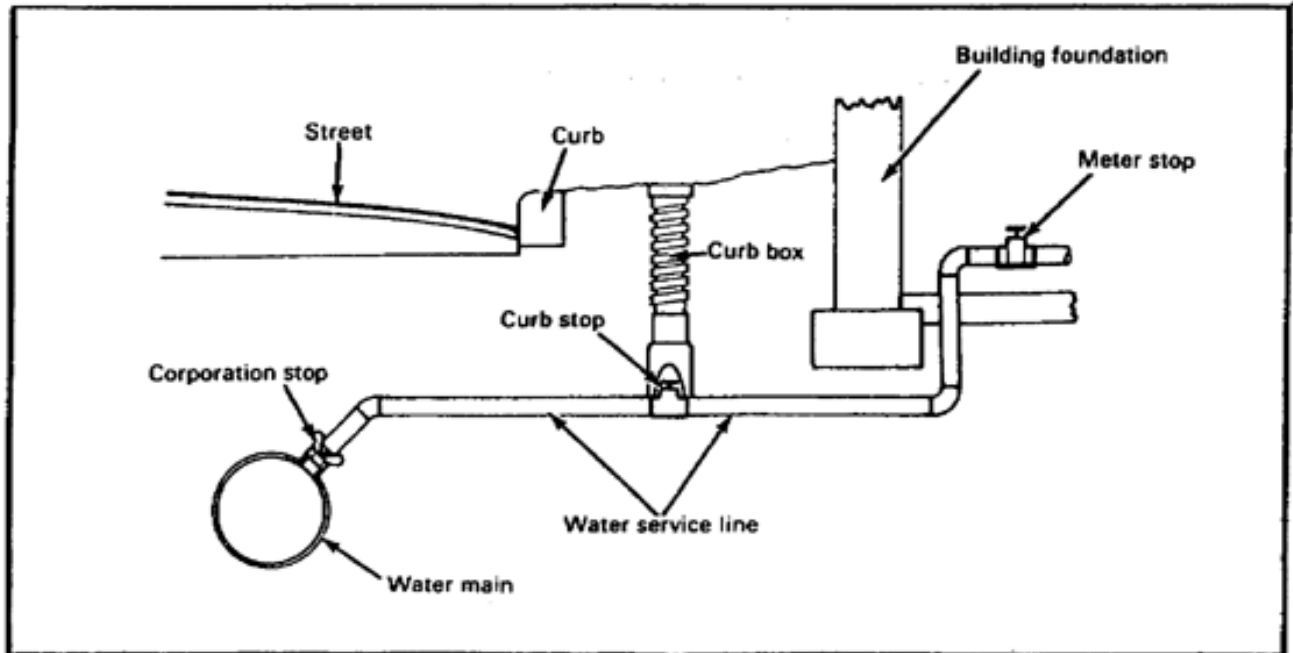


Space Utilization

1. Building
2. Yard Space/Storage
3. Parking
4. Travel Lanes
5. Shipping and Deliveries
6. Landscaping

Utilities

1. Public Utilities
 - a. Water and Sanitary Sewer
 - i. Proximity to Site
 - ii. System Capacity
 - iii. Sizing (Mechanical Engineer)
 - iv. Location
 - v. “to and through” rules
 - vi. Property Owners Responsibilities
 - vii. Tap Fees aka System Development Charges
 - b. Design Components
 - i. Valves
 - ii. Fire Hydrants (Every 300 to 400 Feet)
 - iii. Meters
 - iv. Pressure Reducing Valves
 - v. Fire Suppression Systems
 - vi. Manholes (every 400 feet) plus Inspection MH
 - vii. Cleanouts (per Plumbing Code)
 - viii. Oil Sand Separators
2. Private Utilities
 - a. Gas
 - b. Electricity
 - c. Communications
 - d. Requirements
 - i. Meeting with Individual Providers
 - ii. Connection Fees
 - iii. Extensions to the Lot
 - iv. Property Owner Responsibilities
3. Architect vs. Engineer
 - a. 5-foot Rule
 - b. Programming and Planning
 - c. Irrigation



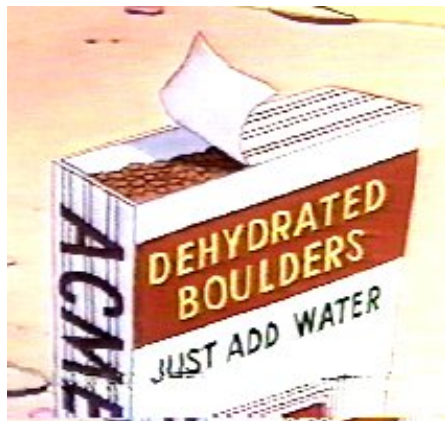
ACME Rockets, LLC



ACME Rockets LLC manufactures a complete line of rockets for numerous rocket propelled vehicles; including ground and air travel. They include the rocket powered skates, cart, bat suit, plane and automobile. Our largest client is Wile E. Coyote. We are planning on relocating our manufacturing facility to Douglas, Wyoming based upon the available open space, abundant natural resources, and favorable environmental regulations. We are requesting your services to assist with the development of a site plan for our proposed manufacturing facility. We have secured an option on Lot 34/35 in the Douglas Business Park and are planning on breaking ground in the Spring of 2009. Below we have detailed the needs of our facility to assist with your proposed site development plan.

- Proposed building 21,200 SF; 400 SF office space, 20,800 SF manufacturing, packaging and shipping space.
- Manufacturing work occurs 40 hours per week, 5 days per week.
- Packaging and shipping are staffed 12 hours per day, 7 days a week to meet the needs of our clients.
- We employ 22 full time employees in manufacturing, sales, shipping and administration.
- Many of our employees ride rocket assisted roller blades, scooters and bicycles to work.

- ACME Rockets, LLC continued
- We would like to provide a space for our employees to take breaks outside and enjoy the environment.
- Semi-tractor Trailer deliveries two times per week.
- Outside storage of chemicals is required for three large storage vessels (20 feet diameter x 30 feet long); security and spill prevention is a priority.
- We will need an outside testing facility for test firing our rocket motors. The facility will consist of a 40-foot long x 20-foot wide "U" shaped concrete blast wall.
- There are no odors from our facility but the chemical storage poses a contamination threat to the ground and water.
- ACME Parcel Service provides 90-percent of our shipping through conventional truck freight received behind the facility. They provide 10-minute delivery to Wile E. Coyote.
- Remaining shipments are received and delivered by tractor trailers.
- Rocket manufacturing is an energy intensive process; we will require 480 V, 1000 amp service to the site.
- A 2-inch natural gas service will be required to heat the facility and meet the heating needs of the manufacturing process.
- A 1½ inch diameter water service will be required for the potable and manufacturing needs at the facility; fire flows of 2,000 gallons per minute will be required for our fire suppression system.
- The owner of ACME Rockets, LLC is an active member of the Audubon society and would like to have a facility that is bird friendly and provides space for trees and natural habitat.



- ACME owns several manufacturing companies and is considering adding onto this facility in the future (5,000 SF) for the manufacture, packaging and shipping of their dehydrated boulders if the rocket venture is favorable.