21. Utilities

Be aware of how proposed utilities will affect the harbor design, layout, and planning. The utilities depend on the harbor type, its function, and its development potential.

21.10 Power

Depending on the size, function, and remoteness of a proposed harbor facility, electricity is usually needed on the land and floats or docks. Typically, power outlets are located on docks to serve the needs of boaters and equipment. Every facility is unique and power needs should be assessed accordingly.

Consider POWER if:

1) Utilities are provided to the proposed harbor site. Remote Alaska sites may not have access to power.

2) Size and function of the harbor warrant the cost of installing power.

Note 1. A special grounding switch is needed for fuel docks.

Note 2. National Electric Code (NEC), Article 555, Marinas and Boatyards, defines the basic electric codes in the United States.

Note 3. If there is no public utility company serving an area and power is required, a power generating plant may serve the facility needs.

Note 4. Vessels have different power requirements. Design power pedestals with flexibility to accommodate changes in the design fleet.

Note 5. Voltage drop is a major concern due to long feeder runs.

Note 6. You may want to include electric utilidors for future expansion or upgrades, if power isn't provided in an initial project.

REFERENCES:

1. Quinn, A.D. 1972. *Design and Construction of Ports and Marine Structures.* New York: McGraw Hill. Pg. 460-464.

2. ASCE Manual No.50. Task Committee on Marinas 2000. 1982. *Planning and Design Guidelines for Small Craft Harbors.* Pg. 32-33, 226-229.

3. Tobiasson, B.O. and Kollmeyer, R.C. 1991. *Marinas and Small Craft Harbors.* New York: Van Nostrand Reinhold. Pg. 380-385.

21.20 Lighting

Lighting is essential for safety in Alaska harbors due to the extreme changes in daylight hours. Winter hours are short; summer hours are long. Automatic lighting systems can accommodate these special needs. Low-level systems on the docks and floats can provide adequate, safe lighting. Consider the aesthetic value and ambience created by low-level versus high-tower lighting.

Consider LIGHTING:

1) In all public facilities, especially those where public power is supplied landside
2) When the harbor facility is large and warrants the need for a lighting system

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Note 1. Include lighting in restroom/shower areas, parking and roadways, buildings, docks, navigational aids, and other public places.

REFERENCES:

1. ASCE Manual No.50. Task Committee on Marinas 2000. 1982. *Planning and Design Guidelines for Small Craft Harbors.* New York. Pg. 33-34.

2. Tobiasson, B.O. & Kollmeyer, R.C. 1991. *Marinas and Small Craft Harbors.* New York: Van Nostrand Reinhold. Pg. 493, 516.

3. Dunham, J.W. & Finn, A.A. 1974. *Small Craft Harbors: Design, Construction, and Operation.* Special Report No. 2 U.S. Army Corps of Engineers. Coastal Engineering Research Center. Pg. 156-171.

21.30 Water

Consider the availability of potable water in the design. Requirements for the supply of water may include separate systems for individual slips and fire protection on the dock. Volume and pressure requirements, anti-siphon valves, easy winter drainage, and substantial freeze protection systems are important design parameters.

Consider WATER service if:

1) A potable water source is available near a proposed harbor site.
2) The harbor facility is large enough to require water service.

Note 1. Estimate usage requirements at 25 gallons per slip per day for recreational boats, and 65 gallons per slip per day for commercial charter boats.

Note 2. Code requirements for fire protection and sewage pumpout may determine the pressure rating for some systems.

Note 3. Extreme cold weather will generally require drainage of a water system on docks and piers.

Note 4. Even if water isn't provided in the initial project, consider including piping for future expansion or upgrades.

Note 5. Consider suspending the main water lines under the floats where the warmer sea water will keep them from freezing.

REFERENCES:

1. Dunham, J.W. & Finn, A.A. 1974. *Small Craft Harbors: Design, Construction, and Operation.* Special Report No.2. U.S. Army Corps of Engineers. Coastal Engineering Research Center. Pg. 156-171.

2. ASCE Manual No.50. Task Committee on Marinas 2000. 1982. *Planning and Design Guidelines for Marinas and Small Craft Harbors.* New York. Pg. 229-230.

3. Tobiasson, B.O. & Kollmeyer, R.C. 1991, Marinas and Small Craft Harbors. New York: Van Nostrand Reinhold. Pg. 360-361.

21.40 Sewer

For public health and safety, consider sewage generated in a harbor. You must consider detailed plans to accommodate boat pumpout facilities, public toilets, and upland development during the site selection process.

Consider a SEWER system when:

1) There is sufficient upland area to develop the sewer system.
2) The proposed harbor facility is larger than about 50 vessels.
3) Environmental concerns warrant the need for a sewer system.

Note 1. Roughly 20 gallons of sewage per slip per day is a general estimation for sizing pipes and pumps during the busy season. If there is a high number of live aboard vessels, this number may be greater.

Note 2. Even if sewage isn't included in the initial project, consider adding piping for future expansion, upgrades, or environmental regulations.

REFERENCES:

1. ASCE Manual No.50. Task Committee on Marinas 2000. 1982. *Planning and Design Guidelines for Small Craft Harbors.* New York. Pg. 33.

2. Tobiasson, B.O. & Kollmeyer, R.C. 1991. *Marinas and Small Craft Harbors.* New York: Van Nostrand Reinhold. Pg. 361-363.

21.50 Fire Response

Readily available fire fighting equipment and trained personnel are important safety features in a harbor. Requirements for fire protection systems vary greatly. They are often identified by local fire departments. National Fire Protection Association's manuals—NFPA 303, 307, and 312—may be useful in establishing design criteria. Foam, high-pressure water systems, and positioning of portable fire extinguishers are among the available fire response systems. Portable systems are available on all-terrain vehicles and boats.

FIRE RESPONSE systems should be a part of every design. Consider:

1) High-pressure water systems are typically used in most harbors and may be required by local codes. However, fuel or electrical fires may be dangerous in combination with water. Specialized training may be necessary to ensure public safety.

2) Foam fire protection systems are useful for electrical and fuel fires. Consider using environmentally friendly products.

3) Portable fire extinguishers strategically positioned could be the first line of fire response. Fire extinguishers should be a part of every harbor design.

Note 1. Fire extinguishers and standpipes should be positioned to avoid being damaged by harbor users.

Note 2. A separate water supply on the docks for the fire protection system is needed to provide the additional pressure and volume required.

REFERENCES:

1. Tobiasson, B.O. & Kollmeyer, R.C. 1991. *Marinas and Small Craft Harbors.* New York: Van Nostrand Reinhold. Pg. 378-380.

2. Quinn, A.D. 1972. *Design and Construction of Ports and Marine Structures.* New York: McGraw-Hill. Pg. 466-468.

3. ASCE Manual No.50. Task Committee on Marinas 2000. 1982. *Planning and Design Guidelines for Small Craft Harbors.* New York. Pg. 219,229.

21.60 Spill Response

Harbor facilities need to include spill response technologies, such as a boom to provide quick cleanup response in cases of an oil, chemical, or fuel spill. Provide space for storage of spill response equipment on the fuel dock and at other strategic locations in the design. Spill response equipment should be readily accessible by harbor patrons and personnel.

Always consider SPILL RESPONSE equipment, especially if:

1) The harbor supports a fuel dock, requiring oil spill response equipment.

Note 1. Static electricity is often a concern near flammable areas and in excessively cold environments. Static-resistant products are available.
