LANDTECH
IRRIGATION CONSULTING • REP SERVICES

Rep Services:

First and foremost, Landtech promotes the responsible use of natural resources. When possible, Landtech promotes the use of non-potable water as the source for the irrigation systems we design. To coordinate the collection, storage & treatment of such water, we recommend and rely on ***Wahaso*** for their water-harvesting expertise. Visit their website: **www.wahaso.com** or call John Bauer at: (630) 235-2143.

When clients are interested in having a more natural/native setting instead of a manicured look… we highly recommend calling ***Pizzo & Associates***. Based just west of Chicago and also operations in SW Michigan, Pizzo is primarily an ecological contracting group; they have done work in fourteen states. They also have the expertise to consult with you, in the beginning stages of a project, to help you create the most ideal scenario for establishing an ecologically pleasing environment by engaging them in their ***'Green-line Review'***. Please check-out their website: **www.pizzo.info** or call them at: (847) 533-5517… and tell them Landtech sent you!

Irrigation Planning Guidelines:

Estimating Daily Water Requirements

Avg. July ET value (Indy)= 7.12" // Average July Rainfall (Indy)= 3.53" (Difference: 3.59")
Assume 'usable' rainfall is around 50%, the real ET/Rainfall difference= 5.35" (for July)
So… since July has 31 days… 5.35" divided by 31 = 0.17" per day needed to replenish ET
0.173" divided by 70% efficiency = 0.25" needed daily
(0.25" x # of acres x 43,560 sq ft) divided by (96.3 x hrs in 'water window')
= gallons per minute needed from water source

Estimating Need for Water Service and Meter & Backflow Sizes

- *Small courtyard with little green space*: 1" water service line with ¾" meter & ¾" or 1" backflow. Keep mainline at 1" Class 200 PVC; use 1" valves. (Will provide up to 12 gpm)
- Large residential & light commercial: 1.5" water service line with 1" water meter & 1" backflow. Mainline would be 1.5" Class 200 PVC; use 1" valves. (Provides up to 28-30 gpm)
- *Office building & commercial sites*: 2" service with 1.5" water meter & 1.5" backflow. Mainline should be at least 2" Class 200 PVC; use 1.5" valves over 30 gpm. (Provides to 50-52 gpm)
- *Larger office park or commercial site*: 3" service with 2" water meter & 2" backflow. Depending on distance, mainline would be either 3" or 4" gasketed Class 200 PVC, with thrustblocks at directional elbows of mainline. Use 1" below 30 gpm; use 1.5" valves from 30-70 gpm; use 2" valves above 70 gpm. (Provides up to 100 gpm, where two 50 gpm zones, or four 25 gpm zones can operate simultaneously).

Water Pressure

- Most irrigation systems work best if the rotors operate at approximately 50 psi. Because of friction losses through the system, the water pressure usually needs to be around 75 psi at the source (point-of-connection). If less, your system will likely need a booster pump.

Budget Estimating (installed) …

** Note: to determine the number of rotors & spray heads on a project (for the two scenarios below), figure on the following number of sprinklers per acre:*

- *Large-turf rotors spaced at an average of 50 ft. apart = 20 rotors/acre*
- *Mid-range rotors spaced at an average of 30 ft. apart = 52 rotors/acre*
- *Spray heads spaced at an average of 13 ft. apart = 275 sprays/acre*

For 'Private' projects…(non-union)

- # of rotors x $110 =

- # of sprays x $60 =
- Controller … = $1400
- Point of Connection
  (tap, meter, backflow) = $6000/ea.
- Sleeves… = @ $20 / linear ft.
- Pump & cover = $8000
  Sub-total ……= $_____ x 1.15 (contingency factor) = Total Budget Estimate

For 'Public' projects (or those with prevailing wages & /or union wages)…

- # of rotors x $175 =
- # of sprays x $95 =
- Controller …….. = $2000
- Point of Connection
  (tap, meter, backflow) = $10,000
- Sleeves … = @ $30 / linear ft.
- Pump & cover = $12,000
  Sub-total ……= $_____ x 1.30 (contingency factor) = Total Budget Estimate

Other 'Off-the-cuff' (Quick techniques) …

- Private projects average: approx $12,000/acre + controller, tap/meter, sleeves, pump
- Public projects average: approx $18,000/acre + controller, tap/meter, sleeves, pump

For smaller areas:

- Open areas: $0.50-0.75/sq. ft. …
- Tight, detailed areas: $1.00 - $1.50/sq. ft.
- Greenroofs: approximately $1.25 - $1.75/sq. ft.

Irrigation Design Coordination

The following outline describes the primary issues that office staff should understand to effectively coordinate irrigation design efforts for development projects. With these basic principles, you will be able to either transmit the necessary information to your irrigation design consultants, or carry out the design process in-house.

What type of system does your client want?

- Fully automated underground sprinkler system? (In bed areas, do you prefer drip-tubing or spray heads? Does your client wish to utilize state-of-the-art products like ET-based controllers, which can save a lot of water/money? What about 'extras' like: pressure-regulation, soil-moisture sensors, rain-sensors?)
- Low-volume system using 'WaterSmart' products (LEED/water-conservation projects)
- A mainline layout with Quick Couplers that can be tapped for use with manually-installed impact heads, or by a hose, etc.
- A mainline layout with couplings for connections to large, traveling 'Water Reels'

Water source

- *Municipal water supply:*
  1. Determine the preferred 'point-of-connection' location to the public/building water supply.
  2. The owner may wish to have a separate water meter dedicated solely to irrigation, so the water used won't be charged on their sewer bill.
  3. A backflow preventer is necessary to protect the water source from contamination.
  4. Have an engineer, or the local water company, determine the static (non-moving) water pressure *and* the residual pressure (usually given as a pressure at a certain flow rate.)
  5. A booster pump may be necessary to increase the water pressure (usually to between 60-70 psi at the pump discharge, depending upon the type of equipment used and the size of the site. *This is after the water meter and the backflow preventer*.)
- *Water harvesting collection systems:*
  1. Determine adequate amount of water storage capacity needed for irrigation.

2. Coordinate with architects about diverting condensate from air conditioners to storage tanks; discuss with engineers how to divert rainwater to cisterns for when irrigation is needed.
3. Requires pump & filter to pull water from the tank and discharge it under pressure.

- *Lake/pond water sources:*
  1. Requires pump & filter to pull water from the source and discharge it under pressure.
  2. No meter required.
  3. Probably will need to be recharged by a water well, unless the lake/pond is naturally recharged.
  4. May contain sediments and minerals that can be more damaging to the system than municipal water. These can also cause staining of walks and walls.
- *Water from wells…directly:*
  1. This is usually an unknown capacity until the wells have been drilled.
  2. Two (or more) smaller-capacity wells are better than one large-capacity well. This is in case one of the pumps (down in the wells) breaks down, the system is not completely disabled.
  3. All 'zones' must be close to the same GPM demand, or there should be 20-50 gallon pressure-tank to allow some miscellaneous use (through quick-couplers) without constantly running the pump.
  4. The system is likely to have very high amounts of sediment, iron and other minerals entering the system. (There is equipment that can be specified to handle these conditions, to reduce damaging effects.)

Other issues that should be addressed are as follows:

- Define the extent of the area to be irrigated (ie: should the strip of grass between the property line/R.O.W. and the curb/street-edge be included?
- Are there areas that the client would like to have addressed as 'Alternate Bid' items?
- Does the client (or their maintenance personnel) have specific product preferences (ie: Toro, Irritrol, Watertronics, Flowtronex, etc.?)
- Is the client interested in incorporating an automatic fertilizer injection system into the irrigation package? (This can save a lot of time and money by eliminating costly application contracts with landscape maintenance contractors.)
- Location of equipment: backflow preventer, pump (if necessary), fertilizer injection system, controller, etc. Will this be outside or in a mechanical room/building?
- Conflicts with other utilities:
- Subsurface drainage on ballfields should be at least 18" below the finished grade of fields.
- Where are primary electric, telephone, water and sewer trunk lines?
- Special situations:
- Make note of location of poorly-drained areas.
- Are there extremely sandy/gravelly areas?
- Topography (berms, swales, embankments, etc.)
- Obstacles (signs, walls, fences, etc.)
- Time period ('water-window') available for irrigation
- Is electric power available at the preferred locations for the controller and pump (if applicable)? If so, try to find out if the power is 120 volt, 208 volt, 230 volt, or 460/480 volt … *and* ask if it is single-phase or three-phase power?

Other Useful information:

- Work with proposed landscape plans (& grading layers); these are very helpful.
- Putting the irrigation layout onto the base of the landscape plan works quite well; however, it is good to turn-off the plant I.D. tag layers *and* erase the planting schedule & the planting details.

If you have questions, contact:

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