Installer - Need to Know

Level 1 = apprentice, beginner
Level 2 = journey man, advanced

I. The professional will understand the general overall site planning and preparation. Be able to ask questions. Have copy of issued permit documentation. Conventional systems have more flexibility and are generally level 1 competencies unless there are site limitations to be considered. Commercial conventional and Alternative or advanced treatment will require more advanced (level 2) knowledge and consultation with designer. Unless otherwise noted this section is all required for level 1 installers.

A. Reading a drawing
   1. Benchmarks
   2. Elevations
   3. Surveying
      a. Equipment
      b. Surveying techniques

B. General check of siting, design, and soils

C. Design changes
   1. Installer
      a. Tank location
      b. Equivalent to specifications
   2. Designer
      a. Tank sizing-understand bedrooms/fixture counts.
      b. Pretreatment sizing (treatment in addition to septic tank) -Level 2
      c. Soil treatment location in test area

D. Plumbing-level 2
      a. Flow meter location
      b. Filter
         (1) Use of pump event counter /timer for flow calculation

E. Site conditions
   1. Climatic-proper conditions for installation
   2. Topography-aware of 15% slopes and setbacks, washes, etc
   3. Frozen soils-wait till thaw
   4. Soil moisture-not too wet
   5. Use of septic tank as holding tank until system can be constructed-only with regulatory approval

F. System layout
   1. Problem identification-know your setbacks
   2. Staking
   3. Setbacks
   4. Tank accessibility
   5. Equipment accessibility
   6. Maintainability
   7. Blue Stake/private locatork

G. System installation plan
    1. Ground pressure/compaction
    2. Backhoe bucket width
    3. Travel pathways over the site
    4. Work from upslope
H. Surface water diversion and erosion control

II. Professional must understand regulations associated with installing
Unless otherwise noted this section is all required for level 1 installers.

A. Understand difference between design change and field change
B. As-built drawings

III. Professional with understand OSHA safety requirements (general)/ competent person
Unless otherwise noted this section is all required for level 1 installers.

IV. Professional will understand installation issues with system components.
Unless otherwise noted this section is all required for level 1 installers.

A. Building sewer specifications-level 2 but level 1 should know where to find applicable plumbing code
    1. Pipe specifications
    2. Depth
    3. Slope (with and without solids)
    4. Freezing
    5. Cleanouts
    6. Sub-base density (no settling/bellies)
    7. Cleaning, priming and gluing joints
B. Septic Tank
    1. General tank protections-don't drive over, installation requirements, leak testing procedure
    2. Location (setbacks)
    3. Setting and securing a tank in high-water table areas
    4. Dimension/capacity check
    5. Verification if existing tank is used-level 2
    6. Baffling
        a. Materials
        b. Fasteners
        c. Dimensions
    7. Sealing between joints, inlet and outlet pipes
    8. Constructing pour-in-place tanks-level 2
        a. Design (dimensions, strength, etc)
        b. Concrete type
        c. Rear requirements
        d. Climatic conditions
    9. Max depth of manhole 6"
    10. "Securing" manhole covers

11. Manhole warning label
12. Backfilling (crowning)
13. Inspection manhole locations, security
14. Insulating tanks
15. Age of tank check- see O & M

C. Distribution System
   1. Supply pipes
   2. Materials
   3. Size
   4. Slope
   5. Sub base requirements
   6. Freezing (w/distribution pipes)
   7. Cleaning, priming, and gluing joints

D. Gravity
   1. Distribution Boxes
      a. Placement
      b. Settling
      c. Cleaning, priming and gluing joints
   2. Drop Boxes
      a. Elevation
      b. Box specs
      c. Proper slope of pipes in and out of box
      d. Hole configuration
      e. Sub base requirements
      f. Soil cover requirements

E. Pressure-Level 2
   1. Manifold requirements (changing pipe sizing)
   2. Floats
      a. Types
      b. Setting
   3. Choosing a pump
      a. Wiring/electrical
         (1) Must be done by a licensed electrician
   4. Alarm
      a. Types/wiring
   5. Event counter
   6. Distribution Pipe
      a. suitable types
      b. hole drilling and bur removal
      c. Cleaning, priming and gluing joints
      d. Leveling
      e. Manifold construction

F. Soil Treatment System
   1. Principles
      a. Excavation
      b. Keep the installation dry

(1) Plastic limit (how to do it, where to take it)
(2) Exposure to rainfall

c. Keep the installation natural
(1) Equipment (traffic, weight, bucket)
(2) Smearing
(3) Driving or walking on surface bottom (beds)

d. Keep the installation level

e. Keep the installation shallow

2. Media (needs expansion here to address differences between MN and AZ terminology/technology)

a. Different types, different products (installation advantages, disadvantages)

b. Placement of rock (compaction while placing)
(1) Geotextile
(a) Specs
(b) Placement

c. Material check for correct product specification, size, durability and cleanliness of rock.

G. In-ground systems
1. Surface preparation
a. Soil moisture
b. Equipment
2. Media placement
3. Inspection pipes

H. At-Grades- Level 2
1. Surface preparation
a. Soil moisture
b. Equipment
2. Media placement
3. Inspection pipes

I. Mounds- Level 2
1. Surface preparation
a. Soil moisture
b. Equipment
2. Sand
a. Spec
b. Testing
c. Placement
(1) Minimum depth
(2) Equipment
3. Distribution media placement
4. Inspection pipes

J. Backfill (is this section needed)
1. Protocols
2. Types- (what does this mean?) Different types of soils require different protocols
3. Quantities generated-level 2 unless cap or berm

K. Topsoil-level 2

1. Quality
2. Quantify
    a. Compaction
3. Placement with minimal compaction

L. Landscaping.
1. Communication between owner, landscaper, and installer for protection of system
2. Who is responsible
3. Vegetation establishment requirement
    a. Seeding/sod recommendation
4. Frost and erosion protection the first year

V. Professional will understand the installation inspection requirements.
Unless otherwise noted this section is all required for level 1 installers.

A. Who is responsible to see if it happens
B. Check local ordinances for notification requirements for an inspection
C. Designated registered professional needs to be on site during construction-level 2
D. Preparation of as-built drawings
1. As-built requirements

VI. Professional will understand proper tank and soil treatment system abandonment
Unless otherwise noted this section is all required for level 1 installers.

A. Procedure and requirements
1. Tank
2. Soil treatment system

VII. Professional will understand general information which is useful to homeowners.
Unless otherwise noted this section is all required for level 1 installers.

A. Keep in vegetation
B. Do not drive or build on it
C. Winter time precautions
D. As-built drawings given to them
E. Water use
F. Suitable discharges
G. Tank maintenance
H. Overall system maintenance- level 1 conventional, Level 2 Alternative or advanced
I. Alarm system- level 2
J. Do not damage/use second site
K. Do not locate irrigation over septic system

VIII. Professional must have general math skills.
Unless otherwise noted this section is all required for level 1 installers.

A. Add, subtract, multiply, and divide
1. Slope
2. Unit conversion
B. Basic algebra/geometry
C. Graphing (pump curves) - Level 2