Irrigation Material Legend:

- Water Valve
- Toro 1" Valve W/Flow Control


- Toro Rotator

- Toro Controller

(Verify Location With Owner Prior To Installation)

Designate Irrigation Zone Area

- Sleeve

Provide (1) - 2" Min. Gray PVC Sleeve for Lighting - Tape Ends
Provide (1) - 4" Min. SOLID PVC Sleeve for Irrigation - Tape Ends
Provide 12" Min. & 18" Min. General Coverage Over All Shores (1 Typ)

Irrigation Notes:
- Changes to Schematics and Actual Location of Pipe and Sheds May Vary Due to Site Conditions and/or Site Services Requirements.
- Irrigation Zoning is Provided as a Guide. Actual Zoning May Vary Based on Available Water Pressure & Site Conditions.
- Three Shall Be a Double Check Backflow Preventer Connected to the Irrigation Systems at the Water Source.
- All Valve Boxes Shall Be Installed w/Draining Bells. None Shall Be Located in Soil Areas.
- All Pipe and Fitting Should Not Be Placed Under Paved Areas Unless it is Necessary.
- Shelves Installed Under Paved Areas To Be At Least Four PVC Shelves Larger Than Pneumatic Sprinkler. External Source In Snake Culverts (Pneumatic Sprinkler).
- Provide (1) - 2" Min. Gray PVC Shelves For Lighting In Required Locations - Tape Ends
Produce (1) - 4" Min. SOLID PVC Shelves For Irrigation In Required Locations - Tape Ends
Provide 12" Min. & 18" Min. General Coverage Over All Shores (1 Typ)
- All Valve for Control Valves To Be No Greater Than 6" And Rated Flow/Volume And Siphoned With 34 DRI Options.
- All Valves To Be Installed In Valve Box Marked Irrigation.
- PVC Pipe To Be SOLID. Main Line And General To Each Valve - Lateral Lines To Be SOLID In And External From Valve To End Of Each Zone.
- Nozzle Selection For Spray Heads To Be Selected By Installer To Provide Minimum Coverage But Shall Not Over Spray On Either Side Of Paved Areas.

Estimated Peak Water Usage for the Proposed Irrigation System:

- Drip System GPM: 41.74 gpm @ 0.20 Minute (1/4" Water) = 1,480.02 gallons
- Pop-Up System GPM: 246 gpm @ 30 Minute = 2,480 gallons

Gallons Per Cycle (Drip + Pop-Up) = 5,980.02 gallons per day
3,000,000 gallons @ 0.3 cycle per week = 10,760.06 gallons per week
11,300,000 gallons @ 4 weeks = 1,680,26 gallons per month

Total Peak Water Usage of 19,800,020 Gallons per Month (Seasonal Months)
Irrigation Material Legend:

- Water Meter
- Toro 1" Valve W/Flow Control
- Toro Rotor
- Toro Controller
  (Verify Location With Owner Prior To Installation)

Designate Irrigation Zone Area

- Sleeve
  Provide (3) - 2" Min. Gray PVC Shown For Lighting - Trap Ends
  Provide (3) - 4" Min. EHD 21 PVC Shown For Irrigation - Trap Ends
  Provide 12" Min. & 18" Max. Ground Coverage (See All Sleeve (Fig)

Irrigation Notes:

- Designs in Schematic and Actual Location of Pipe and Heads May Vary Due to Site Conditions and/or Site Constraints
- Irrigation Zoning is Provided as a Guide. Actual Zoning May Vary Based on Available Water Pressure & Site Conditions.
- There Shall Be a Double Check Backflow Preventer Connected to the Irrigation System at the Water Source.
- All Valve Boxes Shall Be Installed at Planting Beds. None shall Be Located in Soil Areas.
- All Pipe and Fittings Should Not Be Placed Under Paved Areas Unless it is Necessary.
- Sleeves Installed Under Paved Areas To Be at Least Five Pipe Sizes Larger Than Piping Installed. (EHD 12" Min. Schedule 40 PVC/Conduit/Rebar). Provide (1) - 2" Min. Gray PVC Shown For Lighting - Required Locations - Trap Ends
- Provide (4) - 3" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (2) - 4" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (3) - 6" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (2) - 8" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (2) - 10" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (2) - 12" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (2) - 14" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (1) - 18" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- Provide (1) - 24" Min. EHD 21 PVC Shown For Irrigation - Required Locations - Trap Ends
- All Valve Box Covers To Be 16 Gauge SS. And Rated For 60 PSI And Spliced With 3M EPDM Gaskets.
- All Valves To Be Installed In Valve Box Shown Marked Irrigation.
- PVC Pipe To Be RHR-21. Main Line And Main To Each Valve. Laterals Lines To Be RHR-21. And Extended From Valve To End Of Each Zone.
- Nozzle Selection Per Spray Heads To Be Selected By Installer To Provide Minimum Coverage Box Should Not Over Irrigate On Rakes Or Paved Areas.
- Laterals Lines Are Needed To Keep Velocity Below 5 feet Per Second.

Estimated Peak Water Usage for the Proposed Irrigation System:

- Drip System GPM: 52.26 gpm @ 25 Minutes (1/4 Water) = 1,380.68 gallons
- Pop-Up System GPM: 17.67 gpm @ 30 Minutes = 1,757 gallons
- Gallons Per Cycle (Drip + Pop-Up) = 2,138.66 gallons per day
- 2/5/08 0.88 gallons @ 3 cycles per week = 8,677.96 gallons per week
- 0.64 gallons in 4 weeks = 26.04 gallons per month
- Total Peak Water Usage of 43,597.6 gallons per Month (Summer Months)

EXISTING BUILDING 1000 FFE:44.82
Calculating Thrust Block Area

The size and type of thrust block depends on pipe size, type of pipe, pressure, type of trench, degree of bend, and depth of trench. In most cases, the size and type of thrust block will be determined by the engineer. Thrust block size may be calculated as shown by the following example.

Example:

Determine size of thrust block for 9" HDPE pipe with a 90° degree bend, and an operating pressure of 100 psi. The soil is medium clay which can be spaded.

Step 1

Add 50 pounds per linear foot in the working pressure of the pipe. For this example, 100 psi working pressure plus 30 psi protrusion distance = 130 psi. Multiply this figure by 10 for a preliminary figure. Using the following table:

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Thrust Block (in.)</th>
<th>130 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td>3</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>126</td>
</tr>
<tr>
<td>2 1/4</td>
<td>5</td>
<td>140</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>168</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>306</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>487</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>760</td>
</tr>
</tbody>
</table>

Using this table, the thrust would be 32,680 pounds (30 x 1,080).

Step 2

Determine the bearing strength of the soil from the soil table.

Bearing Strength of Soils (psi)

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Bearing Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>3,000</td>
</tr>
<tr>
<td>Gravel</td>
<td>2,000</td>
</tr>
<tr>
<td>Sand</td>
<td>1,000</td>
</tr>
<tr>
<td>Clay</td>
<td>500</td>
</tr>
</tbody>
</table>

Multiply the bearing strength of the soil by the square footage of the iron pipe. Divide this figure by 100,000.

Step 3

Divide the total thrust obtained in step 1 by the bearing strength of the iron pipe obtained in step 2.

The "Bearing Strength of Soils" Table shows that medium clay can be used. From the table bearing strength is 1,000 psi.

Using this figure, the thrust block size is 8 square inches. Therefore, a concrete thrust block of 9" HDPE pipe would be 8 square inches.
PART 1 - GENERAL

1. DESCRIPTION:
A. The landscape plan has been reviewed and approved by the owner's representative who understands that any changes, substitutions, or deletions may require review and approval by the owner.

B. The scope of work for the Landscape Contractor shall include the furnishing and installation of all structural elements, trees, shrubs, and flowers as indicated on the plans and specifications. The following list of items is a partial list of items that may be required:

1. Trees
2. Shrubs
3. Grassing
4. Irrigation
5. Mulching
6. Staking
7. Site preparation
8. Soil amendments

C. All plant material shall comply with the American Standard For Nursery Stock (ANSI A201-90). This standard establishes uniform, practical identification of all products for those concerned with the production and sale of products for landscape planting.

D. This project requires the use of Pressure-Treated lumber which is subject to damage by the brown-rot fungus. Any plantings with an above-ground exposure of more than 36 inches above the ground shall be protected from this fungus by the use of a root growth barrier such as a root barrier.

2. CONSTRUCTION:
A. The Contractor shall be responsible for the structural integrity of all elements. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

B. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

C. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

D. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

E. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

F. The Contractor shall be responsible for the installation of all elements, shall furnish all necessary tools, and shall be responsible for the installation of all elements.

3. Topsoil:
A. Topsoil to be used for backfilling plant pits shall consist of fertile, friable soil and consist of 100% organic material. Topsoil shall be free from toxic amounts of either acid or alkaline elements and shall be capable of contributing nutrients through soil test.

B. Topsoil shall be hand mixed as planting is installed.

C. Backfill or planting mixtures shall contain a mixture of two (2) parts topsoil to one (1) part of soil conditioner, which shall be hand mixed as planting is installed.

D. Mulching:
A. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

B. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

C. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

D. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

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F. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

G. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

H. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

4. Mulching:
A. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

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H. Mulch shall be placed inside of protective barricades, including but not limited to plastic film or cardboard, to prevent the area from being exposed to the elements.

5. SOIL AMENDMENTS OR CONDITIONING MATERIALS:
A. Calcium Ammonium Nitrate:  A NPK fertilizer that is used for the initial topdressing of planting areas.

B. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

C. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

D. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

E. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

F. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

G. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.

H. 2-1-2:  A NPK fertilizer that is used for the initial topdressing of planting areas.
The controller shall be compatible with a normally closed rain sensor of the same voltage and compatible interface. Rain sensor inputs shall be compatible with at least 24 station controllers, including up to four zone controllers. Rain sensors may be connected in series or parallel to provide for up to four zone operation. Each zone controller must have a separate rain sensor input. If a short is detected during scheduled irrigation, the controller will display warnings in either the Water Window Status display or the Water Day Status display.

The controller shall use non-volatile memory to retain all programming information. During a power outage, the time and date is maintained for up to five days without a battery backup. The controller shall have a non-volatile memory that retains all programming information and controller can support electrical requirements. The controller shall have a COPY button for the purposes of copying program information when stations share common attributes. Any program information can be copied to all controllers in a single work zone or to all controllers in a multipurpose work zone.

The sprinkler shall have a color-coded riser screen filter, stainless steel or plastic, riser/body seal, that flushes only upon retraction to clear any debris from around the check valve. The sprinkler shall be of pop-up design with an orifice height of 8-1/4" (210mm), a body diameter of 1-3/8" (35mm), a cap diameter of 2" (50mm), and having a pop-up stroke of 6-1/4" (156mm). The sprinkler shall be developed and manufactured by an ISO 9001-certified facility.

The controller shall have the capability of reviewing all previously entered programming information. During a programming change, the time and date must be maintained for up to six days after a battery failure and for up to five days without a battery backup.

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The sprinkler shall have a color-coded riser screen filter, stainless steel or plastic, riser/body seal, that flushes only upon retraction to clear any debris from around the check valve. The sprinkler shall be of pop-up design with an orifice height of 8-1/4" (210mm), a body diameter of 1-3/8" (35mm), a cap diameter of 2" (50mm), and having a pop-up stroke of 6-1/4" (156mm). The sprinkler shall be developed and manufactured by an ISO 9001-certified facility.

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The sprinkler shall have a color-coded riser screen filter, stainless steel or plastic, riser/body seal, that flushes only upon retraction to clear any debris from around the check valve. The sprinkler shall be of pop-up design with an orifice height of 8-1/4" (210mm), a body diameter of 1-3/8" (35mm), a cap diameter of 2" (50mm), and having a pop-up stroke of 6-1/4" (156mm). The sprinkler shall be developed and manufactured by an ISO 9001-certified facility.

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