

## ATI GOLF IRRIGATION BUDGET PLANNING MATRIX

NOTES
<sup>1</sup> - 100% efficiency is a theoretical baseline using the 5-Star System as 100% efficient and the highest efficiency
<sup>2</sup> - Percentage of total system material cost including pump station, excluding installation. Please note that materials prices can fluctuate dramatically, especially for pipe and wire. These are estimates and the percentages fluctuate with the options selected but these percentages can offer a guideline.
<sup>3</sup> - (Sys) The savings are per system based on using the cost of a 5-Star System. All the other cost savings are estimated by the category of product. These estimates fluctuate with the options selected but these percentages can offer a guideline.
<sup>4</sup> - The playability percentage assumes the 5-Star System provides 100% playability. The playability percentage is reduced as the irrigation system investment declines according to the particular feature eliminated.
<sup>5</sup> - Some block sprinklers may be required for short radius tees or other sprinklers spaced below 13m (42').
<sup>6</sup> - QC & Block systems provide significantly limited control capability resulting in water and power inefficiency.
<sup>7</sup> - QC only results in turf and playability suffering because it is difficult to irrigate. Water is wasted since it is impossible to control the application. The on/off manual QC operation can reduce the lifespan of the pipe and fittings depending on the pump station selected. ATI recommends to install decoder wire with QC mainline to facilitate upgrade to decoder ASAP.
<sup>8</sup> - (Cat) The savings are per category based on using the cost of the 5-Star System product as the baseline. These estimates fluctuate with the options selected but these percentages can offer a guideline in choosing the options to select. Please refer to the Value Engineering Options List for further assistance.
<sup>9</sup> - Wider spacing result in lower CU, DU SC efficiency as well as poorer performance in wind and on slopes.
<sup>10</sup> - Water wasted in the fairways overwatering to irrigate the rough at the end of the sprinkler throw
<sup>11</sup> - In/Out part circle sprinklers use the same pipe reducing the additional cost.
<sup>12</sup> - Pairing sprinklers limits control capability resulting in water and subsequent power inefficiency and detracts from course playability.
<sup>13</sup> - Refer to separate article, "Satellite versus Decoder Control System Comparison" for details regarding satellite and decoder advantages and disadvantages.
<sup>14</sup> - Decoders may be installed at the sprinkler or remotely off the fairway in the lateral valve box.
<sup>15</sup> - The proper software level should be selected for match the features needed and budget.
<sup>16</sup> - Weather stations and sensors help offer a baseline for daily adjustments to the system for weather and soil fluctuations. Without these tools sprinkler run times are less likely to be properly adjusted daily as needed.
<sup>17</sup> - Reduces water window length increases pump and pipe size but greatly improves maintenance and playability with drier course in morning.
<sup>18</sup> - VFD greatly improves pump efficiency and reduces wear on all the system components.
<sup>19</sup> - PVC not available in some international locations.
<sup>20</sup> - HDPE (Main) / PVC (Lat) is an option.
<sup>21</sup> - HDPE may be desirable for reverse osmosis water conditions.
<sup>22</sup> - HDPE pipe is typically slightly more expensive than PVC pipe. There are many different styles of fittings and valves in both PVC and HPE that can greatly influence the cost one way or the other. Generally speaking, if the contractor is trained and knowledgeable in HDPE, the HDPE fittings and valves that can be used are less expensive offsetting some of the pipe savings. We have estimated a savings of 0 - 10% in the use of PVC. There are potential savings in installation costs predominately because there are less joints to assemble and less directional fittings to install.

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### NOTES (Continued)

<sup>23</sup> - On HDPE systems since there are no gaskets there is a zero leakage rate resulting in long term savings in water and the power required to run the pump station.

<sup>24</sup> - PVC pipe requires either concrete thrust blocks or mechanical fasteners to keep the gaskets from slipping apart at fittings and valves. Restraints require more contractor training than thrust blocks. The quality and effectiveness of thrust blocks can vary greatly since the method is less clearly defined. If repairs are needed digging up the fitting buried in concrete can be problematic. The cost of concrete is less expensive than the joint restraints but concrete can be difficult to properly install and mix on site if water is not available.

<sup>25</sup> - Herringbone style requires approximately 10% less pipe and smaller lateral pipe size may be used depending on sprinkler spacing. More lateral valves are required unless isolate only from the mainline (not recommended). Easier to flush lateral pipe on a herringbone system. Herringbone style is most effective on systems of (4) sprinkler rows wide or more.

<sup>26</sup> - Increased lateral isolation improves the system repair capability. This increases amount of lateral valves and some cost but reduces lateral pipe size and fitting size. Increased lateral isolation typically increases flow capacity per hole based on the mainline size. Increased lateral isolation improves repair capability that is especially helpful during grow in.

<sup>27</sup> - Isolation valves could be omitted and only the isolated by the mainline valves.

<sup>28</sup> - Indicates whether the feature can be upgraded or expanded after installation. Items that cannot be upgraded should be cut last.