Exhibit O
1. When the heat gain or loss of the ducts, without insulation, will not increase the energy requirements of the building.
2. Within the HVAC equipment.
3. Exhaust air ducts.
4. Supply or return air ducts installed in unvented crawl spaces with insulated walls, basements or cellars in one- and two-family dwellings.

504.1 Scope:  The purpose of this section is to provide criteria for design and equipment selection that will produce energy savings when applied to service water heating.

504.2 Water Heaters, Storage Tanks and Boilers

504.2.1 Performance Efficiency:  All storage water heaters shall meet the requirements of the National Appliance Energy Conservation Act and be so labeled.  All electric water heaters in unheated spaces or on concrete floors shall be placed on an incompressible, insulated surface with a minimum thermal resistance of R-10.

For combination space and service water heaters with a principal function of providing space heat, the Combined Annual Efficiency (CAE) may be calculated by using ASHRAE Standard 124-1991. Storage water heaters used in combination space heat and water heat applications shall have either an Energy Factor (EF) or a Combined Annual Efficiency (CAE) of not less than the following:

<table>
<thead>
<tr>
<th>Storage Tank Capacity</th>
<th>Energy Factor (EF)</th>
<th>Combined Annual Efficiency (CAE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 gallon storage</td>
<td>0.58</td>
<td>0.71</td>
</tr>
<tr>
<td>50 to 70 gallon storage</td>
<td>0.57</td>
<td>0.71</td>
</tr>
<tr>
<td>&gt; 70 gallon storage</td>
<td>0.55</td>
<td>0.70</td>
</tr>
</tbody>
</table>

504.2.2 Insulation:  Heat loss from unfired hot-water storage tanks shall be limited to a maximum of 9.6 Btu/h/ft² of external tank surface area. The design ambient temperature shall be no higher than 65°F.

504.2.3 Combination Service Water Heating/Space Heating Boilers:  Service water heating equipment shall not be dependent on year round operation of space heating boilers.

EXCEPTIONS:  1. Systems with service/space heating boilers having a standby loss Btu/h less than:

\[
(13.3 \cdot pmd + 400)/n
\]

determined by the fixture count method where:

- \( pmd \) = probable maximum demand in gallons/hour as determined in accordance with Chapter 49 of Standard RS-11.
- \( n \) = fraction of year when outdoor daily mean temperature exceeds 64.9°F.

The standby loss is to be determined for a test period of 24 hours duration while maintaining a boiler water temperature of 90°F above an ambient of 60°F and a five foot stack on appliance.

2. For systems where the use of a single heating unit will lead to energy savings, such unit shall be utilized.

504.3 Automatic Controls:  Service water heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use.  Temperature setting range shall be set to 120°F or 49°C.

504.4 Shutdown:  A separate switch shall be provided to permit turning off the energy supplied to electric service water heating systems.  A separate valve shall be provided to permit turning off the energy supplied to the main burner(s) of all other types of service water heater systems.