1. INTRODUCTION
This paper discusses three key issues:
- Characteristics of high rise buildings with middle-story isolated structural system.
- Response properties and design method for high rise buildings employing a middle-story isolated structural system.
- Examples of high rise buildings adopting a middle-story isolated structural system.

2. CHARACTERISTICS OF HIGH RISE BUILDINGS WITH MIDDLE-STORY ISOLATED STRUCTURAL SYSTEM

<table>
<thead>
<tr>
<th>Characteristics of each structure</th>
<th>Foundation-base isolation structure</th>
<th>Generally adopted middle-story isolated structure</th>
<th>Middle-story isolated structure with unbonded mass damper effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper structure</td>
<td>Isolation layer</td>
<td>Isolation layer</td>
<td>Upper structure</td>
</tr>
<tr>
<td>Lower structure</td>
<td>Isolation layer</td>
<td>Isolation layer</td>
<td>Lower structure</td>
</tr>
</tbody>
</table>

- It is possible to reduce the seismic input to the upper structure, so comparatively free structural planning is possible.
- An expansion joint is needed around the building, which has a large impact on architectural planning.
- It is necessary to make the upper structural form virtually the same, so as it is difficult to adjust the structural form to suit the use.

3. RESPONSE PROPERTIES AND DESIGN METHOD FOR HIGH RISE BUILDINGS EMPLOYING A MIDDLE-STORY ISOLATED STRUCTURAL SYSTEM

Example 1 – “Iidabashi First Building, First Hills Iidabashi” in which the optimum structure and framing forms for each use were stacked vertically

Example 2 Application to “Shiodome Sumitomo Building”, a high rise building having a large atrium in the lower levels

Example 3 – application to the expansion of the upper part of an existing building to form a high seismic performance disaster prevention center “Musashino City Disaster Prevention and Safety Center”

Maximum predicted response value in each part when the velocity conversion value of the energy that contributes to damage is V₀=150cm/sec

Rm=0.2
Rm=0.3
Rm=0.4
Rm=0.5
Rm=0.6
Rm=0.7
Rm=0.8