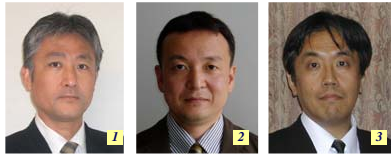


CHALLENGING APPLICATIONS OF SEISMIC DAMPERS FOR RETROFIT OF TALL BUILDING

S05: JAE Special Session
 S05-02:
 Spectacular Projects
 of Passively-Controlled
 Buildings

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1. INTRODUCTION

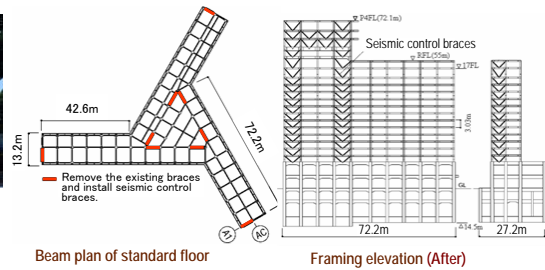
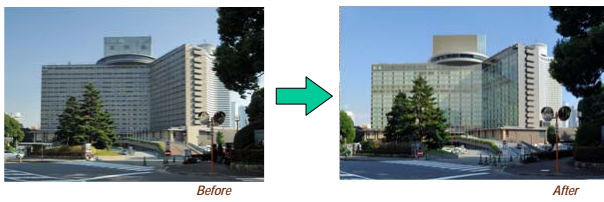
This paper discusses following key issues:

- **Seismic retrofitting** : Two cases where seismic retrofitting work was carried out by using seismic damping members for greater seismic resistance.
- **Buckling restrained brace** : Example of the use of buckling restrained braces for seismic retrofitting of high-rise hotel.
- **Viscoelastic damper** : Example of seismic retrofitting of high-rise hotel using viscoelastic damper .

2. EXAMPLE OF THE USE OF BUCKLING RESTRAINED BRACES FOR SEISMIC RETROFITTING OF HIGH-RISE HOTEL

Outline of the Seismic retrofit

- Reduce total building deformation and the load applied to existing columns and beams.
 - ➡ Low yield strength(225N/mm²) seismic control buckling restrained steel braces absorb seismic energy.
- This hotel has many guest rooms, banquet halls and restaurants. So we have to consider less noise and vibration construction work.
 - ➡ Bonding method with epoxy resin were used instead of regular anchor connections to connect the seismic control steel braces and existing frames.



Inverse of maximum interstory drift

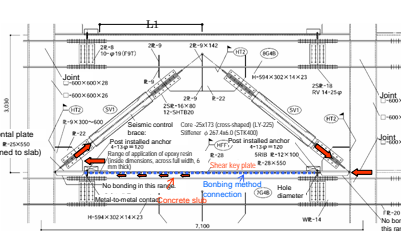
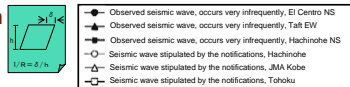
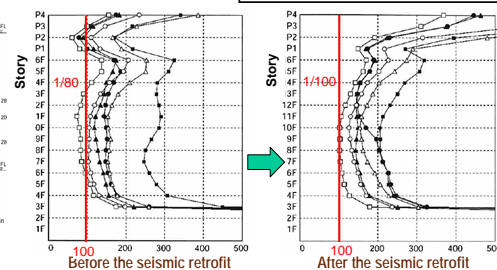


Fig 8. Details of seismic control braces



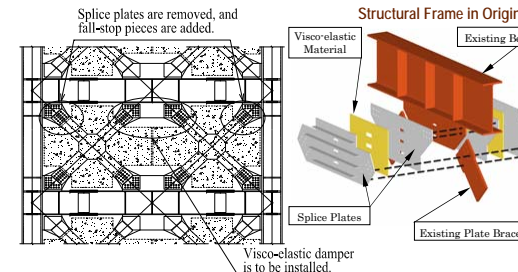
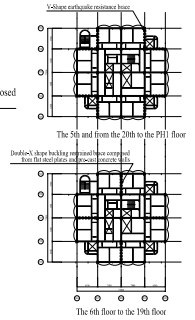
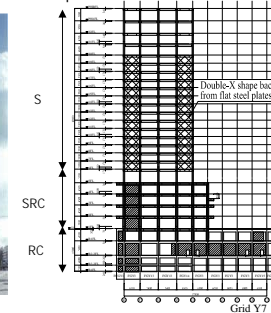
3. EXAMPLE OF SEISMIC RETROFITTING OF HIGH-RISE HOTEL USING VISCOELASTIC DAMPER

Outline of the seismic retrofit

- Improve the seismic performance of existing building
- Use the existing building frames and reduce the amount of additional members
 - ➡ Reinforcement and upgrading of the earthquake-resistant brace provide on the 5th floor
 - Upgrading of pre-cast concrete walls with buckling restrained braces provided on standard floors (floors 6 through 19) through the addition of viscoelastic dampers



1 Cover Shot



Actual Installation Procedure of Visco-elastic Damper

Installation of Visco-Elastic Damper at The Joint Between Brace and Beam

