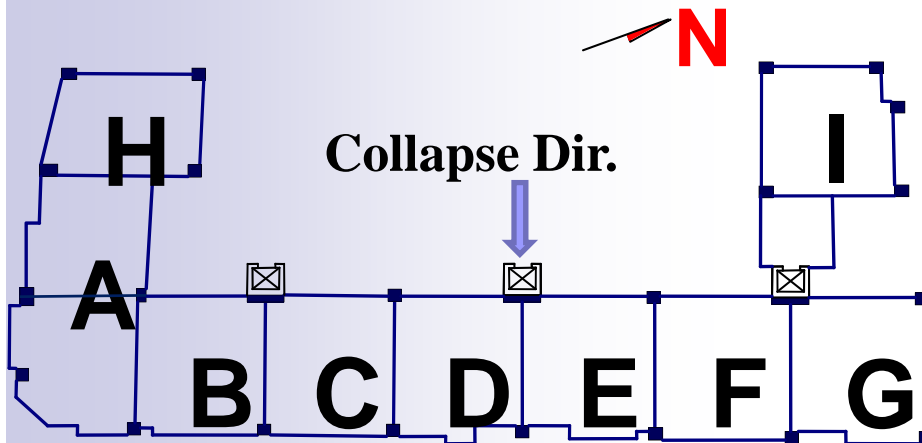
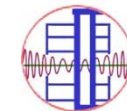




Lessons Learned from Disastrous Earthquakes



- soft and weak first story
- lack of redundancy
- non-ductile detailing
- lack of lateral reinforcement
- structural irregularities





Lessons Learned from Disastrous Earthquakes



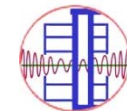
- L-shape structural plan
- ↓
- structural irregularities



Building damage modes

1. **soft and weak first story**
2. **lack of redundancy,**
3. **lack of lateral reinforcement**
4. **imbedded pipelines in column**
5. **Non-ductile reinforcement detailing**
6. **structural irregularity**

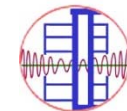
it is urgent to establish prompt preliminary seismic assessment methods for the existing mid-to-high rise buildings, **especially for the older mixed-use buildings in Taiwan.**





Mixed Commercial & Residential Buildings

- **Lower stories for commercial use, upper stories for residential use.**
- **Less wall in lower stories, soft and weak stories induced.**
- **Less wall in front, more wall in back, torsion induced.**
- **Column strength is not high enough.**
- **Detailing is not good enough.**





Development of Collapse Assessment and Retrofit Strategies for Existing Mid-to-high rise Reinforced Concrete Buildings

- Urgent to find out those vulnerable buildings existing in our societies.
- Identifying and prioritizing vulnerable buildings based on building characteristics that could be quantitatively linked to collapse
- Develop efficient and economical strategies for collapse prevention based seismic evaluation and retrofit of mid-to-high rise RC buildings in Taiwan
- Establish prompt preliminary seismic assessment methods for the existing buildings.

