# Features of NewRC Design Guidelines

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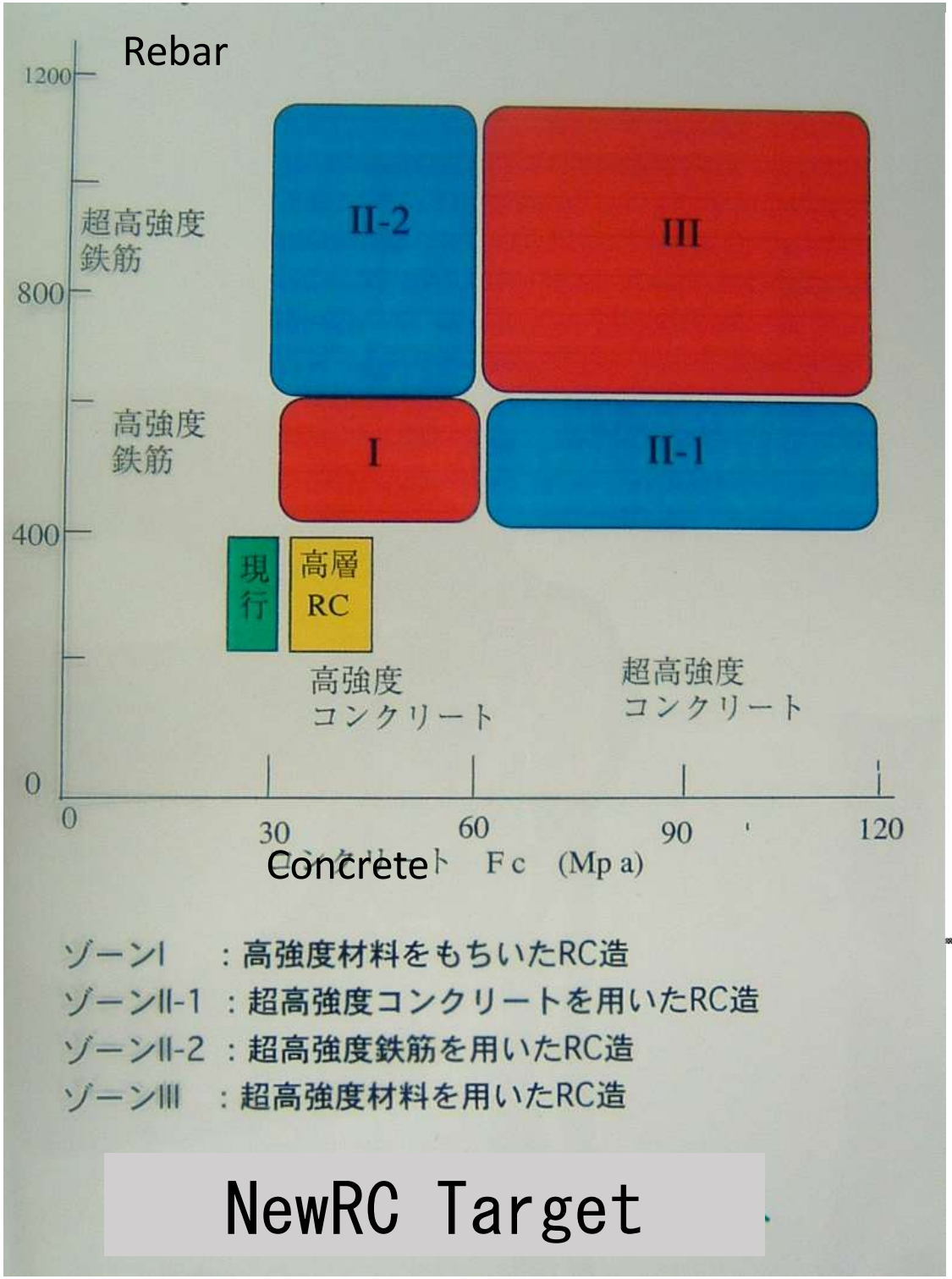
# What is NewRC ❓

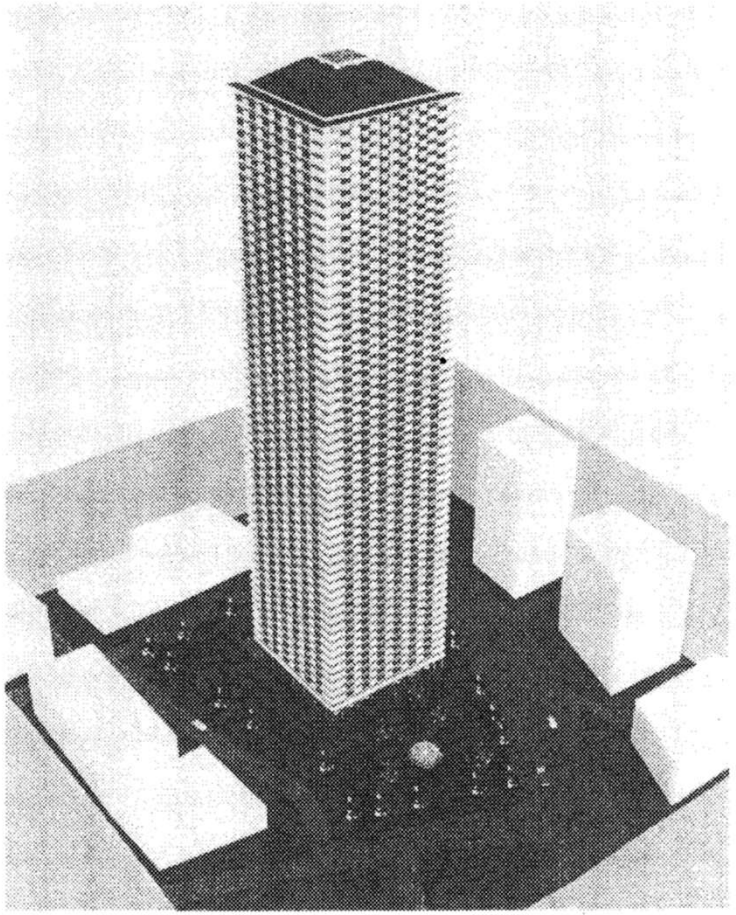
# ⟶ (New Reinforced Concrete)

- National Project for Developing ultra-lightweight and ultra-high-rise reinforced concrete buildings

  5-years project 1988－1992 FY

- High-strength, high-quality Concrete and Re-bars that are two to four times stronger than conventional



図−5　60 階建て超高層集合住宅設計例の鳥瞰

# NewRC Design Guidelines (1)

1. General
 1.1 Scope 60~200m in height
 1.2 Terms
 1.3 Seismic Design Criteria Table 1.3.1 & 1.3.2
 1.4 Yield Mechanism
 1.5 Standards to comply with

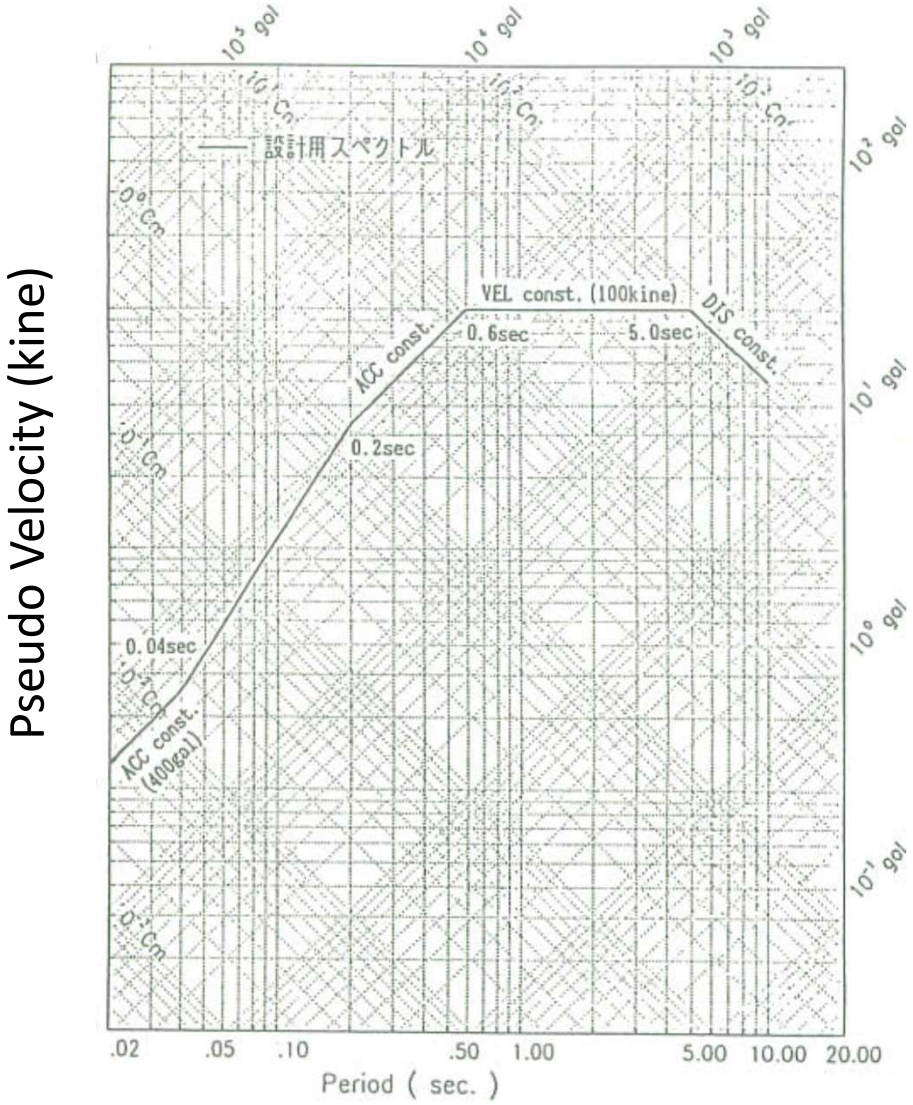
2. Materials Quality and Properties Fig. Zoning
 2.1 Concrete
 2.2 Steel

3. Design for Long Term Loads
- Allowable stress design, no shear cracking

CONt.

# Input seismic motion

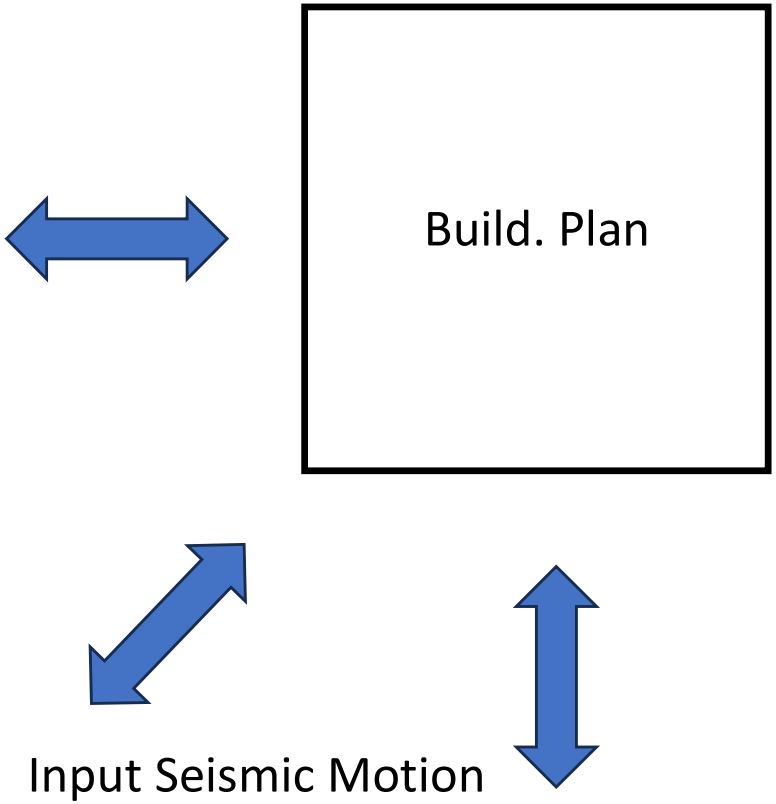
- Level 1: Seismic motion that may be encountered once during the period of use of the building
- Level 2: Maximum seismic motion that could occur at the construction site




Level 2 Response Spectum

# Direction of Input Seismic Motion

Flexural yielding of Beam ends are expected




Moment for Column:
Summation of Component of ΣMb

e.g.
cM45=√2/2（ΣMbx＋ ΣMby)

Axial Load for Corner Column:
Summation of shear force of Beams

e.g.
cN45=(Qbx＋ Qby)

Seismic Motion is considered in any direction

# 1.3 Seismic Design Criteria

Table 1.3.1

| EQ. Level | Story Drift | Build. Drift | Hinge |
|---|---|---|---|
| Level 1 | ≦ Service Limit | | Not Allowed |
| Level 2 | ≦ Response limit disp. X1.5 | ≦ Response limit disp. | Hinge in planned position is allowed |

Designer sets Service limit Drift as under 1/200.
Designer sets Response limit Drift as under 1/120.

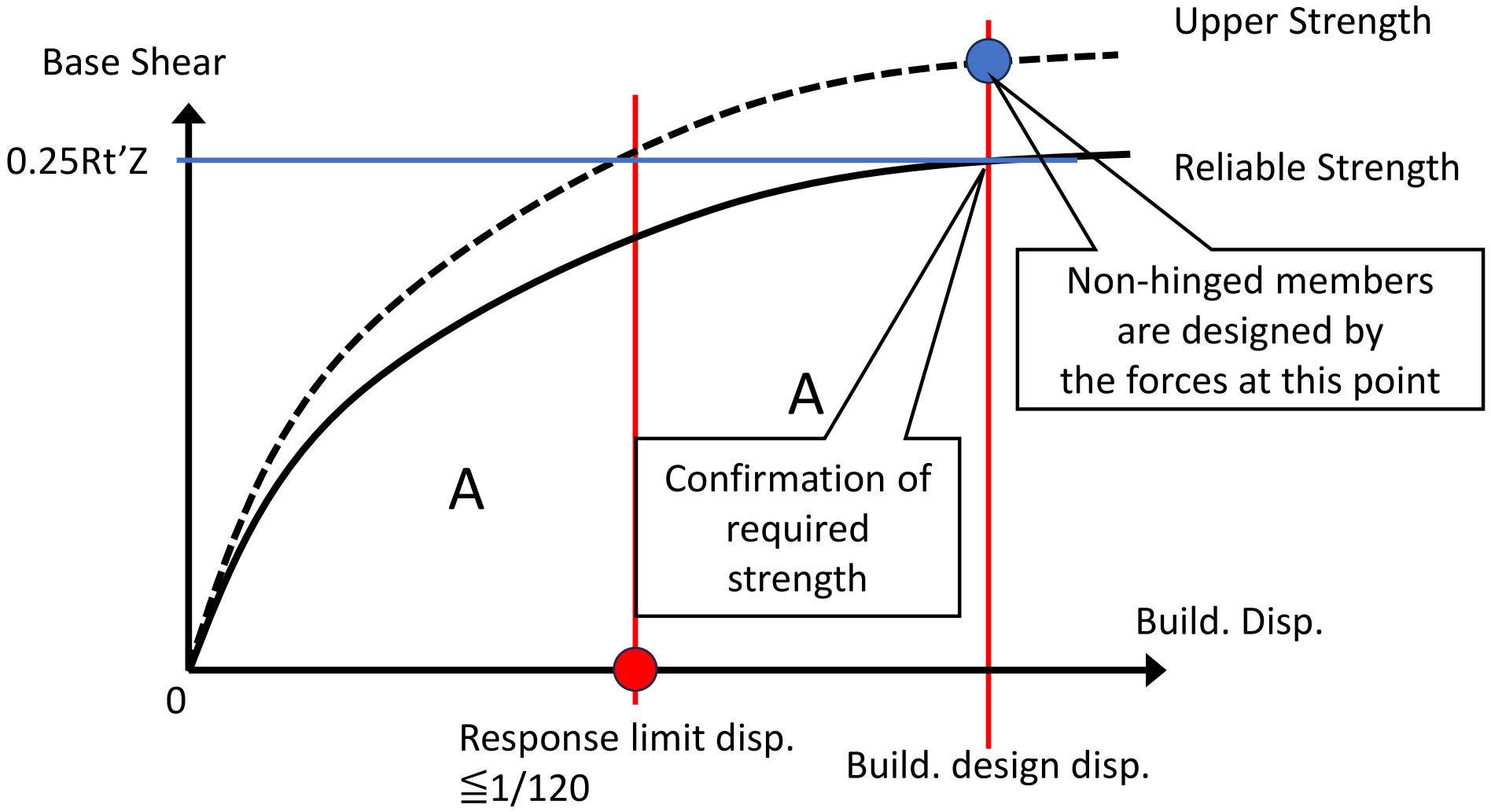
Build. Drift:
Drift of the equivalent height at response limit deformation.

Table 1.3.2 Requirement at Build. Design Disp.

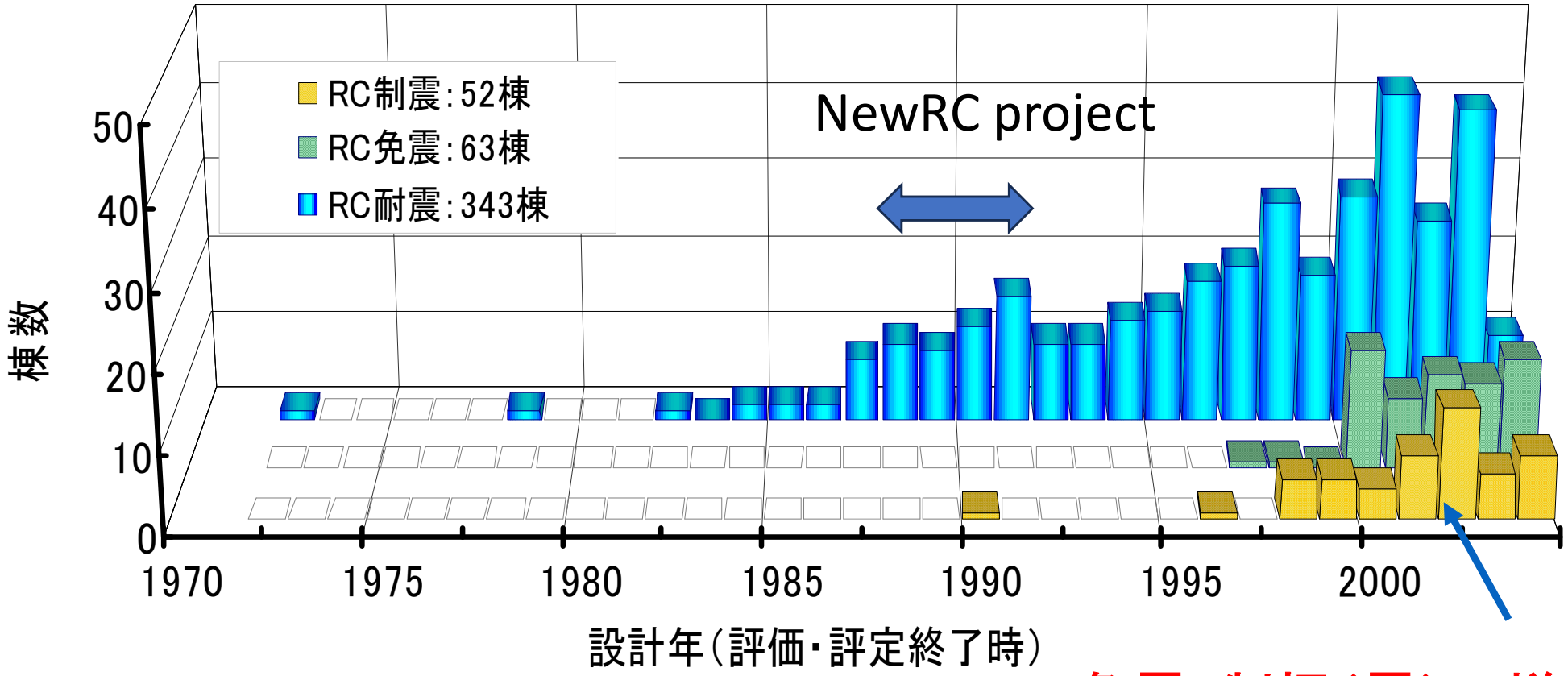
| Structural Member | | Build. Strength |
|---|---|---|
| Hinge member | Enough ductility | Base shear Coefficient ≧ 0.25 ▪ Rt’ ▪ Z’ |
| Non hinge member | Enough Strength | |

# 4.6 Seismic Verification by push-over analysis

The shear force distribution is set to envelop the story shear obtained by the seismic response analysis for the response limit deformation.



# Conclusions




**免震・制振(震)の増加**


AIJ Seismic Performance Evaluation Guidelines for Reinforced Concrete Buildings Based on Capacity Spectrum Method