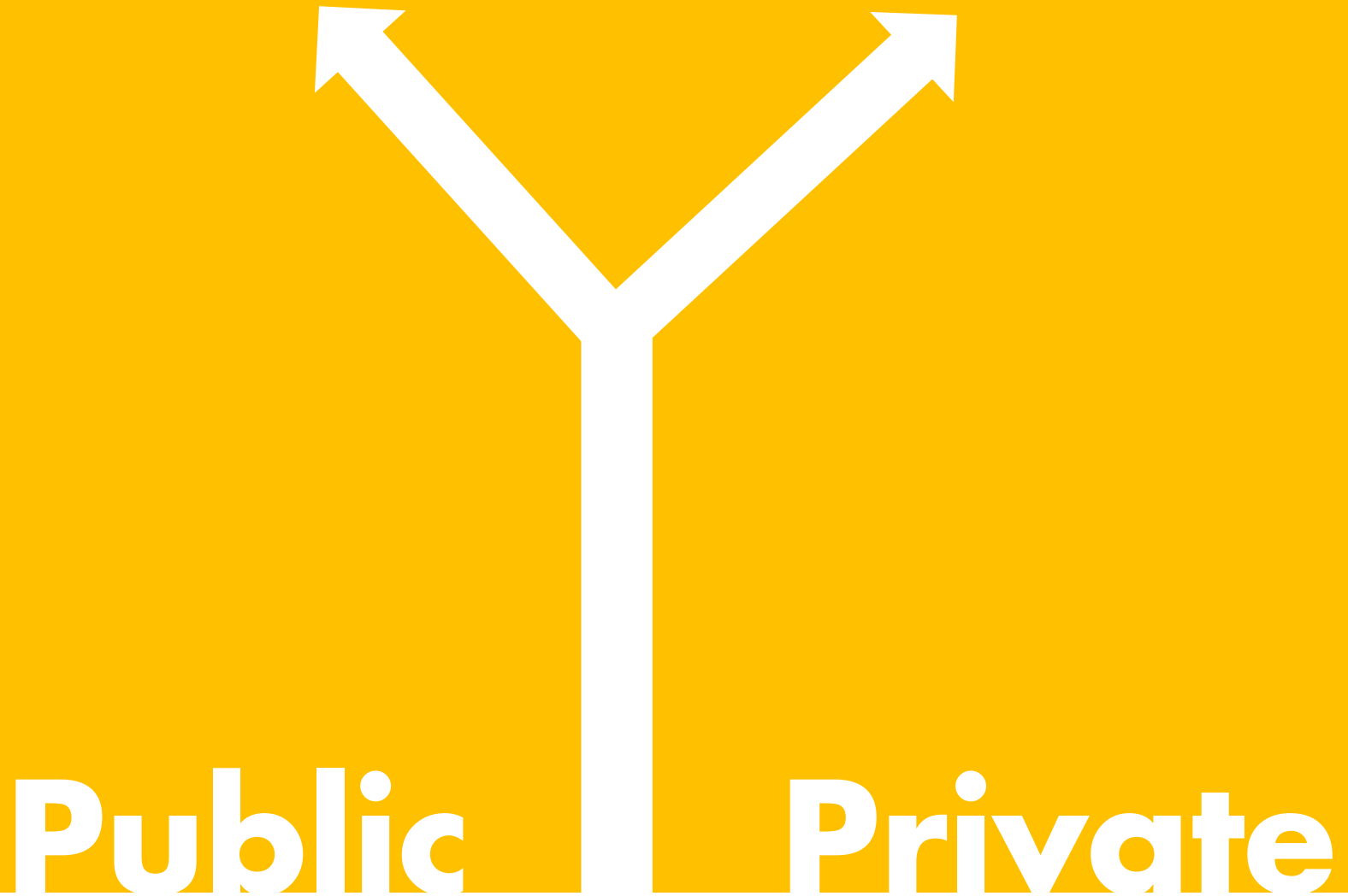


# Diverging Standards



**Public**

**Pre-  
1930's**

**1930's**

**1940's**

**1950's**

**1960's**

**1970's**

**1980's**

**1990's**

**2000's**

**TODAY**

**Private**

# Public

**Pre-  
1930's**

# Private

**1930's**

**1940's**

**1950's**

**1960's**

**1970's**

**1980's**

**1990's**

**2000's**

**TODAY**

# Public

Pre-  
1930's

# Private

1930's

1940's

1950's

No Seismic Design  
Provisions Enforced

1960's

No Seismic Design  
Provisions Enforced

1970's

1980's

1990's

2000's

TODAY



# Long Beach, 1933



# Public

Pre-  
1930's

# Private

1930's

1940's

1950's

1960's

1970's

1980's

1990's

2000's

TODAY

## 1933 Field Act

- Established Office of the State Architect (now DSA)

No Seismic Design Provisions Enforced

**The Field Act was essentially a means of standardized quality assurance of the entire process of constructing a school, from the design stage through completion of construction and occupation.**

# Public

## 1933 Field Act

- Designed by licensed SE

Pre-  
1930's

**1930's**

1940's

1950's

1960's

1970's

1980's

1990's

2000's

**TODAY**

# Private

## Non Field Act

- Designed by licensed CE

# Public

Pre-  
1930's

**1930's**

1940's

1950's

1960's

1970's

1980's

1990's

2000's

**TODAY**

## 1933 Field Act

- Designed by licensed SE
- Plans are reviewed by licensed SE's through DSA

# Private

## Non Field Act

- Designed by licensed CE
- No requirement for licensure for reviewer

# Public

Pre-  
1930's

1930's

1940's

1950's

1960's

1970's

1980's

1990's

2000's

TODAY

## 1933 Field Act

- Designed by licensed SE
- Plans are reviewed by licensed SE's through DSA
- Continuous inspection during construction

# Private

## Non Field Act

- Designed by licensed CE
- No requirement for licensure for reviewer
- Periodic inspection at construction milestones

# Public

Pre-  
1930's

1930's

1940's

1950's

1960's

1970's

1980's

1990's

2000's

TODAY

## 1933 Field Act

- Designed by licensed SE
- Plans are reviewed by licensed SE's through DSA
- Continuous inspection during construction
- Independent testing of materials required

# Private

## Non Field Act

- Designed by licensed CE
- No requirement for licensure for reviewer
- Periodic inspection at construction milestones
- Independent testing of materials may not be enforced

# Public

Pre-  
1930's

1930's

1940's

1950's

1960's

1970's

1980's

1990's

2000's

TODAY

## 1933 Field Act

- Designed by licensed SE
- Plans are reviewed by licensed SE's through DSA
- Continuous inspection during construction
- Independent testing of materials required
- Structural design (EQ forces, detailing requirements) more rigorous

# Private

## Non Field Act

- Designed by licensed CE
- No requirement for licensure for reviewer
- Periodic inspection at construction milestones
- Independent testing of materials may not be enforced
- Structural design equivalent to all other privately owned buildings



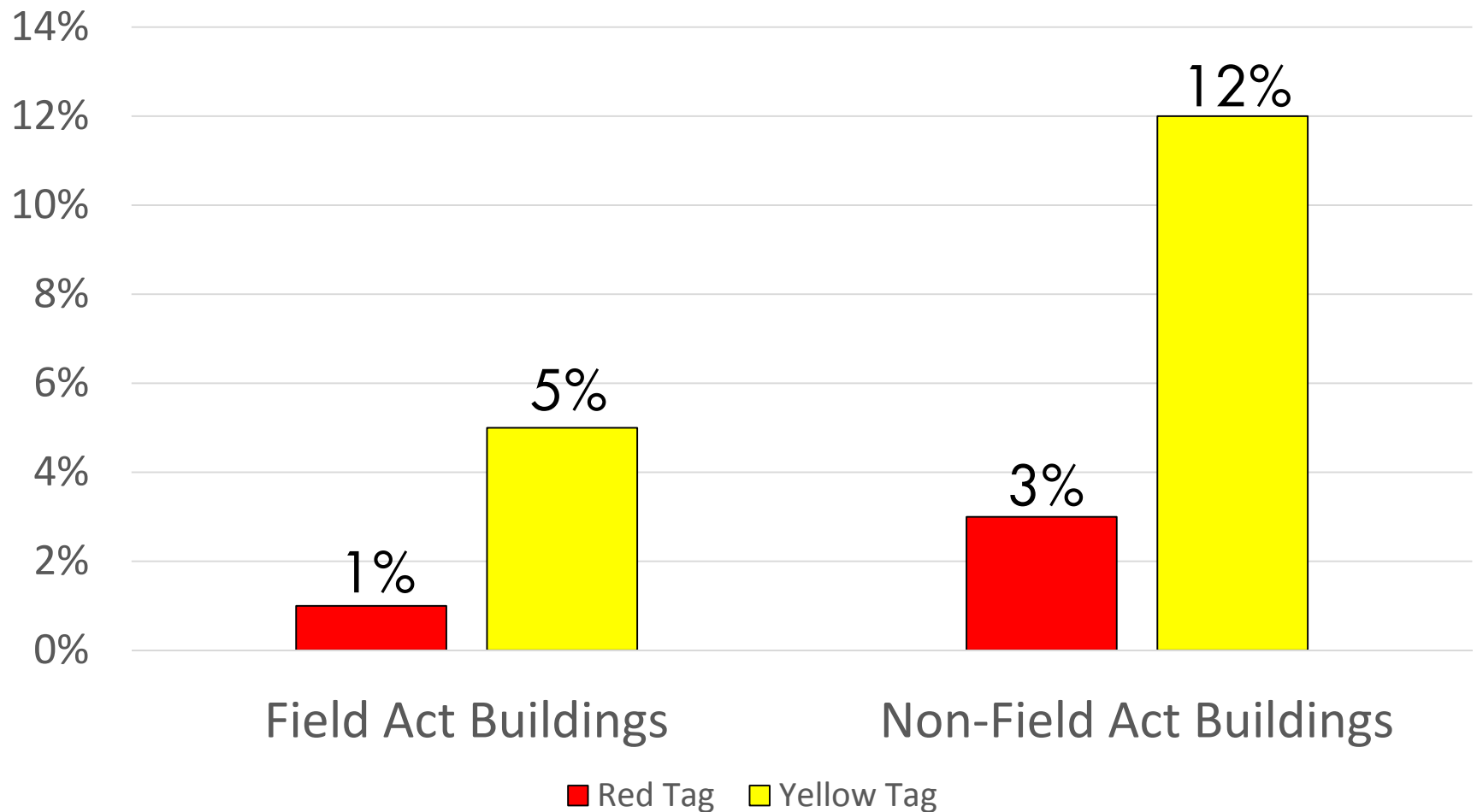
**1939: Garrison Act**

**1967: First Green Act**

**1968: Second Green Act**

**By the late 1970's nearly all public school buildings built before the Field Act had been retrofitted or replaced**

## 2009 California Seismic Safety Commission Study (Earthquake Performance Since 1933)



# Public

Pre-  
1930's

1930's

1940's

1950's

"Modern" Benchmark  
1976 UBC

1960's

1970's

1980's

1990's

2000's

TODAY

# Private

"Modern" Benchmark  
1984 SFBC

# Public

## 2002 AB 300

- State completed inventory of public school buildings built before 1978 with characteristics that may make them unsafe in future earthquakes
- Recommends that public schools on the AB300 list undergo detailed seismic evaluations

Pre-  
1930's

1930's

1940's

1950's

1960's

1970's

1980's

1990's

**2000's**

TODAY

# Private

# Public

Pre-  
1930's

# Private

1930's

1940's

1950's

1960's

1970's

1980's

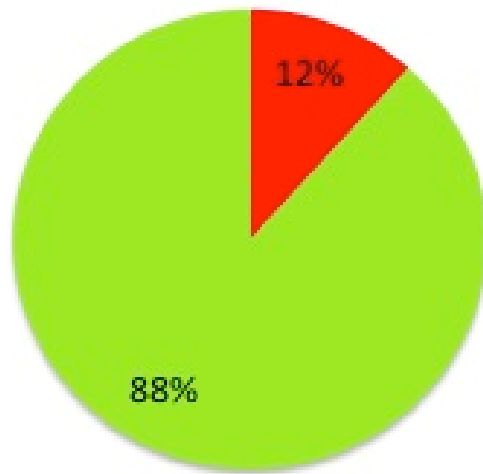
1990's

2000's

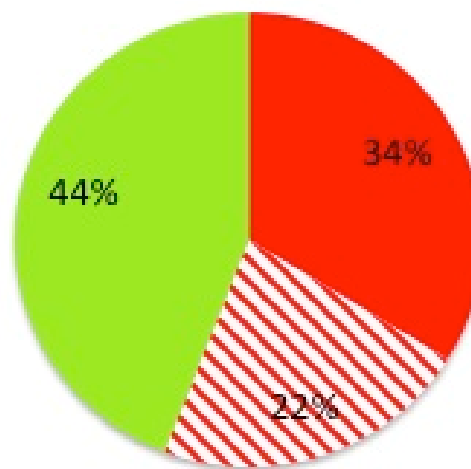
**TODAY**




Earthquake Safety  
Implementation Program  
Private Schools Report

San Francisco  
Public Schools



San Francisco  
Private Schools

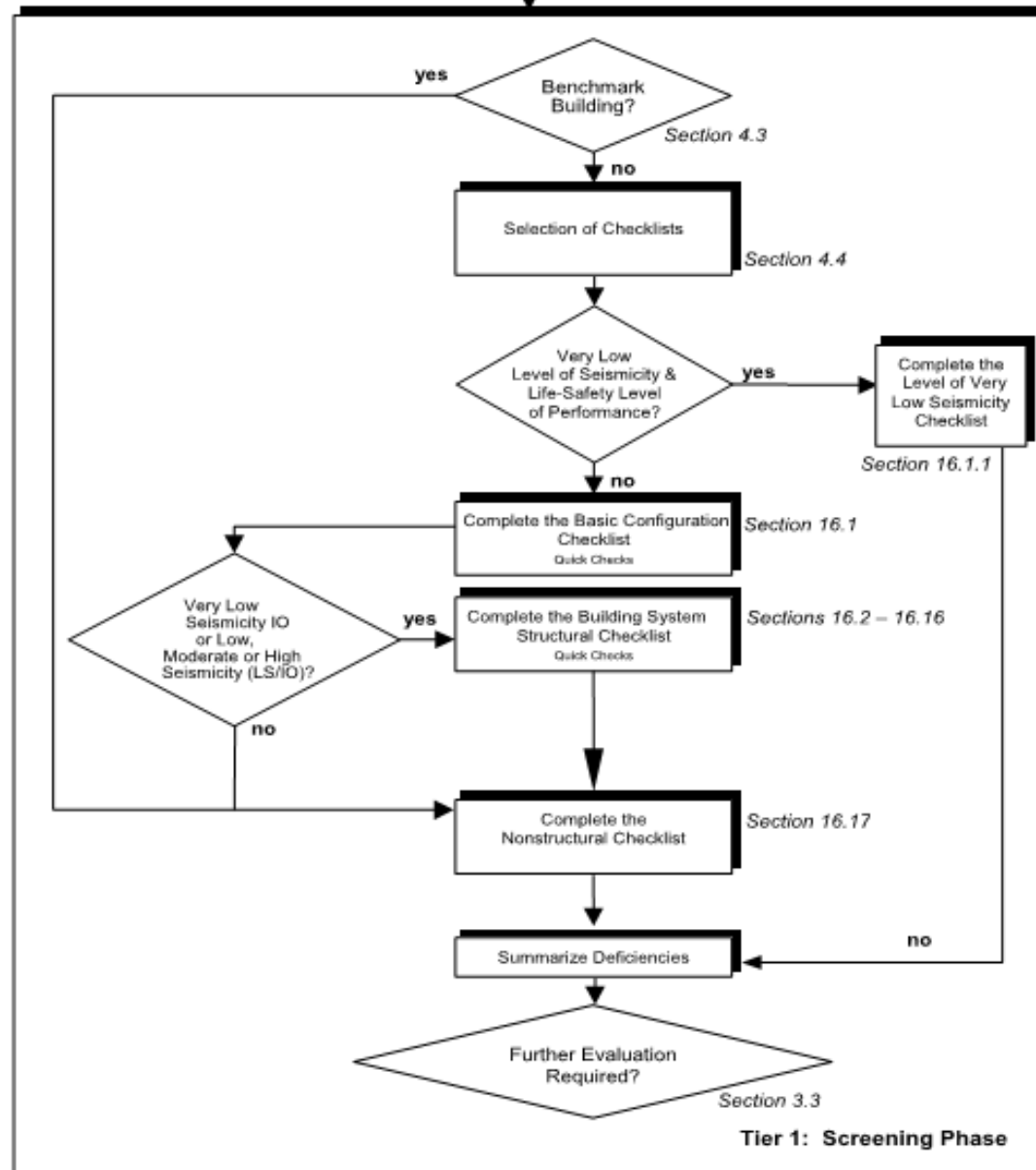


-  Buildings that have characteristics that indicate they **might perform poorly** in future earthquakes
-  Buildings that have characteristics that indicate they are **likely to perform well** in future earthquakes
-  Buildings for which there is **not enough information** to determine likely seismic performance

# **What to know about structural evaluations...**

**Required Information:**  
Level of Performance  
Level of Seismicity  
General Bldg. Description

Chapters 2 & 3





# Helpful Information...

NOTE: These figures include wall space.

BOOK CAPACITY  
HALL 22 ROWS/ROW 100  
HALL 1000 Yds.  
HALL 1000 Yds. 1000 Books

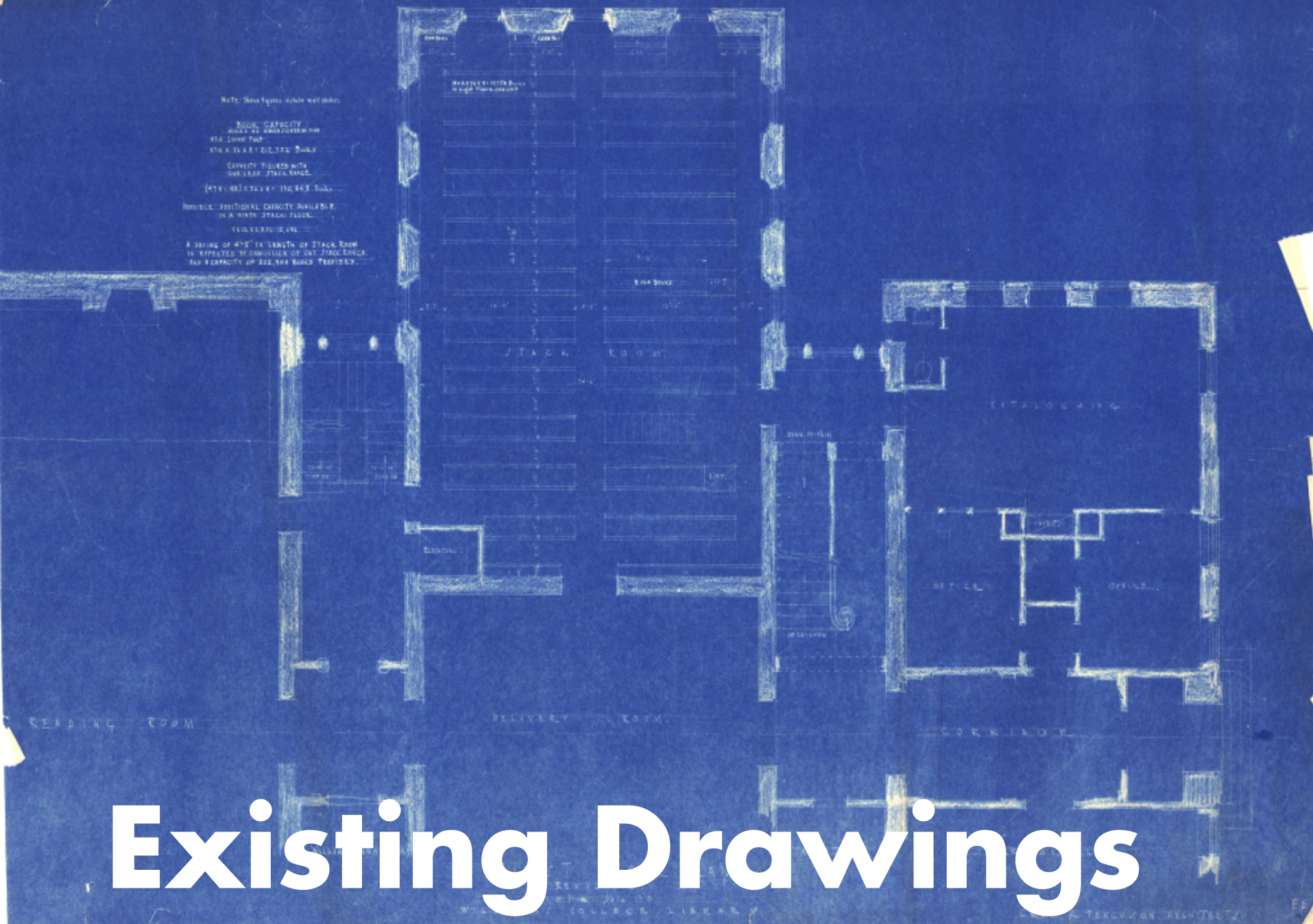
CAPACITY FIGURES WITH  
ONE ROW STACK SPACE.

(411.48) X (51.4) = 21,143.12 Yds.

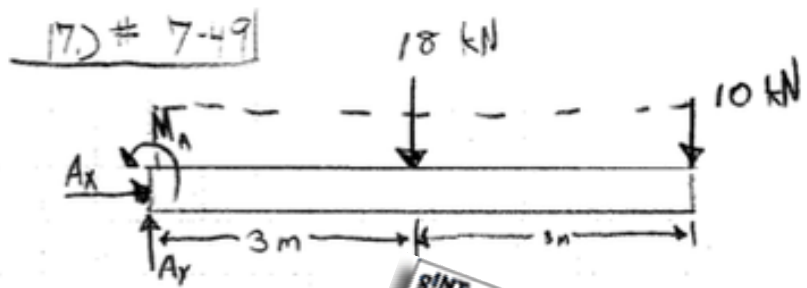
POSSIBLE ADDITIONAL CAPACITY AVAILABLE  
ON A WIDE STACK SPACE.

1000 Yds. 1000 Books

A DEPTH OF 4" IN LENGTH OF STACK ROOM  
IS REPEATED BY DIMENSION OF GAT. STACK SPACE.  
AND A CAPACITY OF 222,484 BOOKS THEREBY.



# Existing Drawings



# Existing Calculations

## Geotechnical Report

## Materials Testing Report

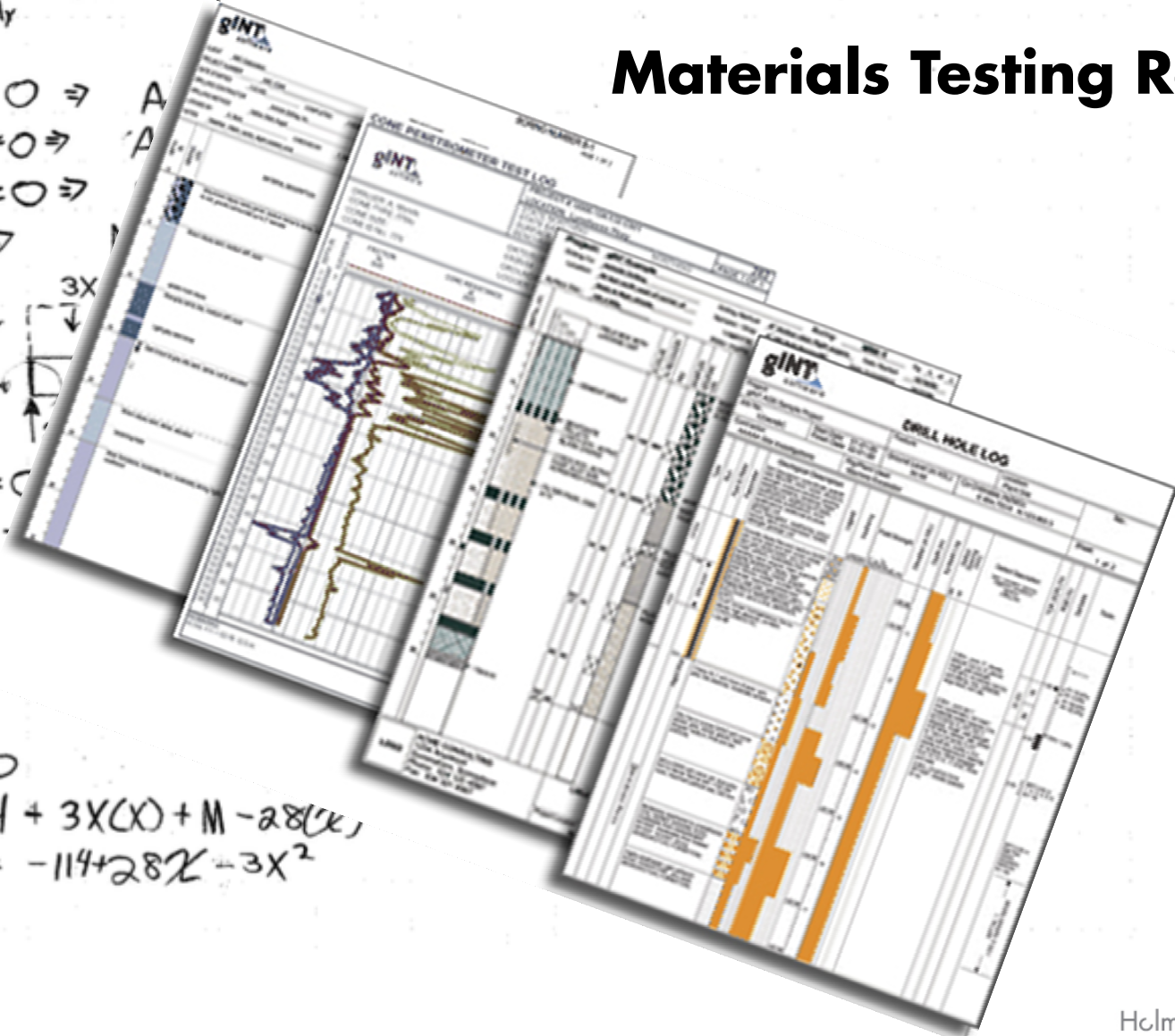
$$\begin{aligned}\downarrow \sum F_y &= 0 \Rightarrow \\ \rightarrow \sum F_x &= 0 \Rightarrow \\ \curvearrowleft \sum M_A &= 0 \Rightarrow\end{aligned}$$

• For V

$$\begin{aligned}\downarrow \sum F_y &= 0 \\ \Rightarrow 3X & \\ \Rightarrow V &= \end{aligned}$$

• For M

$$\begin{aligned}\curvearrowleft \sum M &= 0 \\ \Rightarrow 114 + 3X(X) + M - 28(X) & \\ \Rightarrow M &= -114 + 28X - 3X^2\end{aligned}$$





**How long will it take?**

# Thank you