

BRIDGE DESIGN GUIDELINES



REQUIREMENTS

Responsibility

How are requirements maturing

Two pages to Two thousand pages

Design Build

Add Shall - BDM

Remove Shall - CMS

Active voice imperative mood

Understood command

Plan notes



60 psf Wearing Surface

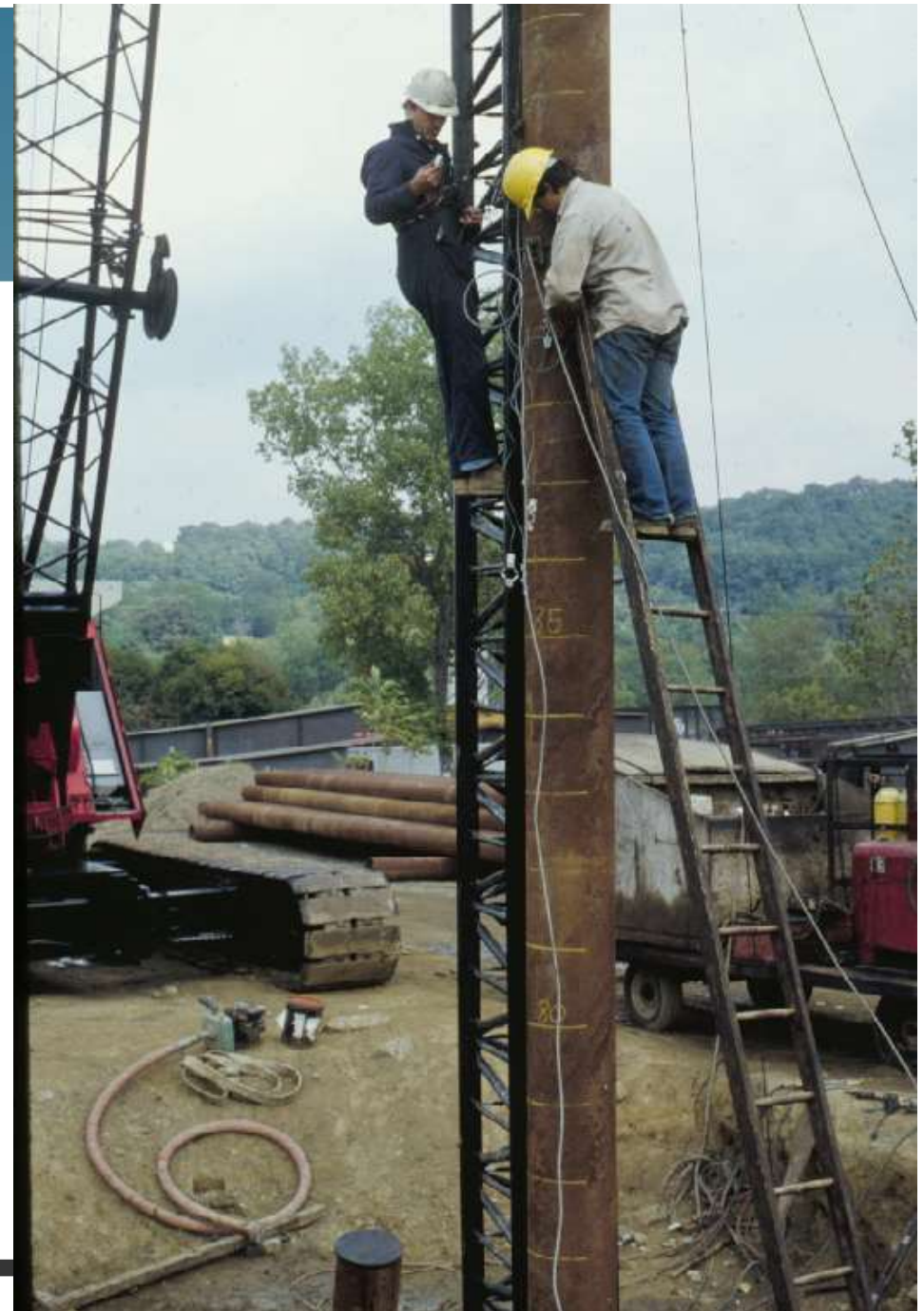
History Overlay Projects



PILES AND PILE DRIVING



Dynamic Pile Testing



Dynamic Pile Tests

Research at Case Western

Dynamic Tests - None

***Only a few static Load Tests each year
10 per year***

Now Every Project with friction piles





LESS THAN 0.25" WALL





LOAD



**POINT
BEARING
PILE**



Research H-Pile to Bedrock

Case Western University

30 piles, 25 feet to bedrock

10 hammers

30 dynamic load test

10 static load test

***Learned about pile stresses and
hammer performance and pile
points***



STEEL H PILE DRIVEN TO REFUSAL ON HARD BEDROCK



STEEL PILE POINT



H-Pile Plug

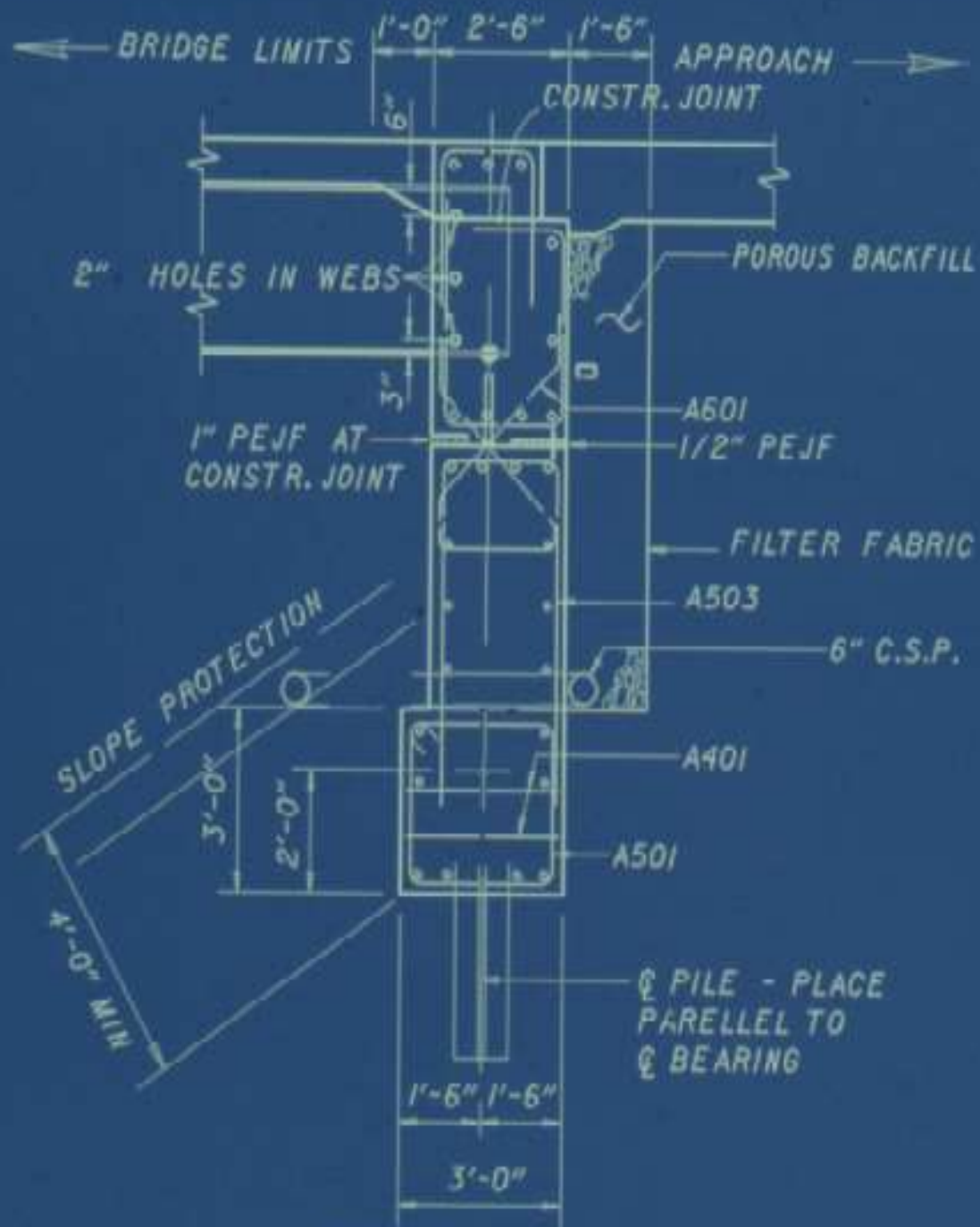




**STATE OF OHIO
DEPT. OF HIGHWAYS
BUREAU OF BRIDGES**

**AUG. 1961
COLUMBUS, OHIO**

**GARRETT & ASSOC.
GROUP PHOTOGRAPHERS**



SECTION B-B

DOUBLE CURVATURE



Semi – Integral Abutments

Hinged vs framed

300 feet

Assume 2/3 expansion at abutments

Skew was not limited

Straight Wingwalls

Paint end of beams - corrosion cell

Fixed Footing

Eliminate the expansion joint

Do not fix any piers



SEMI-INTEGRAL/INTEGRAL ABUTMENT TYPE
SKEW VS. BRIDGE LENGTH LIMITATIONS (FT)

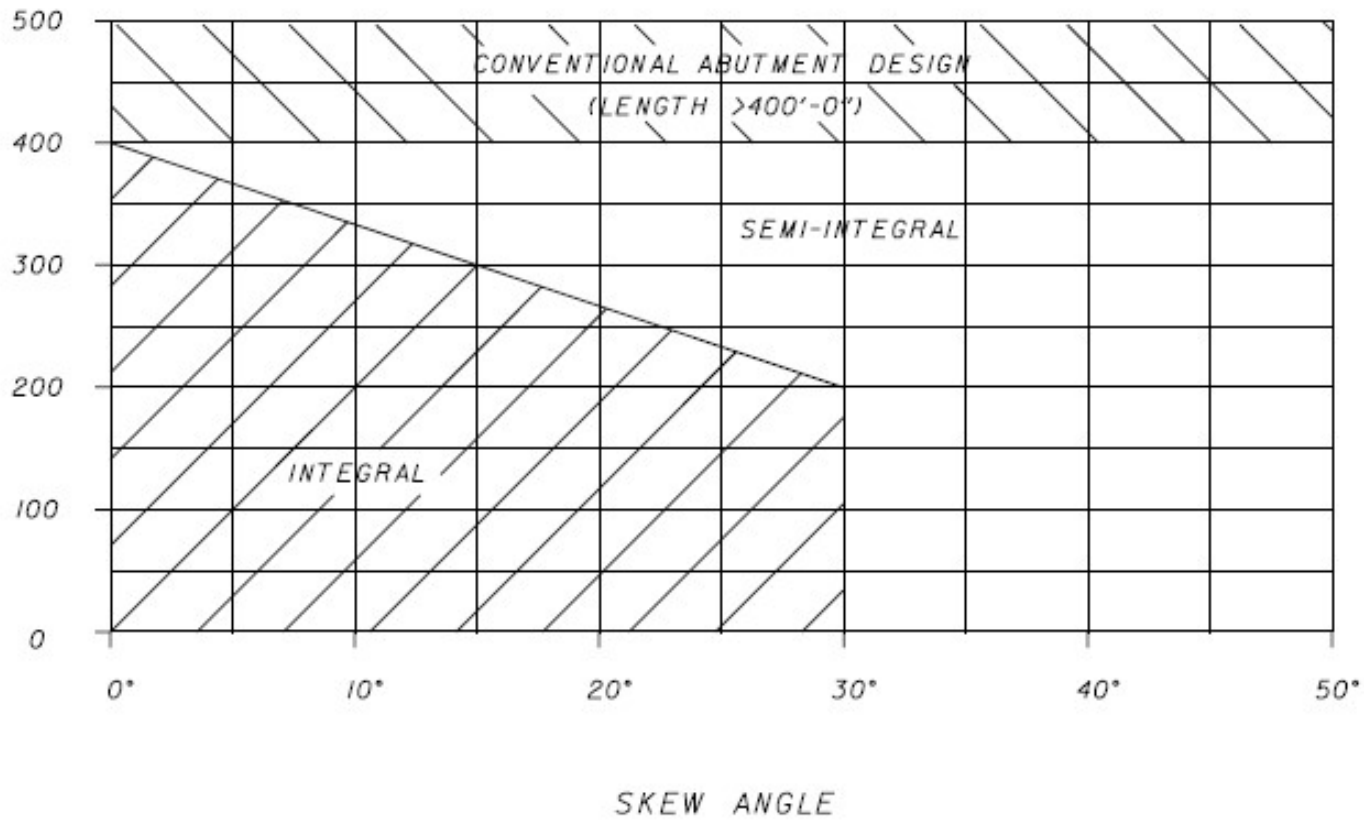
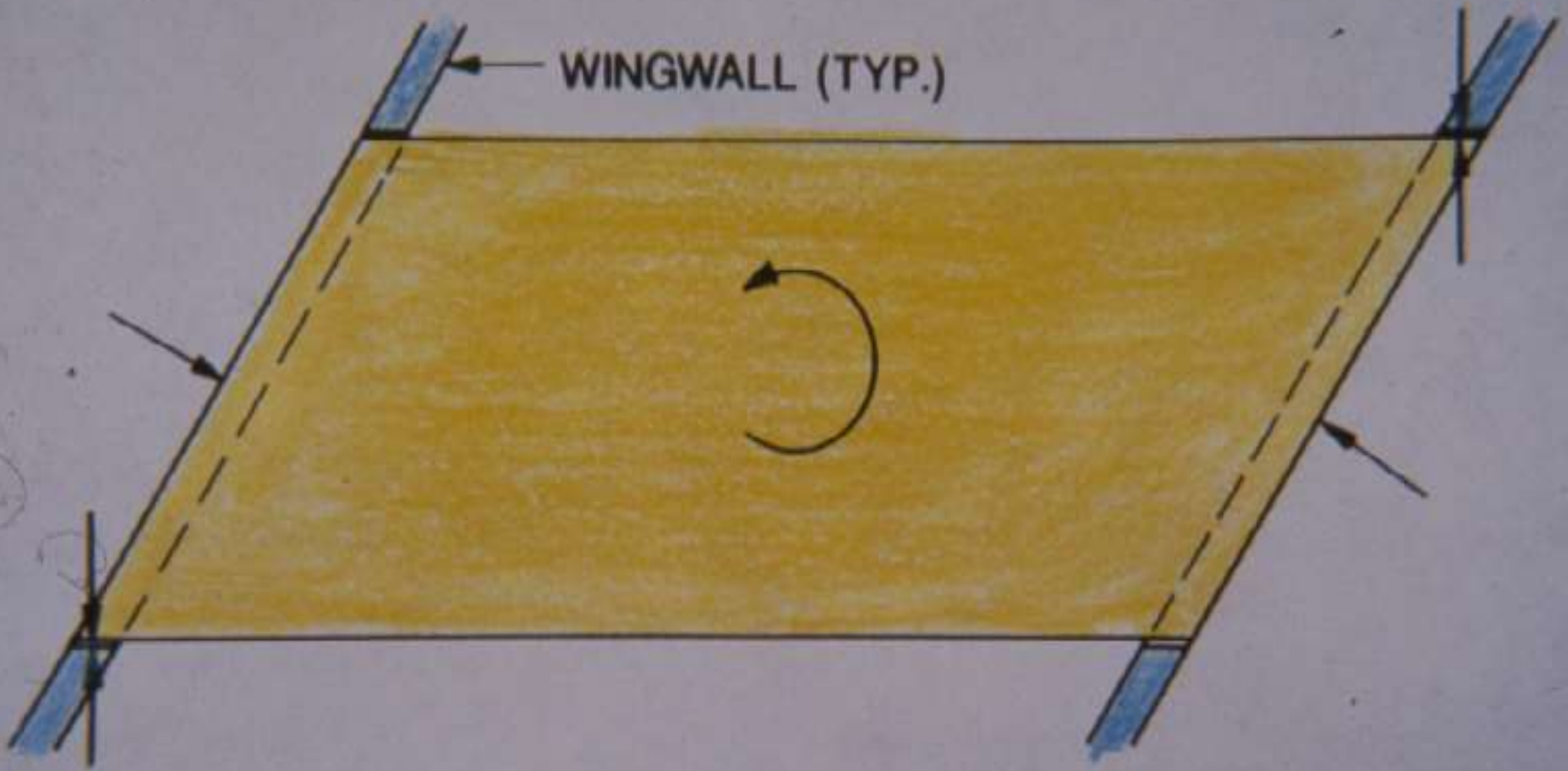


Figure 203



WINGWALL (TYP.)

DECK PLAN

DRILLED SHAFTS

Bedrock Socket Length

Lateral stability has been satisfied

End Bearing H-Piles

Bedrock Strength 20 to 70 TSF



Drilled Shaft Design Logic

70 Tons/sq ft Hard Limestone
50 Tons/sq ft Hard Sandstone
35 Tons/sq ft Hard Shale
20 Tons/sq ft Soft Shale
20 Tons/sq ft Dense Granular
5 Tons/sq ft Firm Clay

Working Stress



E.L. ROBINSON
ENGINEERING

**[26] ITEM 203 EMBANKMENT,
AS PER PLAN:**

Place and compact embankment material in 6 inch lifts for the construction of the approach embankment between stations ** to ** .



REFERENCE MONUMENTS

- All spread footings at all substructure units, not founded on bedrock, are to have elevation **reference monuments** constructed in the footings. See Section 600 for notes and additional guidance.

