

10/1
4/20/44

STUDY OF GRADES AND CURVES FROM LOWER YARD TO SUMMIT
(AT OMAHA) AND CHECK OF TONNAGE RATING RECOMMENDED
FROM ACTUAL TEST RUNS OVER THIS TRACKAGE

COMPOSITE CONDENSED PROFILE & ALIGNMENT

CODES:
CURVES - BLACK
DISTANCES - RED
GRADES - BLUE

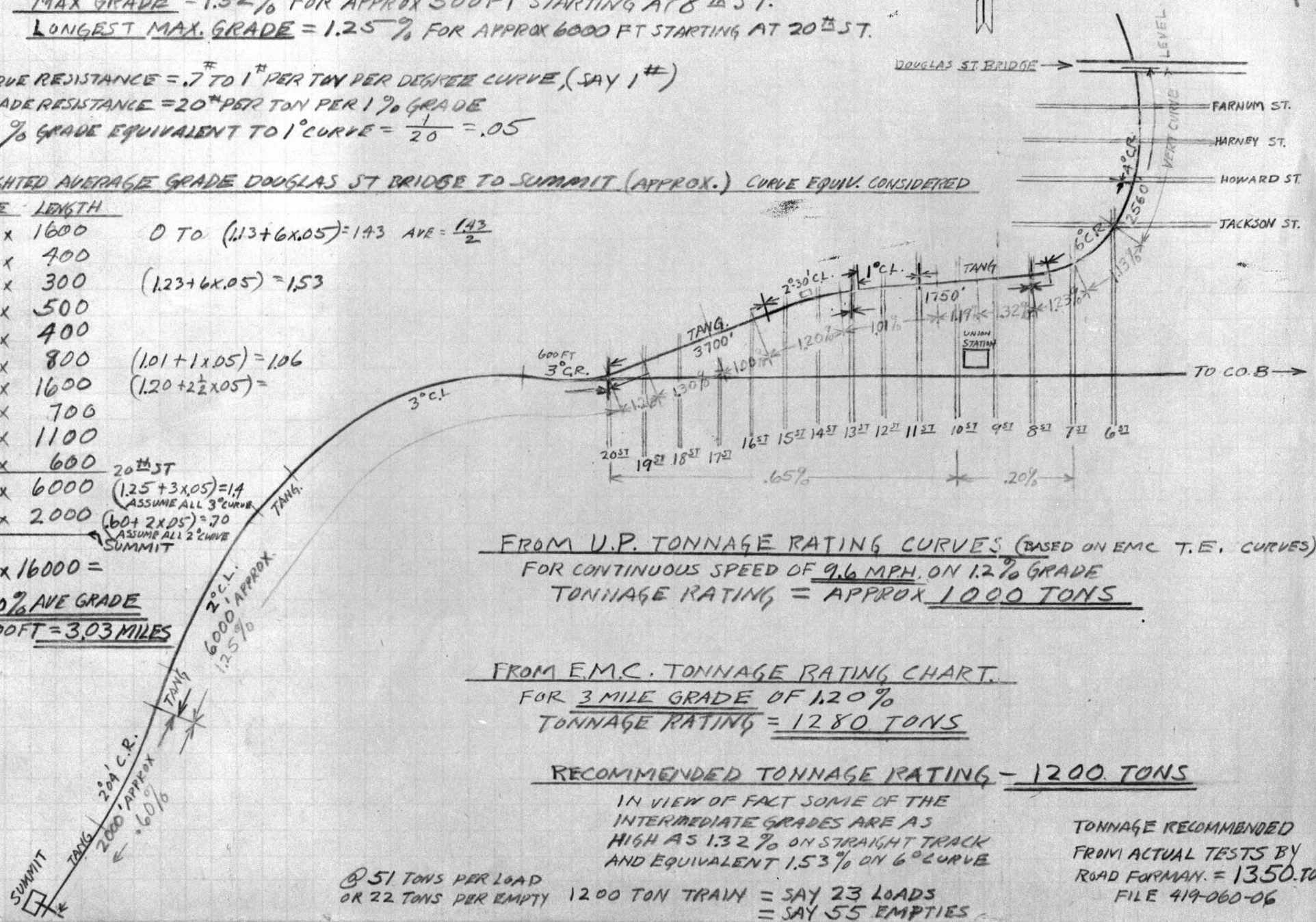
MAX. GRADES CURVE EQUIV. NOT CONSIDERED
MAX GRADE = 1.32% FOR APPROX 500 FT STARTING AT 8th ST.
LONGEST MAX. GRADE = 1.25% FOR APPROX 6000 FT STARTING AT 20th ST.

CURVE RESISTANCE = .7 TO 1st PER TON PER DEGREE CURVE, (SAY 1st)
GRADE RESISTANCE = 20th PER TON PER 1% GRADE
∴ % GRADE EQUIVALENT TO 1st CURVE = $\frac{1}{20} = .05$

WEIGHTED AVERAGE GRADE DOUGLAS ST BRIDGE TO SUMMIT (APPROX.) CURVE EQUIV. CONSIDERED

GRADE	LENGTH	WEIGHTED AVERAGE
.715	x 1600	0 TO (1.13 + 6 x .05) = 1.43 AVE = $\frac{1.43}{2}$
1.430	x 400	
1.530	x 300	(1.23 + 6 x .05) = 1.53
1.320	x 500	
1.190	x 400	
1.060	x 800	(1.01 + 1 x .05) = 1.06
1.325	x 1600	(1.20 + 2 x .05) =
1.000	x 700	
1.300	x 1100	
1.260	x 600	
1.400	x 6000	20 th ST (1.25 + 3 x .05) = 1.4 ASSUME ALL 3 rd CURVE
.700	x 2000	(.60 + 2 x .05) = .70 ASSUME ALL 2 nd CURVE SUMMIT

1.185 x 16000 =
SAY 1.20% AVE GRADE
FOR 16000 FT = 3.03 MILES



FROM U.P. TONNAGE RATING CURVES (BASED ON EMC T.E. CURVES)
FOR CONTINUOUS SPEED OF 9.6 MPH. ON 1.2% GRADE
TONNAGE RATING = APPROX 1000 TONS

FROM EMC. TONNAGE RATING CHART.
FOR 3 MILE GRADE OF 1.20%
TONNAGE RATING = 1280 TONS

RECOMMENDED TONNAGE RATING - 1200 TONS

IN VIEW OF FACT SOME OF THE
INTERMEDIATE GRADES ARE AS
HIGH AS 1.32% ON STRAIGHT TRACK
AND EQUIVALENT 1.53% ON 6th CURVE

@ 51 TONS PER LOAD
OR 22 TONS PER EMPTY 1200 TON TRAIN = SAY 23 LOADS
= SAY 55 EMPTIES

TONNAGE RECOMMENDED
FROM ACTUAL TESTS BY
ROAD FORMAN. = 1350 TONS
FILE 419-060-06

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