

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

CONTRACT NO. 1000

DIARY

K & E
LEVEL BOOK
F 373 A

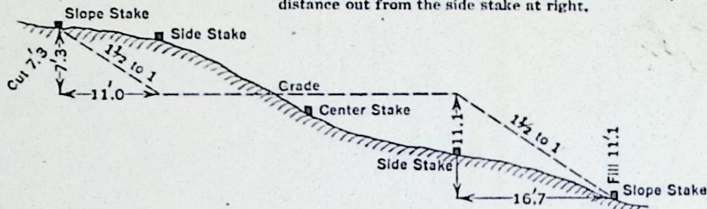
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9

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

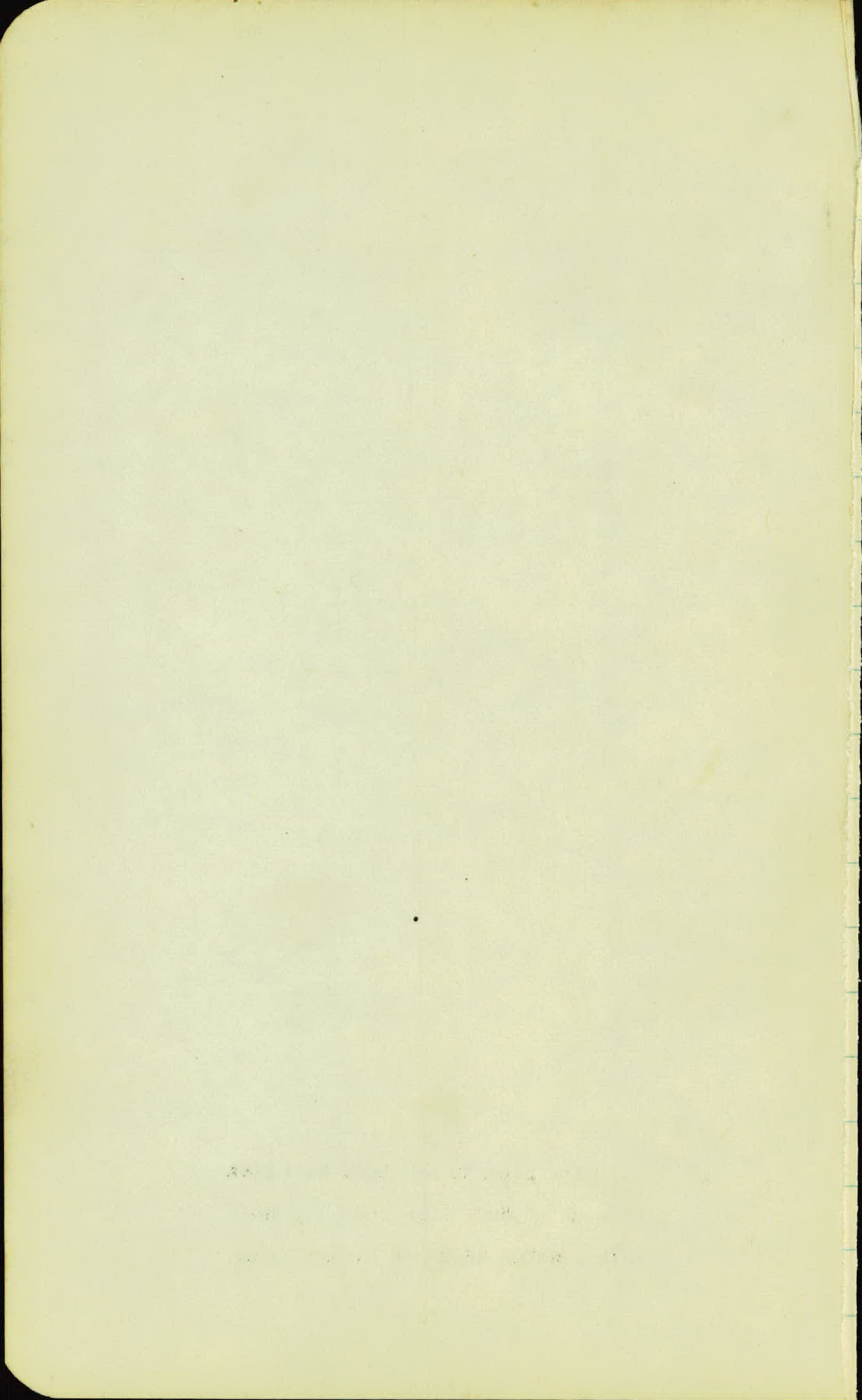
In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake									Cut or Fill	
	0	.1	.2	.3	.4	.5	.6	.7	.8		.9
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

H. F. Welch
Diary
1912

The paper in this book **No. F373A**
is made of **50%** high grade rag stock
with a **WATER RESISTING** surface sizing.



7-27-42 Warm
arrived in St Paul &
assigned to S.P. 27-516-01
62-511-01 & 6216-02

Drove over job and
contacted McCubrey about
crew.

7-28-42 Warm
Out over job with C
VanLoon in P.M. spent
morning looking for
an office.

7-29-42 Warm
Hughes, Chandler & Low
reported for work, crew
sitting staked on C
Rented field office at
the Cross Roads - small
4-room house

7-30-42

clear warm

Unloaded truck & moved
equipment into the field
office. crew staking
in P.M.

7-31-42

clear warm

Harrison, Brand Johnson
reported for work today.
set stakes in P.M.

This job is full of
potholes and they are
full of water. Job as
a whole is very wet
& drainage poor.

8-1-42

Rain this P.M. & clear
& Warm in P.M.
Spent most of day studying
plans

8-2-42

sun - no work

8-3-42 clear warm

crew staking bet sta
27³ & 30¹⁷ shallow ditch
in old road, staking
slow due to fences

8-4-42 clear warm

crew staked sta 17-30

Rolls on job as foreman
& he expects to start work
tomorrow.

8-5-42

Other cloudy shower at noon.
Dillon had a small
crew removing old fence.
Work actually started about
2 P.M. Foreman Dillon
plans on working 5
hours a day. Will start
at 8 A.M.

9-6-42 Clear Warm

cont started two cats &
dozers & scraper tearing
up old bituminous mat
& flattening shoulders.
Set Dillon to place
barricade at # 5 &
tank form. Two lights
to be placed at each
barricade

called Tom Mc Cloud in
regard to bituminous and
he requested material be
placed on R R ROW.

Chord on job in AM & PM.
Swanson requested storm
sewer pits Sta. 75+66 & 81+52
be staked.

7-7-42

cloudy shower warm
cont started 2-12 yd
surveys to day. plowing
& comp with 2-40 cuts
& Bulldozer & double drum
tramp. 5 laborer &
teams cutting & digging
of grass & weeds

cut in ditches is
wet & mucky. Does
not compact right.

Give Kollar permission
to stop B.P.A. on 6-21-42.

Sat 8-8-42 cloudy
Hard shower at 10 AM!
2 scrapers, 4 cuts, 2 cuts
& diggs. & temp. worked
from 8-10 AM. shut
down for day due to
rain.

Ed Rowland called
& requested we issue
supp agr to reins barn
(old shed) on SP 6296-02

Sun Aug 9
No work

Mon Aug 10

cloudy cool

Surveyors working bet
sta 0-15 on 62511. Dirt
is wet and hard to
handle.

Moved survey to
snelling ave in P.M.
Dirt too wet to work.
Small crew rem fence
& cutting grass & weeds

Thu Aug 11

clear warm

small crew cutting grass
& removing fence.

Porter's dog stuck in
mud all day. Eye is
tough. Patches are
very wet, dirt to wet
to compact.

Wed Aug 12

Clear Warm

standard cont Co started
exc for sewer today
2 men building oil
shed for grading cont

Just Jim hollow to
spread fill between sta
88-85 so it could be
built up in uniform
layers

Thu Aug 13

cloudy cool

2 men building oil shed.
Team & Teamster cutting
grass & weeds.

started cont so spec
for & laying 15" SC. Ground
is very wet but firm
Just cont to use lime in
grout mix.

Buy Brand on sewer pipe

This job is going to be
very wet

Fri Aug 14

cloudy cool

Poor drying weather

cut & dig speckling
fill between sta 70-75

Cont. moved Buymen

Eric H & B shovel on
job today and set in
at sta 75. This is a
sand cut and look
dry.

standard cont Co spec
for & logging 18" 5C
French is very wet

Sat Aug 15

cloudy rain in AM.
standard cut as laid
12' of pipe and specimen
of dog bankfilling trench
no work in P.M. trench
is very wet.

H.S.B. shovel & truck
loading & hauling dirt
sta 80-85. Harbor & dge
composting fill.

Just hollow to place
fill in layers not
to exceed 1' in depth
after composting.

This sand cut is wet too
sand is very fine and
I believe some silt.
shovel down several times
during day.

Mon Aug 17

cloudy warm

started out as expected
+ placing pipe for sewer
trench wet + full of
soft spots. Just out
to be careful of Northern
State power pole over
trench. Ground is wet
and will cover evenly
called M & P as in
regard to pole and
suggested they send
a man to check same.

H & B & trucks not
working today. Foreman
may decide to finish
cut with scraper. cut
to soft for H & B.

Full Aug 15
Cloudy Warm
Stankoid cont As to jack
pipe under conc slab
at New Brighton Road.
County furnishing the pipe.
Trench very wet. Progress
slow due to wet conditions
of trench.

no work for getting crew
Efr to work.

m check on job at 5 a.m.
Request we use gravel
under pipe. Trench is
to soft to carry pipe.

Wed Aug 19

clear warm

standard cont Co

plowing sewer. Trench
still wet and full
of soft spots. cont
lining up trench &
preparing the proper
grade of trench for picking

no work for grading
contractor. No water

Thu Aug 20
clear flat

standard cut as jacking
pipe under pavement.

Progress slow. soil is
wet & rocky & difficult
to handle. French head
of slab is very wet.

Progress slow

Inst. Erickson to backfill
trench in 1' lifts

Fri Aug 21.

Clear Not Windy

Finished jacking pipe
under slab today

end of pipe was all
bent from hitting rock.

cut off end of pipe

Bottom of sewer trench
is more firm but
is still wet.

Foreman advised me
they would not work
sat 8-11.

Sat Aug 22
Slow cool

cont worked to sat
noon laying pipe and
backfilling trench
Progress slow due to
water in trench.

No work for getting
contractor. Edge is
still wet.

Sun Aug 23
No Work

Mon Aug 24
Clear Cool
standard const Co
working on storm
sewer. trench wet
dragline worked other

No grading equipment
on job. dirt dry
on top but ditches
full of water
standard moved
equipment to
S.P. 16216-02

Free Aug 25

No work

Wed Aug 26
cloudy Rain

Three tractors & scrapers
& cat & sheepsfoot
moved on job.

Working between sta
00 & county line

Ground is full of
water and as soon
as top foot is removed
material is wet

Thu Aug 27

cloudy cool - Warm
moved equipment to 91-93
and started work, this
is a sand cut but
sand is very fine &
moist.

2 cuts broke down
but were repaired.
Progress slow.

Fri Aug 28

cloudy cool

started work at west
end but dirt is
still fairly wet

Inst foreman to
place up material
in 1" lifts. material
is not compacting
to well but is
being rolled very
good.

Sat Aug 29

Rain Rain Rain

More rain so dont
accomplished very little
to-day. Crew worked
in rain for a while
but results were
unsatisfactory.

Sun Aug 30

No work

Mon Aug 31

Cloudy Rain

Cont started new
shift at 5 AM.

work on west end
to wet so moved
equipment to 80-90.

Moved back to west
end at noon but
progress poor. Worked
through light showers
but had rain
bet 10-11 forced cont
to suspend operations

Tue sept 1

Rain

No work to wat

Wed Sept 2

cloudy cool

Inst foreman to
drain water from low
spots at his earliest
convenience.

Started small dogline
cleaning ditches about
sta 70. Dog in poor
shape and is not
accomplishing very much.

Thurs Sept 3

Slow & cloudy
2 carts & scrapers
trying to move dirt
earth is wet & progress
slow
Mog on ditches & dyes

Fri Sept 4th

Slow cool
Worked at sta 80-93
part of morning and
then moved to west
end, made wet
& progress slow
Dragline cleaning
ditches

Sat Sept 3
Clear Warm

Grading cleaning cuts
at ditch ends,
Grading equipment
working on scratch work
in daylight and moved
to swelling at night

Progress slow - Rain

Sun Sept 6
No work

Mon Sept 7
No work
Labor day.

Fire Dept 5th

Cloudy warm

soft spot developed
bet 10+60-12 so inst
suft to sub cuts approx
2 1/2' in depth. Cont
removed thin sections.

approx 1' below grade
but it did not cure
soft spot. Cat &
sweeper working at
sta 45.

Prog cleaning ditches
& draining low
spots.

Wed Sept 9th

cloudy warm

moved shovel #51 to
sta 90 and started hauling
material to west end
of job. Henry Co

22 cuts at sta 45

cut & down spreading ^{material}

cont working section
near Cleveland. This
section is wet on
track side but

very hard in roadbed
Inst foreman to verify
old road but he is
slow getting started. Rep
Young Smith to check
on site shift.

Thu Sept 10

Clear Warm

Cont removed sub cut
bet sta 10+60-12. This
section ok, snow
caught Erickson's backfilling
cut's trench at 5+70
without tamping and
requested him to
uncover pipe & tamp.
Dredline burned up
at sta 6+2 about 11 AM.
Cont hauling paving
equipment on job
thru day.

progress slow to-wab

Fri Sept 11
Clear Warm

cont had crew setting
pumps and getting equipment
set up.

cont grading section
between sta 30-50 but
progress slow, but
does not hinder right
sub soon sealed Dig
that burned up & will
not permit it to grade
until repairs are made

Rain at 7 took up
operations

Sat Sept 12

Clear warm

equipment trying to
work. Sta. 40-60 but
do not accomplish
very much due to
wet conditions of dirt

Left spot west of
Cleveland giving some
trouble. Cont used
dog to help traffic
through. Two trucks
getting stuck. Just
Sept to fix road so
two trucks can keep
going.

Progress for week slow

Sun Sept 13

Clear Warm

Cont working equipment
at Cleveland Ave.

Progress slow due to
wet grade. soft spot
at 19 getting worse.
Must Sept to keep gas
trap moving.

Small crew setting
up gaging equipment.

Inst preman to place
wet pipe on slopes.

more left of
low beam

Grade bet 0-25 is ok
but balance on C is
rough & in poor shape

Cont setting up paving
equipment but grade
is not good enough
to start

Cont pulling & pushing
trucks from Cleveland
to $\frac{1}{2}$ mile west.

Nov 15

Cloudy showers

Trucks from tank farm
having a tough time
getting through. Road
in tough shape.

over job with Mr. Kipp
in regard to maintaining
roads. Brent Likes thinks
govt cont permission to
cont to gravel road to north
of plant.

cont using 3 sites and
2 patches to keep goats
going.

to visit to grade today.

wed Sept 16
cloudy Rain

Go with to work.

Mr. Mathew & I chard
out and requested we
haul sand from sewer
trench at sta 25
on Snelling ave to
sta 37-53. Started hauling
at 6:30 and completed
at 1:15

small crew setting up
paving equipment

Thu Sept 17
Cloudy Rain

Small crew on paving
equipment. Cont building
& maintaining road
through tank farm
& keeping gas trucks
go throughs.

Fri Sept 18
Clear Cool

Go wet to work.
Cont maintaining road
through tank farm &
working on paving equipt

Sat Sept 19

clear cool

cont. tried blocking
section but sta 26-75
but found it was
too wet to work

Sun Sept 20
clear warm

cont working grading
equipment between 70-105
sub cut bet sta 75-89
is very wet.

small crew working
on paving equipment

Mon Sept 21

cloudy drizzling

Setting forms & fine
grading. All Paving
is set for 11" slab

cont expects to start
paving tomorrow
1000' Pete is paving
Supt & Steve Callahan
is mixer Freeman
roadbed is spongy and
will require constant
blading and dry weather
to compact.

Instr Supt to keep blade
& roller working on all
soft spots on c

Tue Sept 22

clear a.m. cloudy P.M.

Started paving at 1:50 and
shuts down at 5:13 paved
235.7' of 11' slab. Progress
slow all green crew.

Haul road soft & trucks
hauling by way of TH #36

Lights for finishing are
on but not like
good old daylight

Grading crew at
Cleveland until dark
& then moved to snelling
Mr. Clark & White on job today

Wed Sept 23

Rain during site
and showers thru AM.
No paving to wet
Grading Crew backfilling
subgrade treatment 85-89
Go wet to move dirt
so operations suspended
to much mud!

Thu Sept 24

cloudy snow flurries
started paving at 10:10 &
quit at 4:40. Paved 520'
Paving setting up very
slow. snow at 3:30 P.M.
Inst. supt Peterson to provide
burlop to use in case
of emergency.

Mary Smith checking
slab on night shift
Grading crew filling in
frost boil treatment at
15-59. Haul road tough
Trucks going around TH #36
Temp at 7:00 P.M. was only +32°
so inst supt Peterson to
lay off until temp reached
a + 35° & rising + 40 was
highest temp recorded during day
Poor day Progress poor.

Fri Sept 25

cloudy cold Windy
started paving at 8:27
and quit at 4:55 good
\$80.7

hooking crew working bet
sta 30-60 removing
wet sub grade & replacing
with better soil. Grade
is tough. No progress
for amount of equipment
working.

cont has poor paving
crew. Crew members
are not experienced
on highway construction
slab setting up slow.
slab not covered until 1:30
Hard ^{rain &} snow at 10 P.M.
Working conditions poor.

Sat Sept 24
cloudy cool

all work suspended
roadbed is a sea of
mud due to snow &
rain Friday P.M.

Poor finish on slab
for yesterday's run
Inst Peterson to watch
slab more closely in
future and keep finisher
on job until slab was
finished. One finisher
walked off job last night.

sun Sept 29
Pthly cloudy cool

No work - to wet

Mon Sept 25

clear fair

Grading crew working
from 72 to 90.

Patrol blocking C as far
as forms. Grade wet,
but is drying out when
patrol is working.

Inst. Supt Peterson to
drain all water pockets
on C. Water pockets are
numerous but will
not require much
hand work to drain.

Crew accomplished very
little. Earth too wet
to accomplish normal
output.

No paving — too wet.

Tue Sept 29

Clear Fair

Started paving at 12:50
and quit at 4:50

started at 4+11 and stopped
at 9+51. Progress poor
haul road in poor condition
and trucks could not
keep up. Crew met form in am.

Grading crew working
between sta 75-90.

Dist is drying out and
with another day or two
of sunshine will be in
fair shape.

Blade (Patrol) working
full length of grading
on a

cut 75+ slopes 57 sent
to Rosemont today. Permission
to release slopes was not
given.

Wed Sept ~~29~~³⁰

Clear Warm

started paving at 7:10 and
quit at 5:40. Paved bet

sta 9+81 & 23+62. Roller

not operating so inst Supt
Peterson to get roller operating
at once. Highway subgrade
today, short of trucks due to poor
haul road, subgrade spongy.

Grading equipment working
bet sta 55-70

Standard const co plowing
culv at 75+66.

Five grade crew getting
behind, Supt Peterson will
work five grade crew until
dark. slow going over truck
at 26+

23+62
x 81

13+81

Thu Oct 1

Ptly cloudy warm
started paving at 9:05 and
quit at 5:32. Late start
due to fine grade. Lost
some time joining across
tracks at 26+. Roller
started again today but
it only worked about $\frac{1}{2}$ hr
and broke down again.
Unable to get gate, Inst
supt to put roller in
operation or secure another
roller. Moved Koenig
mixer to pt of County C
and started checking operating
gate of water & timing

Grading crew working
between station 63-90
pit is still wet and
difficult to move. Progress
slow. Fine sand in
this section is wet
and ~~dry~~ does not dry
out due to silty texture
Patrol blocking section
from forms to snelling.
Inst Supt Peterson to
refrain from placing forms
on fill that had not been
properly compacted. Ordered
approximately 200' of forms
reset. Forms were placed
on chunks of dirt about 2"
higher than subgrade

35 x 53
22 x 22

Fri Oct 2

Clear Warm

started paving at 7:06 and
quit at 6:00. Paved bet
stations 35+53 and 51+26.

Best run to date, average
175' per hr. Theoretical is
216' per hr.

subgrade bet sta 70 to 85
is fairly wet. dont working
this section to dry it out
Just Supt Peterson to
keep roadbed well bladed
to help create wet
material in roadbed.
roadbed really not fit
to pour on.

Five grade crew getting
behind, only 100' ahead of
paver at quitting time.

Sat Oct 3

cloudy shower in P.M.

Late start this A.M. due
to fine grade.

started paving at 9:45
and quit at 5:30. Paved
between station 57+26 + 63+07

grading crew working
between 70-105. Patrol
blocking on C but rain
at 6 P.M. made it
impossible to do much
good - grade to muddy
Rain on slab done some
damage. one section
finished with out
hooping or bedding.

Patrol working on haul
road out of tank farm

31 x 26
35753
15 x 73

sun out 4

Clear warm

Rain last night made
it too wet to work
major equipment.

- power patrols working
on subgrade draining
and drying out grade.

Frederickson & Sully
checking Koenig mizer
at junction of 7th, #1
and County C.

Mon Oct 5

Clear Cool

Power patrol working
between stations 45 and
Snelling Avenue.

Paved part of intersection
between sta 0+17 and
0+57.3 today.

Worked about $1\frac{1}{2}$ hrs.

Standard const cost
basis for M Holes
at 75+66 & 80+

To wait for major equipment
to work.

Free Out to

Clear Warm.

Out on job at 9 a.m. 2 men
grading and setting forms
at cut to Great Lake pipe line
Out to mixer at noon and
crew setting forms. Center
forms were being set on north
situated with water & not
stable. south form fair. Told

form setter I would give Pete order
not to set center forms. met Pete at

^{str} 150. and he told me forms ^{setter} were not suppose
to set forms on soft grade. Requested
Pete use roller & blade to dry out grade
Pete moved from setter to west end
on connection to # 5. Mortz &
Roy stayed on grade from 2-5.
crew left at 4:30. Pete said he
would start paving at 8 a.m.

Swanson on job at 3:30 P.M.
Frehner at 3:30 P.M.
Swanson objected to drying
& compacting subgrade before
setting forms.

Wed Oct 7

Clear Fair.

Out on job at 7:50. Lonness
sick so took Ted Svensson
out to check cement. I look
out when we arrived at
cement shed. Grade bet
sta 70 & 75 wet and
very spongy. Cont using
patrol to help dry out grade.
Inst Supt Peterson to
excavate soft spots &
backfill with dry material.
Took Fredrickson to check
subgrade about 9:30.

Chad on job at 10 a.m. - 12
Thought grade at 70-75
was ok. Inst on job
at 2 P.M. and Sudman
& Swanson at 3.

Just sent Peterson to
put rollers on job which
he did about 10 a.m. Just
Steve Collohan to correct
setting of different types of
forms and to use some
types as much as possible,
Also just him to fix lock
on forms.

Cut sections at great
loper ent at 6 P.M.

Pete advised me he
would start paving
at 7 a.m. Oct 5th

Coverd bet sta 63+07 & 15+38
to-day. started at 8 and
quit at 5:26. Will
start at 7 a.m. Oct 5.

Progress slow. Corr haulroad
trucks could single batch
for part of day.

Thu Oct 8

Clear Warm

started paving at 7:15 and
quit at 5:10. Paved between
sta 75+3 & 79+5

subgrade drying fairly
well today.

Some delays were encoun-
tered due to trucks
water & grade. Lost
some time crossing New
Brighton Road.

Paved part of intersection
at # 5 today

Paver shut down early.

Final grade machine broke
down at 90+75. Final grade
about 120' ahead of mixer

Fri Oct 9

Clear Warm

started paving at 8:03 &
quit at 4:27. Total dirt
this a.m. due to fine grade
& float sticking in ^{and dirt took} mixer
Paved between sta. 89+57-105+17
This completes south half
of 22' slot.

Best run to date - Grade
in good shape.

Paving equipment moved
to Snelling Avenue.

105+17
105+17
15+59

Sat Oct 10
Clear Warm

Paved part of intersection
at # 5 today. used
kneeing miter.

Sun Oct 11
Clear Warm
No work

Mon Oct 12

Clear Warm

Paved north lane between
sta 25+01.3 and 25+56.1. Today

This section is located between
at south entrance to West

Loke Pipe Line Co and

across N.P. Tracks.

Used ready mix from

~~Ho~~ Curving & Ronchue
Plants.

Tue Oct 13

Clear Warm

No work today

Wed Oct 14

Clear Warm

3 men grading & ploving
forms for 2 panels of
slab at County A & # 8.

Thu Oct 15

Clear Warm

cost $84\frac{1}{2}$ sq yds of concrete
into of County A & # 8
to-day. started at 11 a.m.
& finished at 6 p.m. late
finish due to bump on
slab. Finisher very
poor. White on job at 11:30
& Swanson at 11.
Pete disgusted with finisher
Fredrickson insp.

2 men cleaning &
filling joints

Insp Supt Peterson
to place barricade at
New Brighton Road
to-day.

Power patrol leveling
off north half of Sub
grade & shoulder.

Fri Oct 16

clear warm

2 men grading &
placing forms for
2 panels of intersection
at # 5

Sat Oct 17th

Clear warm

Power patrol leveling
subgrade for north
half of slab. Patrol
also leveling shoulder.

Sun Oct 18

Clear Warm

crew setting form for
north half of slab and
pave grading.

Paving equipment
moved from Snelling
avenue back to their
job today

Finished paving to sta
115 on Snelling ave.

This includes East 11' lane
from Hoyt ave.

Monday Oct 19

Clear Warm

Crew setting up and repairing
paving equipment.

Crew also setting forms
and fine grading.

started paving at sta
0+95 and quit at 5+94

started paving at 12:25 and
finished at 6:05

Supt. Supt. to place box
behind mixer to catch
concrete spill from

bucket & discharge chute
Supt. Supt. Peterson to

place contraction & exp
joints opposite the ones
placed in the south lane.

Supt. using forming
tool for centerline marker

8+94
0+98
7+96

but job looks terrible,
just finished to gobok
& re-fursh⁴ joints. Tried
using⁴ caps at end of
day and they seemed
to leave a better mark.

Just Insp Brand to
watch succeed very careful
and see that no foreign
particles were reding under
shoe on slab as we will
encounter a lot of trouble
keeping north slab down
Just Brand to watch 4
joint very close and
just finished to leave
clean out mark
miper is working on
new slab.

Dec Oct 20

Clear warm

Started paving at 8+94
at 7:07 and quit at
5+9 15.45 at 5:56. started
in Hennepin Co and
finished in Ramsey
Mr. Mathew & Churf
on job today called their
attention to poor work
and they thought cones
would work ok.

Just Supt Peterson to
plank edge of slab before
running mixer off to
clean it right & then
run off at center of
panel.

Cones sitting up very slow.

12+83.7
8+94

3+98.7
15+15

19+03.7

Wed Oct 21

cloudy cool light rain

started pouring at 7:07 at sta
15+15 and quit at 5:57 at sta

5+33
5+15
—
0+18

35+33. Lost some time
xing tracks at Great Forks.

Came very slow setting up
so inst. supt Peterson to
use CaCl₂ in battery last
2 hr of days run. Swanson
informed me he was going
to start using tandem mixers
Oct 22nd. Called Methven
and advised him of tandem
mixers and he said OK

Supt Peterson said crew
would work 8 hr a day
when tandem mixer started.

Thu Oct 22

Cloudy Cool Light rain
Cont started tandem
mixers today. started pour
at 7:45 at sta 35+33 & quit
at 4:55 at 50+71.

50+71

35+33

15+38

started
Tandem
Mixer.

Pip broke down at 10:20
white out and did not
think much of arrangement.
Crew dissatisfied with
weather and ready to quit.
used 9 lbs per batch of
C & C in last 94 batches
Cone set up much better
Inst. supd Peterson to
^{obtain} ~~require~~ better finish on
all joints. some joints
are very ragged.
Workmanship as a whole poor
Grade not so hot.
covered sub grade with paper

Fri Oct 23

Cloudy Cool

started paving at 7:57 at
sta 50+71 and quit at 5:25
at sta 62+42. shut down
at 10:50 to 1:00 due to low temp
of conc. Informed Peterson he
could start in P.M. if weather
warmed up.

Mechanical float broke down
and Pete bot out old wrapped
channel for float. Had to
throw it out and finish
with hand floats.

Instr. supt Peterson to
obtain satisfactory wooden
float for emergency.

White & Long on job.

Finishing is punk. No
exp finishers.

62+42
50+71
1+71

mixer shut down
white finisher caught
up.

Pop of valve was funny
when we shut down.
Mixer ops had a bomb
set under valve to
keep it working.

Two slab finisher on
job but Pete did not
like them.

Heavy mist at intervals
but not enough to
call rain.
Cone set up slow
cone covered with paper
& blankets.

Sat Oct 27

cloudy cool damp.

started paving at 8:15 at 62+42
and quit at 3:30 at 75+65.

Early quit - Fine grade
machine broke down

Finishing machine (Long Haul)
could not keep up. cone
setting up slow.

Tied up early due to grade
& Fine grade machine
cont covering subgrade

with paper & slab with
blankets & paper

cold weather forecast
for tonite & tomorrow.

Supt Peterson was so
advised.

Finishing below normal
progress for week poor

77+65
62+42
15+23

Sun Oct 25

Cloudy Cold High Wind

No going today to cold
Inst. supt Peterson to
have crew replace blankets
that had blown off. slab
one in various places
Camp under blankets +43

Inst. supt Peterson to
place planks over north
lane at great locker entrance
also Inst. supt Peterson to
open up south lane but
~~for~~ Cleveland & #5

Low temp for day +21°

High " " day +37°

Have divided by tank
on mixer.

mon Oct 26

clear cold

No paving — to cold

Conts ploed pipeline on
x brace to mark $\frac{1}{2}$ of slab
Int of # 8 to Cleveland

Thanks for temp x-ing
ploed over N lane & Gust
Loken Oil Co.

South lane paved up
to-day. Trucks will
haul one way.

Free Oct 27
Ethly cloudy cool

No paving to cold
No finishes on jobs.

Just got to mountain
bouside bet #54 closed

Wed Oct 28

Cloudy Cool - Rain 8 PM

started paving at 1:50
at sta 78+65 and quit at
5:10 at 75+51

75+51
78+65
6+86

crew finished section
of slab at serpentine ave
this a.m.

concrete setting up irregular
Mr White using straight
portland, portland & Co²
and portland & natural
Tests four natural &
Co² C1-2 at this time
of year.

lot of concrete with no Co²
very slow.

Finish on slab gone.

Progress laywire.

on job with White & Harry Smith
till 9:30 PM.

This Oct 29th

Cloudy cool misty

started moving at 9:45 at sta

85+51 and quit at 3:35
at sta 105+16.9.

105+16.9
85+51

19+65.9

This completes north half
up to snelling with the
exception of short section
at snelling & widening
at New Brighton Road.

Crew ordered out at 5 AM
and truck at 7 AM.

Good run today.

cont moving equipment
to CP 6216-02

Fri Oct 30

cloudy cool

Moving equipment to
south end of Snelling job.
Just left Peterson to
barrecode county C from
Cleveland to Snelling
with posts & snow fence
small crew checking
pavement cover

Just left Peterson to
blades temp x mg at
Cleveland. Temp is
very rough.

Sat Oct 31
cloudy Cool

Sun Nov 1
clear Fair

Mon Nov 2
cloudy cool

Tue Nov 3
clear cool

wed Nov 4
cloudy cool

Thur Nov 5
cloudy cool

standard const. as working
on calc. etc. at sta 47450

Fri Nov 6
clear cool

Boyer & Co. working in
cut at sta. 52 cleaning
up ditch. Material is
pretty mucky. Top layer
of dirt is ~~dry~~ but as
soon as top crust is
removed material is wet.
Just Foreman Hoffman to
keep heavy equipment off
slab until evening period
has elapsed.

Sat Nov 7

Clear Fair

Exc equipment working
in ditches sta 48-55
ditch is wet and
progress slow.

standards const Co working
on. culv sta 47+
culv is under water &
progress slow.

Sun Nov 8

cloudy Fair

No work

Mon Nov 9

cloudy light rain

Standard const. Co working
on culv sta 47+50

Tue Nov 10

clear cold

Standard const. Co working
on culv sta 47+50

Requested Erickson to excavate below
grade & backfill with gravel.
Base for culv is soft

Wed Nov 11

Clear Cold

Standard const. Co finished
laying culs at 47+50.

Inst Erickson to clean up
dam placed at cul ends.

Cost & scraper & roller worked
short time on ditch bet
sta 80-105.

Inst Hoffman to place
dirt over slab before
hauling dirt across road
with tractor & scraper.

Thu Nov 12

Ptly cloudy - clear

Erickson laying side culverts

No work - to widen
ditches for Gen Cont.

Fri Nov 13

Ptly cloudy - clear

Gen Cont. shouldering between
sta 95-105

Erickson placing side culverts

Progress slow

Sate Nov 14

Clear Fair

Line cont working between
sta 95-105. Material from
ditch is fairly wet.

Material is fine sand &
clay & silt and does not
dry out very readily.

Inst Hoffman to keep
material spread each
night so if we are
caught with a hard freeze
material will not be
higher than slab.

Sun Nov 15

Big Cloudy Fair

No Work

Mon Nov 16

cloudy warm misty

Grading equipment working
between Cleveland ave and
New Brighton Road.

Spill in ditches still
wet.

cont. cut into night shift
and will work about 9 hrs
per day. Inst. Supt to grade
all approaches and leave in
good condition for winter. Also
Inst. Supt to grade Cleveland
ave approach as stated and
to remove temp signs.
Inst. Supt to refill all
low points on project.

Que Nov 17 Cloudy.

Cost of machine covers on
NB road to day. Just Pete
to cover with paper & blankets,
and keep crew off newly cost
road.

Just sept to gravel all
approach to building
before closing down
for winter.

Loading equipment
working between New B.
road & Cleveland Ave
ditch wet.

Wed
~~Wed~~ Nov 18

cloudy cool

Grading equipment working
between sta 27 & 50. Dirt
in this section in finish.

Thu Nov 19

cloudy misty

Grading equipment worked
bet sta 27 - 64. shouldering

Fri Nov 20

cloudy cool

Grading equipment working
between sta 00 and
sta 10 in Ramsey Co

Moved shovel to borrow
pit B. this P.M. will
haul a few loads to west
end of job tomorrow.

sat Nov 21

clear cool

Grading equipment worked
all day. Shovel in Pit B
and trucks hauling to west
end. Cat & loader
working in ditch 75-95

sun Nov 22

clear cool

no work

mon Nov 23

Clear Cool

Equipment (cat & scraper
& dozer working 75-95 inch
shovel taking out sub cut
at Cleveland approach mat
dumped at sta 45

Trucks hauling gravel
backfill for sub cut

Sun Nov 24

cloudy

shovel cleaning ditch
bet sta 72-77. material
hauled to low spots on
shoulder and west end
of job.

Wed. Nov 25

cloudy cold

shovel cleaning up ditch
bet sta 73-77. Trucks hauling
material to low spots &
west end.

Thu
~~Wed~~ Nov 26

cloudy cold light snow
shovel back in Pit B
& hauled a few loads to
sta 100-105H

Fri Nov 27

clear cold

Boyer & I are leveling
off Pit B part of day

all work suspended
for year.

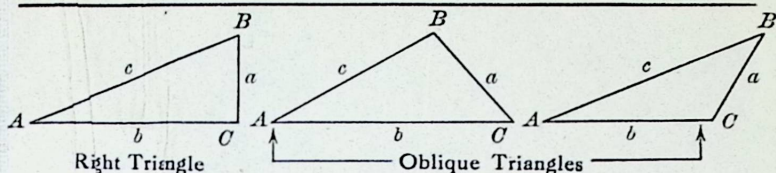
will complete in Spring '43

~~How~~

Sat Dec 5 (clear cold)
after work for year was
suspended cut operation
by Thompson what down
on C and cleared up
a couple of stumps
on Row.



TRIGONOMETRIC FORMULÆ



Right Triangle

Oblique Triangles

Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given a, b Required A, B, c

$$\tan A = \frac{a}{b} = \cot B, c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$$

a, c Required A, B, b

$$\sin A = \frac{a}{c} = \cos B, b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$$

A, a Required B, b, c

$$B = 90^\circ - A, b = a \cot A, c = \frac{a}{\sin A}$$

A, b Required B, a, c

$$B = 90^\circ - A, a = b \tan A, c = \frac{b}{\cos A}$$

A, c Required B, a, b

$$B = 90^\circ - A, a = c \sin A, b = c \cos A$$

Solution of Oblique Triangles

Given A, B, a Required b, c, C

$$b = \frac{a \sin B}{\sin A}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

A, a, b Required B, c, C

$$\sin B = \frac{b \sin A}{a}, C = 180^\circ - (A + B), c = \frac{a \sin C}{\sin A}$$

a, b, c Required A, B, C

$$A + B = 180^\circ - C, \tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$$

$$c = \frac{a \sin C}{\sin A}$$

a, b, c Required A, B, C

$$s = \frac{a + b + c}{2}, \sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$$

$$\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}, C = 180^\circ - (A + B)$$

a, b, c Required Area

$$s = \frac{a + b + c}{2}, \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$$

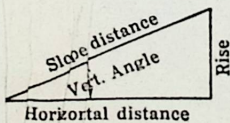
A, b, c Required Area

$$\text{area} = \frac{bc \sin A}{2}$$

A, B, C, a Required Area

$$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = $5^\circ 10'$. From Table, Page IX. $\cos 5^\circ 10' = .9959$. Horizontal distance = $319.4 \times .9959 = 318.09$ ft. Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. $\cos 5^\circ 10' = .9959$. $1 - .9959 = .0041$. $319.4 \times .0041 = 1.31$. $319.4 - 1.31 = 318.09$ ft.

When the rise is known, the horizontal distance is approximately:—the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft. slope distance = 302.6 ft. Horizontal distance = $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.