6-12

GH

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5A(5)	1941
LAKE COUNTY			
S.H. No. 2		SEC. Q(Pt.)	

1/43

U.S.R. 20. 28.10 ~ 30.41

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

F.A.P. 5-A(5)

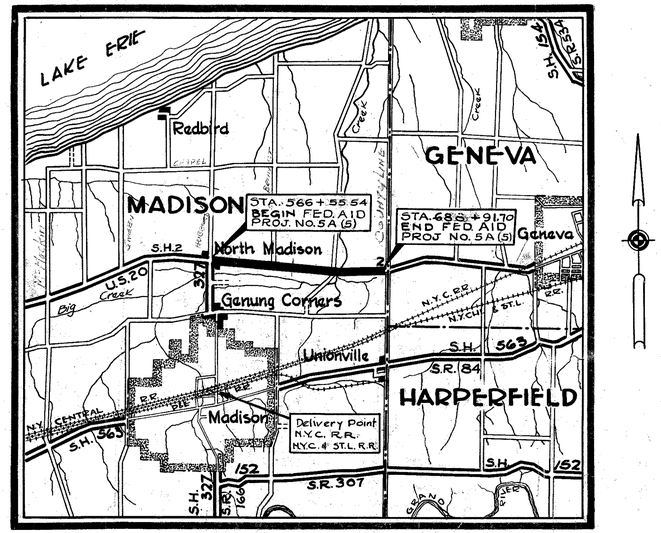
CLEVELAND BUFFALO ROAD

S.H. 2 SEC. Q(Pt.)

LAKE COUNTY

MADISON TOWNSHIP

LENGTH OF PROJECT = 12236.16 LIN. FT. = 2.317 MILES



AVERAGE HAUL = 3.5 MILES

LOCATION PLAN

SCALE OF MILES
0 1/2 1 2 3

PORTION TO BE IMPROVED
STATE HIGHWAYS
COUNTY ROADS

CONVENTIONAL SIGNS

COUNTY LINE
TOWNSHIP LINE
CENTER LINE
PROPERTY LINE
CITY OR VILLAGE LINE
FENCE LINE
STEAM RAIL
POWER LINE
GUARD RAIL
NEW DRAIN PIPE
OLD DRAIN PIPE

The Standard Specifications of the State of Ohio, Department of Highways, including changes and supplemental specifications listed in the proposal, shall govern this improvement.

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway. Ample provision will be made for the maintenance and safety as shown on the plans and estimates.

The necessary right of way for this improvement will be provided by the State of Ohio.

Approved Fred R. Williams P.E. 862
Date 7-26-40 Resident Division Deputy Director

Approved G. R. Thorson P.E. 25
Date 8-6-40 Chief Engineer, Location and Right of Way

Approved
Date Chief Engineer, Bureau of Maintenance

Approved Wm Wickman P.E. 2629
Date 8/5/40 Chief Engineer, Bureau of Bridges

Approved H. B. Hom
Date 8-6-40 First Assistant Director and Chief Engineer

Approved Paul O. Bestatter
Date 8-6-40 Director of Highways

SUPPLEMENT PRINTS OF STANDARD CONSTRUCTION DRAWINGS			
Drawing No.	Date	Drawing No.	Date
L-1	2-16-38		
E-5 No. 1	8-25-39	I-8 C.B. No. 6	11-1-39
B-T-71 R	7-11-38	I-8 C.B. No. 13-A	7-1-40
S-27 P.C.P.	3-1-39	T-70-71 E No. 1	10-1933
I-1, 2, 3, 4, & 5	3-1-39	L-2	2-16-38
I-8 C.B. 1-2 & 2-2	11-24-39		
I-8 C.B. 2-3 & 2-4	11-1-39		
I-8 M.H. No. 1	3-1-39		
G-7.07	10-1933		
B-T-50-70-71 E No. 1	10-1933		
B-T-71 E No. 1	10-1933		

SUPPLEMENTAL SPECIFICATIONS			
Drawing No.	Date	Drawing No.	Date
M-110.11	REV. 9-16-39		
M-110.12	REV. 7-25-40		
M-110.23	ADP. 3-11-40		
E-305	REV. 2-15-40		

FILE No. LAKE COUNTY ~ SH No. 2 ~ SEC. Q(Pt.)
DATE OF LETTING 194
CONTRACT No.

SCALES

1"=50' PLAN
1"=5' VERTICAL PROFILE
1"=50' HORIZONTAL PROFILE
1"=5' CROSS SECTIONS

INDEX OF SHEETS

Title Page	1
Typical Sections	2-3
Joint Sheets	3-A, 3-B, 3-C, 3-D
Curve Table - Intersections and C.B. Details	4-5-6-7
Plan Sheets	8-21
Cross Sections	22-34
Sewer Outfall	35-36
D.W. Details	37-38
Tree Protection	39
Structures	40-41
Summary	42-43

LINE INDEX

Beginning of Project 566+55.54
End of Project 688+91.70
No Additions or Deductions
Net Length = 12236.16 Lin. Ft. or 2.317 Miles.

CONSTRUCTION BUREAU
APR 9 1956
GROUND PHOTOLAB

000802

RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER
PUBLIC ROADS ADMINSTRATION
FEDERAL WORKS AGENCY

APPROVED

COMMISSIONER
PUBLIC ROADS ADMINSTRATION
FEDERAL WORKS AGENCY

TITLE SHEET

FED. RD. DIST. NO.	STATE	Fed. Aid PROJECT	FISCAL YEAR
10	OHIO	5A (5)	1941

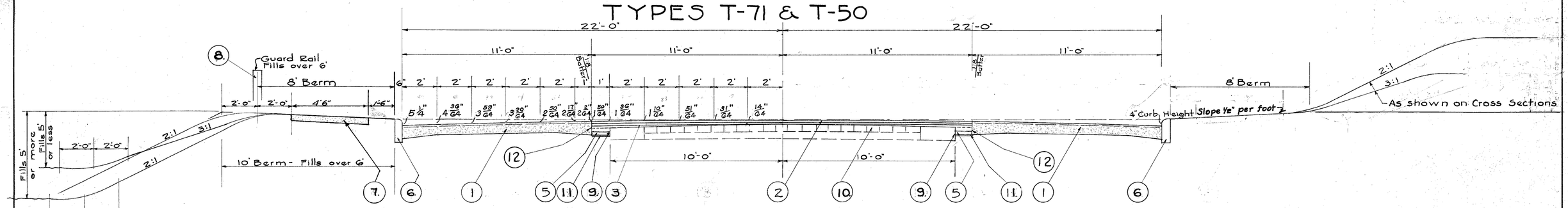
2.
43

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)

TYPICAL SECTIONS

Scale 3/8" = 1'-0"

TYPES T-71 & T-50



1 Item T-71 - 9"-T-T-9" Reinforced Portland Cement Concrete Pavement.

2. Item T-50 2½" Hot-mixed, Hot-laid Asphaltic Concrete Surface Course (1" Type B Wearing Course, 1½" Binder Course)

3 Item T-50. Hot mixed, Hot laid Asphaltic Concrete Leveling Course (This course, 2½" over the Base Widening & Variable Thickness over Portions of existing pav't.)

Course.

5 Item B-50-3" Hot-mixed, Hot-laid Asphaltic Concrete Base Course.

6. Item I-11 - 6"x16" Sandstone Curb (Berea, Amherst, or Equal)

NOTE :- SUBGRADE FOR BITUMINOUS BASE WIDENING SECTIONS, SHALL BE PREPARED AND COMPACTED AT THE TIME THE SUBGRADE IS CONSTRUCTED FOR THE CONCRETE WIDENING LANE.

STATION			LIN. FT.
FROM	TO		
566 + 55.54	650 + 89.5		8433.96
660 + 64.3	688 + 91.7		2827.40
Total			11261.36

7. Item I-13 Concrete Sidewalk - 4" Thick x 4'-6" Wide

8. Item I-15 Guard Rail

9. Item E-10 Sealing of Existing Pavement Edge with Bituminous Material Sec. M-5.2, A-2; M-5.12 AE-1; AE-2, or AE-3 at the rate of 1/4 Gal. Per Sq. Yd. of Surface Area.

10. Existing Pavement: 4" Monolithic Brick with 5" Concrete Base 16'-0" Wide; 2'-0" x 0'-9" Concrete Widening on Each Side.

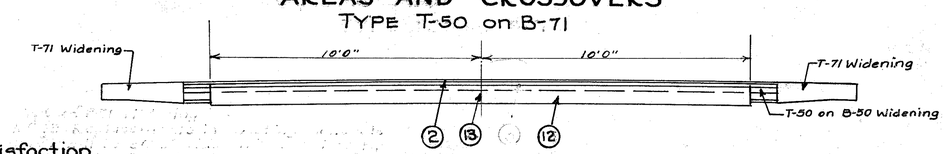
11. Item I-19 - 1¼" Insulation Course.

12. Item E-10 Sealing only, 6¾" of vertical face of new concrete surface course using same material and at the same rate as under Note 9

LEVELING COURSE:- ASPHALTIC CONCRETE LEVELING COURSE SHALL BE OF "BINDER COMPOSITION." THE COURSE SHALL BE LAID IN TWO OPERATIONS AS FOLLOWS: FIRST, ALL DEPRESSIONS IN THE OLD PAVEMENT AND THE BASE WIDENING SHALL BE LEVELED SO THAT THE LEVELING COURSE WILL BE FINISHED 1/4" ABOVE ANY PROJECTION OR PAVEMENT EDGE WHEN COMPACTED. IN LEVELING THE BASE WIDENING OR DEPRESSIONS, THE MATERIAL SHALL BE SPREAD BY STRIKE OFF OR RAKED BY HAND AND THE JOINTS SHALL BE SET BY RAKES ALONG ANY EDGE. SECOND, THE REMAINING PORTION OF THE LEVELING COURSE AND EXTRA BINDER SHALL BE USED TO REDUCE CROWN. THE TOTAL EDGE THICKNESS OF THE TWO PARTS OF THE LEVELING COURSE SHALL BE 2½".

REPLACEMENT FOR DEFECTIVE AREAS AND CROSSOVERS

TYPE T-50 on B-71



2. Item T-50 2½" Hot Mixed Hot Laid Asphaltic Conc. Surface Course 1" Type B Wearing Course - 1½" Binder Course

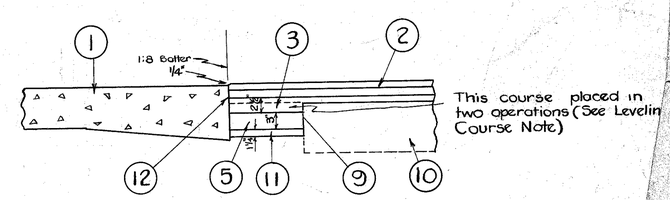
12 Item B-71 8" Reinforced Portland Cement Concrete Base Course

13 Longitudinal Joint

NOTE: Full depth wood forms and finishing according to Sec. B-70.191 will be permitted for the B-71 Base.

TRAFFIC NOTE

Two lane traffic shall be maintained at all times to the satisfaction of the Engineer. The item of maintenance shall include furnishing lights, signs, barricades, and watchmen necessary to secure the unimpeded flow of two lane Traffic twenty four hours a day. Satisfactory means of ingress & egress for people living adjacent to this improvement shall be maintained at all times by the contractor.



COURSE DETAIL

FED. RD. DIST. NO.	STATE	FED AID PROJECT	FISCAL YEAR
10	OHIO	5A(5)	1941

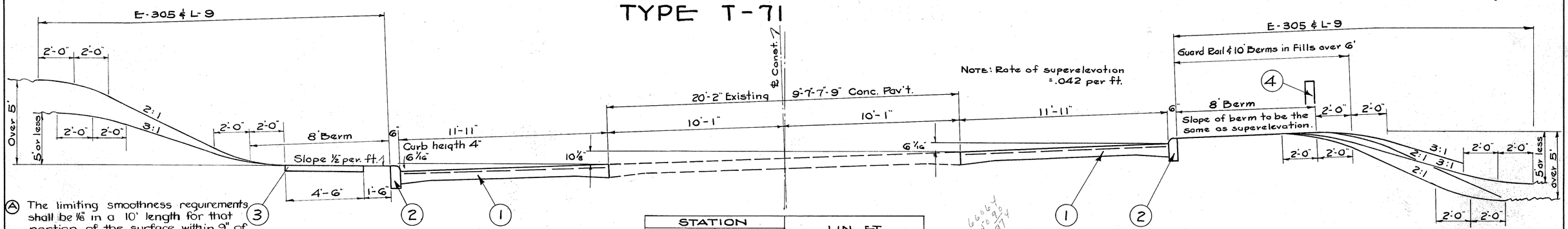
3. / 43

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

— TYPICAL SECTIONS —

Scale 3/8" = 1'-0"

TYPE T-71



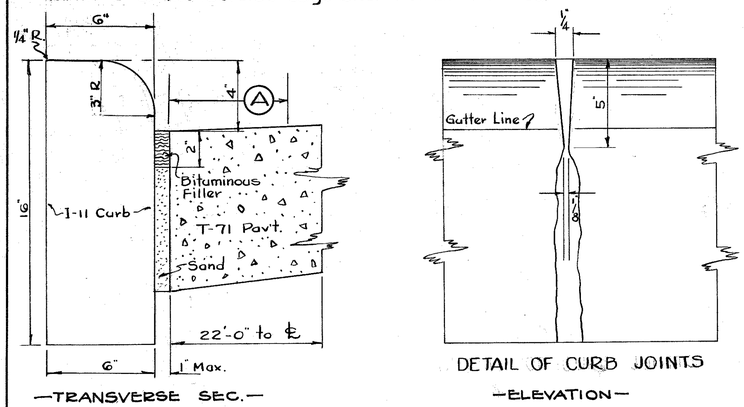
Ⓐ The limiting smoothness requirements shall be 1/8" in a 10' length for that portion of the surface within 9" of the outside edge. That portion of the surface within 9" of the outside edge shall not be broomed

STATION FROM	STATION TO	LIN. FT.
650+89.5	657+96.68	707.18
658+81.84	660+64.3	182.46
	Total	889.64

Note: Sta. 657+96.68 to 658+81.84 = Deduction for Bridge.

6606.4
650 90
97.4

1. Item T-71 — 9'-7"-7'-9" Reinforced Portland Cement Concrete Pavement. *Expansion and contraction Jts. to be at some interval and spacing as existing joints.*
2. Item I-11 — 6"x16" Sandstone Curb (Berea, Amherst, or Equal)
3. Item I-13 — Concrete Sidewalk — 4" Thick × 4'-6" Wide
4. Item I-15 — Guard Rail



Pavement to be full width of 44' as shown on Typical Sections. Curb shall be outside pav't. width.

Any opening remaining between curb and pav't. shall be filled with dry sand to within 2" of surface. The remaining space shall be filled with Bituminous filler meeting requirements of Item M5.5 (F-2)

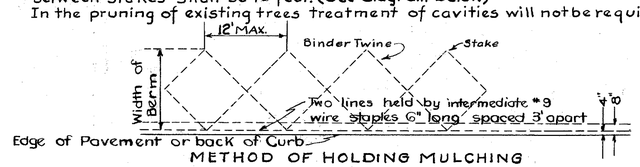
Sand shall meet requirements of Item M2.2. Payment for joint to be included in unit price bid per lineal foot of curb.

— DETAIL OF SANDSTONE CURB —

SCALE 3" = 1'-0"

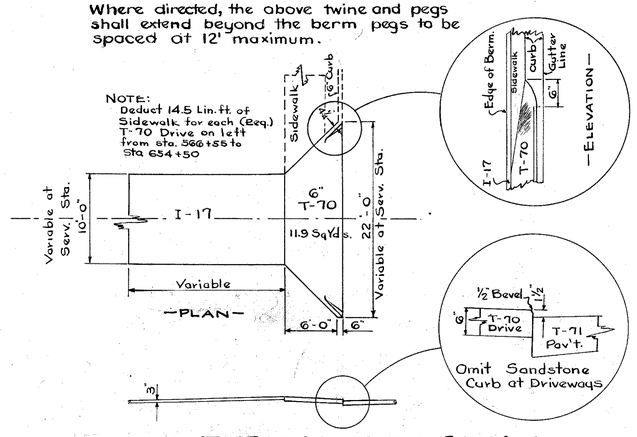
ROADSIDE IMPROVEMENT NOTES

Compaction will not be required on the top 3" of embankment due to seeding.
Items E305 & L-9 shall be performed on all earth area within the limits of the work.
Seed shall be sown at the rate of 4 lbs. per 1000 sq.ft. using the following mixture: 60% Kentucky Blue Grass, 20% Domestic Rye Grass, & 20% Red Top.
Straw shall be held in place by the use of lath stakes in lengths of 4" to 8" with twine between stakes and crossing near the center of square or rectangular areas formed by the stake placement. The maximum distance between stakes shall be 12 feet. (See diagram below)
In the pruning of existing trees treatment of cavities will not be required.



METHOD OF HOLDING MULCHING

Where directed, the above twine and pegs shall extend beyond the berm pegs to be spaced at 12' maximum.



—TYPICAL DRIVEWAY—

Scales 1/8" = 1'-0" & 3/4" = 1'-0"

— GENERAL NOTES —

The thickness of the subgrade in cuts to be compacted on this project will be eight inches loose measurement. The width shall be the width of the pavement plus eighteen inches on each side of the pavement.

All berms and slopes shall be finished in accordance with the typical sections, except where otherwise shown on the cross sections.

Supervelevated curves shall be built without crown. The crown shall be worked out of the pavement in that portion between the beginning of the transition and the point where the superelevation equals twice the crown.

Where openings are made across the roadway, they shall be immediately back-filled and protected in order to provide the minimum of inconvenience to twoway traffic.

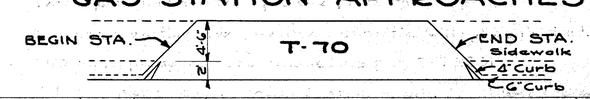
All existing pavement which is removed, plus surplus excavation from drive pipe, storm sewers, underdrains, crossovers, and road approaches not specifically detailed shall be used in embankment to reduce borrow

T-70 for Approaches and Drives may be finished as per T-70.201.

All Manholes in Storm Sewer System shall be stationed 5' Longitudinally from catch basins in direction of flow.

Aggregate For Side Approaches Shall be 60% No 4 and 40% No 7 And Compacted With Roller Weighing Not Less Than 2 1/2 Tons.

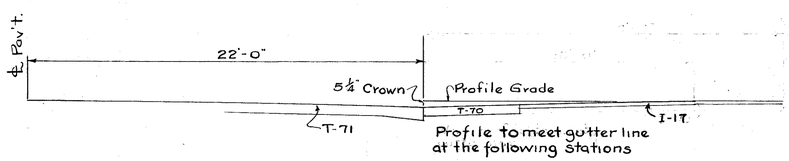
GAS STATION APPROACHES



STA. TO STA.		SIDE	LENGTH	T-70 CALCULATIONS	S.F.	S.Y.	I-17 C.Y.	DED. CURB L.F.
566+55.54	568+18	RT.	162.46	(162.46×6)+[(162.46+3)×0.5]	1057.5	117.5	16.7	165.5
569+18	571+38	RT.	220	(220×6)+[(220+6)×0.5]	1433	159.2	22.7	226
571+51	573+82	RT.	191	(191×6.5)	1242	138	19.7	197
611+21.57	613+27.57	LT.	206	(206×6)+[(206+6)×0.5]	1342	149.1	21.3	212
633+84	634+60	RT.	76	(76×6)+[(76+6)×0.5]	497	55.2	7.5	82
638+17	639+18	LT.	101	(101×6)+[(101+6)×0.5]	660	73.3	10.1	107
644+09	645+34	LT.	125	(125×6)+[(125+6)×0.5]	816	90.7	12.7	131
655+62.56	656+97	RT.	134.44	(134.44×6)+[(134.44 ×0.5]	874	97.1	13.7	134.4
659+29	660+97	RT.	168.00	(168×6)+[(168+6)×0.5]	1095	121.7	17.3	174

DETAIL OF SIDE ROAD APPROACHES AT GUTTER

SCALE 1" = 4'-0"



Profile to meet gutter line at the following stations

611+13.23	Lt	Intersection
612+00	Lt	Gas Station
638+67	Lt	Gas Station
654+90	Lt	Gas Station
655+38.26	Rt	Intersection
656+00	Lt	G.S & Intersection
660+00	Lt	Gas Station

FED. RD. DIST. NO.	STATE	FEDERAL AID PROJECT	FISCAL YEAR
10	OHIO	5-A(5)	1941

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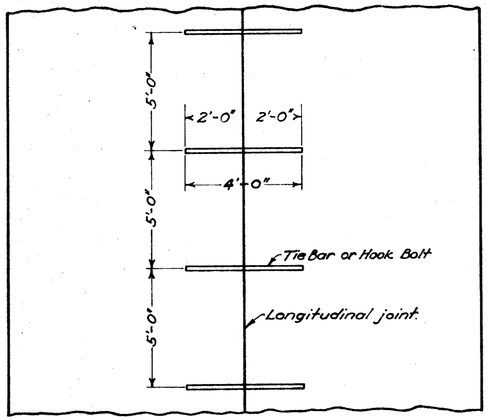
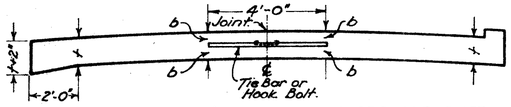
LAKE COUNTY
S.H. 2 SEC. Q (PT.)

LONGITUDINAL JOINTS

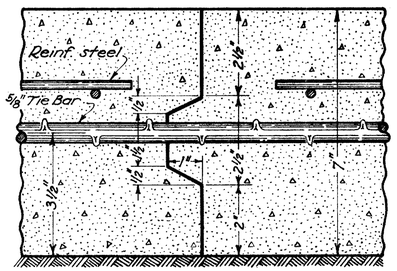


HALF PLAN FOR PAV'T. HALF PLAN FOR BASE



HALF SEC. FOR PAV'T. HALF SEC. FOR BASE

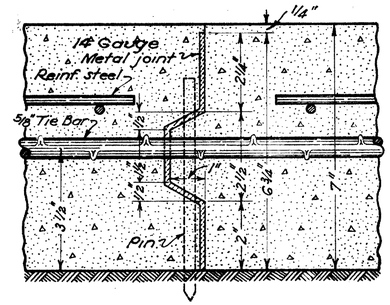
KEY JOINT



DETAIL OF JOINT

NOTE:- This joint is designed for 7" slab. When a greater or less thickness is used the joint shall be proportionally designed. Other deformations may be used if approved by the engineer.

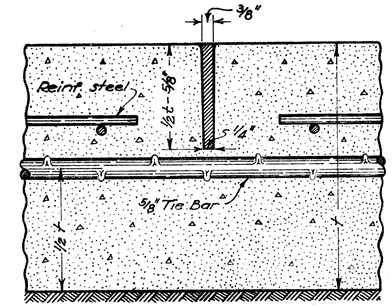
METAL JOINT



DETAIL OF JOINT

NOTE:- This joint is designed for 7" slab. When a greater or less thickness is used the joint shall be proportionally designed to extend within 1/4" of the surface of the slab. Other deformations may be used if approved by the engineer.

IMPRESSED JOINT



DETAIL OF JOINT

DESCRIPTION:- This joint shall be formed by impressing a device or bar into the newly deposited concrete before initial setting. The device or bar shall be removed as soon as the concrete is in such condition as to preclude of distortion or injury to the concrete. The groove thus formed shall be on the center line unless otherwise shown on the plans, and of the dimensions as detailed above. After the joint is formed it must be protected from dirt and foreign matter until the filler is placed.

The filler shall be handled in such a manner that it will be confined to the joint and in nowise mar the surface.

Material for sealing 3/8 inch premolded joints and for filling impressed joints shall meet the requirements of Section M-5.5 F-2. Immediately before placing liquid bituminous seal or filler an application of kerosene shall be applied to the area of the joint to be in contact with the seal or filler.

Application of kerosene shall be by pressure spray, brush or swab.

GENERAL:- Longitudinal joints shall be used when called for on the typical section, and shall be constructed as shown on this sheet.

Tie bars to be 5/8 inch round, deformed bars.

A satisfactory device shall be used to hold the tie bars in proper position.

The longitudinal joint between adjoining slabs poured in separate operations shall be a key joint with American hook bolts or equal, or billet steel (Sec. M-7.1) tie bars, unless otherwise shown on the plans.

If tie bars are bent, no portion of the bend shall extend into the first slab poured.

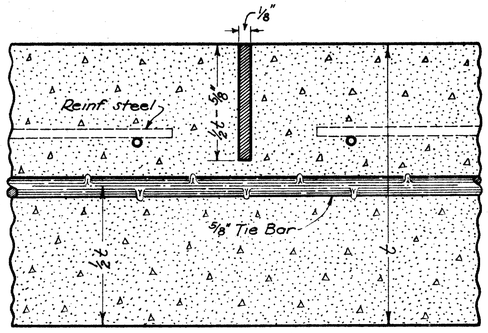
Immediately prior to placing the second slab, bent tie bars shall be straightened by means of a pipe slipped over the free end of the bar.

Key joints used in part width construction shall be painted with two coats of bituminous material as per Section M-5.5 F-2 before adjoining slabs are poured.

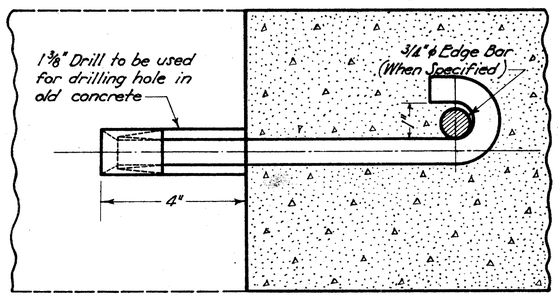
The Metal, Key, and 1/8" Premolded Joints shall not be edged.

Special care shall be exercised in edging Impressed and 3/8" Premolded Joints, that the width of the opening does not exceed that shown.

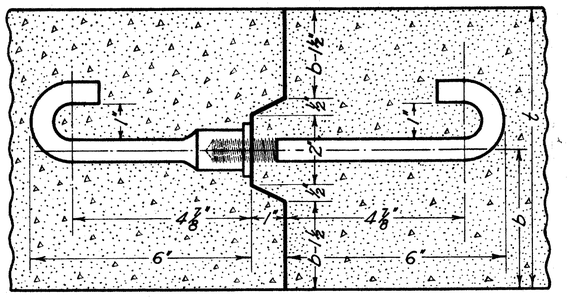
PREMOLDED JOINT



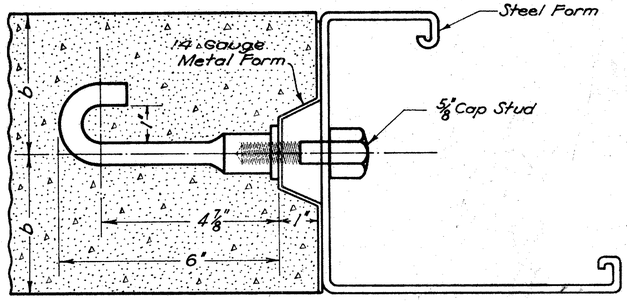
EXPANSION BOLT JOINT



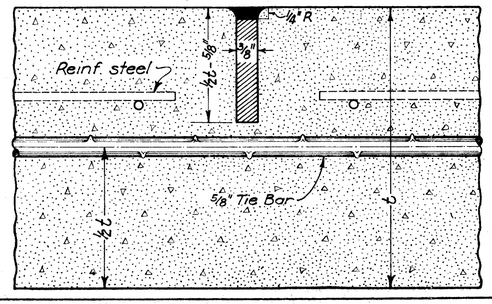
HOOK BOLT AND KEY JOINT

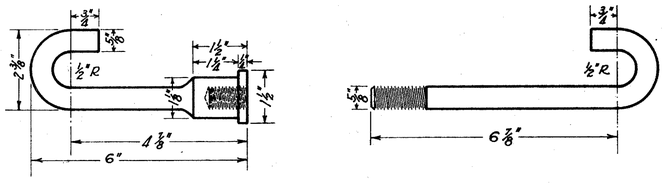


ACCEPTABLE METHOD OF FORMING JOINT



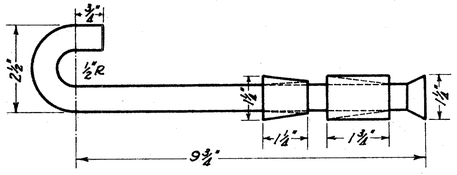
PREMOLDED JOINT





INSERT J BOLT

HOOK BOLT DETAIL



EXPANSION BOLT DETAIL

FED. RD. DIST. Nº	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5-A(5)	1941

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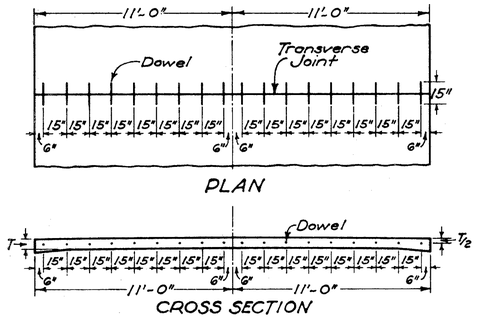
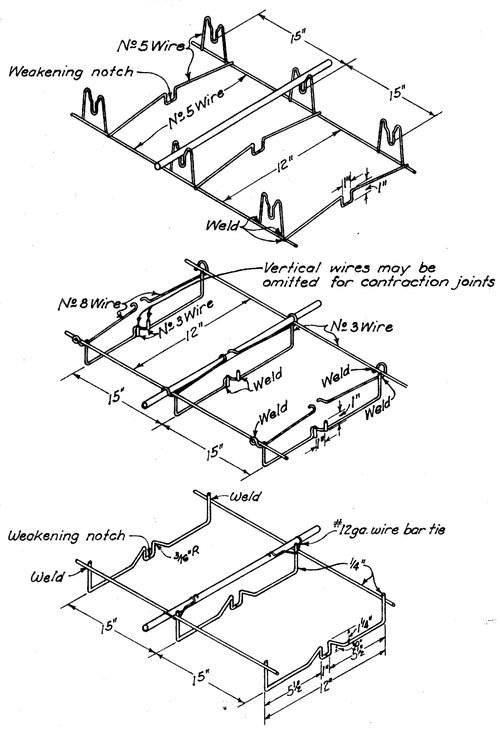
LAKE COUNTY
S.H. 2 SEC. Q (PT.)

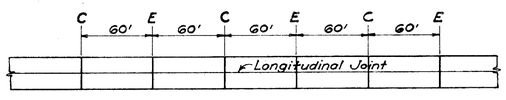
TRANSVERSE JOINTS

DOWEL SPACING



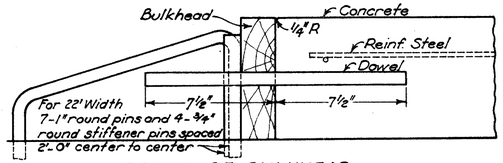
DOWEL SUPPORT UNITS



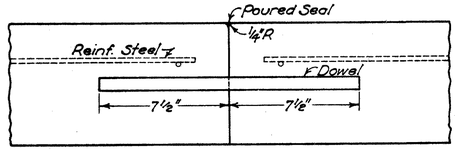


ARRANGEMENT OF TRANSVERSE JOINTS
C = Contraction Joint
E = Expansion Joint

CONSTRUCTION JOINT

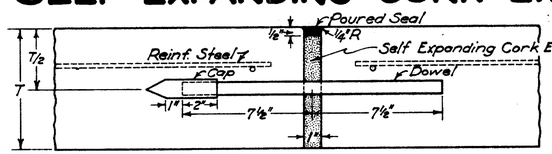


DETAIL OF BULKHEAD

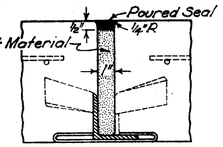


DETAIL OF DOWEL JOINT

SELF EXPANDING CORK EXPANSION JOINT

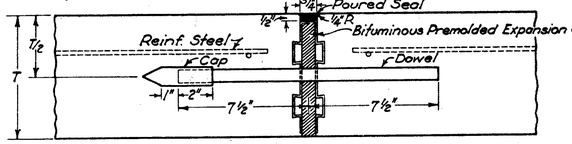


TRANSFER OF LOAD BY DOWEL

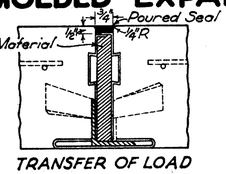


TRANSFER OF LOAD WITH TRANSLODE BASE

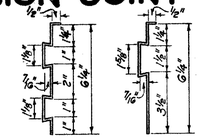
NON-EXTRUDING BITUMINOUS PREMOLDED EXPANSION JOINT



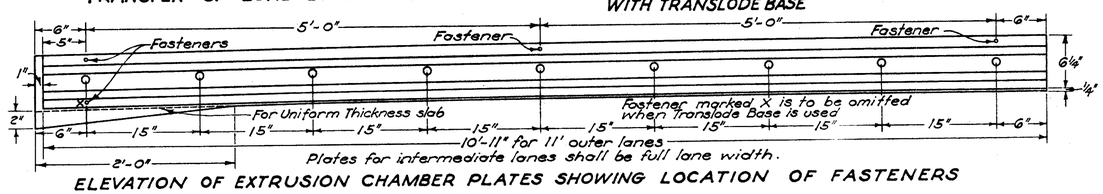
TRANSFER OF LOAD BY DOWEL



TRANSFER OF LOAD WITH TRANSLODE BASE

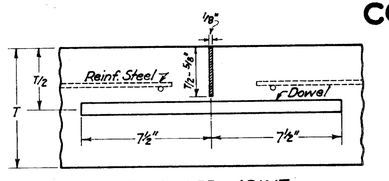


DETAILS OF SIDE PLATES

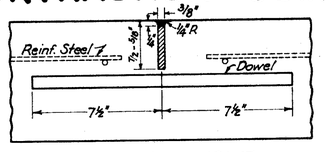


ELEVATION OF EXTRUSION CHAMBER PLATES SHOWING LOCATION OF FASTENERS

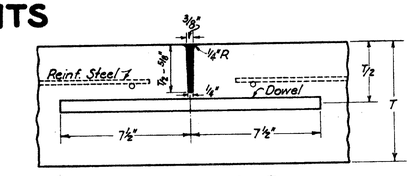
CONTRACTION JOINTS



PREMOLDED JOINT

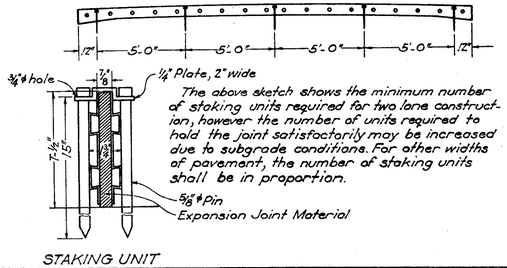


PREMOLDED JOINT



IMPRESSED JOINT

SUGGESTED METHOD OF STAKING JOINTS



The above sketch shows the minimum number of staking units required for two lane construction, however the number of units required to hold the joint satisfactorily may be increased due to subgrade conditions. For other widths of pavement, the number of staking units shall be in proportion.

STAKING UNIT

CONTRACTION JOINTS. Contraction joints shown are to be considered as alternates, the type to be used on any project shall be optional with the contractor; and shall be constructed as shown herewith. Contraction joints shall be spaced so that the length of any slab between transverse joints shall not exceed 60 feet. Joint arrangement at intersections shall be as specifically shown on the plans.

PREMOLDED CONTRACTION JOINTS. The filler material shall meet the requirements of Sec. M-10.1 or Sec. M-10.13. The top edge of contraction joint material shall be shaped to fit the surface of the pavement.

IMPRESSED CONTRACTION JOINT. This joint shall be formed by impressing a device or bar into the newly deposited concrete before initial setting. The device or bar shall be removed as soon as the concrete is in such condition as to preclude of distortion or injury to the concrete. The groove thus formed shall be of dimensions detailed. After the joint is formed it must be protected from dirt and foreign matter until the filler is placed.

· NOTES ·

GENERAL. Expansion joints shown are to be considered as alternates; the type to be used on any project shall be optional with the contractor. The type of joint selected by the contractor and all operations and materials for assembling and installing the joints shall be approved by the engineers.

DOWELS. All dowels shall be ¾" inch round, straight, smooth bars, free from burring and flattening at ends. The entire dowel shall be thoroughly coated before placing in the pavement using either Bit. Mat, Sec. M-5.11 SC-2 or heavier, or an oil such as 600 W or equal.

Prior to placing, all dowels shall be assembled in a unit which is to remain in place for construction, contraction or expansion joints. The length of the unit shall be not less than the distance between longitudinal joints and sufficient support shall be provided to hold the dowels accurately perpendicular to the joint. Expansion joint material shall be forced over the lower cross wires so as to fit snugly on the subgrade. The design of the dowel support unit may be as shown herewith or may be an approved equal, and it shall be shop assembled. When the lane width varies from 11 feet, the spacing of the dowels shall be 15 inches and the 6" end spaces shall be equally increased or decreased and shall be less than 10½" but not less than 3".

CONSTRUCTION JOINTS. A bulkhead shall be constructed to permit dowels to extend through the joint. Care shall be taken in removing bulkhead and placing adjacent concrete to see that dowels are embedded in the concrete without being bent.

EXPANSION JOINTS. Expansion joints shall be constructed as shown herewith. The spacing of the expansion joints shall not exceed 120 feet. The type and arrangement of expansion joints at intersections shall be as specifically shown on the plan.

Each dowel bar shall be equipped with a neat fitting metal cap on one end. The surface width of expansion joints shall not be greater than the width shown herewith. The bituminous material for the poured seal shall meet the requirements of Section M-5.5 F-2.

The top edge of the extrusion chamber plates, and also the edges of all expansion joint materials shall be shaped to fit the section of the pavement.

Joints in monolithic curbs shall be constructed with the same type of filler material as used in the expansion joints. When premolded material is used in curbs over 3 inches in height, sufficient holes shall be provided in the material to prevent extrusion.

SELF EXPANDING CORK JOINT. The filler material for this joint shall meet the requirements of Supplemental Specification Nº M-110.11, and shall be accurately held in place by means of approved steel bulkheads. Dowel holes shall be ⅝ inch in diameter.

NON-EXTRUDING BITUMINOUS PREMOLDED JOINT. The filler material shall meet the requirements of Sec. M-10.1. The extrusion chamber plates shall be constructed of 24 gauge metal rolled to true section. When assembled in the field, a template and protected bench shall be provided for the workmen to insure accuracy in assembling.

Dowel holes shall be punched in the filler material, and shall be 11/16 inch round holes to insure tight fitting dowels.

Dowel holes in the side plates shall be ⅞ inch in diameter. In no case shall dowels interfere with the extrusion chambers. At each edge of the pavement the extrusion chambers shall be bent down to seal the ends of the chambers. The joint shall at all times be protected from heat and other agencies which tend to cause distortion. The assembled joint shall be securely fastened together by ⅛ inch stove bolts or other approved fasteners. The holes for the fasteners may be made in the plates at the factory; when made in the field, they shall be drilled after the joint is assembled. The stove bolts shall be fastened with thin nuts, speed nuts, or rubber tubing screwed on. In order for this joint to function properly, the plates must be fitted snugly against the filler material and held in position while concrete is being deposited so that no mortar enters between the plate and filler, after which the fasteners must function in such a manner as will permit the plates to move with the concrete slab. The use of clinched nails or any such fasteners as would prevent the movement of the plates will not be permitted. The joint shall then be staked rigidly to the subgrade.

BITUMINOUS SEAL AND FILLER. Material for sealing expansion, construction and contraction joints and for filling impressed contraction joints shall meet the requirements of Section M-5.5 F-2. Immediately before placing liquid bituminous seal or filler an application of kerosene shall be applied to the area of the joint to be in contact with the seal or filler. Application of kerosene shall be by pressure spray, brush or swab.

EDGING JOINTS. Special care shall be exercised in edging joints that the width of the opening does not exceed that shown.

TREATMENT OF EXPANSION JTS. AT LONGITUDINAL JTS. A positive method to maintain required alignment shall be used in connecting the expansion joints at longitudinal joints. The expansion material and metal plates shall meet in a vertical joint. Longitudinal keys and keyways, where used, shall be omitted for the thickness of the expansion joint.

DATE
3-1-39
3-28-39
5-4-39
7-20-39
9-18-39

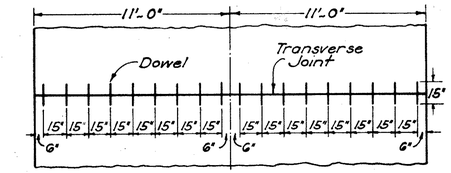
TJ-6

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	3-C / 43
10	OHIO	5-A (5)	1941	

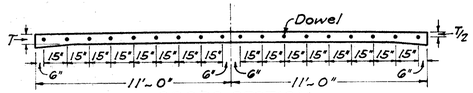
LAKE COUNTY
S.H. 2 SEC. Q (PT.)

TRANSVERSE JOINTS

DOWEL SPACING

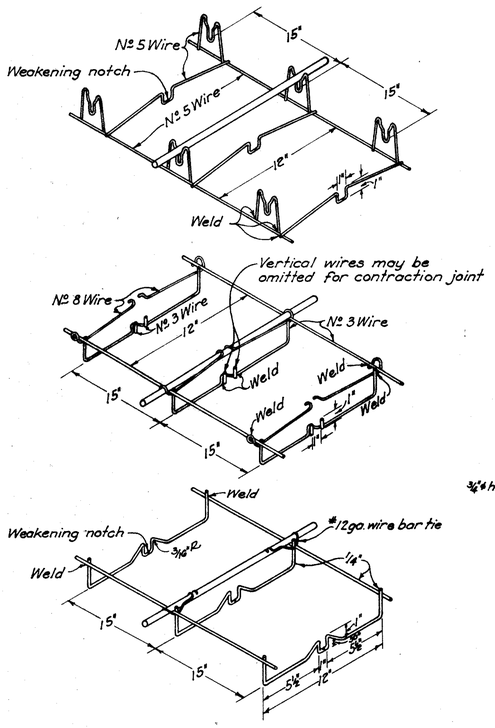


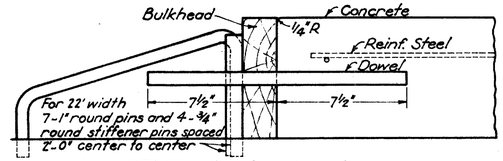
PLAN



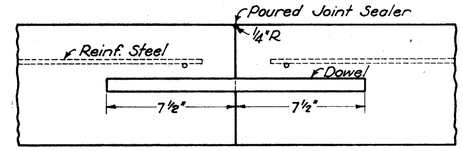
CROSS SECTION

DOWEL SUPPORT UNITS

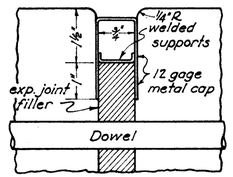




DETAIL OF BULKHEAD

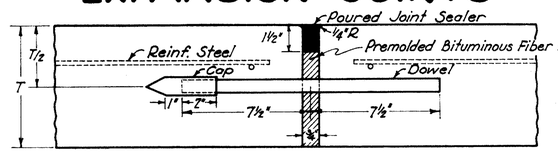


DETAIL OF DOWEL JOINT

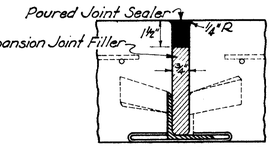


DETAIL OF METAL CAP

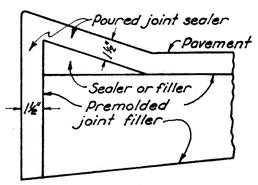
EXPANSION JOINTS



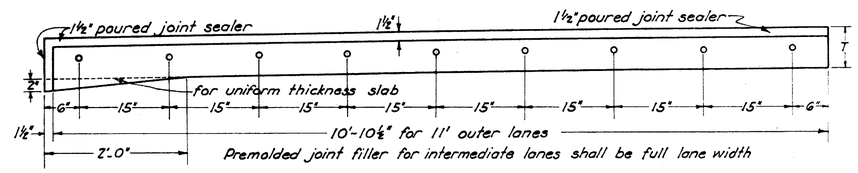
TRANSFER OF LOAD BY DOWEL



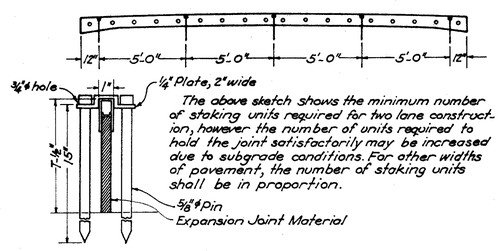
TRANSFER OF LOAD WITH TRANSLODE BASE



CURB SECTION

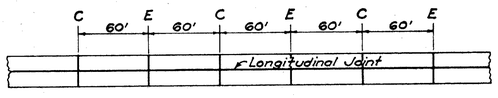


ELEVATION OF PREMOLDED EXPANSION JOINT FILLER SHOWING DOWEL HOLES AND POURED JOINT SEALER



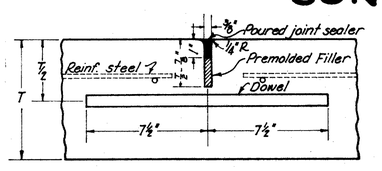
The above sketch shows the minimum number of staking units required for two lane construction, however the number of units required to hold the joint satisfactorily may be increased due to subgrade conditions. For other widths of pavement, the number of staking units shall be in proportion.

SUGGESTED METHOD OF STAKING JOINTS

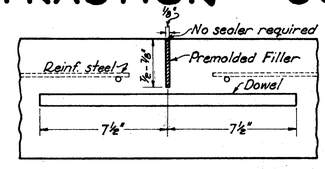


ARRANGEMENT OF TRANSVERSE JOINTS
C = Contraction Joint
E = Expansion Joint

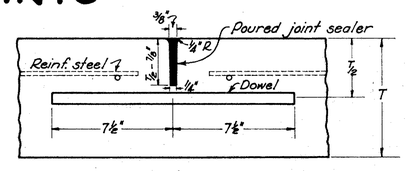
CONTRACTION JOINTS



3/8" PREMOLDED JOINT



1/8" PREMOLDED JOINT



IMPRESSED JOINT

GENERAL. Expansion joints shown are to be considered as alternates; the type to be used on any project shall be optional with the contractor. The type of joint selected by the contractor and all operations and materials for assembling and installing the joints shall be approved by the engineers.

DOWELS. All dowels shall be 3/4" inch round, straight, smooth bars, free from burring and flattening at ends. The entire dowel shall be thoroughly coated before placing in the pavement using either Bit. Mat, Sec. M-5.11 SC-2 or heavier, or an oil such as 600 W or equal.

Prior to placing, all dowels shall be assembled in a unit which is to remain in place for construction, contraction or expansion joints. The length of unit shall be not less than the distance between longitudinal joints and sufficient support shall be provided to hold the dowels accurately perpendicular to the joint. Expansion joint material shall be forced over the lower cross wires so as to fit snugly on the subgrade. The design of the dowel support unit may be as shown herewith or may be an approved equal, and it shall be shop assembled. When the lane width varies from 11 feet, the spacing of the dowels shall be 15 inches and the 6" end spaces shall be equally increased or decreased and shall be less than 10 1/2" but not less than 3".

CONSTRUCTION JOINTS. A bulkhead shall be constructed to permit dowels to extend through the joint. Care shall be taken in removing bulkhead and placing adjacent concrete to see that dowels are embedded in the concrete without being bent.

EXPANSION JOINTS. Expansion joints shall be constructed as shown herewith. The spacing of the expansion joints shall not exceed 120 feet. The type and arrangement of expansion joints at intersections shall be as specifically shown on the plan.

Each dowel bar shall be equipped with a neat fitting metal cap on one end. The surface width of expansion joints shall not be greater than the width shown herewith. The material for the poured seal shall meet the requirements of Supplemental Specification Nº M-110.23.

The edges of all expansion joint filler shall be shaped to fit the section of the pavement leaving a 1 1/2" space across the top and down the ends of the joint for poured joint sealer.

The 3/4" x 1 1/2" vertical space for sealing the ends of the joint at each edge of the pavement shall be provided by removable blocks or forms fastened to the premolded filler.

Joints in monolithic curbs shall be constructed with the same type of filler material as used in the expansion joints and sealed to a depth of 1 1/2" with poured joint sealer.

PREMOLDED BITUMINOUS FIBER EXPANSION JOINT FILLER. This material shall meet the requirements of Supplemental Specification Nº M-110.12 and shall be accurately held in place by means of approved steel holders. Dowel holes shall be 11/16" in diameter.

POURED JOINT SEALER. Material for sealing expansion, construction and 3/8" premolded contraction joints and for filling impressed contraction joints shall meet the requirements of Supplemental Specification Nº M-110.23

EDGING JOINTS. Special care shall be exercised in edging joints so that the width of the opening does not exceed that shown.

TREATMENT OF EXPANSION JTS. AT LONGITUDINAL JTS. A positive method to maintain required alignment shall be used in connecting the expansion joints at longitudinal joints. The expansion material shall meet in a vertical joint. Longitudinal keys and keyways, where used, shall be omitted for the thickness of the expansion joint.

CONTRACTION JOINTS. Contraction joints shown are to be considered as alternates; the type to be used on any project shall be optional with the contractor; and shall be constructed as shown herewith. Contraction joints shall be spaced so that the length of any slab between transverse joints shall not exceed 60 feet. Joint arrangement at intersections shall be as specifically shown on the plans.

3/8" PREMOLDED CONTRACTION JOINT. The filler material shall meet the requirements of Sec. M-10.1 or Supplemental Specification Nº M-110.12.

IMPRESSED CONTRACTION JOINT. This joint shall be formed by impressing a device or bar into the newly deposited concrete before initial setting. The device or bar shall be removed as soon as the concrete is in such condition as to preclude of distortion or injury to the concrete. The groove thus formed shall be of dimensions detailed. After the joint is formed it must be protected from dirt and foreign matter until the joint sealer is poured.

1/8" PREMOLDED CONTRACTION JOINT. The filler material shall meet the requirements of Sec. M-10.13.

DATE 6-1-40

TJ-8

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	3-D
10	OHIO	5-A(5)	1941	43

LAKE COUNTY
S.H.2 SEC. Q (PT.)

TRANSVERSE JOINTS

NOTES

GENERAL:- Expansion joints shown are to be considered as alternates; the type to be used on any project shall be optional with the contractor. The type of joint selected by the contractor and all operations and materials for assembling and installing the joints shall be approved by the engineers.

DOWELS:- Prior to placing, the dowels shall be assembled into a unit, as shown hereon, which is to remain in place for expansion, contraction and construction joints. The straight end of each dowel shall be neatly fitted with a metal cap as shown hereon. The straight end of each dowel shall be thoroughly coated, before placing in the pavement, with either bituminous material Sec. M-5.11 S.C. 2, or heavier, or 600 W grease or equal. The length of the unit shall be not less than the distance between longitudinal joints and sufficient support shall be provided to hold the dowels accurately perpendicular to the joint when the lane width varies from 11 feet. The spacing of the dowels shall be 15 inches and the 6" end spaces shall be equally increased or decreased and shall be less than 10½" but not less than 3".

EXPANSION JOINTS:- The spacing of the expansion joints shall not exceed 120 feet. The type and arrangement of expansion joints at intersections will be specifically shown on the plan. The base angle of the dowel assembly and the edge of the expansion joint material shall be shaped to fit the section of the pavement. Joints in monolithic curbs shall be constructed with the same type of premolded filler material as used in the expansion joints.

CONTRACTION JOINTS:- Contraction joints shown are to be considered as alternates; the type to be used on any project shall be optional with the contractor; and shall be constructed as shown hereon. Contraction joints shall be spaced so that the length of any slab between transverse joints shall not exceed 60 feet. Joint arrangement at intersections shall be as specifically shown on the plans. The filler material for ⅛" PREMOLDED CONTRACTION JOINTS shall meet the requirements of Sec. M-10.13. The filler material for ⅜" PREMOLDED CONTRACTION JOINTS shall meet the requirements of Sec. M-10.1 or Supplemental Specifications Nº M-110.12. IMPRESSED CONTRACTION JOINTS shall be formed by impressing a device or bar into the newly deposited concrete before initial setting. The device or bar shall be removed as soon as the concrete is in such condition as to preclude of distortion or injury to the concrete. The groove thus formed shall be of dimensions detailed. After the joint is formed it must be protected from dirt and foreign matter until the joint sealer is poured.

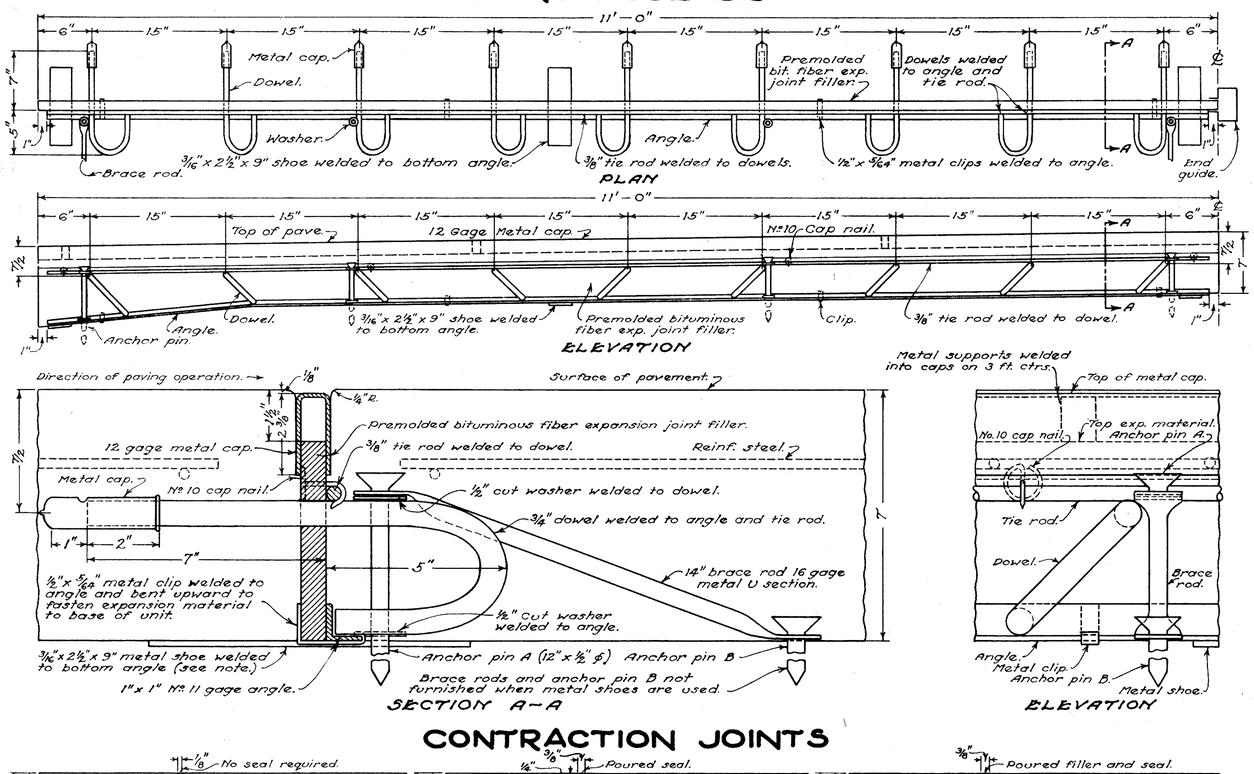
CONSTRUCTION JOINTS:- At construction joints the assembled dowel unit shall be reversed so that the straight end of the dowels point in the direction of the concreting operation. This is to permit the rigid bulkhead to be slipped over the straight ends of the dowels. If the construction joint is at an expansion joint the premolded expansion joint filler shall be placed to hold the concrete and be backed up by the rigid bulkhead. Care should be taken in removing the bulkhead and placing the adjacent concrete to see that the dowels are embedded in the concrete without being bent.

PREMOLDED BITUMINOUS FIBER EXPANSION JOINT FILLER:- This joint filler material shall meet the requirements of Supplemental Specifications Nº M-110.12. Dowel holes 1⅛" inch in diameter shall be accurately punched in the filler material to insure tight fitting dowels. The joint shall at all times be protected from the heat and other agencies which tend to cause distortion. A 12 gage metal cap as shown hereon shall be placed, before concreting, over the upper edge of each joint filler. This metal cap shall be removed immediately after the finishing machine has passed over the joint. A ¾" x 1⅜" strip of planed hardwood or metal shall then be fastened to the premolded joint filler to form the ¾" x 1½" space for the poured joint sealer. Any edging or finishing necessary shall be done along this strip which shall not be removed until the concrete has set. As an alternate method of placing the strip it may be placed before or with the metal cap so that when the cap is removed the strip will be in place. The filler material shall be securely fastened to the 1 inch by 1 inch angle with metal clips and to the ⅜ inch tie rod with Nº 10 cap nails. The dowel unit assembled with the filler material shall then be staked rigidly to the subgrade with anchor pins and brace rods or metal shoes as shown hereon.

NON-EXTRUDING BITUMINOUS PREMOLDED JOINT:- The filler material shall meet the requirements of Sec. M-10.1. The extrusion chamber plates shall be constructed of 24 gage metal rolled to true section. When assembled in the field a template and protected bench shall be provided for the workmen to insure accuracy in assembling. Dowel holes shall be punched in the filler material and shall be 1⅛ inch round holes to insure tight fitting dowels. Dowel holes in the side plates shall be ⅞ inch in diameter. In no case shall dowels interfere with the extrusion chambers. At each edge of the pavement the extrusion chambers shall be bent down to seal the ends of the chambers. The joint shall at all times be protected from heat and other agencies which tend to cause distortion. The assembled joint shall be securely fastened together by ⅛ inch stove bolts or other approved fasteners. The holes for the fasteners may be made in the plates at the factory; when made in the field they shall be drilled after the joint is assembled. The stove bolts shall be fastened with thin nuts, speed nuts or rubber tubing screwed on. In order for this joint to function properly the plates must be fitted snugly against the filler material and held in position while concrete is being deposited so that no mortar enters between the plate and filler, after which the fasteners must function in such a manner as will permit the plates to move with the concrete slab. The use of clinched nails or any such fasteners as would prevent the movement of the plates will not be permitted. The dowel unit assembled with the filler and plates shall then be staked rigidly to the subgrade with anchor pins and brace rods or metal shoes as shown hereon.

SELF EXPANDING CORK JOINT:- The filler material for this joint shall meet the requirements of Supplemental Specification Nº M-110.11, and shall be accurately held in place by methods specified for installing PREMOLDED BITUMINOUS FIBER EXPANSION JOINT FILLER.

JOINT ASSEMBLY



NOTES

TREATMENT OF EXPANSION JOINTS AT LONGITUDINAL JOINTS:- At the junction of longitudinal and transverse joints a positive method shall be used to connect the joints and maintain the vertical and longitudinal alignment of the two joints. Longitudinal keys and keyways, where used, shall be omitted for the thickness of the joint.

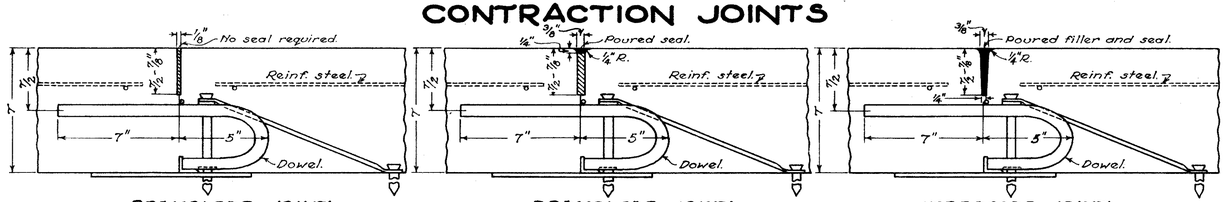
EDGING JOINTS:- Special care shall be exercised in edging joints so that the width of the opening does not exceed that shown.

JOINT SEALER:- Material for sealing expansion, contraction and construction joints in pavements where Non-Extruding Bituminous Premolded Filler or Self Expanding Cork filler is used shall meet the requirements of Section M-5.5 F-2 for liquid bituminous seal. Immediately before placing liquid bituminous seal an application of kerosene shall be applied by pressure spray, brush or swab to the joint to be in contact with the seal. Material for sealing expansion, contraction and construction joints in pavements where Premolded Bituminous Fiber expansion joint filler is used shall meet the requirements of Supplemental Specification Nº M-110.23 for poured joint filler.

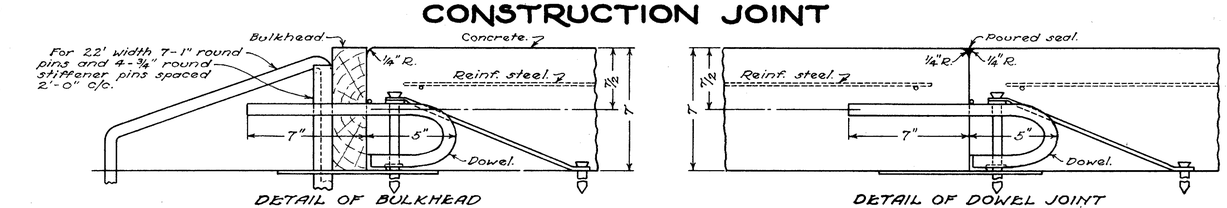
CONSTRUCTION DETAILS:- The assembled unit shall be rigidly held in such position as will keep the plane of the dowels parallel to the surface of the pavement and the expansion joint material at right angles to the pavement surface. This shall be accomplished by staking the unit to the subgrade with a sufficient number of anchor pins "A" and by bracing with a sufficient number brace rods and anchor pins "B". Not less than four "A" pins, two brace rods and "B" pins shall be used for each eleven foot section. Anchor pins 18" long shall be used where necessary to hold the unit in position. The metal shoes may be used in lieu of brace rods where hard shale or rock subgrade is encountered.

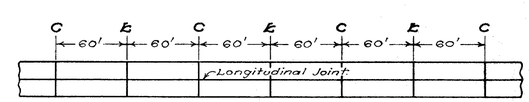
The metal cap shall fit closely on the dowel so that when forced on it can not easily be displaced. It shall be crimped to receive only two inches of the dowel and leave one inch space in the end for future movement of the dowel. It shall be made to prevent mortar from entering any part of it when in place on the dowel.

CONTRACTION JOINTS



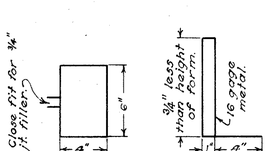
CONSTRUCTION JOINT





ARRANGEMENT OF TRANSVERSE JOINTS
C = Contraction Joint
E = Expansion Joint

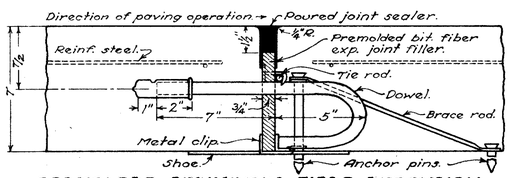
END GUIDE



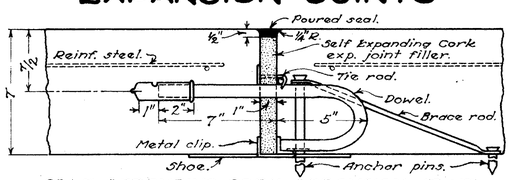
TOP VIEW

SIDE VIEW

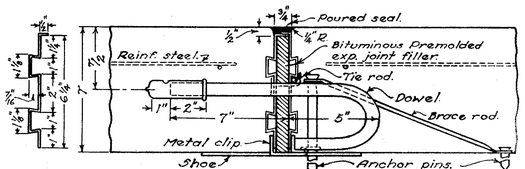
EXPANSION JOINTS



PREMOLDED BITUMINOUS FIBER EXPANSION JOINT FILLER WITH SUP. SPEC. Nº 110.23 SEAL



SELF EXPANDING CORK EXPANSION JOINT FILLER WITH LIQUID BITUMINOUS SEAL



BITUMINOUS PREMOLDED EXPANSION JOINT FILLER WITH LIQUID BITUMINOUS SEAL

DATE 7-1-40

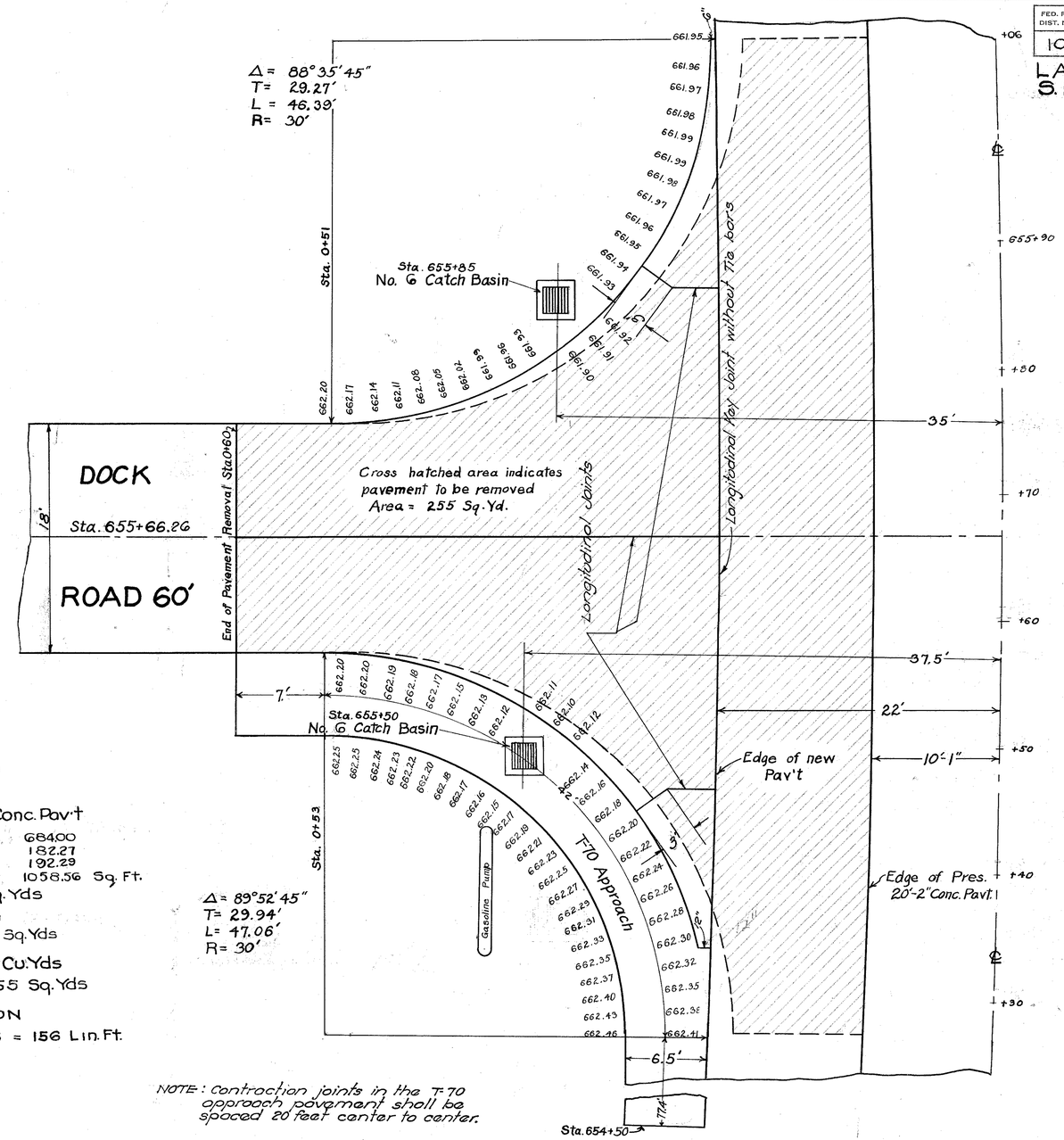
TJ-9

FED. RD. DIST. NO.	STATE	PROJECT	FISCAL YEAR
10	OHIO	Fed. Aid. 5A (5)	1941

4. / 43

LAKE COUNTY
S.H. 2 SEC. Q (Pt)

P.C. 651+77.92				P.T. 659+49.21	
D = 2°-00' L					
LEFT		CENTER		RIGHT	
Elev. New Edge 22' from ℄	Elev. Pres. Edge 10'-1" from ℄	Station	Def.	Elev. Pres. Edge 10'-1" from ℄	Elev. New Edge 22' from ℄
	73		650+89.5 End. Brick Begin Conc.		
663.85		650+75			663.85
663.68	663.82	651+00		663.90	663.80
663.50	663.71	651+25		664.22	664.25
663.32	663.69	651+50		664.40	664.75
663.13	663.63	651+77.92 B.C.	0°-00"	664.44	664.94
663.10	663.60	652+00	0°-13'-15"	664.43	664.93
663.05	663.55	652+25	0°-28'-15"	664.40	664.90
663.01	663.51	652+50	0°-43'-15"	664.33	664.83
662.94	663.44	652+75	0°-58'-15"	664.29	664.79
662.89	663.39	653+00	1°-13'-15"	664.24	664.74
662.86	663.36	653+25	1°-28'-15"	664.18	664.68
662.83	663.33	653+50	1°-43'-15"	664.11	664.61
662.75	663.25	653+75	1°-58'-15"	664.05	664.55
662.74	663.24	654+00	2°-13'-15"	663.99	664.49
662.69	663.19	654+25	2°-28'-15"	663.94	664.44
662.62	663.12	654+50	2°-43'-15"	664.12	664.46
662.54	663.04	654+75	2°-58'-15"	663.84	664.34
662.51	663.01	655+00	3°-13'-15"	663.83	664.33
662.42	662.92	655+25	3°-28'-15"	663.76	664.26
662.29	662.79	655+50	3°-43'-15"	663.62	664.12
662.14	662.64	655+75	3°-58'-15"	663.48	663.98
661.99	662.49	656+00	4°-13'-15"	663.33	663.83
661.78	662.28	656+25	4°-28'-15"	663.12	663.62
661.61	662.11	656+50	4°-43'-15"	662.91	663.41
661.35	661.85	656+75	4°-58'-15"	662.66	663.16
661.04	661.54	657+00	5°-13'-15"	662.38	662.88
660.77	661.27	657+25	5°-28'-15"	662.08	662.58
660.44	660.94	657+50	5°-43'-15"	661.77	662.27
660.05	660.55	657+75	5°-58'-15"	661.34	661.84
659.66	660.16	658+00	6°-13'-15"	661.00	661.50
659.52	660.02	658+14	6°-28'-15"	660.83	661.33
658.67	659.17	658+64	6°-43'-15"	659.97	660.47
658.42	658.92	658+75	6°-58'-15"	659.70	660.20
657.98	658.48	659+00	7°-13'-15"	659.27	659.77
657.54	658.04	659+25	7°-28'-15"	658.84	659.34
657.09	657.59	659+49.21 P.T.	7°-42'-45"	658.40	658.90
656.80	657.23	659+75		657.94	658.38
656.50	656.82	660+00		657.35	657.65
656.30	656.55	660+25		656.78	656.90
656.14	656.35	660+50		656.43	656.40
656.10	656.30	660+64.3	End Conc. Begin Brick	656.37	656.30
656.03		661+00			656.03
Run Off's not standard but made to fit pres. Conc.					



DOCK ROAD

Sta. 655 + 66.4

Extra 9"-7"-7"-9" T-71 Conc. Pav't

38×18 =	684.00
29.27×30 − [π × 30² × .246	182.27
29.94×30 − [π × 30² × .250	192.29
Total	1058.56 Sq. Ft.

1058 ÷ 9 = 117.6 Sq. Yds

T-70 Approach

(126.3 x 6.5) ÷ 9 = 91.3 Sq. Yds

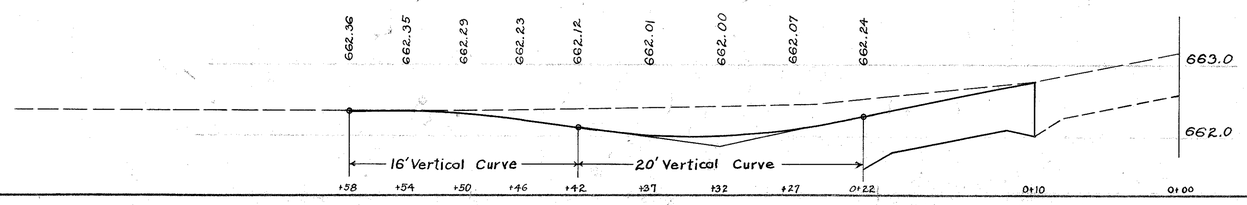
Excavation = 25 Cu. Yds

Pav't Removal = 255 Sq. Yds

CURB DEDUCTION

Sta. 654+50 to 656+06 = 156 Lin. Ft.

NOTE: Contraction joints in the T-70 approach pavement shall be spaced 20 feet center to center.

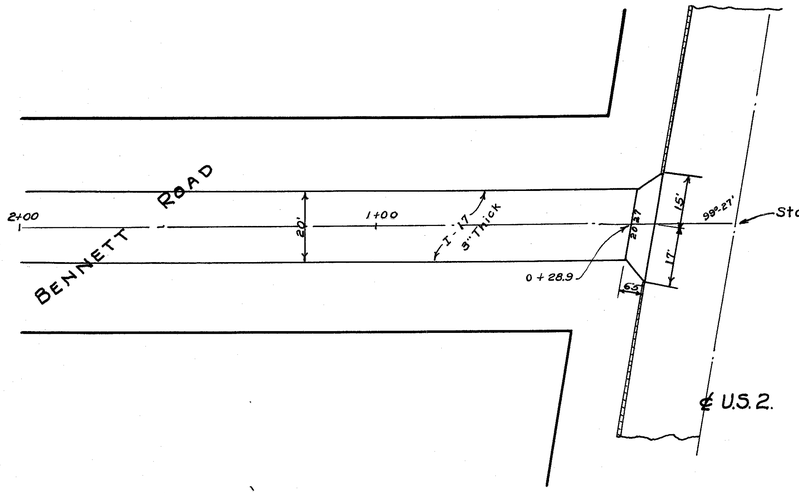


CURVE TABLE.

FED. RD. DIST. NO.	STATE	FED. AID. PROJECT	FISCAL YEAR
10	OHIO	5A (5)	1941

5.
43

LAKE COUNTY
SH. 2 SEC. Q (Pt.)



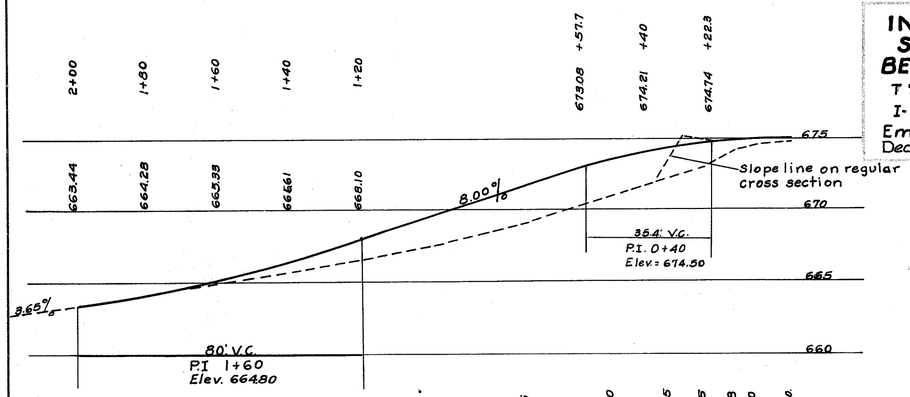
T-70 $\left[\left(\frac{92+20.27}{2} \times 6\right) + (32.0 \times .5)\right] \div 9 = 19.2$ Sq. Yds

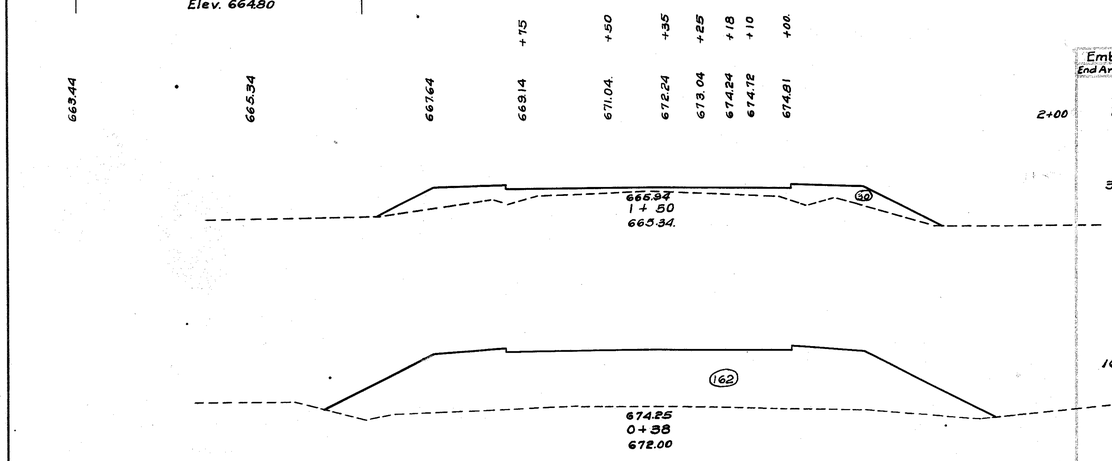
I-17 0+28.9 to 2+00 = 171.1 Lin. Ft.
(171.1 X 20 X .25) ÷ 27 = 31.7 Cu. Yds.

INTERSECTION
STA. 611+13.23
BENNETT ROAD

T 70 (6")	19.2 Sq. Yds.
I-17 (3")	31.7 Cu. Yds.

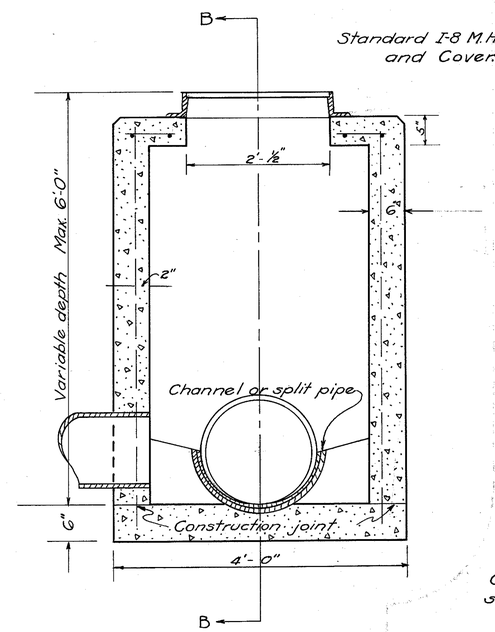
Embankment 442 Cu. Yds.
Deduct Curb ~ 32 Lin. Ft.



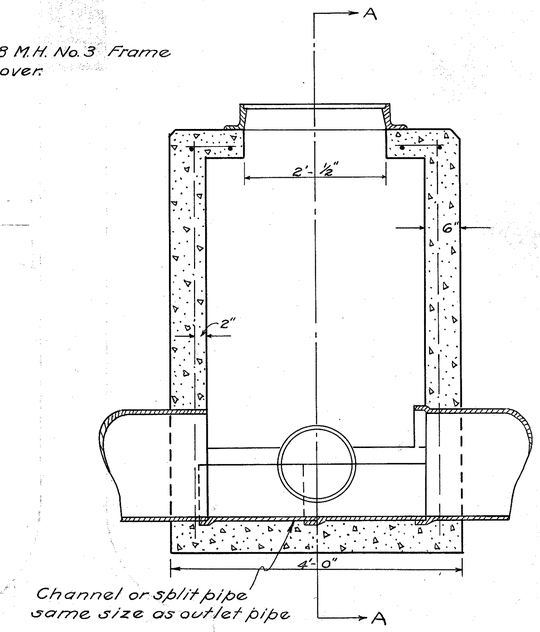


	Embankment End Area	Embankment Cu. Yds.
2+00	0	
		28
	30	
		399
	162	
		15
0+33	0	
	Total	442.

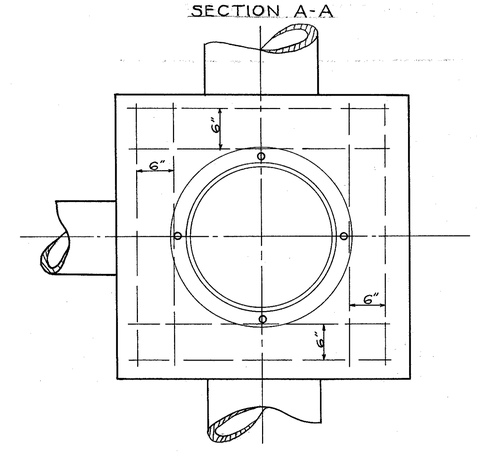
DETAIL OF SPECIAL MANHOLE



SECTION A-A



SECTION B-B

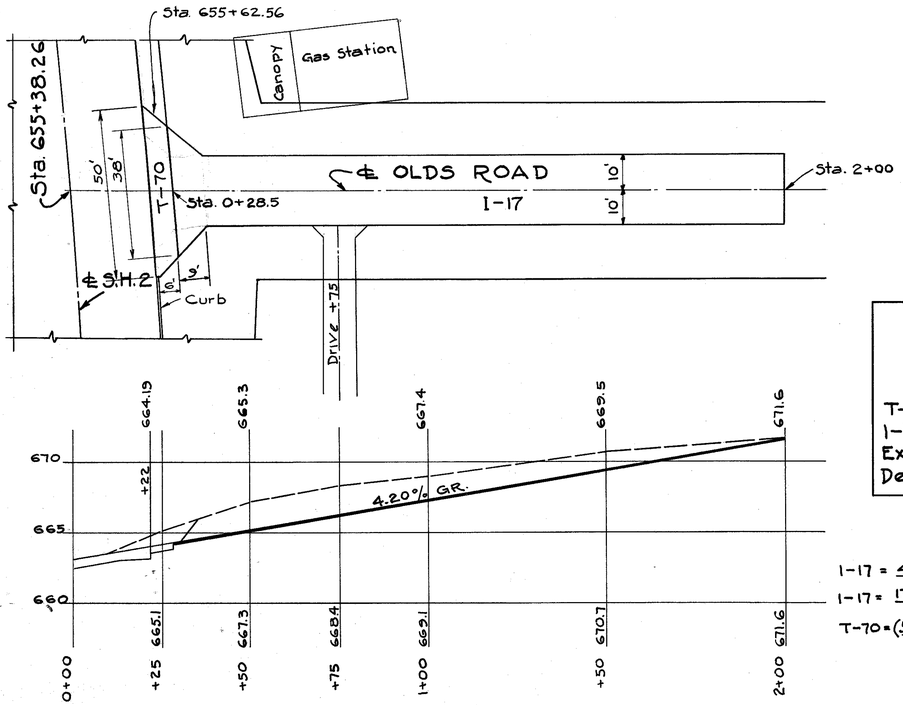


NOTE For further details of Manhole box see standard drawing I8 C.B 2-3 & 2-4
for details of Frame and Cover see standard drawing I8 M.H. No. 3

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5A (5)	1941

6.
43

LAKE COUNTY
S.H.2 – SEC. Q (PT)



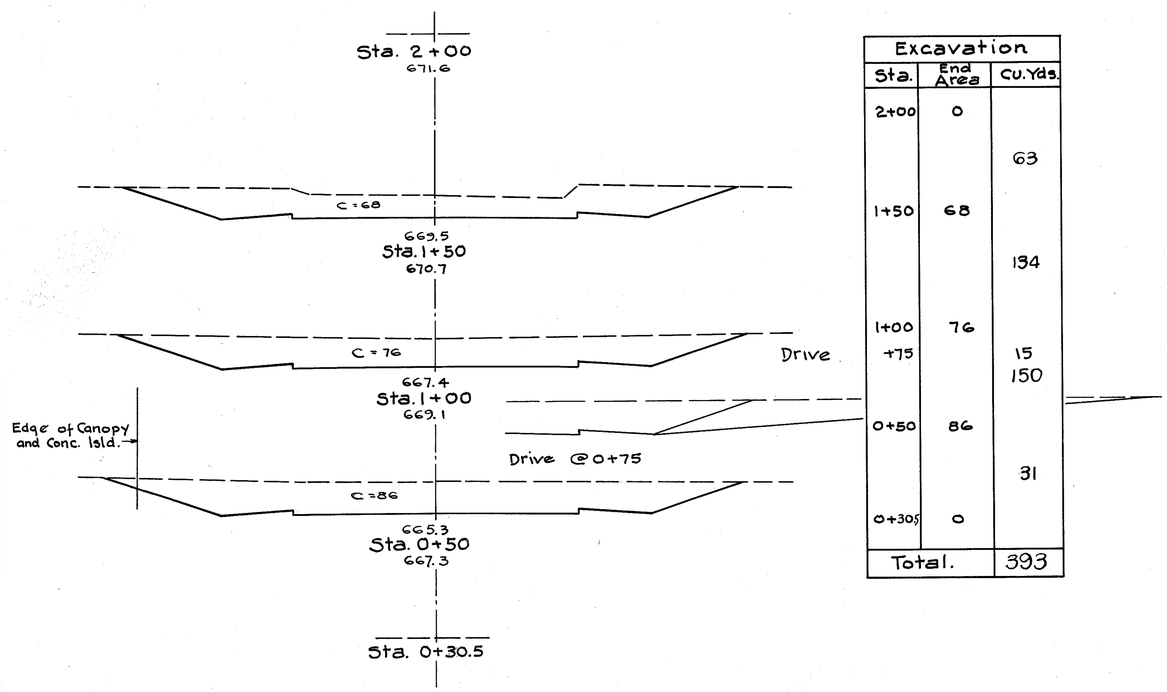
INTERSECTION
STA. 655+38.26
OLDS ROAD

T-70	32.1 Sq.Yds.
I-17	36.9 Cu.Yds.
Excavation	393.0 Cu.Yds.
Deduct Curb	50 Lin. Ft.

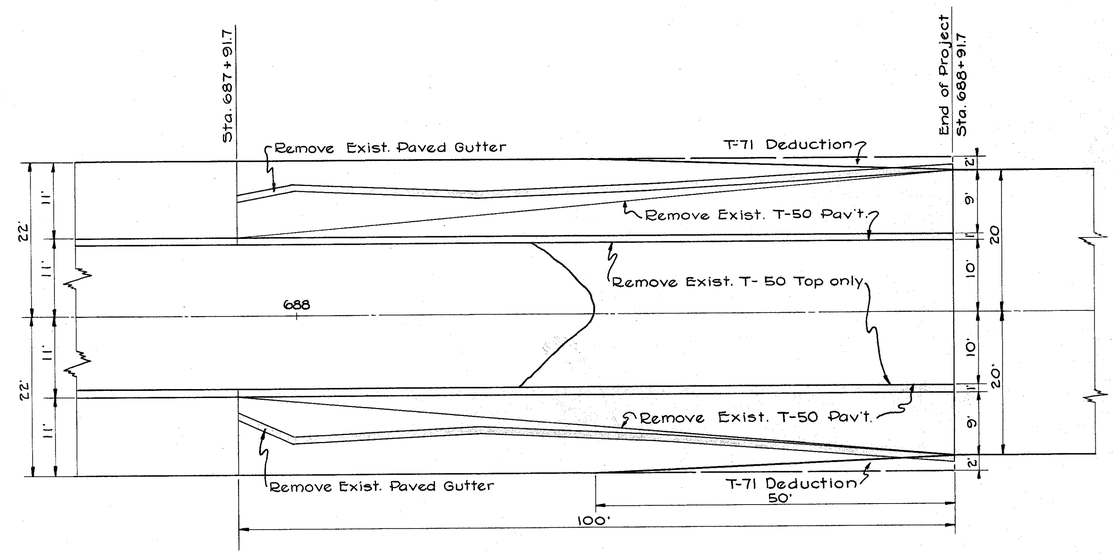
$$I\text{-}17 = \frac{40 \times 10 \times .25}{27} + \frac{5 \times 5 \times .25}{27} = 4.1 \text{ Cu.Yds.}$$

$$I\text{-}17 = \frac{171.5 \times 20 \times .25}{27} + \frac{9 \times 9 \times .25}{27} = 32.8 \text{ Cu.Yds.}$$

$$T\text{-}70 = \left(\frac{50+38}{2}\right) \times \frac{6}{9} + \frac{50 \times .5}{9} = 32.1 \text{ Sq.Yds.}$$



Excavation		
Sta.	End Area	Cu.Yds.
2+00	0	
		63
1+50	68	
		134
1+00	76	
+75		15
		150
0+50	86	
		31
0+30.5	0	
Total.		393



QUANTITIES

T-50 Removed (Top Course only)	$\frac{20 \times 55}{9}$	= 122.2 Sq.Yds.
Paved Gutter Removed		= 204 Lin.Ft.
T-71 Deduction	$\frac{50 \times 2}{9}$	= 11.1 Sq.Yds.

DETAIL OF TRANSITION – STA. 687+91.7

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	SA (5)	1941

7.
43

LAKE COUNTY
S.H. 2 ~ SEC. Q (PT)

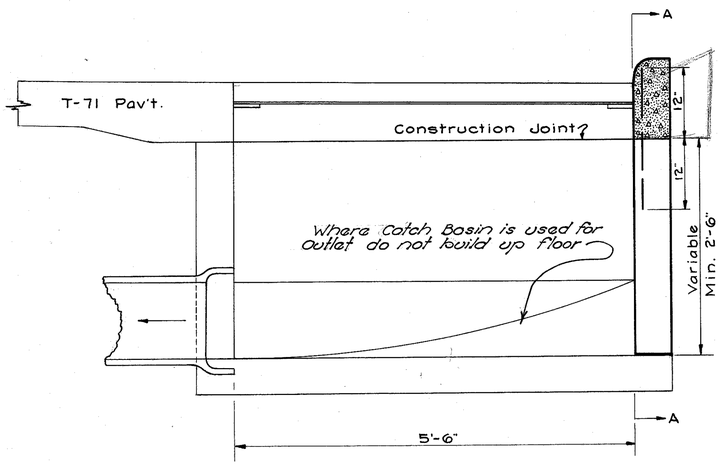
DETAILS OF CATCH BASINS

CATCH BASIN No. 13-X

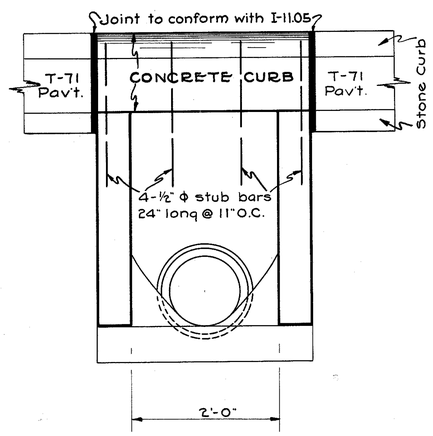
SCALE 1" = 1'-0"

NOTE:
This Catch Basin is a modification of Std. Const. Dr'wg. I-8 C.B. No. 13-A in the shape and construction of the concrete curb only.

Payment for Concrete Curb to be included in price bid for C.B. No. 13-X (Each)



LONGITUDINAL SECTION



SECTION A-A

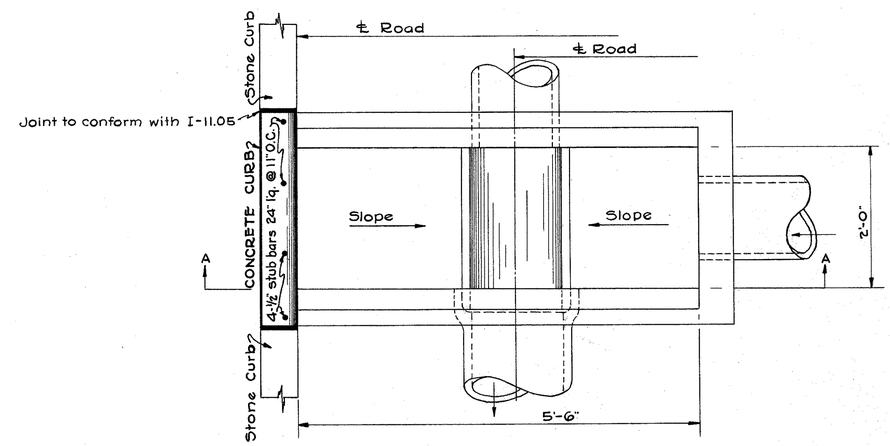
FOR PLAN VIEW OF CURB SEE C.B. No. 13-Y

CATCH BASIN No. 13-Y

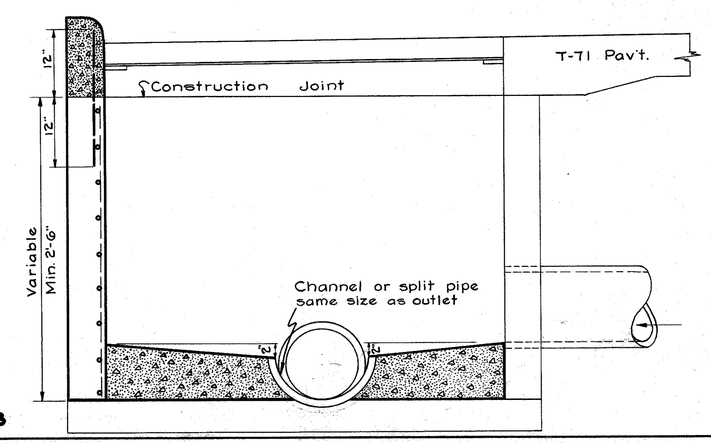
SCALE 1" = 1'-0"

NOTE:
This Catch Basin is a modification of Std. Const. Dr'wg. I-8 C.B. No. 13-A only–
1. in the shape and construction of the concrete curb; and
2. in the shape and construction of the bottom to handle carrying line of sewer.

Payment for above modifications to be included in price bid for C.B. No. 13-Y (Each)



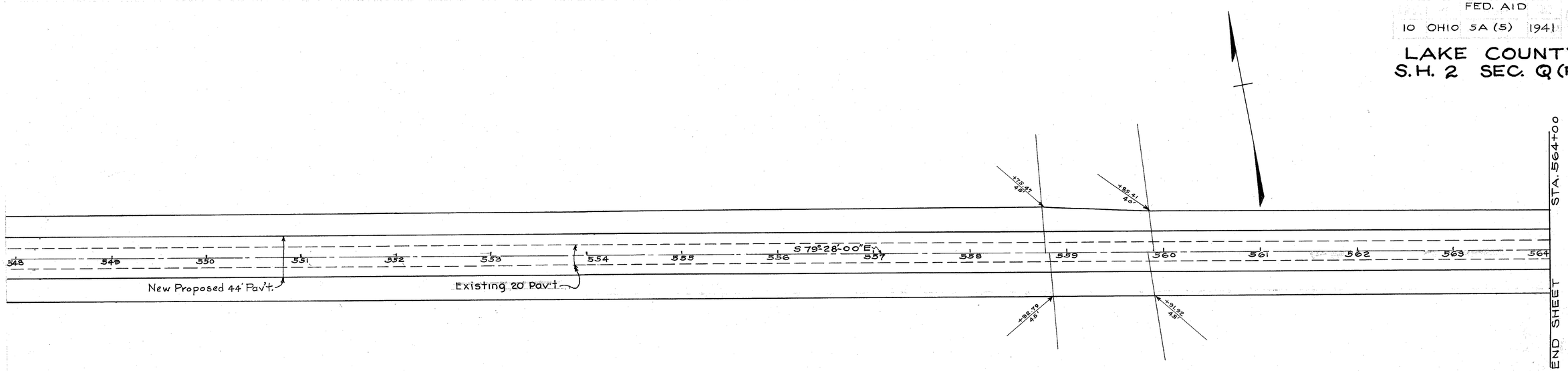
PLAN
Grating Removed

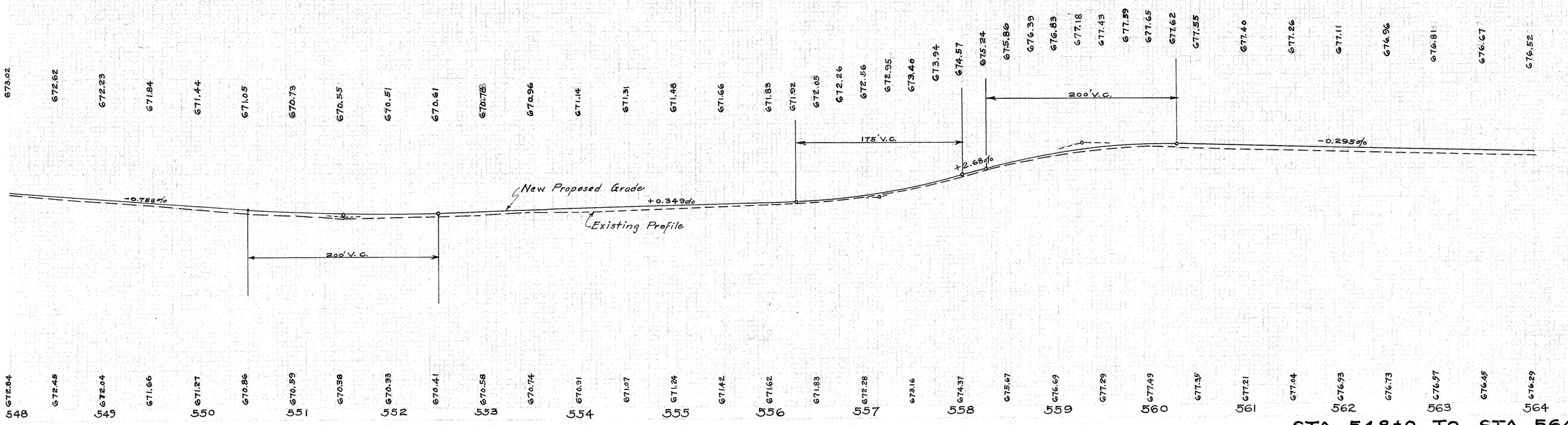


SECTION B-B

FED. AID 8.
10 OHIO 5A (5) 1941 43

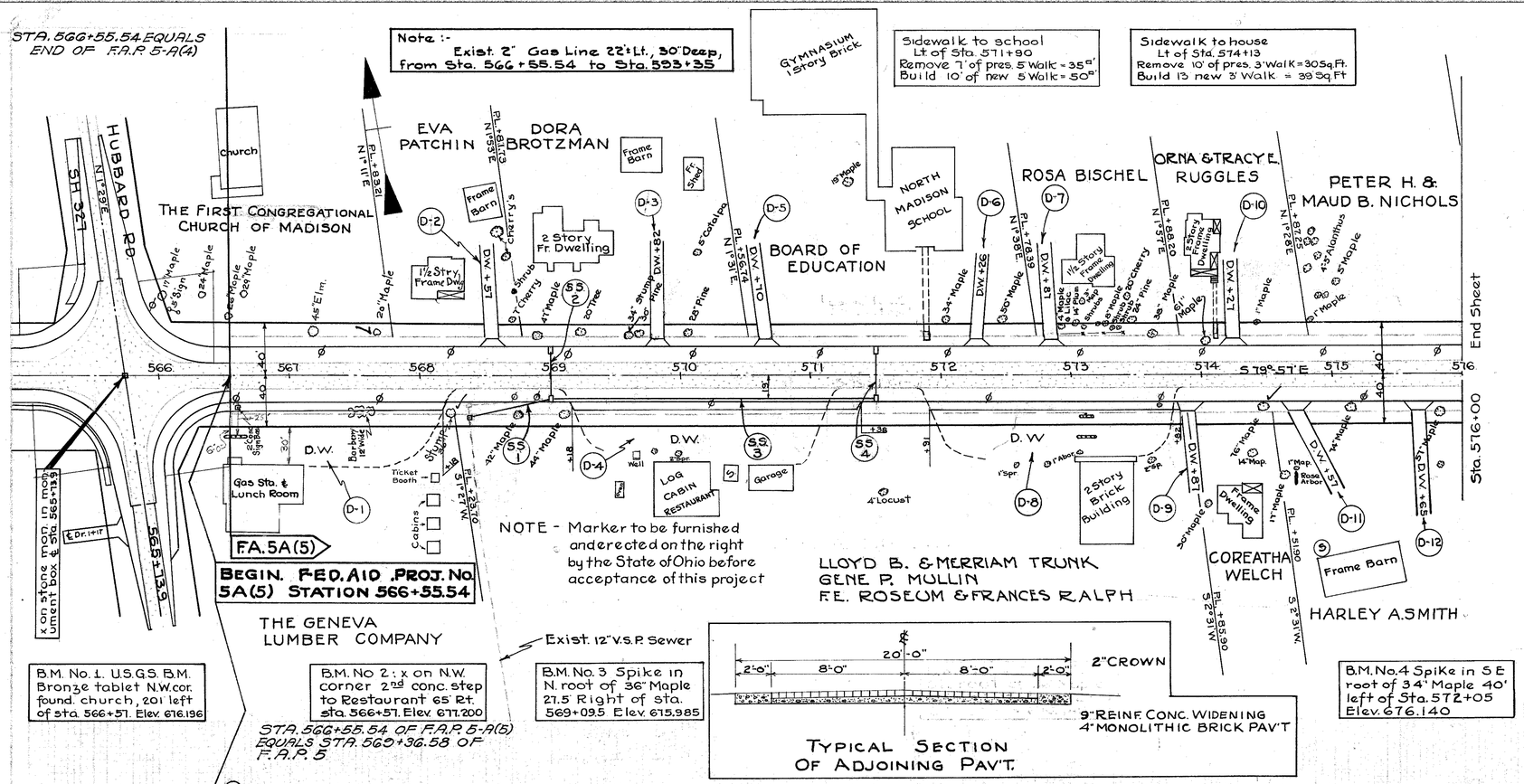
LAKE COUNTY
S.H. 2 SEC. Q (PT.)





STA. 548+0 TO STA. 564+0

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



DRIVES & APPROACHES

	Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds	Deduct Curb Lin. Ft	See Sheet No.
*	D-1.	567 + 00	Rt.	117.5	16.7	165.5	
	D-2.	568 + 57	Lt.	11.9	1.1	22.	
	D-3.	569 + 82	Lt.	11.9	1.1	22.	
*	D-4.	570 + 00	Rt.	159.2	22.7	226	
	D-5.	570 + 70	Lt.	11.9	1.1	22.	
	D-6.	572 + 26	Lt.	11.9	1.1	22.	
	D-7.	572 + 87	Lt.	11.9	1.1	22.	
*	D-8.	573 + 00	Rt.	138.0	19.7	197.	
	D-9.	573 + 87	Rt.	11.9	1.1	22.	
	D-10.	574 + 27	Lt.	11.9	1.1	22.	
	D-11.	574 + 57	Rt.	11.9	2.0	22.	37
	D-12.	575 + 65	Rt.	11.9	2.0	22.	37
	* See sheet 3 for quantities.						
	Totals			521.8	70.8	786.5	

SIDEWALK (LEFT)

Station	To Station	Lin Ft	Deductions	Length	Width	Sq. Ft
566+55.54	576 + 00	944.46	6 Drs @ 14.5 = 87	857.46	4.5	3858.6
Connections 571+90 Lt + 50 Sq. Ft. 574+13 Lt. 39 Sq. Ft.						89
				Total		3947.6
Sidewalk Removed 574+13 Lt - 35° + 574+13 Lt - 30° = 65 Sq. Ft.						

STORM SEWER

Item No.	Side	Station	To Station	Pipe Lin. Ft 12"	Pipe Under Pav't (Lin. Ft) 12"	Catch Basins 13X	13Y	2-3
SS.-1	Rt.	568 + 40	568 + 99	56	5			1
SS.-2	Lt. to Rt.	569 + 00			33	1	1	
SS.-3	Rt.	569 + 01	571 + 49		248			
SS.-4	Lt. to Rt.	571 + 50			33	1	1	
	Totals			56	319	2	2	1

REMOVAL OF EXISTING PAV'T.

Station From	Station To	Length	Width	Sq. Yds
568+96	569+04	8	20	17.8
571+46	571+54	8	20	17.8
Total				35.6

REMOVAL OF TREES & STUMPS

Station	Side	Dist. from ℄	Size	Kind
569 + 61	Lt.	29'	34"	Stump
568 + 25	Rt.	28	36"	Stump
574 + 45	Rt.	23'	16"	Maple
567 + 67	Lt.	32	20"	Maple
Total = 4				Indicated thus ⊗ ✓

REPLACEMENT FOR CROSSOVERS

Station From	Station To	Length	Width	6" B-11 Sq. Yds
568+96	569+04	8	20	17.8
571+46	571+54	8	20	17.8
Total				35.6

SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
566+55.54		Lt. to Rt.	44'
566+55.54	576 + 00	Lt. & Rt.	3778.
Total			3822.

PIPE REMOVED

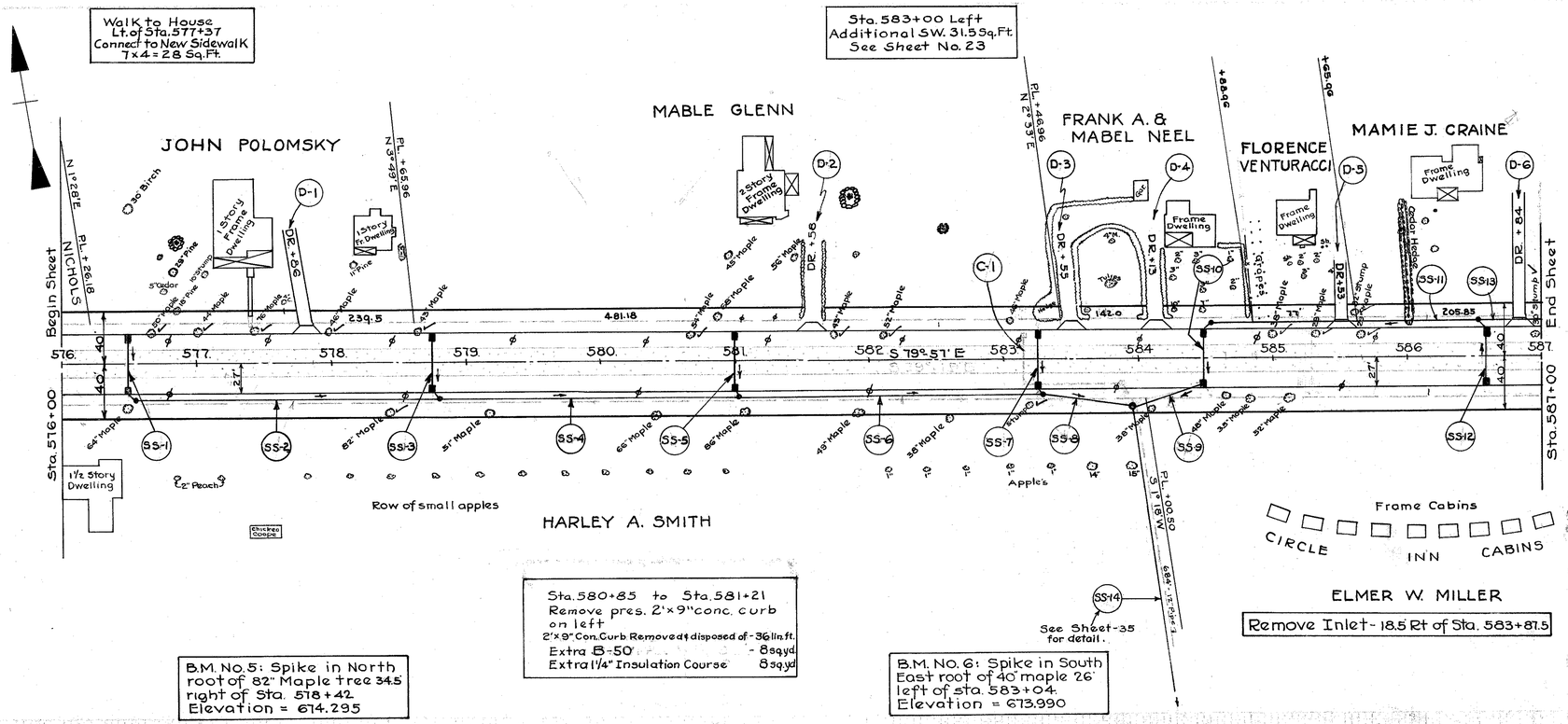
Station From	Station To	Side	Lin. Ft. 12"
568+38		Rt.	10.
568+39	568+91	Rt.	52
Total			62.

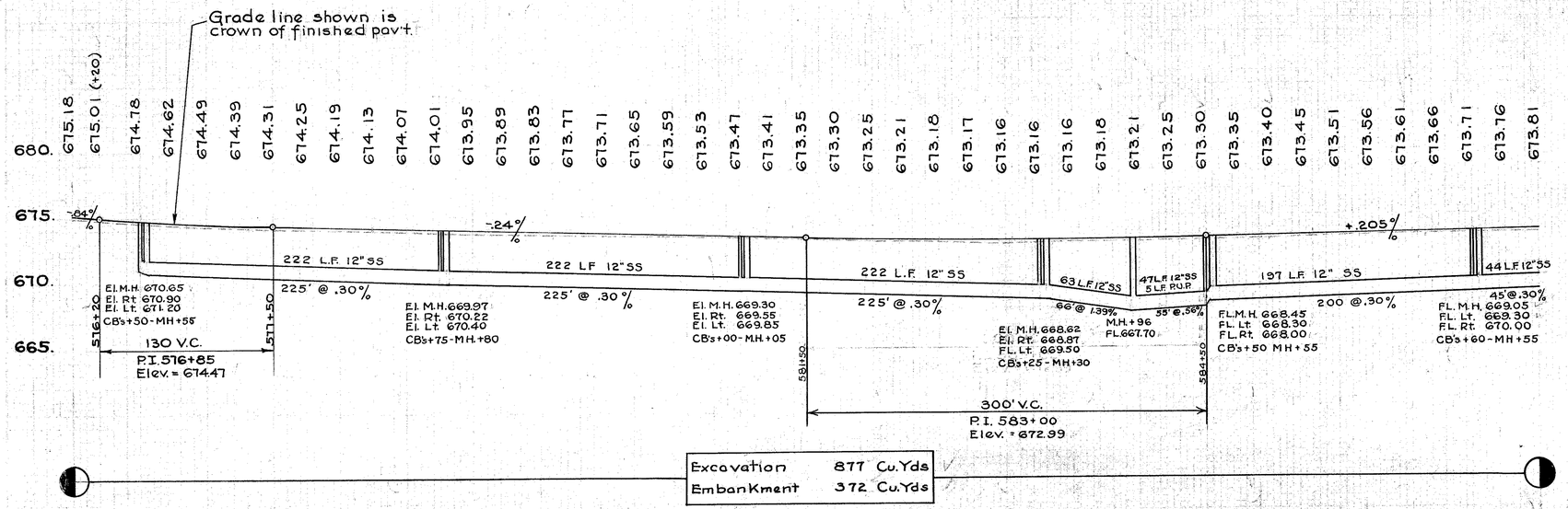
INLETS REMOVED

Station	Side	Dist. from ℄
568 + 37.5	Rt.	24'
568 + 92	Rt.	19'
Total = 2		

STA. 565+73.90 – STA. 576+00

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)





Excavation	877 Cu. Yds
Embankment	372 Cu. Yds

B.M. No. 5: Spike in North root of 82" Maple tree 34.5' right of Sta. 578+42
Elevation = 674.295

B.M. No. 6: Spike in South East root of 40" maple 26' left of sta. 583+04
Elevation = 673.990

DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds	Deduct Curb Lin. Ft.
D-1	577 + 86	Lt.	11.9	1.1	22
D-2	581 + 58	Lt.	11.9	1.1	22
D-3	583 + 55	Lt.	11.9	1.1	22
D-4	584 + 13	Lt.	11.9	1.1	22
D-5	585 + 53	Lt.	11.9	1.1	22
D-6	586 + 84	Lt.	11.9	1.1	22
Totals			71.4	6.6	132

SIDEWALK (LEFT)

Station	To Station	Lin. Ft	Deduction	Length	Width	Sq. Ft.
576 + 00	587 + 00	1100	6 Drs @ 14.5' = 87	1013'	4.5	4558.5
Additional 577+37 Lt. 28 Sq. Ft. + 583+00 Lt. 31.5 Sq. Ft. =						59.5
				Total		4618.0

STORM SEWER

Item	Side	Station	To Station	Pipe Lin. Ft. 12"	Pipe Lin. Ft. 15"	Outlet Pipe L.F. 15"	Pipe Under Pav't. (Lin. Ft.) 12"	Catch Basins Each 13 X	Catch Basins Each 2-2	Manholes Each Special	Concrete Class "C" Cu. Yd
SS-1	Lt. to Rt.	576 + 50		6			33	2		1	
SS-2	Rt.	576 + 55	578 + 80	222							
SS-3	Lt. to Rt.	578 + 75		6			33	2		1	
SS-4	Rt.	578 + 80	581 + 05	222							
SS-5	Lt. to Rt.	581 + 00		6			33	2		1	
SS-6	Rt.	581 + 05	583 + 30	222							
SS-7	Lt. to Rt.	583 + 25		6			33	2		1	
SS-8	Rt.	583 + 30	583 + 96	63							
SS-9	Rt.	583 + 96	584 + 50	47			5				
SS-10	Lt. to Rt.	584 + 50		6			33	2		1	
SS-11	Lt.	584 + 55	586 + 55	197							
SS-12	Rt. to Lt.	586 + 60		6			33	2		1	
SS-13	Lt.	586 + 55	587 + 00	44							
SS-14	Rt.	583 + 90	667' South		649	16			1	1	0.1
Total				1053	649	16	203	12	1	7	0.1

REMOVAL OF TREES AND STUMPS

Station	Side	Dist from ℄	Size	Kind
516 + 66	Lt.	20'	50"	Maple
577 + 00	Lt.	20'	44"	Maple
577 + 42	Lt.	21.5'	76"	Maple
577 + 97	Lt.	19'	46"	Maple
578 + 42	Rt.	35'	82"	Maple
578 + 63	Lt.	19'	43"	Maple
580 + 65	Lt.	17'	54"	Maple
581 + 74	Lt.	16'	43"	Maple
582 + 11	Lt.	15.5'	52"	Maple
583 + 16	Rt.	32'	20"	Stump
584 + 99	Lt.	14'	38"	Maple
585 + 32	Lt.	14'	29"	Maple
585 + 62	Lt.	32'	32"	Stump
585 + 65	Lt.	15'	29"	Maple
586 + 96	Lt.	15'	30"	Stump
Total = 15		Indicated thus ✓		

REMOVAL OF EXISTING PAV'T. & REPLACEMENT

Station From	Station To	Length Lin. ft.	Width Lin. ft.	Sq Yds	8" B-71 Sq. Yds
576+46	576+54	8	20	17.8	17.8
578+71	578+79	8	20	17.8	17.8
580+96	581+04	8	20	17.8	17.8
583+21	583+29	8	20	17.8	17.8
584+46	584+54	8	20	17.8	17.8
586+56	586+64	8	20	17.8	17.8
Total				106.8	106.8

SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
576 + 00	587 + 00	Lt. & Rt.	4400
6 CROSSOVERS 6(20x2)			240
Total			4640

PIPE REMOVED

Station From	Station To	Side	Lin. Ft. 12"
583 + 18	583 + 85	Rt.	67
583 + 85	702' South	Rt.	684
Total			751

STRUCTURES 20' SPAN & UNDER

C-1	Sta. 583+16.5	Size 12" x 36'	Abandon	See sheet 40

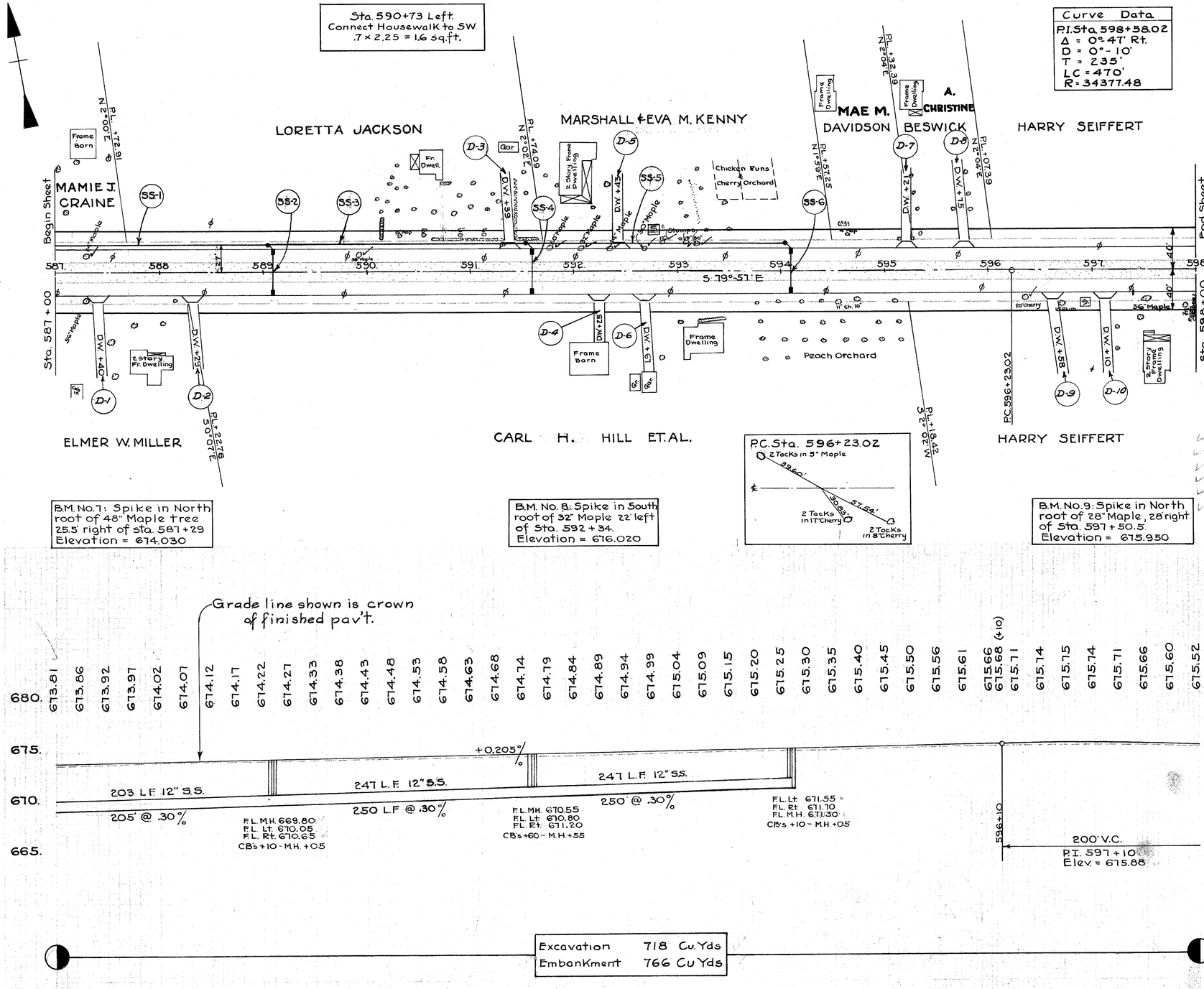
STA. 576+00 - STA. 587+00

STATE	FED. AID				
10	OHIO	5A(5)	1941	11	43

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)

Sta. 590+73 Left.
Connect Housewalk to S.W.
.7 × 2.25 = 1.6 sq.ft.

Curve Data
P.I. Sta. 598+58.02
Δ = 0°-47' Rt.
D = 0°-10'
T = 235'
LC = 470'
R = 34377.48



B.M. No. 7: Spike in North root of 48" Maple tree 25.5' right of sta. 587+29 Elevation = 674.030

B.M. No. 8: Spike in South root of 32" Maple 22' left of Sta. 592+34. Elevation = 676.020

B.M. No. 9: Spike in North root of 28" Maple, 28' right of Sta. 597+50.5. Elevation = 675.950

DRIVES & APPROACHES

Item	Station	Side	T-70 Sq.Yds	I-17 Cu. Yds.	Deduct Curb Lin. Ft.	Detailed on Sheet
D-1	587+40	Rt.	11.9	2.0	22	37
D-2	588+29	Rt.	11.9	2.0	22	37
D-3	591+39	Lt.	11.9	1.1	22	
D-4	592+25	Rt.	11.9	1.1	22	
D-5	592+43	Lt.	11.9	1.1	22	
D-6	592+67	Rt.	11.9	1.1	22	
D-7	595+21	Lt.	11.9	1.1	22	
D-8	595+75	Lt.	11.9	2.0	22	37
D-9	596+58	Rt.	11.9	4.3	22	37
D-10	597+10	Rt.	11.9	2.0	22	37
Totals			119.0	17.8	220.	

SIDEWALK (LEFT)

Station	To Station	Lin. Ft.	Deduction	Length	Width	Sq. Ft.
587+00	598+00	1100	4 Drs @ 14.5' = 58	1042	4.5	4689.
			+ 1.6 Sq. Ft. (Walk to House Lt. 590+73)			= 4690.6

STORM SEWERS

Item No.	Side	Station	To Station	Pipe Lin. Ft. 12"	Pipe Under Pav't (Lin Ft.) 12"	Catch Basins Each 13X		Manholes Each Special
SS-1	Lt.	587+00	589+05	203				
SS-2	Rt to Lt	589+10		6	33	2		1
SS-3	Lt.	589+05	591+55	247				
SS-4	Rt to Lt	591+60		6	33	2		1
SS-5	Lt.	591+55	594+05	247				
SS-6	Rt to Lt.	594+10		6	33	2		1
Totals				715	99	6		3

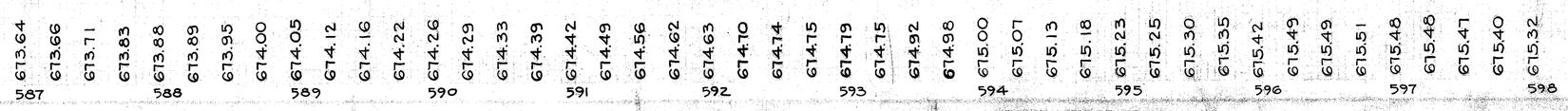
REMOVAL OF TREES AND STUMPS

Station	Side	Dist. from ℄	Size	Kind
587+30	Lt.	16'	24"	Maple
589+92	Lt.	16.3'	39"	Maple
591+75	Lt.	22'	50"	Maple
592+07	Lt.	21'	32"	Maple
592+35	Lt.	21.5	44"	Maple
592+67	Lt.	22.8	30"	Maple
592+84	Lt.	28	12"	Stump
593+06	Lt.	28'	19"	Stump
593+18	Lt.	27.	30"	Stump
596 37	Rt	26.5	20"	Cherry

Total = 10 Indicated thus

Grade line shown is crown of finished pav't.

Excavation	718 Cu. Yds
Embankment	766 Cu. Yds



REMOVAL OF EXISTING PAV'T / REPLACEMENT

Station From	Station To	Length	Width	Sq. Yds	8" B-7 Sq. Yds
589+06	589+14	8	2.0	17.8	17.8
591+56	591+64	8	2.0	17.8	17.8
594+06	594+14	8	2.0	17.8	17.8
Totals				53.4	53.4

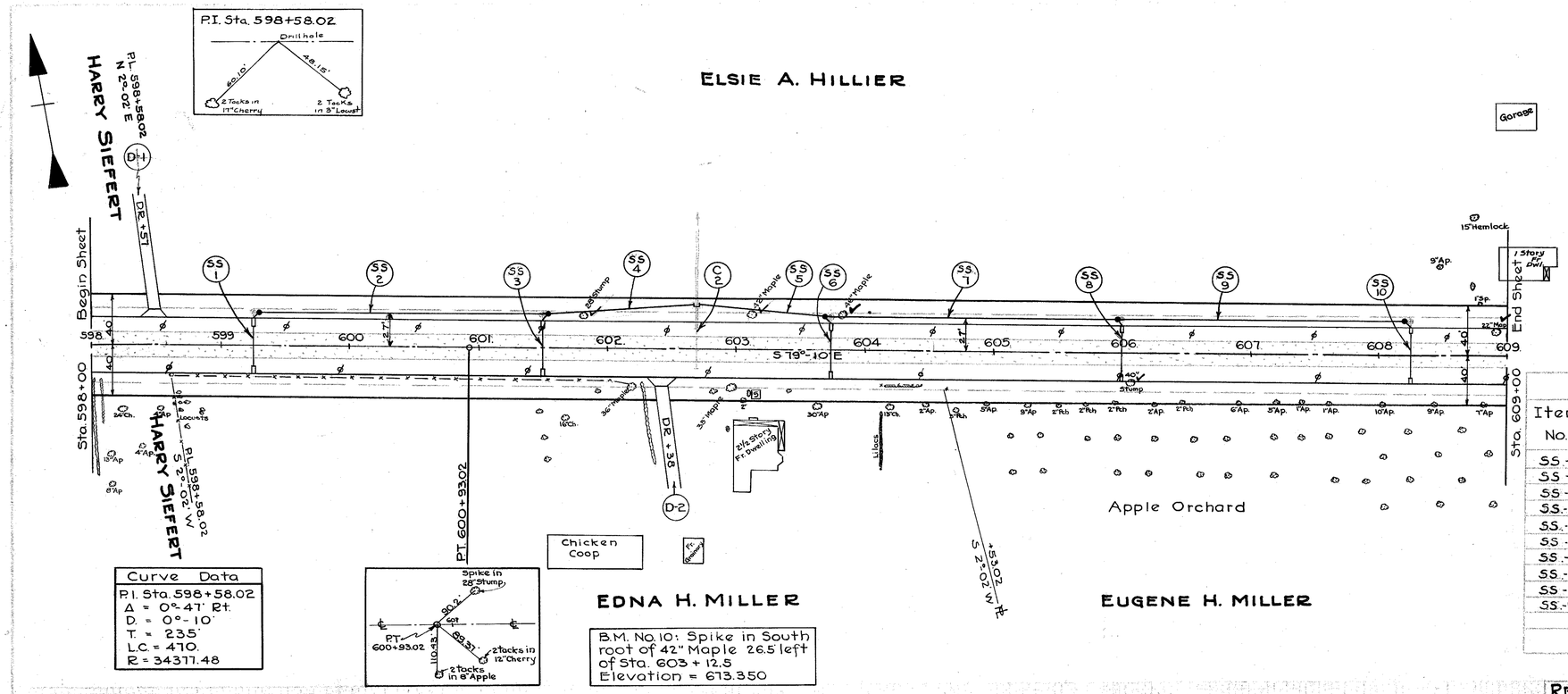
SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
587+00	598+00	Lt & Rt	4400
3 CROSSOVERS 3(20X2)			120
Total			4520

STA. 587+00 - STA. 598+00

FED. AID				
10	OHIO	5A(5)	1941	12 / 43

LAKE COUNTY
S.H. 2 SEC. Q(Pt.)



Curve Data
P.I. Sta. 598+58.02
Δ = 0°-47' Rt.
D. = 0°-10'
T. = 235'
L.C. = 470.
R = 34377.48

B.M. No. 10: Spike in South root of 42" Maple 26.5' left of Sta. 603 + 12.5
Elevation = 613.350

DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds	Deduct Curb Lin. Ft.	Detailed on Sheet
D-1	598 + 57	Lt.	11.9	4.3	22	37
D-2	602 + 38	Rt.	11.9	1.1	22	
Totals			23.8	5.4	44.	

SIDEWALK (LEFT)

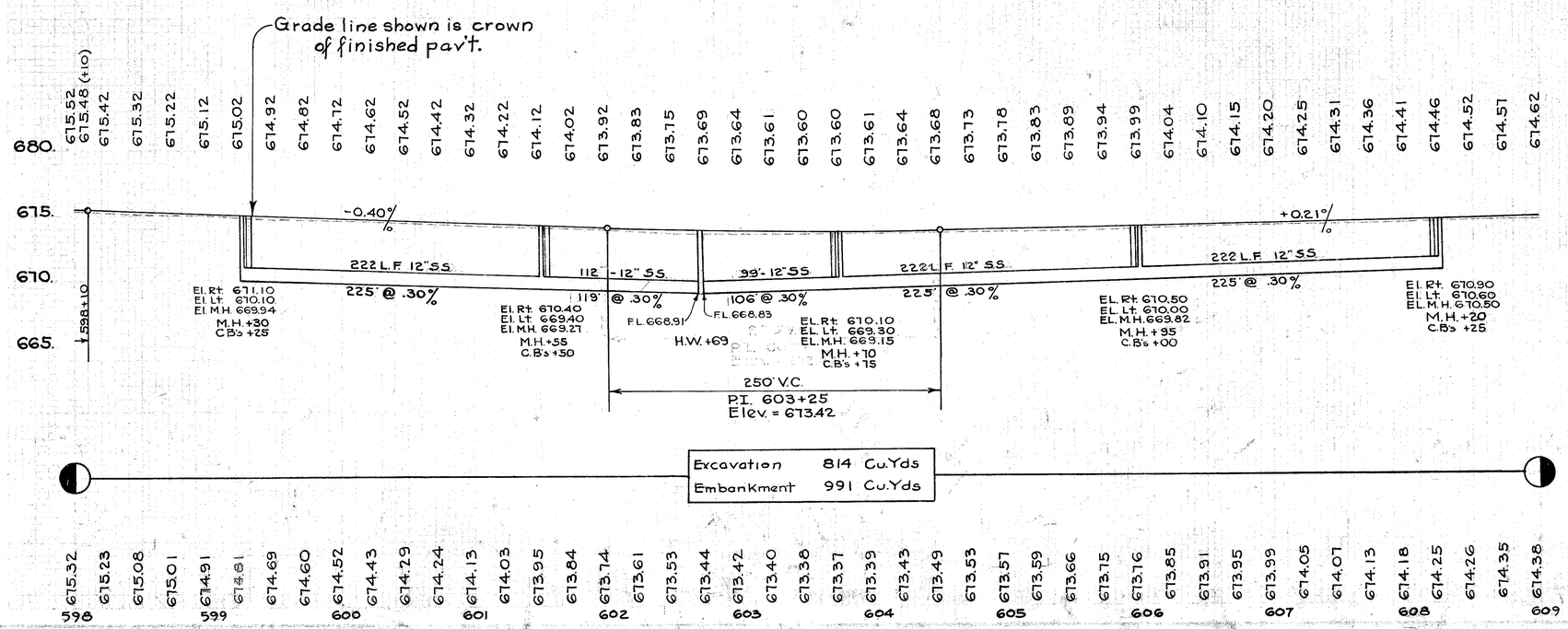
Station	To Station	Lin. Ft.	Deductions	Length	Width	Sq. Ft.
598 + 00	609 + 00	1100'	1 Dr. @ 14.5 = 14.5'	1085.5	4.5	4884.75

STORM SEWERS

Item No.	Side	Station	To Station	Pipe Lin. Ft. 12"	Pipe Under Pav't (Lin. Ft.) 12"	Catch Basins Each 13X		Manholes Each Special
SS-1	Rt to Lt	599+25		6	33	2		1
SS-2	Lt.	599 + 30	601 + 55	222				
SS-3	Rt to Lt	601 + 50		6	33	2		1
SS-4	Lt.	601 + 55	602 + 68	112				
SS-5	Lt.	602 + 70	603 + 70	99				
SS-6	Rt to Lt.	603 + 75		6	33	2		1
SS-7	Lt.	603 + 70	605 + 95	222				
SS-8	Rt to Lt	606 + 00		6	33	2		1
SS-9	Lt.	605 + 95	608 + 20	222				
SS-10	Rt to Lt	608 + 25		6	33	2		1
Totals				907	165	10		5

REMOVAL OF EXISTING PAV'T. / REPLACEMENT

Station From	Station To	Length	Width	Sq. Yds	8" B-71 Sq. Yds.
599+21	599+29	8	20	17.8	17.8
601+46	601+54	8	20	17.8	17.8
603+11	603+19	8	20	17.8	17.8
605+96	606+04	8	20	17.8	17.8
608+21	608+29	8	20	17.8	17.8
Total				89.0	89.0



Excavation	814 Cu. Yds
Embankment	991 Cu. Yds

REMOVAL OF TREES AND STUMPS

Station	Side	Dist. from ℄	Size	Kind
601 + 81	Lt	23	28"	Stump
603 + 12	Lt	26	42"	Maple
603 + 82	Lt	24'	46"	Maple
606 + 04	Rt	20.5	40"	Stump
608 + 91	Lt.	16'	22"	Maple
Total = 5 Indicated thus ✓				

SEALING (ONLY) EDGES OF EXIST. PAV'T.

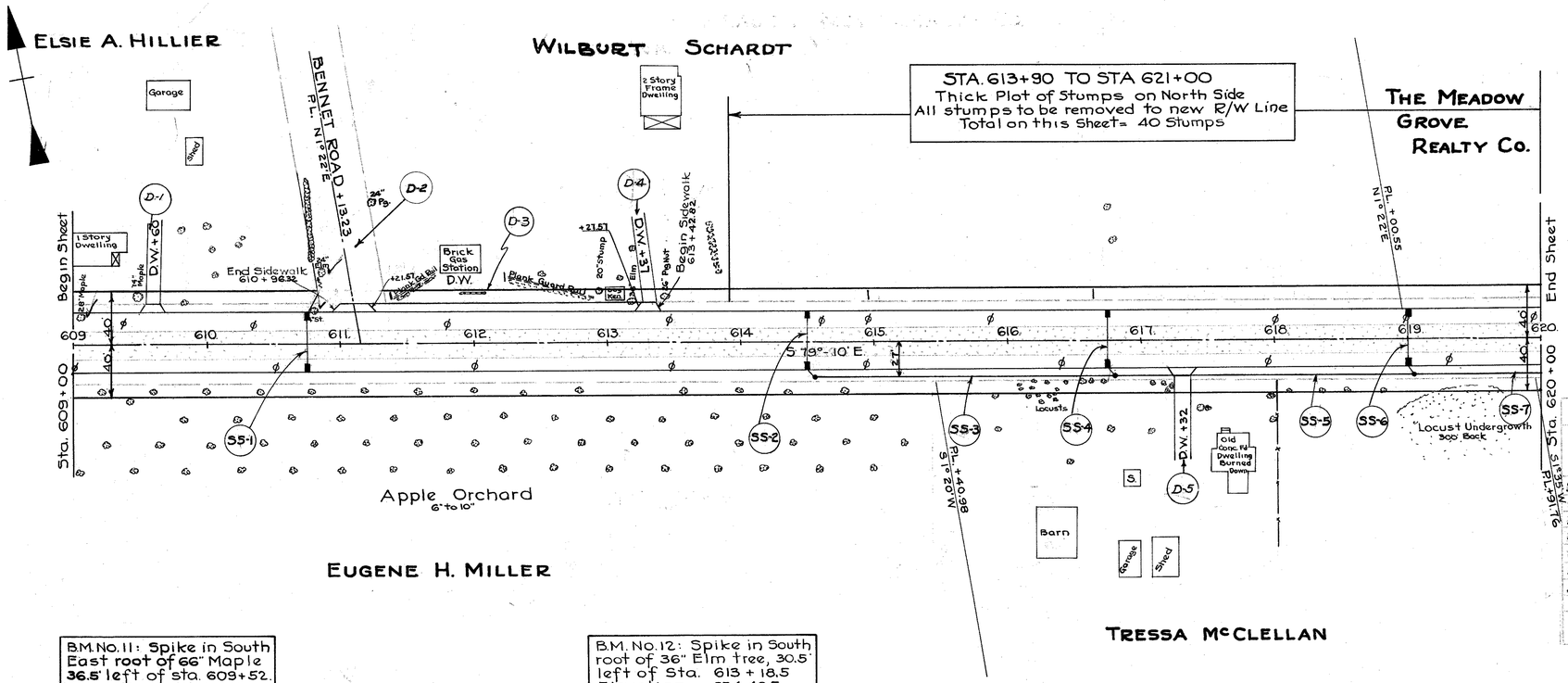
Station	To Station	Side	Lin. Ft.
598 + 00	609 + 00	Lt. & Rt	4400
5 CROSSOVERS 5(20×2)			200
Total			4600

STRUCTURES 20' SPAN & UNDER

C-2	Sta. 602+69	Size 12"x30.5'	Abandon	See sheet 40.

STA. 598+00 - STA. 609+00

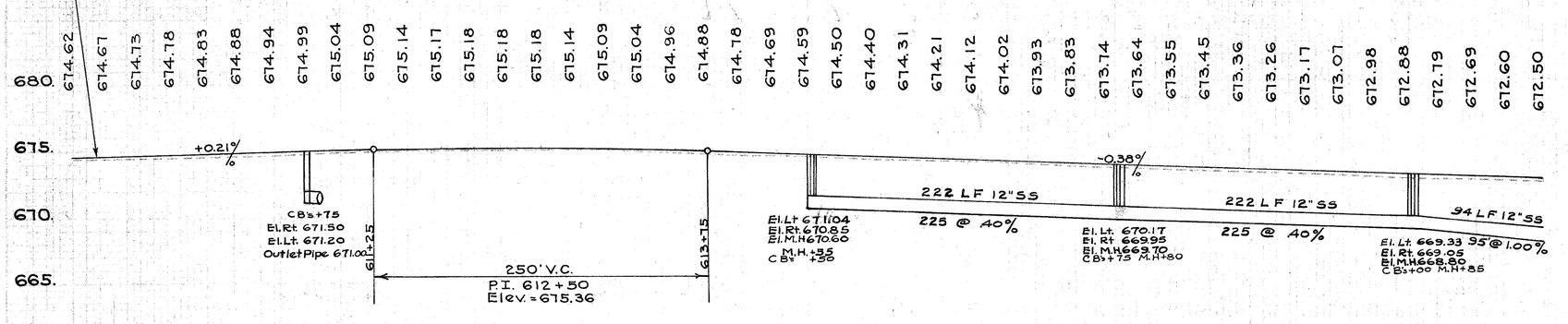
LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



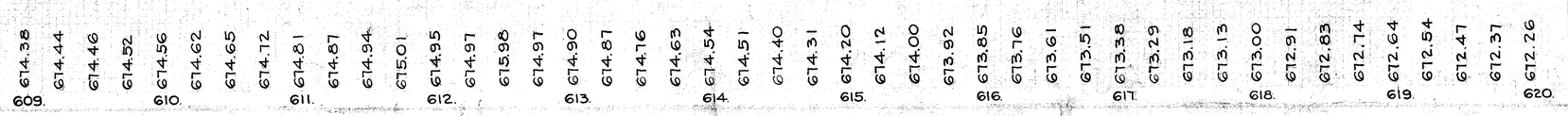
B.M. No. 11: Spike in South East root of 66" Maple 36.5' left of sta. 609+52. Elevation = 674.085

B.M. No. 12: Spike in South root of 36" Elm tree, 30.5' left of Sta. 613 + 18.5 Elevation = 674.495

Grade line shown is crown of finished pav't



Excavation	673 Cu. Yds
Embankment	1506 Cu. Yds



DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds.	I-17 Cu. Yds.	Deduct Curb Lin. Ft.		See Sheet No.
D-1	609 + 60	Lt.	11.9	2.0	22		37
D-2	611 + 13.23	Lt.	19.2	31.7	32		5
D-3	612 + 00	Lt.	149.1	21.3	212		3
D-4	613 + 37	Lt.	11.9	4.3	22		37
D-5	617 + 32	Rt.	11.9	2.0	22		37
Totals			204	61.3	310		

SIDEWALK (LEFT)

Station	To Station	Lin. Ft.	Deductions	Length	Width	Sq. Ft.
609+00	620 + 00	1100	1 Dr = 14.5' + 610+96.32 to 613+42.82 = 261	839	4.5	3775.5

STORM SEWER

Item No	Side	Station	To Station	Pipe Lin. Ft. 12"	Pipe Under Pav't (Lin. Ft.) 12"	Catch Basins Each 13X	Outlet Pipe Lin. Ft. 12"	Manholes Each Special
SS - 1	Rt to Lt	610 + 75			33	2	20	
SS - 2	Lt to Rt	614 + 50		6	33	2		1
SS - 3	Rt	614 + 55	616 + 80	222				
SS - 4	Lt to Rt	616 + 75		6	33	2		1
SS - 5	Rt	616 + 80	619 + 05	222				
SS - 6	Lt to Rt	619 + 00		6	33	2		1
SS - 7	Rt	619 + 05	620 + 00	94				
Totals				556	132	8	20	3

Marked thus ✓

REMOVAL OF TREES & STUMPS

Station	Side	Dist. from ℄	Size	Kind
609 + 05	Lt.	16'	28"	Maple
610 + 80	Lt.	24.5'	14"	Stump
610 + 86	Lt.	53	24"	Elm
613+90 to				
621 + 00	Lt.	Variable	9" to 36"	40 Stumps
Total - 43				

REMOVAL OF EXISTING PAV'T / REPLACEMENT

Station From	Station To	Length	Width	Sq. Yds	8" B-71 Sq. Yds.
610+71	610+79	8	20	17.8	17.8
614+46	614+54	8	20	17.8	17.8
616+71	616+79	8	20	17.8	17.8
618+96	619+04	8	20	17.8	17.8
Totals				71.2	71.2

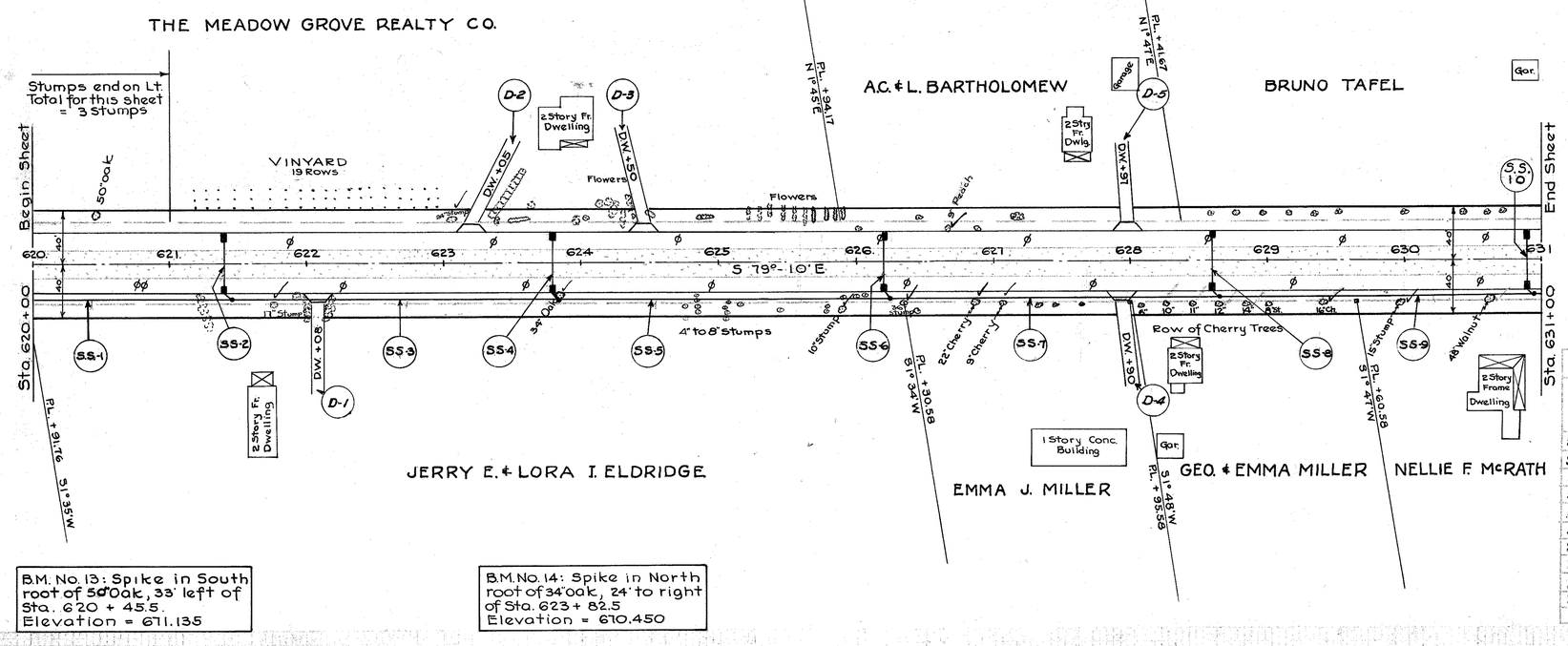
SEALING (ONLY) EDGES OF EXIST. PAV'T.

Station	To Station	Side	Lin. Ft.
609+00	620+00	Lt & Rt	4400
4 Crossovers 4(20x2)			160
Total			4560

STA. 609+00 - STA. 620+00

		FED. AID		
10	OHIO	5 A (5)	1941	14. / 43

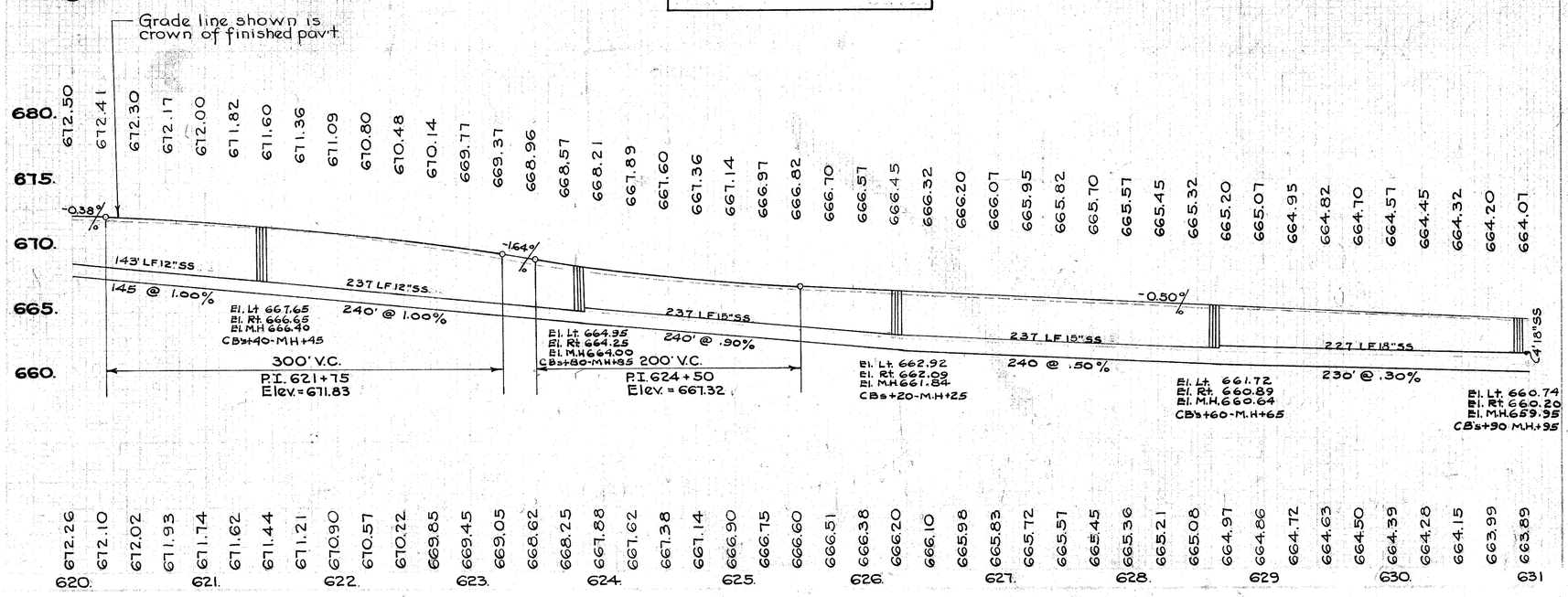
LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



B.M. No. 13: Spike in South root of 50" Oak, 33' left of Sta. 620 + 45.5. Elevation = 671.135

B.M. No. 14: Spike in North root of 34" oak, 24' to right of Sta. 623 + 82.5 Elevation = 670.450

Exc.	940	Cu. Yds.
Emb.	751	Cu. Yds.



DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds.	I-17 Cu. Yds.	Deduct Curb Lin. Ft.	Detail Sheet No.
D-1	622 + 08	Rt.	11.9	1.1	22	
D-2	623 + 05	Lt.	11.9	4.3	22	37
D-3	624 + 50	Lt	11.9	4.3	22	38
D-4	627 + 90	Rt	11.9	1.1	22	
D-5	627 + 97	Lt.	11.9	1.1	22	
Totals			59.5	11.9	110.	

SIDEWALK (LEFT)

Station	To Station	Lin Ft.	Deduction	Length	Width	Sq. Ft.
620 + 00	631 + 00	1100	3 Drs @ 14.5 = 43.5	1056.5	4.5	4754.25

STORM SEWERS

Item No	Side	Station	To Station	Pipe Lin. Ft. 12"	15"	18"	Pipe Under Pav't Lin. Ft. 12"	Catch Basins Each 13-X	Manholes Each Special
SS - 1	Rt	620+00	621 + 45	143					
SS - 2	Lt to Rt	621+40		6			33	2	1
SS - 3	Rt	621+45	623 + 85	237					
SS - 4	Lt to Rt	623+80		6			33	2	1
SS - 5	Rt	623+85	626 + 25		237				
SS - 6	Lt to Rt	626+20		6			33	2	1
SS - 7	Rt	626+25	628 + 65		237				
SS - 8	Lt to Rt	628+60		6			33	2	1
SS - 9	Rt	628+65	631 + 00			231			
SS - 10	Lt to Rt	630+90		6			33	2	1
Totals				410	474	231	165	10	5

REMOVAL OF EXISTING PAV'T REPLACEMENT

Station From	Station To	Length	Width	Sq Yds	8" B-71 Sq Yds
621+36	621+44	8	20	17.8	17.8
623+76	623+84	8	20	17.8	17.8
626+16	626+24	8	20	17.8	17.8
628+56	628+64	8	20	17.8	17.8
630+86	630+94	8	20	17.8	17.8
Totals				89.0	89.0

REMOVAL OF TREES AND STUMPS

Station	Side	Dist. from ℄	Size	Kind
620 to 621	Lt.	Variable	8" to 15"	3 Stumps
621 + 77	Rt.	32'	17"	Stump
623 + 07	Lt.	30'	24"	Stump
623 + 83	Rt.	24'	34"	Oak
625 + 91	Rt.	35'	10"	Stump
626 + 35	Rt.	31'	36"	Stump
626 + 67	Lt.	24.5'	9"	Peach
626 + 87	Rt.	31'	22"	Cherry
627 + 07	Rt.	31'	9"	Cherry
629 + 99	Rt	32'	15"	Stump
629 + 41	Rt	31'	16"	Cherry

Total = 13 Indicated thus ✿

SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
620 + 00	631 + 00	Lt. & Rt	4400
5 Crossovers	5 x (20 x 2)		200
			4600

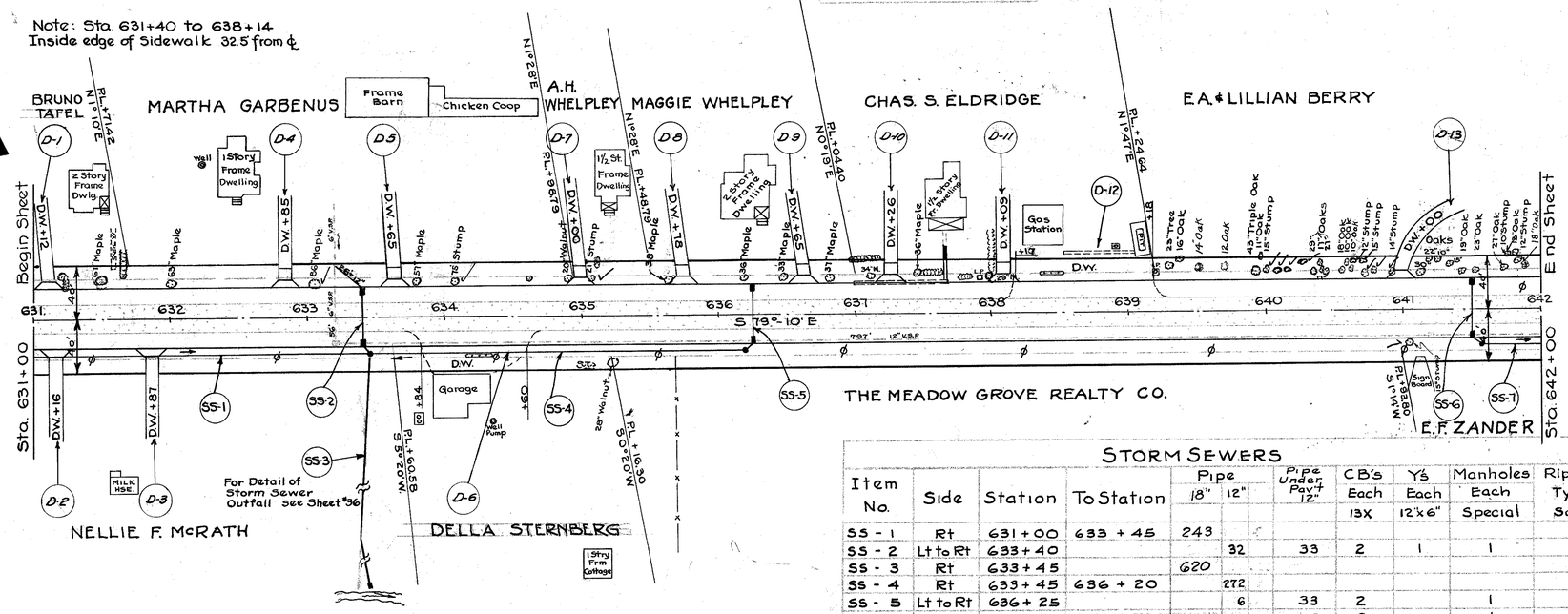
STA. 620+00 - STA 631+00

		FED. AID			
10	OHIO	5A(5)	1941		15 / 43

LAKE COUNTY
S.H. 2 SEC. Q (Pt)

Walk to house
Lt. of Sta. 637+65
Remove 25' of pres. 2' walk = 50 □'
Build 10' of new walk = 20 □'

Note: Sta. 631+40 to 638+14
Inside edge of Sidewalk 32.5' from ℄



B.M. No. 15: Spike in South West root of 63" Maple tree, 26.5' left of sta. 631+91. Elevation = 664.075

DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds	Deduct Curb Lin. Ft.	Detail Sheet No.
D-1	631+12	Lt.	11.9	2.0	22	37
D-2	631+16	Rt.	11.9	1.1	22	
D-3	631+87	Rt.	11.9	1.1	22	
D-4	632+85	Lt.	21.3	0.3	22	
D-5	633+65	Lt.	21.3	0.3	22	
D-6	634+22	Rt.	55.2	7.5	82	3
D-7	635+00	Lt.	21.3	0.3	22	
D-8	635+78	Lt.	21.3	0.3	22	
D-9	636+65	Lt.	21.3	0.3	22	
D-10	637+26	Lt.	21.3	0.3	22	
D-11	638+09	Lt.	21.3	0.3	22	
D-12	638+67	Lt.	73.3	10.1	107	3
D-13	641+00	Lt.	11.9	2.0	22	37
Totals			325.2	23.9	431	

SIDEWALK (LEFT)

Station	To Station	Lin. Ft.	Deductions	Net Length	Width	Sq. Ft.
631+00	642+00	1100	2 Dr @ 14.5' = 29' 7 Dr @ 10' = 70' 1 Dr @ 10' = 10'	900	4.5	4050
Walk to house Lt. of Sta. 637+65 - 20 □'			4050 + 20	=		4070
SIDEWALK REMOVED -						
636+99	637+66	67	None	67	3	201
Walk to house Lt. of Sta. 637+65 - 50 □'			201 + 50	=		251

STORM SEWERS

Item No.	Side	Station	To Station	Pipe 18"	Pipe 12"	Pipe Under Pav't 12"	CB's Each 13X	YS Each 12"x6"	Manholes Each Special	Riprap Type 'A' Sq. yds	Class 'C' Conc. Cu. Yds
SS-1	Rt	631+00	633+45	243							
SS-2	Lt to Rt	633+40			32	33	2	1	1		
SS-3	Rt	633+45		620						5	2.4
SS-4	Rt	633+45	636+20		272						
SS-5	Lt to Rt	636+25			6	33	2		1		
SS-6	Lt to Rt	641+50			6	33	2		1		
SS-7	Rt	641+55	642+00		44						
Total				863	360	99	6	1	3	5	2.4

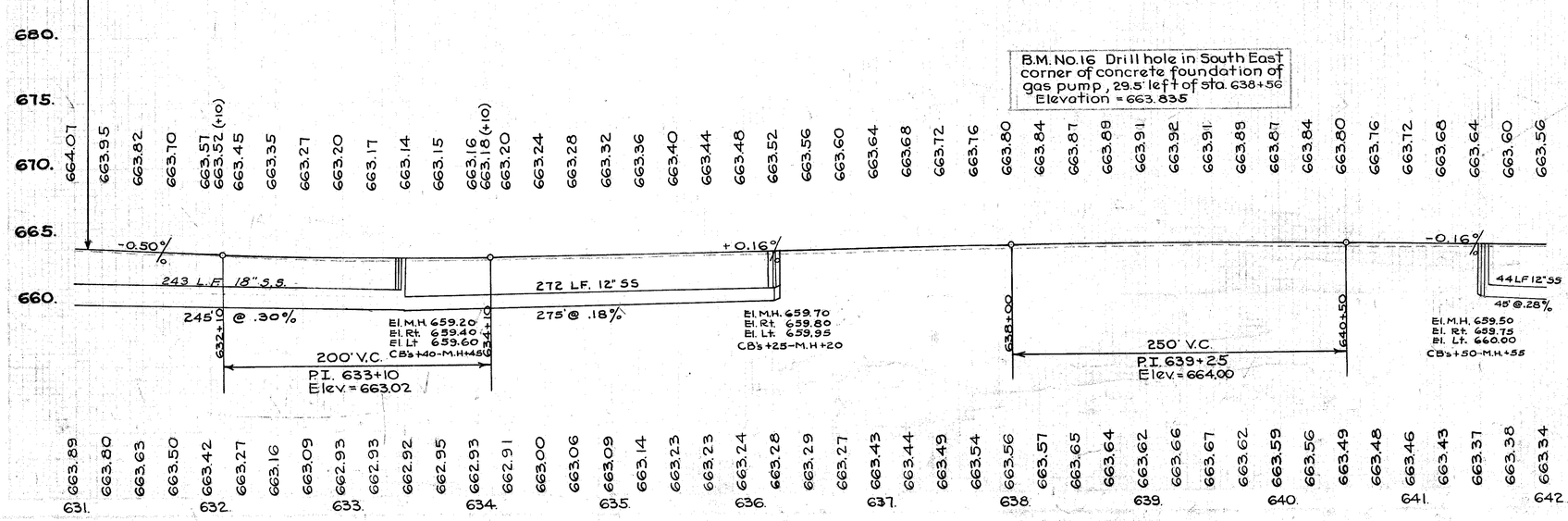
REMOVE EXIST. STRUCTURES

Station	Item	Dist. from ℄
633+20	Brick Inlet	18.5 Rt.
641+20	" "	18.5 Rt.
Total = 2		

Excavation	536 Cu. Yds.
Embankment	530 Cu. Yds.

Grade line shown is crown of finished pav't

B.M. No. 16 Drill hole in South East corner of concrete foundation of gas pump, 29.5' left of sta. 638+56 Elevation = 663.835



REMOVAL OF TREES & STUMPS

Station	Side	Dist. from ℄	Size	Kind
633+05	Lt.	23'	86"	Maple
634+07	Lt.	25'	75"	Stump
639+97	Lt.	30'	15"	Stump
640+05	Lt.	29.5'	11"	Stump
640+16	Lt.	29.5'	10"	Stump
640+25	Lt.	36'	10"	Stump
640+60	Lt.	30.5'	11"	Stump
635+06	Lt.	28'	21"	Stump
640+68	Lt.	36'	11"	Stump
640+72	Lt.	29'	12"	Stump
640+77	Lt.	29.5'	15"	Stump
640+93	Lt.	27'	14"	Stump
641+03	Rt.	32'	15"	Stump
641+74	Lt.	39'	10"	Stump
641+78	Lt.	34'	12"	Stump
Total = 15		Indicated thus- ✓		

REMOVAL OF EXISTING PAV'T / REPLACEMENT

Station From	Station To	Length	Width	Sq. Yds	8" B-71 Sq. Yds.
633+16	633+24	8	20	17.8	17.8
633+36	633+44	8	20	17.8	17.8
636+21	636+29	8	20	17.8	17.8
641+46	641+54	8	20	17.8	17.8
Total				71.2	71.2

SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
631+00	642+00	Lt. & Rt.	4400
4 Crossovers 4 x (20 x 2)			160
Total			4560

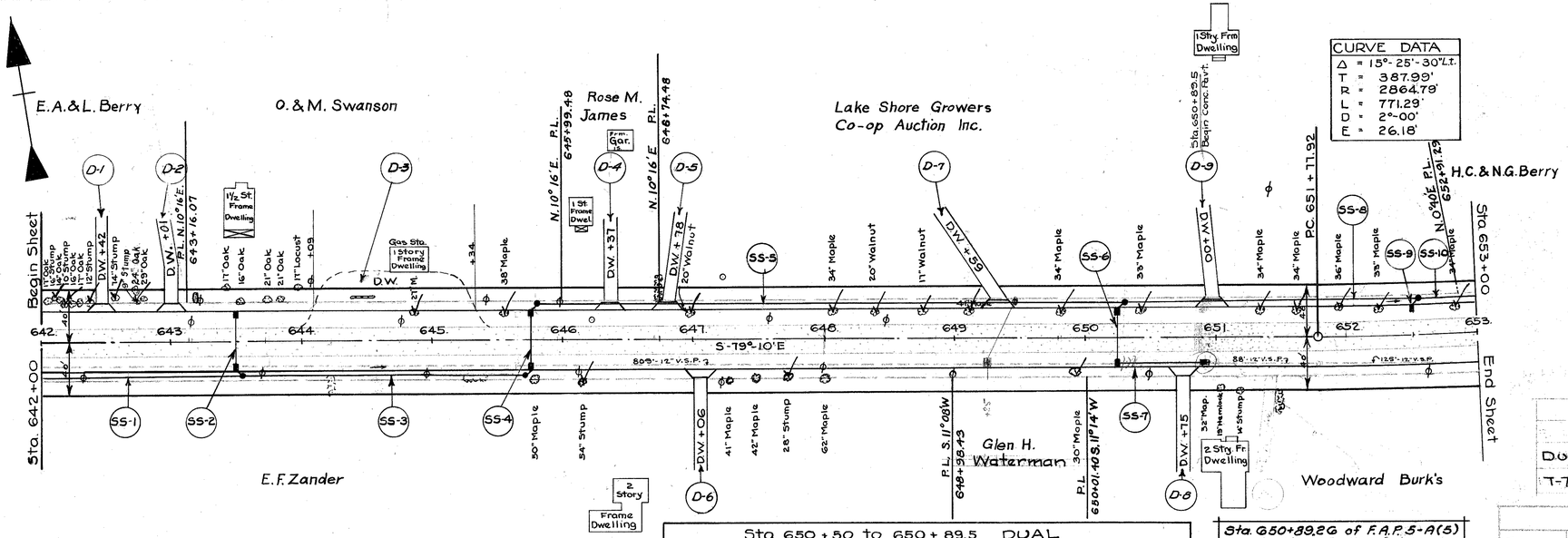
PIPE REMOVED

Station From	Station To	Side	Lin. Ft. 6"	Lin. Ft. 12"
633+20		Lt. to Rt.	56	
633+22	641+19	Rt.		797
641+23	642+00	Rt.		77
Total			56	874

STA. 631+00 - STA 642+00

		FED. AID			16
10	OH10	5A(5)	1941		43

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



CURVE DATA
Δ = 15°-25'-30" Lt.
T = 387.99'
R = 2864.79'
L = 771.29'
D = 2°-00'
E = 26.18'

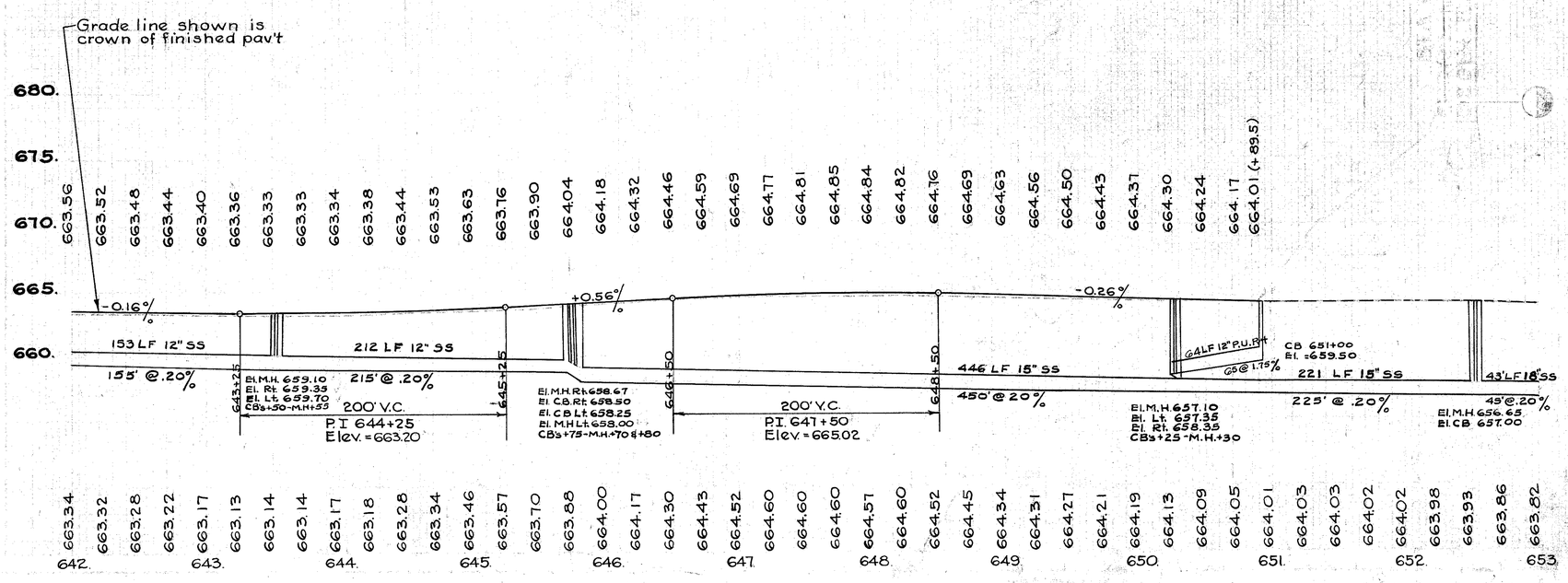
Sta. 650+50 to 650+89.5 DUAL
Removal & Disposal of Exist. Brick Surf. Course (39.5 x 16) ÷ 9 = 70.2 Sq. Yds
Removal & Disposal of Exist. 2' flush curb 39.5 x 2 = 79. Lin. Ft.
Insulation Course [(39.5 x 2) x 2] ÷ 9 = 17.6 Sq. Yds Extra
Extra B-50 Pav't (At curbs) = 17.6 Sq. Yds. | Estimated to build up center {B-50 Leveling 8 Cu. Yds

Sta. 650+89.26 of F.A.P. 5-A(5) Equals Sta. 651+00 of U.S.W.P.H. No. W.P.H. 5 Unit 2 & Equals Sta. 653+68.58 of F.A.P. 5

B.M. No. 17: Spike in North root of 40" Maple tree, 50' right of Sta. 646+00 Elevation = 666.755

B.M. No. 18: Spike in North root of 24" Fir tree, 39' right of Sta. 651+04 Elevation = 665.510

Excavation = 479 Cu. Yds
Embankment = 475 Cu. Yds



DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds	Deduct Curb Lin. Ft.	Deduct Sidewalk	Detail Sheet No.
D-1	642 + 42	Lt.	11.9	2.0	22		37
D-2	643 + 01	Lt.	11.9	2.0	22		37
D-3	644 + 71	Lt.	90.7	12.7	131	123.5	3
D-4	646 + 37	Lt.	11.9	2.0	22		37
D-5	646 + 78	Lt.	11.9	2.0	22		37
D-6	647 + 06	Rt.	11.9	1.1	22		
D-7	649 + 59	Lt.	11.9	4.3	22		38
D-8	650 + 75	Rt.	11.9	1.1	22		
TOTAL DUAL			174.0	27.2	285	123.5	
D-9	651 + 00	Lt.	11.9	2.0	22		37
TOTAL T-71			11.9	2.0	22		

SIDEWALK (LEFT)

	Station	To Station	Lin. Ft.	Deductions	Net Length	Width	Sq. Ft.
DUAL	642 + 00	650 + 89.5	889.5	5 Drs @ 14.5 = 72.5 + 1 Dr @ 123.5 = 196	693.5	4.5	3120.8
T-71	650+89.5	653 + 0	210.5	1 Dr. @ 14.5' = 14.5	196	4.5	882

STORM SEWER

Item No.	Side	Station	To Station	Pipe Lin Ft 12"	15"	18"	Pipe Under Pav't 12"	Catch Basins Each 13X	13-Y	Manholes Each Special	#1
SS - 1	Rt	642 + 00	643 + 55	153							
SS - 2	Lt to Rt	643 + 50		6			33	2		1	
SS - 3	Rt	643 + 55	645 + 70	212							
SS - 4	Rt to Lt	645 + 75		12			33	2		1	1
SS - 5	Lt	645 + 80	650 + 30		446						
SS - 6	Rt to Lt	650 + 25		6			33	1	1		1
SS - 7	Rt	650 + 25	650 + 89.5				64		1		
SS - 8	Lt	650 + 30	650 + 89.5		58						
TOTAL DUAL				389	504		164	5	2	2	2
SS - 8	Lt	650+89.5	652 + 55		163						
SS - 9	Lt	652 + 55	652 + 80	6				1			1
SS - 10	Lt	652 + 55	653 + 0			43					
TOTAL T-71				6	163	43		1			1

REMOVAL OF TREES AND STUMPS

Station	Side	Dist from ℄	Size	Kind
644 + 86	Lt	21	27	Maple
645+56	Lt	20	38	Maple
646+16	Rt	31	54	Stump
646+99	Lt	20	20	Walnut
647+72	Rt	30	28	Stump
648+05	Lt	19.5	34	Maple
648+39	Lt	20	20	Walnut
648+75	Lt	20.5	17	Walnut
649+10	Lt	19.5	41	Maple
649+81	Lt	20	34	Maple
650+42	Lt	20	33	Maple
651+33	Lt	20	34	Maple
651+62	Lt	20	34	Maple
651+94	Lt	20	36	Maple
652+25	Lt	19.5	33	Maple
652+85	Lt	18.5	34	Maple
642 + 00 to 643 + 00	Lt	29' to 34'	Var.	5 Stumps
649 + 96	Lt	22.2	30	Maple
TOTAL DUAL = 17		TOTAL T-71 = 5		

REMOVAL OF EXISTING PAVEMENT

Station From	To	Length	Width	Sq. Yds
643+46	643+54	8	20	17.8
645+71	645+79	8	20	17.8
650+21	650+29	8	20	17.8
TOTAL DUAL				53.4

REPLACEMENT OF PAVEMENT

Station From	To	Length	Width	B-B-71 Sq. Yds.
643+46	643+54	8	20	17.8
645+71	645+79	8	20	17.8
650+21	650+29	8	20	17.8
TOTAL DUAL				53.4

REMOVE EXISTING STRUCTURE

Station	Side	Dist. From ℄	Object	Lump
651+77	Rt.	18.2'	Brick Inlet	1
TOTAL T-71				1

SEALING (ONLY) EDGES OF EXIST. PAV'T

Station	To Station	Side	Lin. Ft.
642 + 00	650 + 89.5	Lt & Rt.	3558
3 Crossovers 3 (20 x 2)			120
TOTAL DUAL			3678
650 + 89.5	653 + 00	Lt. & Rt	421
TOTAL T-71			421

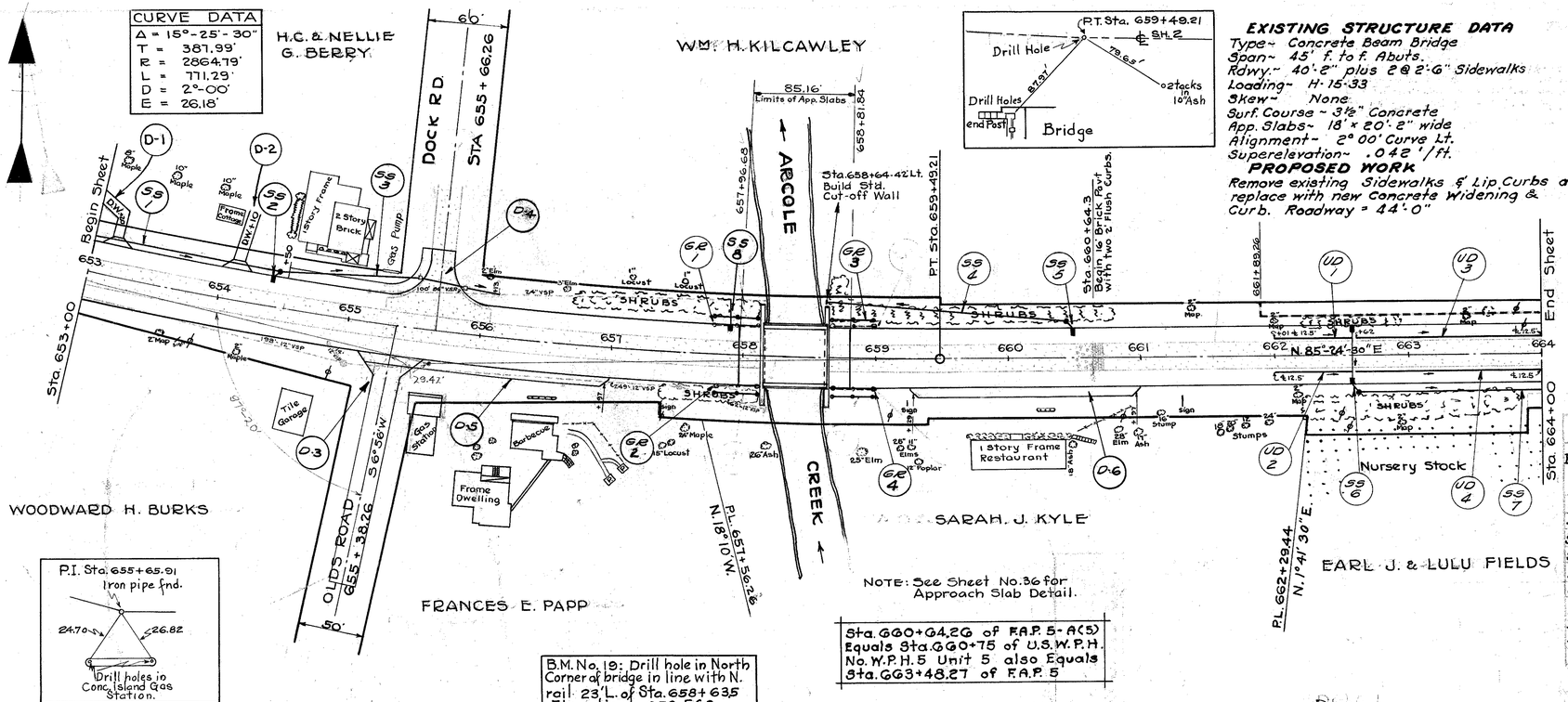
PIPE REMOVED

Station From	To	Side	Lin. Ft. 12"
642+00	650+89.5	Rt.	889
TOTAL DUAL			889
651+78	653+00	Rt.	122
650+89.5	651+76	Rt.	87
TOTAL T-71			209

STA. 642+00 - STA. 653+00

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)

CURVE DATA
Δ = 15°-25'-30"
T = 387.99'
R = 2864.79'
L = 771.29'
D = 2°-00'
E = 26.18'



P.I. Sta. 655+65.91
Iron pipe fnd.
24.70 — 26.82
Drill holes in Conc. Island Gas Station.

B.M. No. 19: Drill hole in North Corner of bridge in line with N. rail 23' L. of Sta. 658+63.5 Elevation = 659.560

NOTE: See Sheet No. 36 for Approach Slab Detail.

Sta. 660+64.26 of F.A.P. 5-A(5) Equals Sta. 660+75 of U.S.W.P.H. No. W.P.H. 5 Unit 5 also Equals Sta. 663+48.27 of F.A.P. 5

Sta. 660+34.3 to 660+64.3 Remove left half of present conc. pav't & replace with T-71.
Pav't Removed 33.6 Sq. Yds
9-T-T-9 T-71 Pav't 33.6 Sq. Yds

EXISTING STRUCTURE DATA
Type ~ Concrete Beam Bridge
Span ~ 45' f. to f. Abuts.
Rdwy. ~ 40'-2" plus 2 @ 2'-6" Sidewalks
Loading ~ H-15-33
Skew ~ None
Surf. Course ~ 3½" Concrete
App. Slabs ~ 18' x 20'-2" wide
Alignment ~ 2° 00' Curve Lt.
Superelevation ~ .042'/ft.

PROPOSED WORK
Remove existing Sidewalks & Lip Curbs and replace with new Concrete Widening & Curb. Roadway = 44'-0"

DRIVES & APPROACHES

	Item	Station	Side	T-70 Sq. Yds	I-17 Cu. Yds.	Deduct Curb Lin. Ft.	T-71 SQ. YDS.	DETAIL SHEET NO.
	D-1	653+20	Lt.	11.9	1.1	22		
	D-2	654+10	Lt	11.9	1.1	22		
	D-3	655+38.26	Rt.	32.1	36.9	50		6
	D-4	655+66.26	Lt.	91.3		156	117.6	4
	D-5	656+25	Rt.	97.1	13.7	134.4		3
	D-6	660+10	Rt.	90.2	13.0	141		3
	TOTAL	T-71		334.5	65.8	535.4	117.6	
DUAL	D-6	660+10	Rt.	31.5	4.3	33		

SIDEWALK T-71

STATION	TO STATION	LIN. FT.	DEDUCTIONS	SIDE	LENGTH	WIDTH	SQ. FT.
653+00	654+50	150	2 Dr. @ 14.5' = 29	LT	121	4'-6"	544.5

STORM SEWERS

Item No	Side	Station	To Station	Pipe Lin. Ft. 12"	18"	24"	Outlet Pipe Lin. Ft. 12"	Pipe Under 24" x 12" Tee 12"	Pavt. Lin. Ft. 24"	Pipe Spec. Each 12 x 6 Tee	Catch Basins Each. 13X	No. G	Man Holes Each. Spec No.	Class "C" Conc. Cu. Yds
SS-1	Lt.	653+00	654+45	143										
SS-2	Lt.	654+40		6							1		1	
SS-3	Lt.	654+45	656+13		102	26			32			2		
SS-4	Lt.	658+64	660+43	162			16							0.1
SS-5	Lt.	660+48		6							1		1	
SS-8	Lt.	657+92		18						1	1			
		Total T-71		192	245	26	16		32	1	3	2	1	0.1
SS-7	Rt.	662+65	664+00	134										
SS-6	Lt & R.	662+60		6				29		2	2		1	
	TOTAL DUAL			140				29		2	2		1	

REMOVAL OF EXISTING STRUCTURES

Item No	Side	Station	Structure	DIST. ℄	Lump
RS-1	Rt.	654+89	Catch Basin	21.3	1
RS-2	Rt.	655+00	Manhole	34.5	1
RS-3	Lt	655+13	Manhole	22.5	1
RS-4	Rt.	657+53	Manhole	27'	1
RS-5	Rt.	658+15	Headwall	42.2	1
		TOTAL	T-71		5

PIPE UNDERDRAINS
Full Depth Porous Backfill.

Item No	Side	Station	To Station	6" Perfor. C.M. Pipe Lin. Ft.
UD-1	Lt	662+01	662+60	58
UD-2	Rt	662+01	662+60	58
UD-3	Lt	662+62	664+00	138
UD-4	Rt	662+62	664+00	138
		TOTAL DUAL		392

NOTE: Flow Line of 6" Pipe Underdrains Same as for Storm Sewers

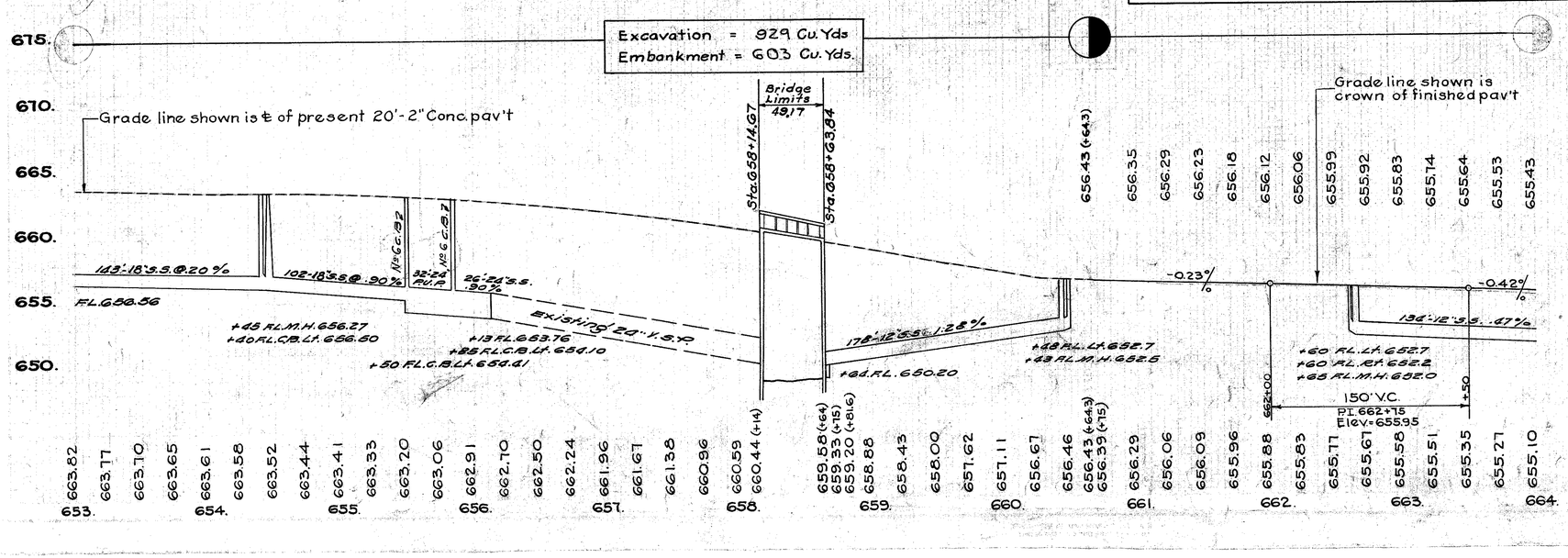
DUAL

Removal & Disposal of Exist. Brick Wearing Course Sta 660+64.3 to 661+75. (110.7 x 16) ÷ 9 = 196.8 Sq. Yds

Removal & Disposal of Exist. 2' flush curb
Sta. 660+64.3 to 661+00 Left = 35.7 Lin. Ft.
Sta. 660+64.3 to 661+75 Right = 110.7 Lin. Ft.
Total = 146.4 Lin. Ft.

Extra 1¼" Insulation Course $\frac{146.4 \times 2}{9}$ = 32.5 Sq. Yds.
Extra B-50 Pav't. (at curb) & (Base & Leveling Course) = 32.5 Sq. Yds.
Extra B-50 Level. Course (to build up center) = 22 Cu. Yds.

Excavation = 929 Cu. Yds
Embankment = 603 Cu. Yds.



REMOVAL OF EXISTING PAVEMENT

	Station From	Station To	Length Lin. Ft.	Width Lin. Ft.	Sq. Yds	REPLACEMENT 8" B-71 Sq. Yds
DUAL	662+56	662+64	8	20	17.8	17.8
	655+66	Dock Rd	(See Sheet 4)		255	
	660+34.3	660+64.3	30	10'-1"	33.6	
		T-71		Total	288.6	

SEALING (ONLY) EDGE EXIST. PAV'T.

Station	To Station	Side	Lin. Ft.
653+00	657+97	R & L	994
658+82	660+64.3	R & L	364
TOTAL	T-71		1358
1 Crossover	1 (20 x 2)		40
660+64.3	664+0	R & L	1343
TOTAL DUAL			1383

GUARD RAIL

Item No	Station From	Station To	Side	Remove & Rebuild Lin. Ft.
GR-1	657+80	658+12	L	32
GR-2	657+80	658+12	R	32
GR-3	658+67	658+99	L	32
GR-4	658+67	658+99	R	32
	TOTAL	T-71		128

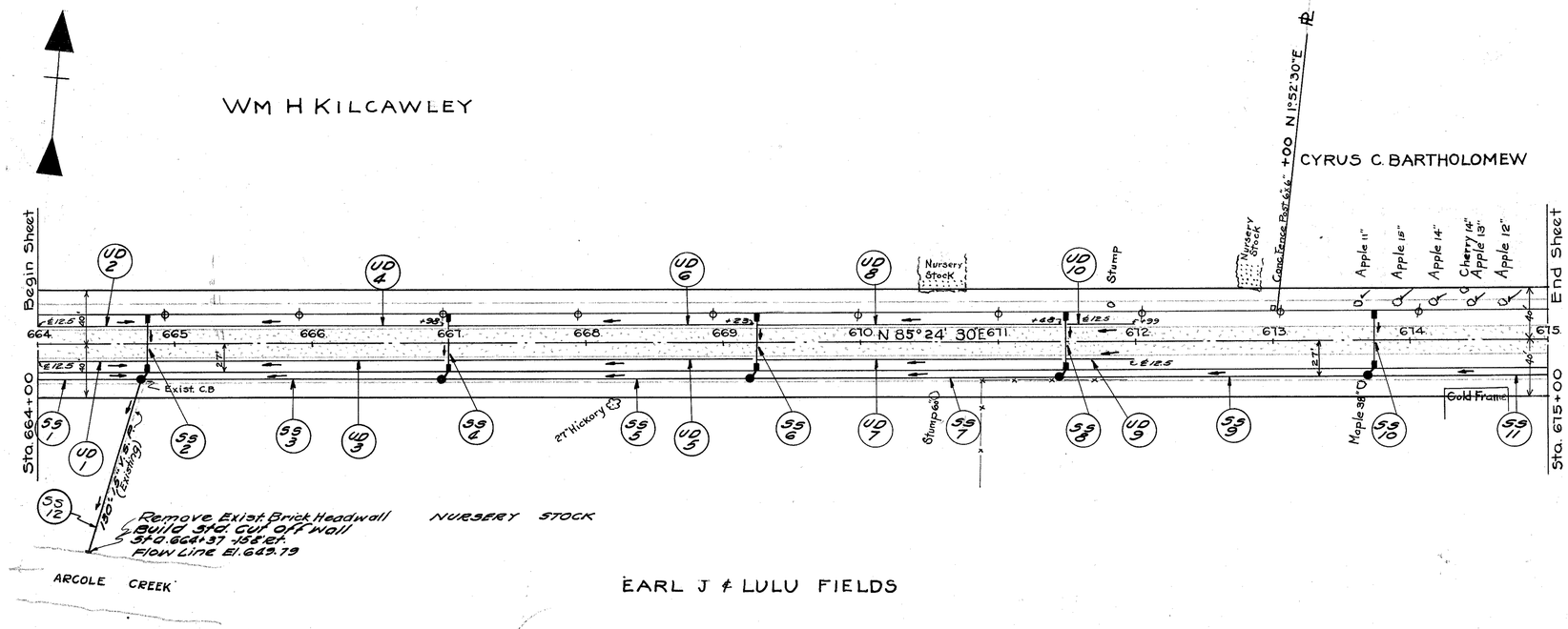
PIPE REMOVED

Station From	To	Side	Lin. Ft. Pipe 12"	24"
653+00	655+00	Rt.	198	
654+89	655+00	Rt.	14	
655+00	657+53	Rt.	249	
655+13	656+13	Lt.		100
657+53	658+15	Rt.	62	
T-71 TOTAL			523	100

STA. 653+00 – STA. 664+00

FED. AID.				
10	OHIO	5 A(5)	1941	18. 43

LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



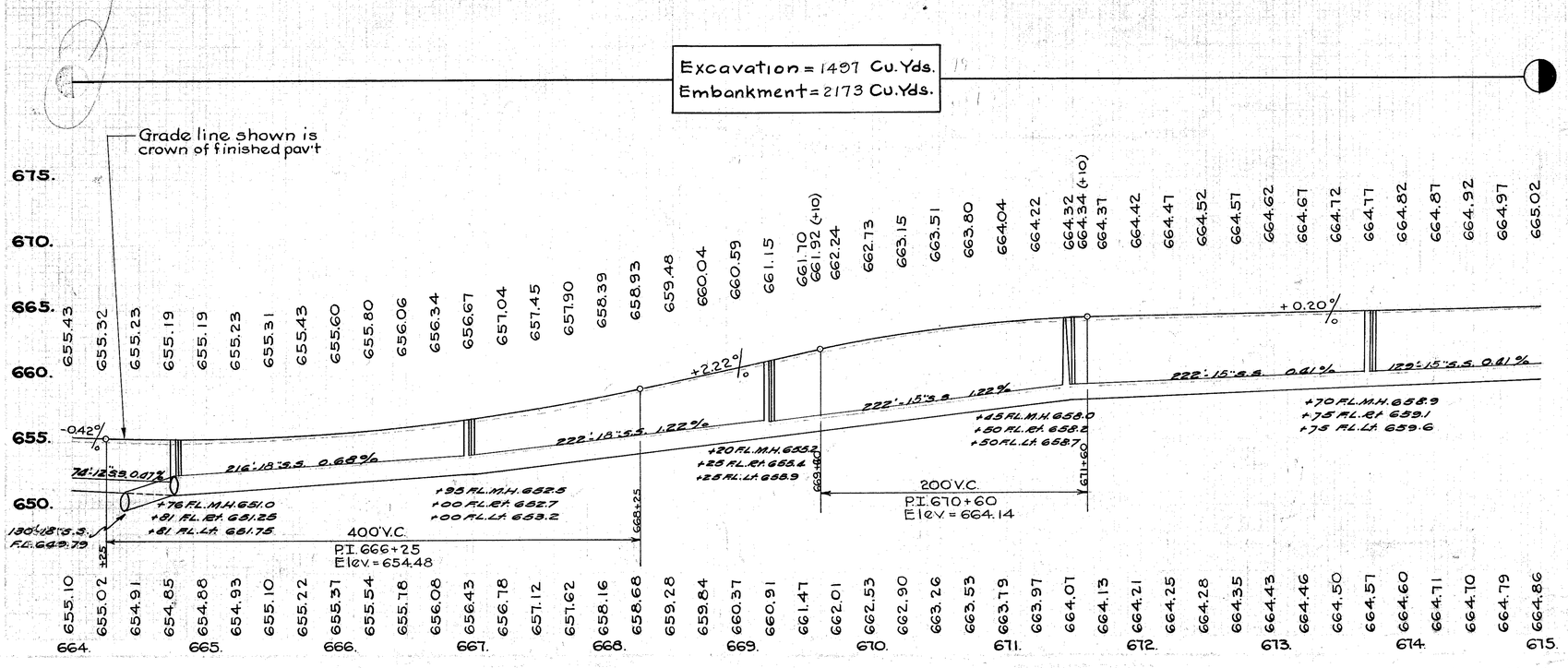
B.M. No. 20: Spike in North root of 24" Hickory tree 42' right of Sta. 668+18
Elevation = 657.880

B.M. No. 21: Spike in North root of 36" Maple tree 30.5' right of Sta. 673+67
Elevation = 666.220

REMOVAL OF TREES AND STUMPS				
STATION	SIDE	DIST. FROM ℄	SIZE	KIND
673+63	Lt.	29.6'	11	APPLE
673+91	Lt.	29.8	15"	APPLE
674+17	Lt.	29.7	14"	APPLE
674+44	Lt.	29.0	13"	APPLE
674+69	Lt.	29.5	12"	APPLE
TOTAL 5 TREES.				

STORM SEWERS

ITEM NO.	SIDE	FROM STATION	TO	OVERLAP CONC. PIPE LIN. FT. 18"	PIPE LIN. FT. 12"	PIPE LIN. FT. 15"	PIPE LIN. FT. 18"	PIPE UNDER PAVT. LIN. FT. 12"	PIPE SPECIALS EACH 12"x6" T	PIPE SPECIALS EACH 12"x6" DOUBLE T	CLASS "C" CONC. CU. YDS.	CATCH BASIN EACH 13X	MANHOLES EACH SPEC.	MANHOLES EACH NO. 1
SS-1	RT	664+00	664+76		74									
SS-2		664+81			6			29		2		2	1	
SS-3	RT	664+76	666+95				216							
SS-4		667+00			6			29	2			2	1	
SS-5	RT	666+95	669+20				222							
SS-6		669+25			6			29	2			2	1	
SS-7	RT	669+20	671+45			222								
SS-8		671+50			6			29	2			2		1
SS-9	RT	671+45	673+70			222								
SS-10		673+75			6			33				2	1	
SS-11	RT	673+70	675+00			129								
SS-12	RT	664+37	664+77	16			114				0.1			
TOTALS				16	104	579	552	149	6	2	0.1	10	4	1



PIPE REMOVED			
STATION FROM	STATION TO	SIDE	LIN. FT. 15"
664+37	664+77	RT	130
TOTAL			130

REMOVE EXIST. STRUCTURES				
STATION	SIDE	DIST. ℄	STRUCTURE	LUMP
664+37	RT	15.9	H'dwall	1
664+77	RT	29	C. Basin	1
TOTAL				2

PIPE UNDERDRAINS FULL DEPTH POROUS BACKFILL				
ITEM NO	SIDE	FROM STATION	TO STATION	6" PERFOR CORR. M.P. LIN. FT.
UD-1	RT	664+00	664+81	80
UD-2	LT	664+00	664+81	80
UD-3	RT	664+81	666+98	216
UD-4	LT	664+81	666+98	216
UD-5	RT	667+00	669+23	222
UD-6	LT	667+00	669+23	222
UD-7	RT	669+25	671+48	222
UD-8	LT	669+25	671+48	222
UD-9	RT	671+50	671+99	48
UD-10	LT	671+50	671+99	48
TOTAL				1576

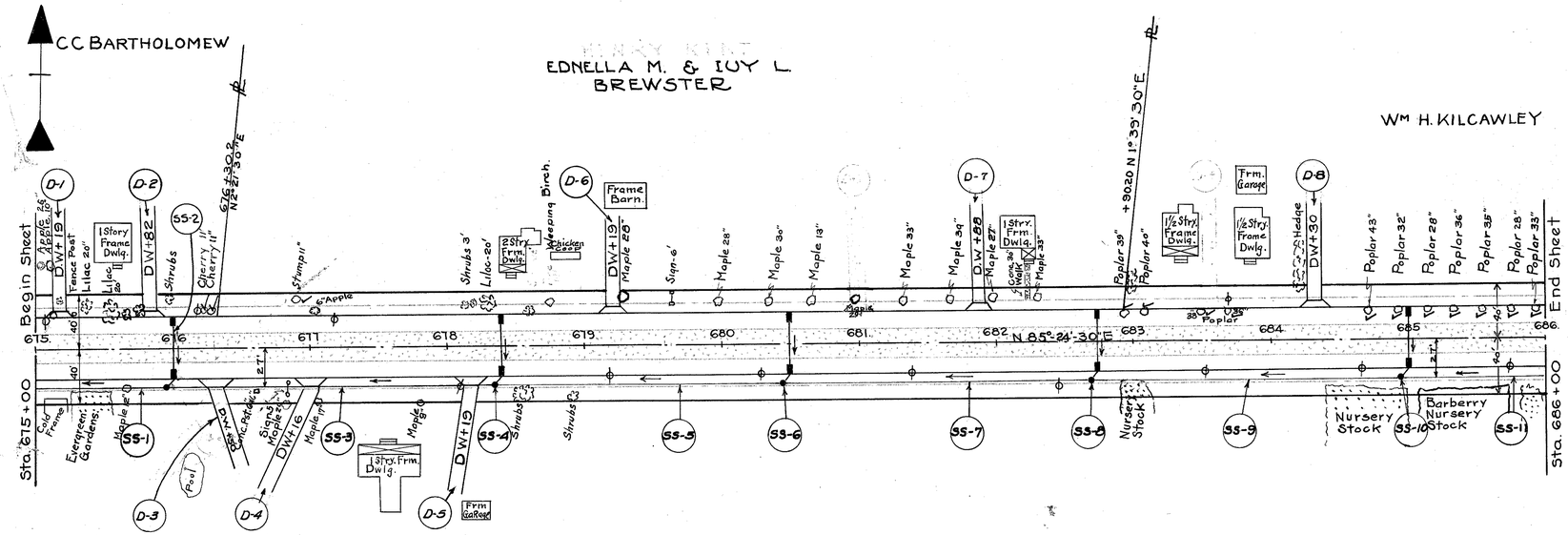
NOTE: Flow Line of 6" Pipe Underdrains same as for Storm Sewers

REMOVAL OF EXISTING PAVEMENT					REPLACEMENT
STATION FROM	STATION TO	LENGTH LIN. FT.	WIDTH LIN. FT.	SQ. YDS.	8" IB-71 SQ. YDS.
664+77	664+85	8	20	17.8	17.8
666+96	667+04	8	20	17.8	17.8
669+21	669+29	8	20	17.8	17.8
671+46	671+54	8	20	17.8	17.8
673+71	673+79	8	20	17.8	17.8
TOTAL				89.0	89.0

SEALING (ONLY) EDGES OF EXIST. PAVE.			
STATION	TO STATION	SIDE	LIN. FT.
664+00	675+00	RT. & LT.	4400
5 CROSSOVERS 5 (20x2)			200
TOTAL			4600

STA. 664+00 – STA 675+00

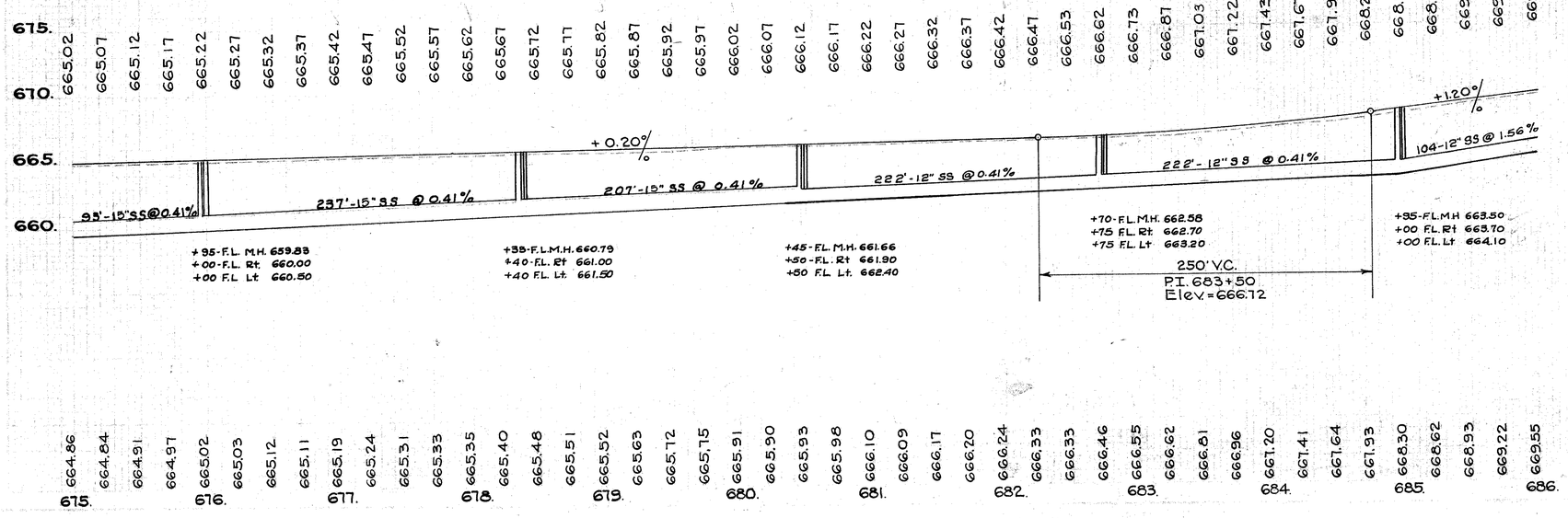
LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



B.M. No. 22: Spike in North root of 26" Maple tree 31' left of Sta. 679+99
Elevation = 665.630

B.M. No. 23: Spike in South side of 30" Poplar tree 31' left of Sta. 684+92
Elevation = 668.545

Excavation = 1204 Cu. Yds.
Embankment = 743 Cu. Yds.



DRIVES & APPROACHES

Item	Station	Side	T-70 Sq. Yds.	I-17 Cu. Yds.	Deduct Curb Lin. Ft.	Detailed on Sheet No.
D-1	675+19	Lt.	11.9	4.3	22	38
D-2	675+82	Lt.	11.9	4.3	22	38
D-3	676+50	Rt.	11.9	1.1	22	
D-4	677+16	Rt.	11.9	1.1	22	
D-5	678+19	Rt.	11.9	1.1	22	
D-6	679+19	Lt.	11.9	2.0	22	37
D-7	681+88	Lt.	11.9	2.0	22	37
D-8	684+30	Lt.	11.9	1.1	22	
TOTAL			95.2	17.0	176.	

Indicated Thus ✓

REMOVAL OF TREES & STUMPS

Station	Side	Dist. from ℄	Size	Kind
676+90	Lt.	35.0'	11"	Stump
682+93	Lt.	20.8'	39"	Poplar
683+08	Lt.	20.6'	40"	Poplar
683+49	Lt.	21.0'	38"	Poplar
683+69	Lt.	29.7'	36"	Poplar
684+71	Lt.	21.4'	43"	Poplar
684+92	Lt.	21.6'	32"	Poplar
685+12	Lt.	21.8'	28"	Poplar
685+33	Lt.	21.5'	36"	Poplar
685+54	Lt.	21.7'	35"	Poplar
685+75	Lt.	21.8'	28"	Poplar
685+94	Lt.	21.5'	33"	Poplar
676+26	Lt.	28.0'	11"	2 Cherry
		TOTAL 14		

STORM SEWERS

Item No.	Side	Station	To Station	Pipe Lin. Ft. 12	Pipe Lin. Ft. 15	Pipe Under Pav't Lin. Ft. 12"	Catch Basins Each 13X	Man Holes Each Special
SS-1	Rt.	675+00	675+95		93			
SS-2		676+00		6		33	2	1
SS-3	Rt.	675+95	678+35		237			
SS-4		678+40		6		33	2	1
SS-5	Rt.	678+35	680+45		207			
SS-6		680+50		6		33	2	1
SS-7	Rt.	680+45	682+70	222				
SS-8		682+75		6		33	2	1
SS-9	Rt.	682+70	684+95	222				
SS-10		685+00		6		33	2	1
SS-11	Rt.	684+95	686+00	104				
TOTALS				578	537	165	10	5

REMOVAL OF EXISTING PAVEMENT / REPLACEMENT

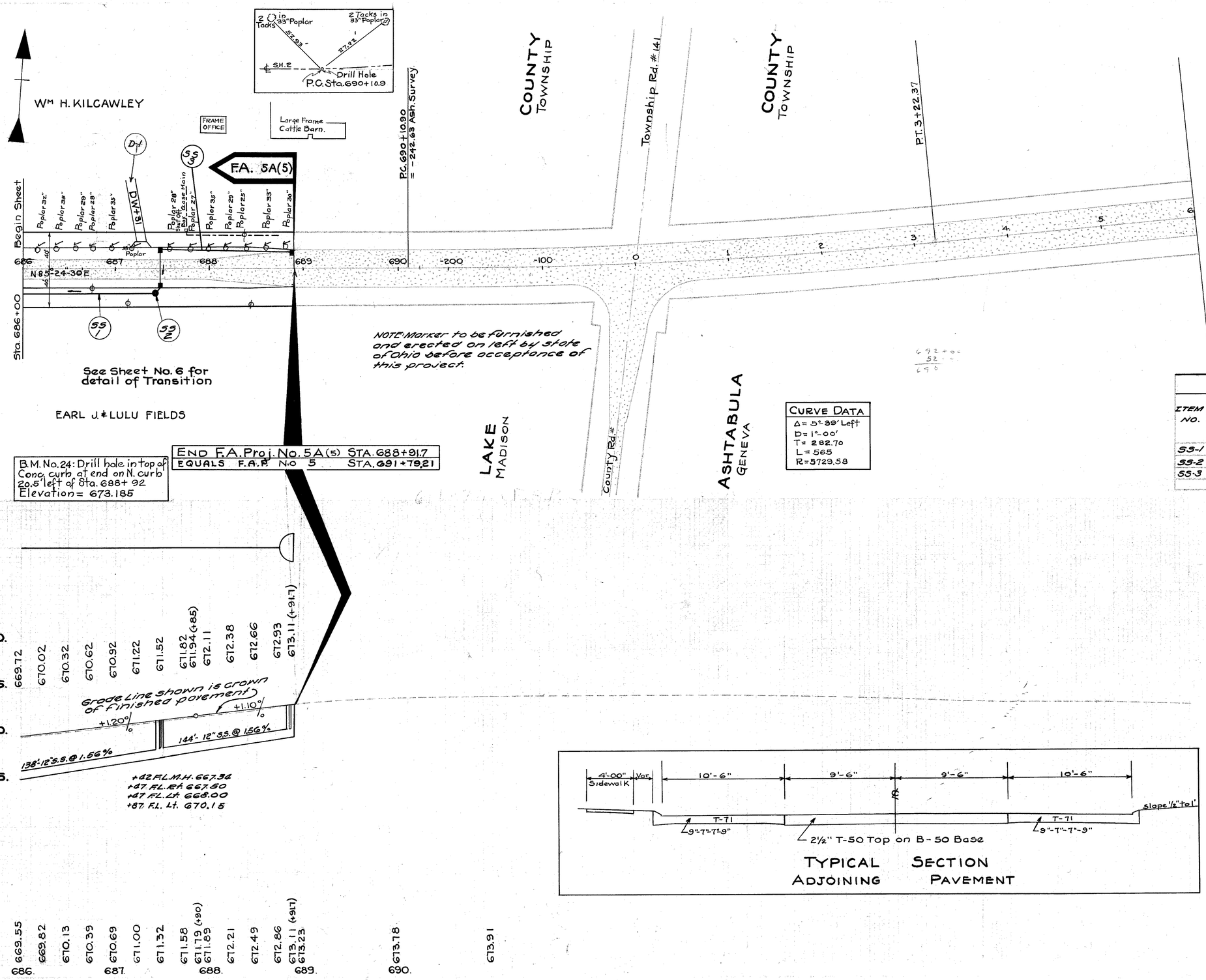
Station From	Station To	Length Lin. Ft.	Width Lin. Ft.	Sq. Yds.	8 B-71 Sq. Yds.
675+96	676+04	8	20	17.8	17.8
678+36	678+44	8	20	17.8	17.8
680+46	680+54	8	20	17.8	17.8
682+71	682+79	8	20	17.8	17.8
684+96	685+04	8	20	17.8	17.8
TOTAL				89.0	89.0

SEALING (ONLY) EDGES OF EXIST. PAV'T.

Station	To Station	Side	Lin. Ft.
675+00	686+00	Rt. & Lt.	4400
5 Crossovers 5(20x2)			200
TOTAL			4600

STA 675+00 - STA. 686+00

LAKE COUNTY
S.H. 2 SEC. Q (Pt)



DRIVES & APPROACHES

ITEM.	STATION	SIDE	T-70 Sq. Yds.	I-17 Cu. Yds.	DETAILED ON SHEET NO.
D-1	687+31	Lt.	11.9	4.3	38
TOTAL			11.9	4.3	

STORM SEWERS

ITEM NO.	SIDE	FROM STATION	TO STATION	PIPE LIN. FT.	PIPE UNDER PAVE. LIN. FT.	CATCH BASIN EACH	MAN-HOLES EACH
				12"	12"	13X 13Y	SPECIAL
SS-1	RT.	686+00	687+42	138			
SS-2	RT.	687+47		6	33	2	1
SS-3	Lt.	687+47	688+87		138	1	
Totals				144	171	2	1

INDICATED THUS ⊗3Y

REMOVAL OF TREES & STUMPS

Station	Side	Dist. from ℄	Size	Kind
686+15	Lt.	21.9'	32"	Poplar
686+35	Lt.	22.0'	35"	Poplar
686+56	Lt.	22.4'	29"	Poplar
686+76	Lt.	21.8	28"	Poplar
686+96	Lt.	21.7	35"	Poplar
687+17	Lt.	21.4	33"	Poplar
687+58	Lt.	21.7	28"	Poplar
687+79	Lt.	21.9	27"	Poplar
687+98	Lt.	22.3	35"	Poplar
688+19	Lt.	22.2	29"	Poplar
688+39	Lt.	22.6	25"	Poplar
688+60	Lt.	21.5	33"	Poplar
688+80	Lt	22.2	30"	Poplar
		Total	13	

TYPICAL SECTION
ADJOINING PAVEMENT

REMOVAL OF EXIST. PAVE. — REPLACE.

STATION FROM	STATION TO	LENGTH LIN. FT.	WIDTH LIN. FT.	SQ. YDS.	8" B-71 SQ. YDS.
687+43	687+51	8	20	17.8	17.8
TOTAL				17.8	17.8

SEALING (ONLY) EDGES OF EXIST. PAVE.

FROM STATION	TO STATION	SIDE	LIN. FT.
686+00	688+91.7	Lt. & Rt.	1167
1 CROSSOVER 1 (ZONE 2)			40
TOTAL			1207

STA. 686+00 – STA. 6+00 (ASH. CO.)

FED AID

10 OHIO 5A (5) 1941

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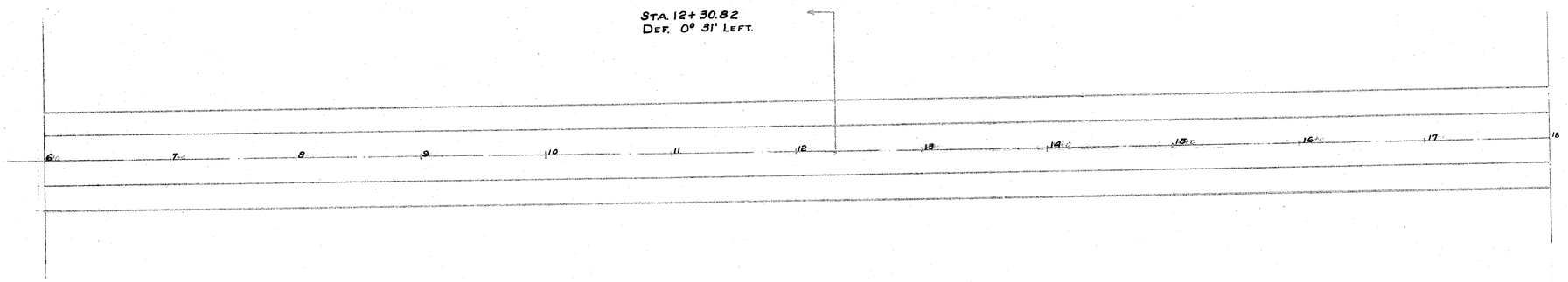
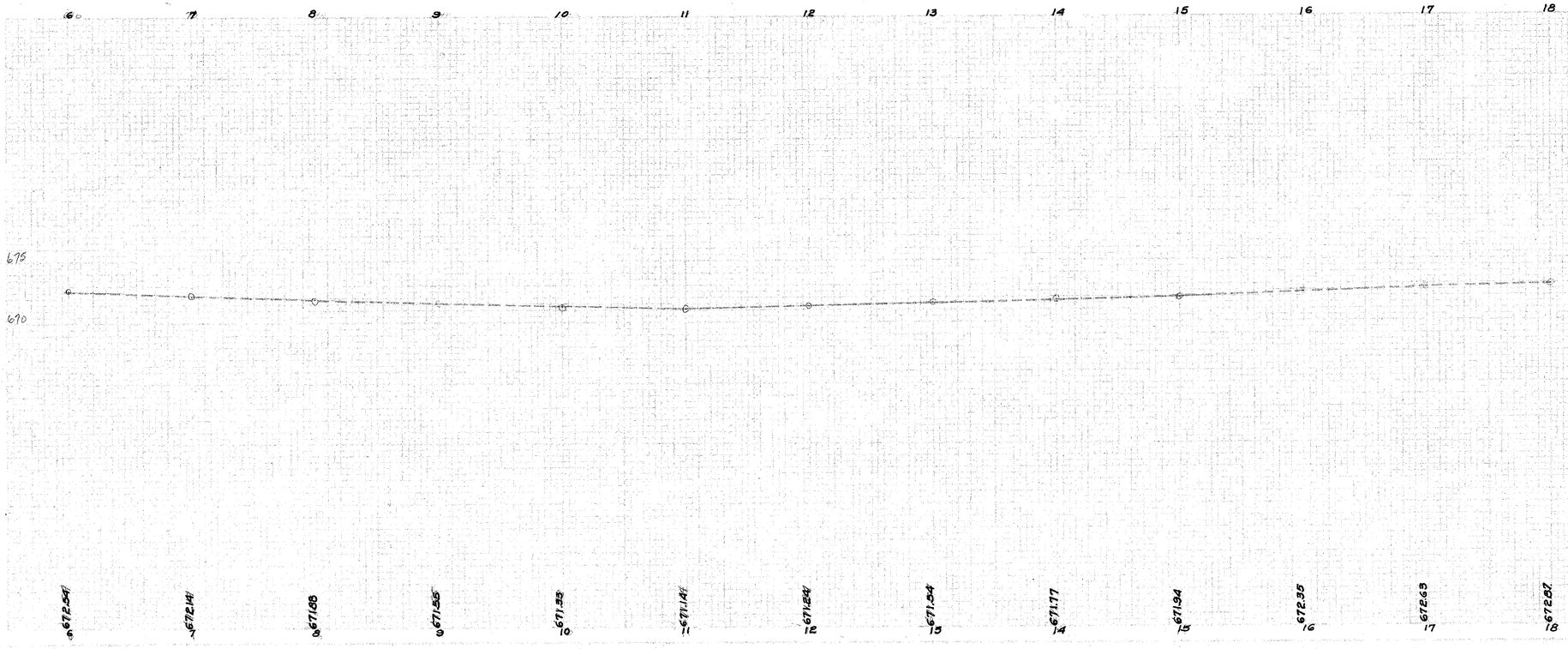
LAKE COUNTY
S.H. 2 SEC. Q (Pt)





Sta 6+0 to Sta 18+0 (Ash Co.)

G-12

LAK-20-28.10-30.41 FED. AID

22
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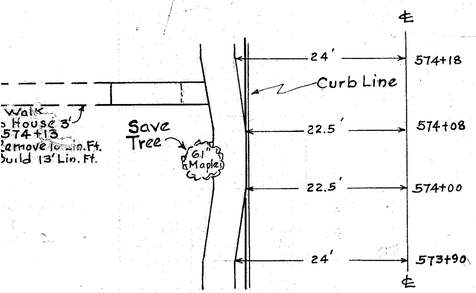
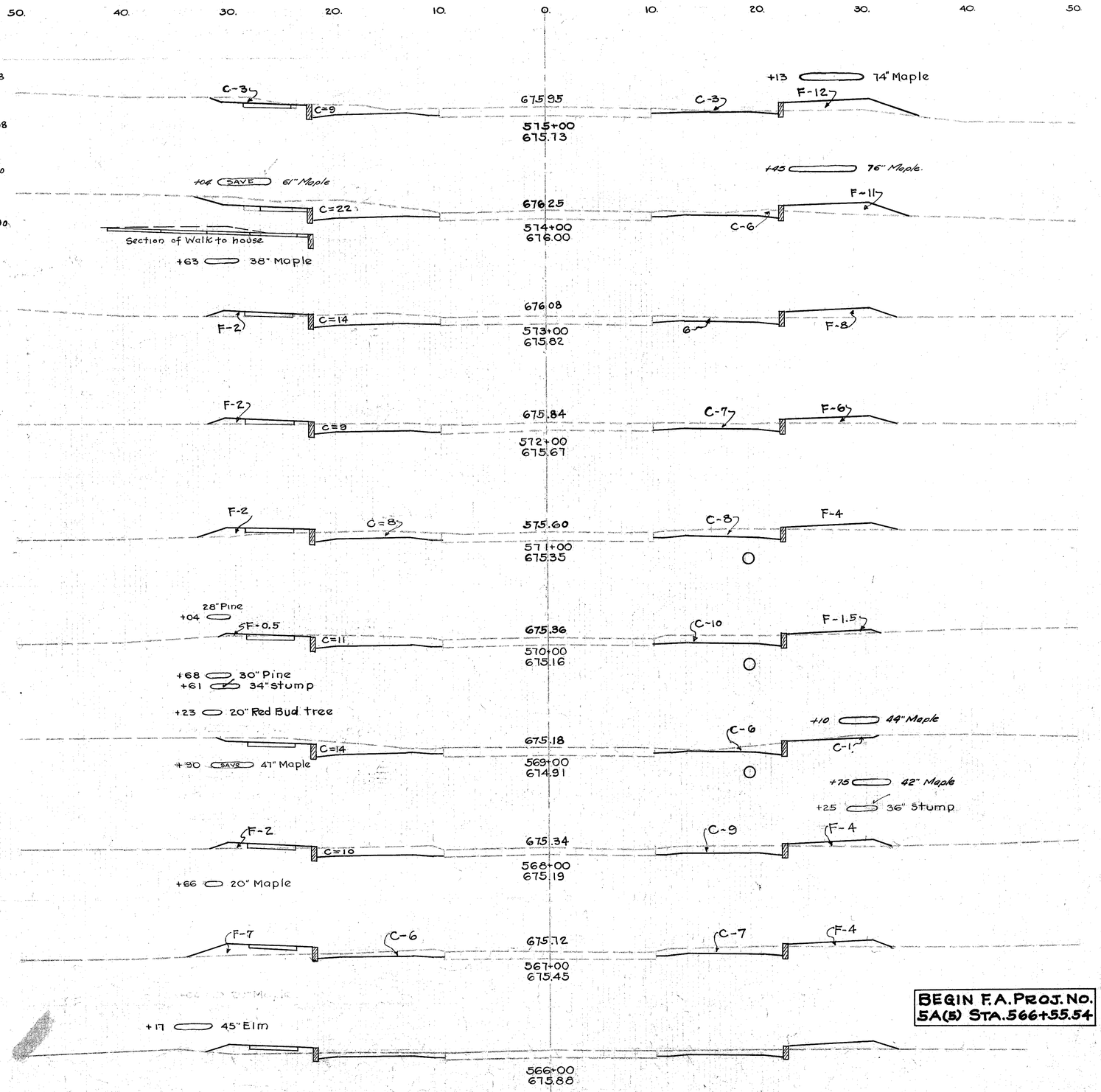
LAKE COUNTY
S.H. 2 SEC. Q (Pt.)



Location of Sidewalk
Between Sta. 573+90 & 574+18



		End. Area Exc.	End. Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
675.		15	12		
				80	43
	DR. 574+57 Rt.				5
675.		28	11		
				89	39
675.		20	10		
				67	33
675.		16	8		
				59	26
675.		16	6		
				69	15
675.		21	2		
				78	4
675.		21	0		
				74	11
675.		19	6		
				59	31
675.		13	11		
				21	18
	566+55.54	13	11		
675.					

STA. 566+55.54 TO 576+00
EXCAVATION = 631 CU. YDS.
EMBANKMENT = 300 CU. YDS.

STA. 566+00 TO STA. 575+00

FED. AID
10 OHIO 5A(5) 1941

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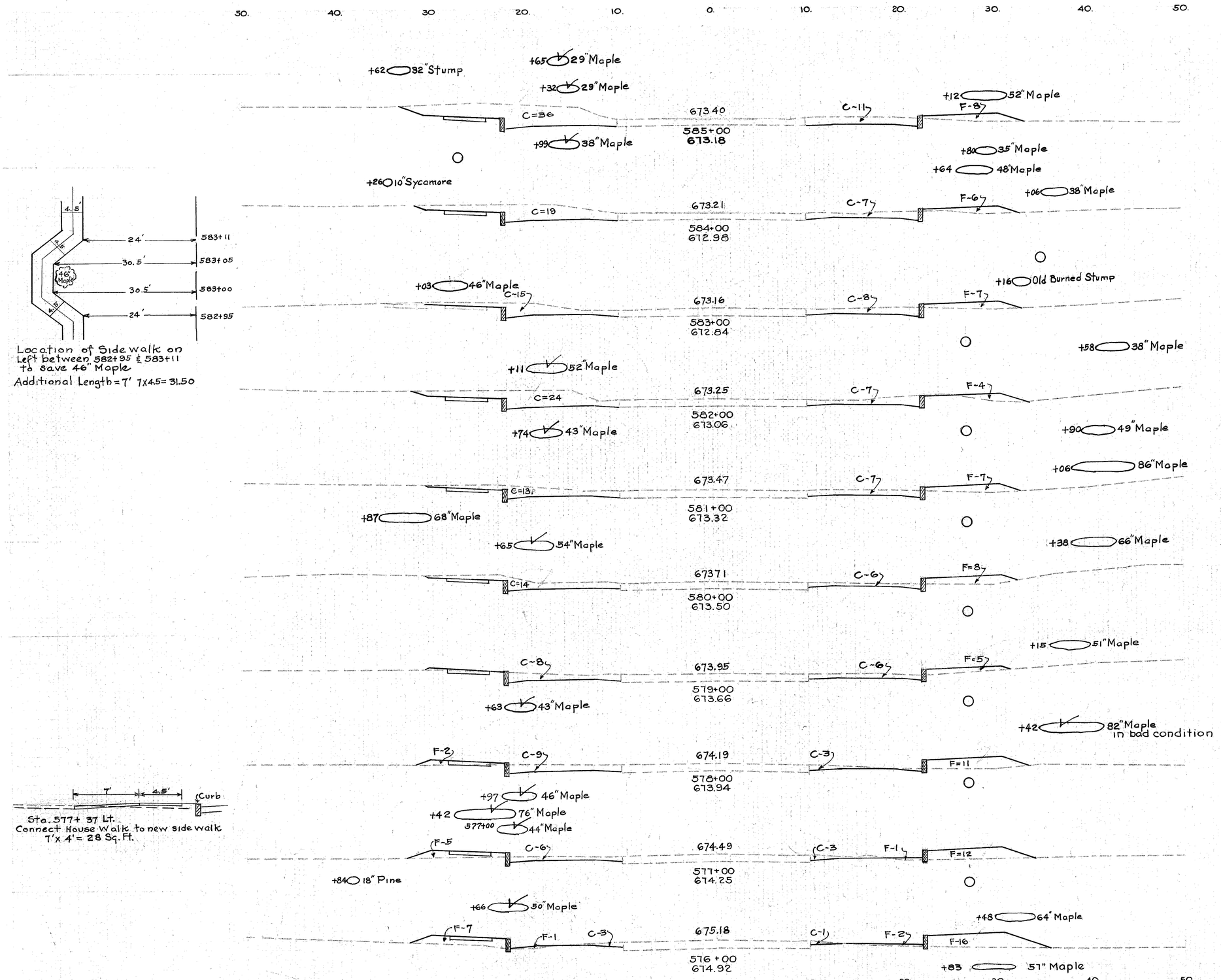
43

LAKE COUNTY
S.H.2 SEC.Q (Pt.)



End Area Exc.	End Area Emb	Cu. Yards Exc.	Cu. Yards Emb
47	8		
		135	26
26	6		
		91	24
23	7		
		100	20
31	4		
		94	20
20	7		
		74	28
20	8		
		63	24
14	5		
		48	33
12	13		
		39	57
9	18		
		24	81
4	26		
		35	70
Dr. 575+65 Rt. Sta 575+00 15	12		5

STA. 576+00 TO STA. 585+00 — Excavation = 877 Cu. Yds. Embankment = 372 Cu. Yds.

STA. 576+00 TO STA 585+00

Fed. Aid 24
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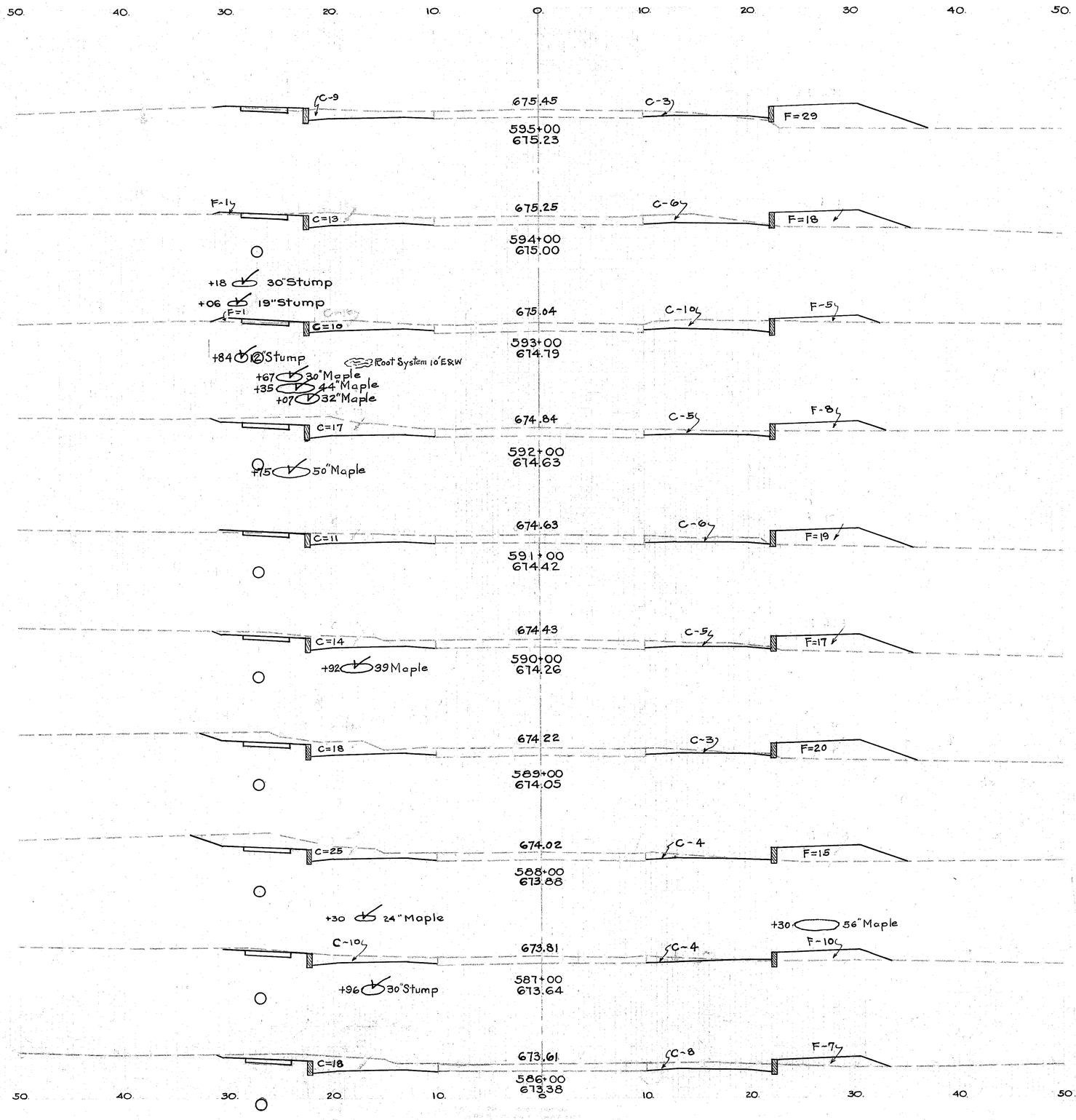
LAKE COUNTY
S.H.2 SEC. Q (Pt.)



Sta. 590+73 Left
Connect House Walk to new sidewalk
0.7 x 2.25 = 1.6 Sq.Ft.

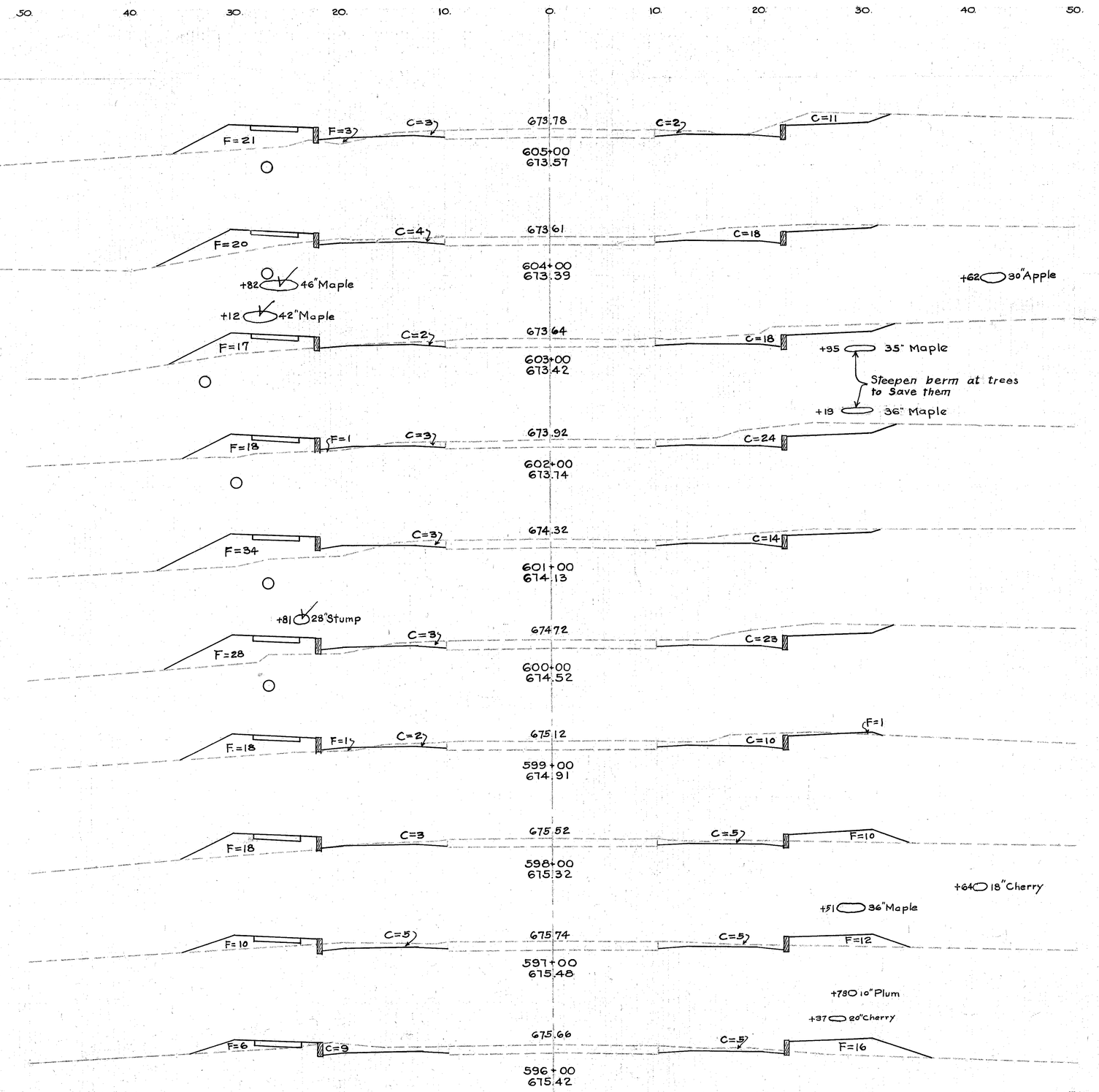
	End. Area Exc.	End. Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
	12	29		
			57	89
	19	19		
			72	46
	20	6		
			78	26
	22	8		
			72	50
	17	19		
			67	67
	19	17		
			74	69
	21	20		
Dr. 588+29 Rt.			93	65 8
	29	15		
Dr. 587+40 Rt.			80	46 5
	14	10		
			74	31
	26	7		
Sta. 585+00	47	8	135	28

STA. 587+00 TO 598+00
EXCAVATION = 718 Cu. Yds.
EMBANKMENT = 766 Cu. Yds.

STA 586+00 TO STA 595+00

FED. Aid. 25
10 OHIO 5A(5) 1941 43

LAKE COUNTY
S.H.2 SEC. Q (Pt.)



	End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
675	16	24		
			70	81
675.	22	20		
			78	69
675.	20	17		
			87	67
675.	27	19		
			81	98
675.	17	34		
			80	115
675.	26	28		
			70	89
675.	12	20		
			37	89
Dr. 598+57 Lt.				16
675.	8	28		
			33	93
Dr. 597+10 Rt.				5
675.	10	22		
			44	81
Dr. 596+58 Rt.				17
675.	14	22		
			48	94
Dr. 595+75 Lt.				5
Sta 595+00	12	29		

STA. 598+00 To 609+00
EXCAVATION = 814 Cu. Yds.
EMBANKMENT = 991 Cu. Yds.

STA. 596+00 TO STA. 605+00

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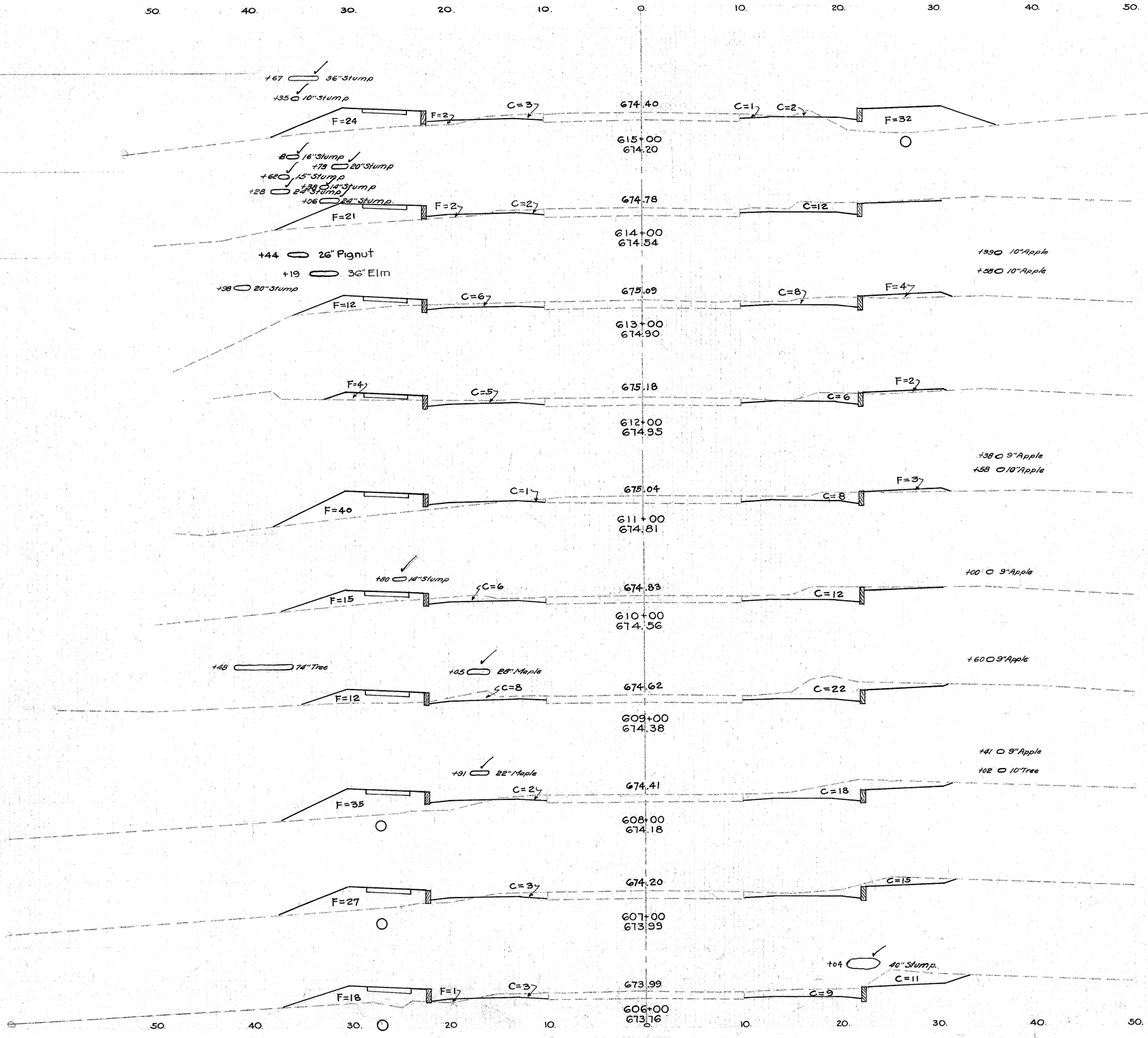
10 OHIO 5A(5) 1941 43

LAKE COUNTY
S.H.2 SEC. Q(Pt.)

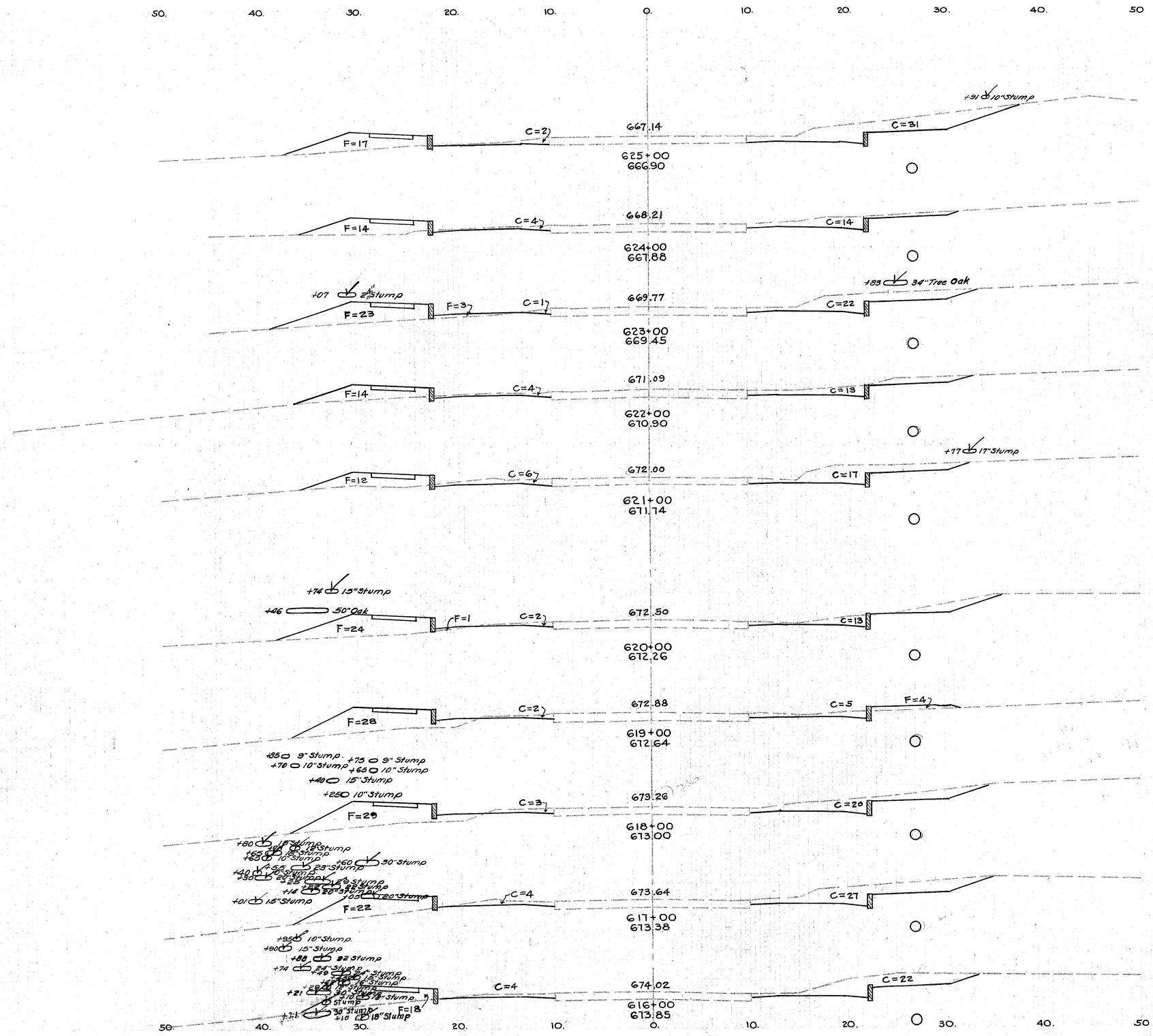


	Exd. Area Exc.	Exd. Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
675.	6	58		
			37	150
675.	14	23		
			52	72
Dr. Sta. 613+37 Lt.				15
675.	14	16		
			46	41
675.	11	6		
			37	91
Bennet Road Lt. Sta. 611+13.28				442
675.	9	43		
			50	107
675.	18	15		
			89	50
Dr. Sta. 609+60 Lt.				5
675.	30	12		
			93	87
675.	20	35		
			70	115
675.	18	27		
			76	85
675.	23	19		
			72	80
Sta. 605+00	16	24		

STA. 609+00 TO 620+00
EXCAVATION = 673 CU. YDS.
EMBANKMENT = 1506 CU. YDS.

STA. 606+00 TO STA. 615+00

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

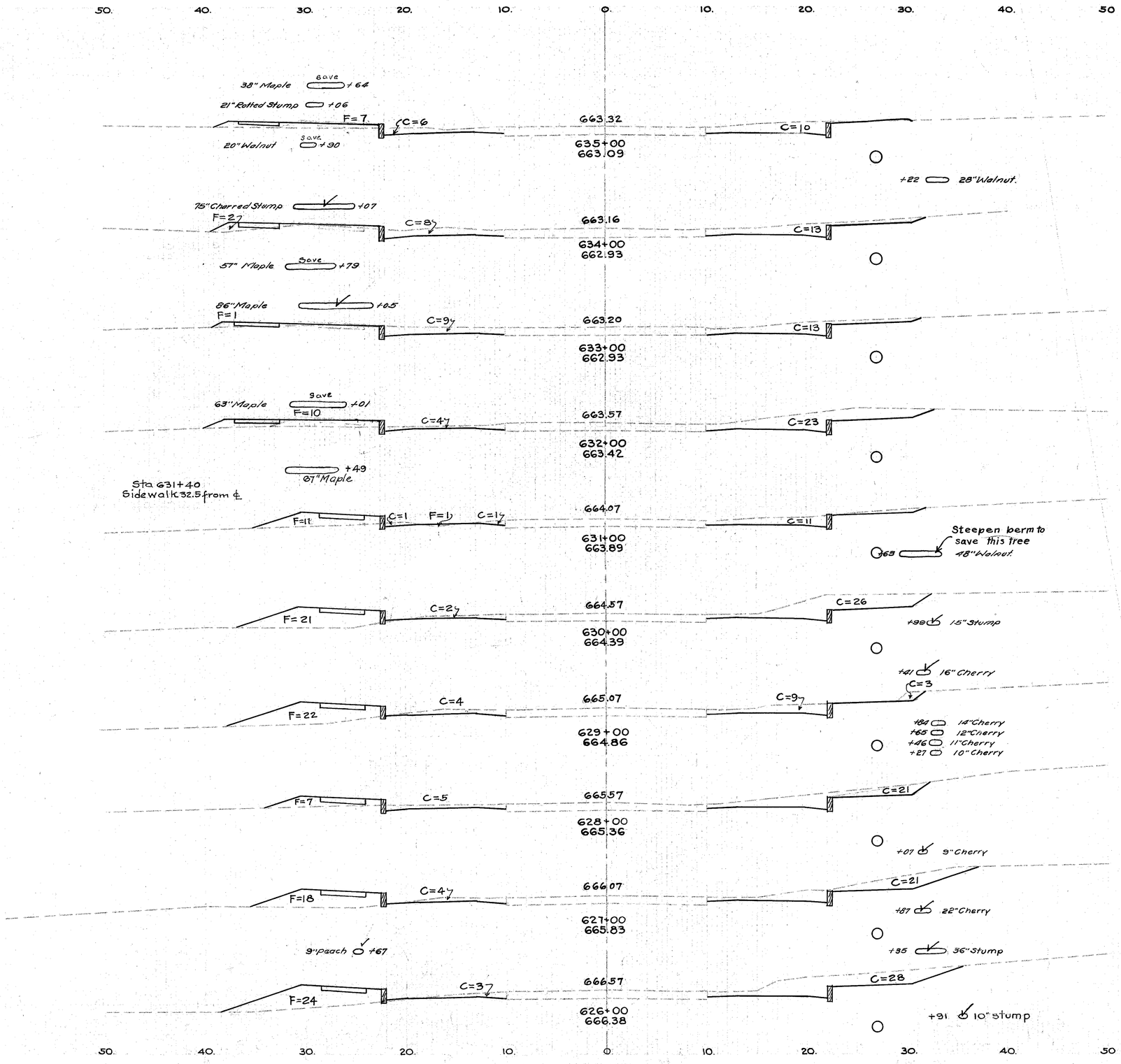


	End. Area Exc.	End. Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
610	33	17		
Dr. Sta. 624+50 Lt			94	17 / 57
610	18	14		
			76	74
Dr. Sta. 623+05 Lt				17
610.	23	26		
			74	74
610.	17	14		
			74	48
610.	23	12		
			70	69
615.	15	25		
			41	106
615.	7	32		
			56	113
615.	23	29		
			100	94
Dr. Sta. 617+32 Rt.				5
615	31	22		
			106	74
615.	26	18		
			59	141
Sta 615+00	6	58		

STA. 620+00 TO 631+00
EXCAVATION= 940 CU. YDS.
EMBANKMENT= 751 CU. YDS.

STA. 616+00 TO STA. 625+00

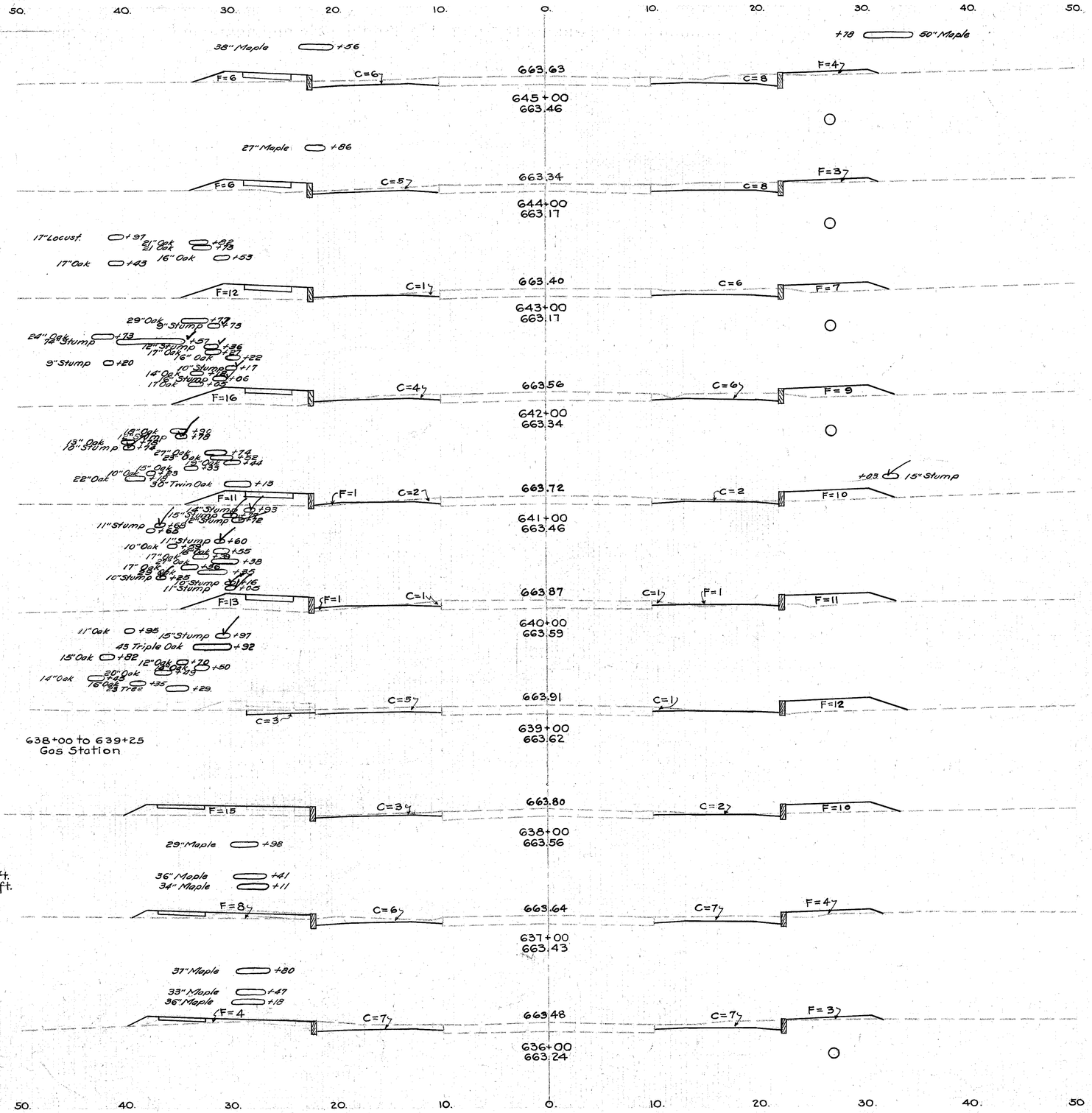
LAKE COUNTY
S.H. 2 SEC. Q (PT.)



		End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
	665.	16	7		
				69	17
	665.	21	2		
				80	6
	665.	22	1		
				91	20
	665.	27	10		
				74	41
Dr. Sta. 631+12 Lt.					5
	665.	13	12		
				76	61
	665.	28	21		
				81	80
	665.	16	22		
				78	54
	665.	26	7		
				94	46
	665.	25	18		
				104	78
	665.	31	24		
				119	76
Sta 625+00		33	17		

STA. 626+00 TO STA. 635+00

LAKE COUNTY
S.H. 2 SEC. Q(PT.)



Walk to house Lt. of sta. 638+65
Remove 26' of pres. 2' walk = 50 sq.ft.
Build 10' of new walk = 20 sq.ft.

		Epd Area Exc.	Epd Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
665.		14	10		
				50	35
665.		13	9		
				37	52
665.	Dr. Sta. 643+01 Lt.	7	19		5
				31	81
	Dr. Sta. 642+42 Lt.				5
665.		10	25		
				26	87
	Dr. Sta. 641+00 Lt.				5
665.		4	22		
				11	89
665.		2	28		
				20	70
665.		9	12		
				26	69
665.		5	25		
				33	69
665.		13	12		
				50	35
665.		14	7		
				56	26
Sta 635+00		16	7		

STA. 631+00 To 642+00
EXCAVATION = 536 Cu. Yds.
EMBANKMENT = 539 Cu. Yds.

STA. 636+00 TO STA 645+00

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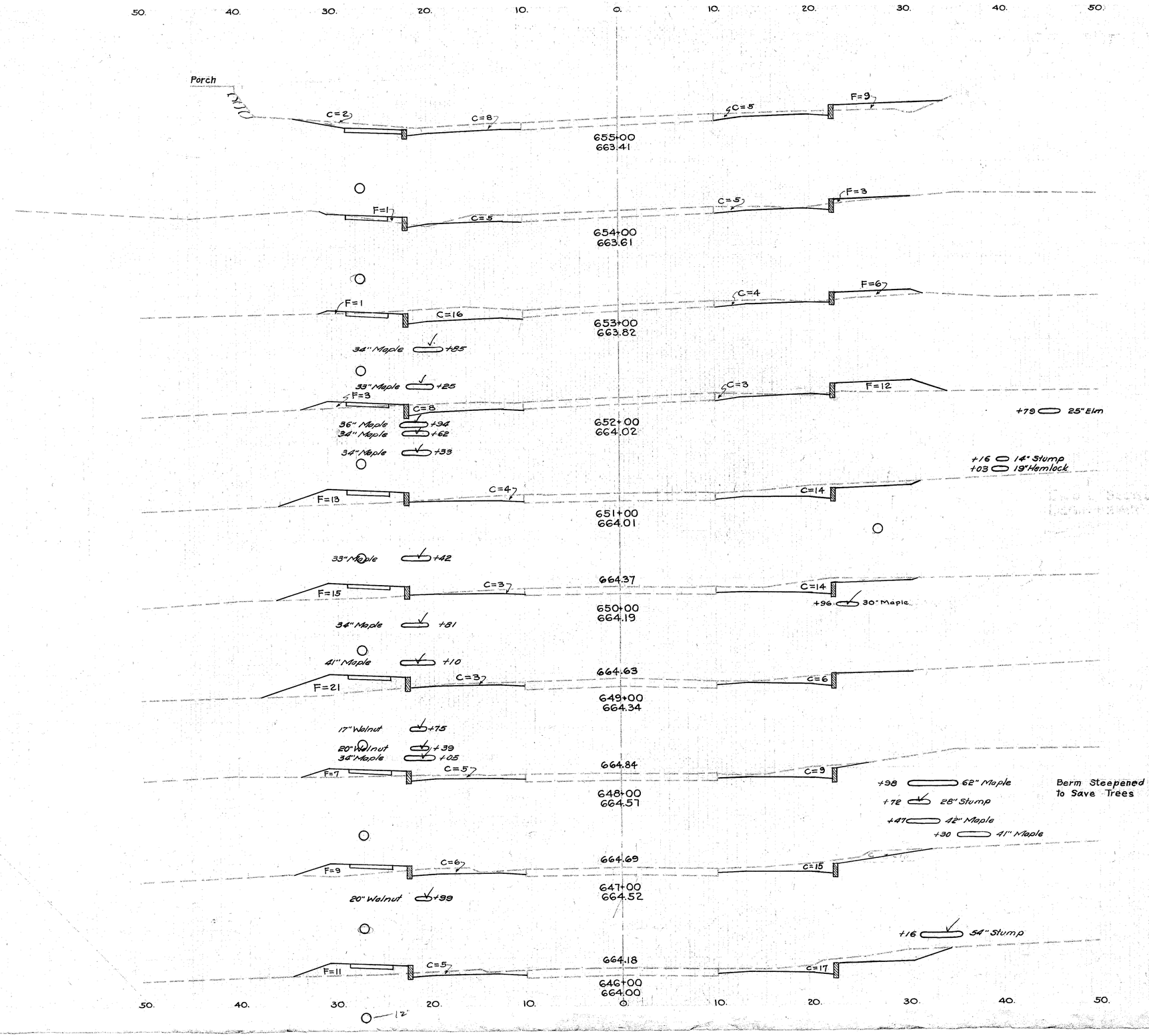
LAKE COUNTY
S.H. 2 SEC. Q(PT)



	End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
665.	15	9		
			48	24
665.	10	4		
			56	20
665.	20	7		
			57	41
665.	11	15		
			54	52
665. Dr. Sta. 651+00 Lt.	18	13		5
			7	5
STA 650+89.5			58	47
665.	17	15		
			48	67
Dr. Sta. 649+59 Lt.				15
665.	9	21		
			43	52
665.	14	7		
			65	30
665.	21	9		
			80	37
Dr. Sta. 646+78 Lt.				5
Dr. Sta. 646+37 Lt.				5
665.	22	11		
			67	39
Sta 645+00	14	10		

STA. 642+00 TO 650+89.5
EXCAVATION = 479 CU. YDS.
EMBANKMENT = 475 CU. YDS.

STA. 646+00 TO STA. 655+00

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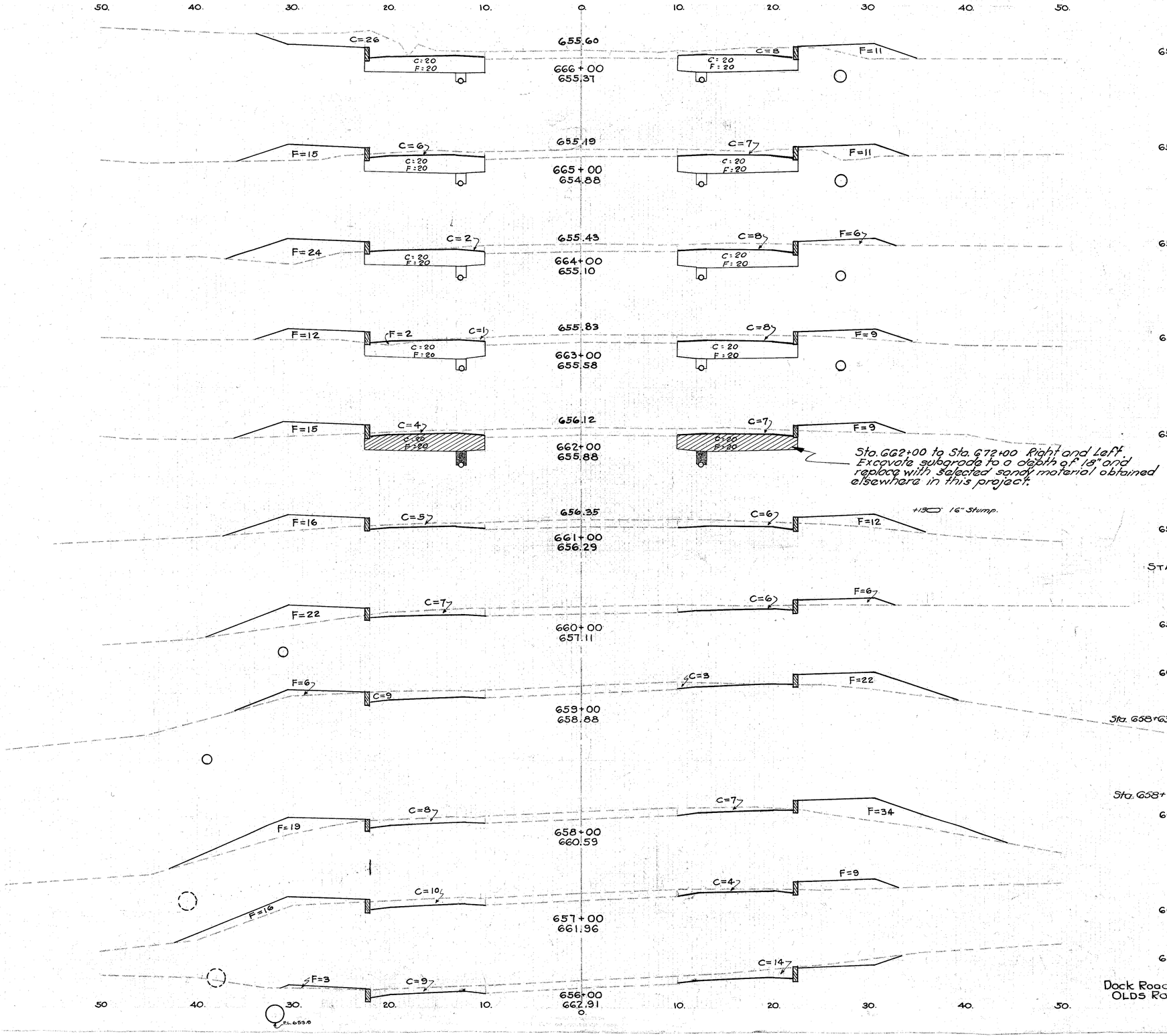
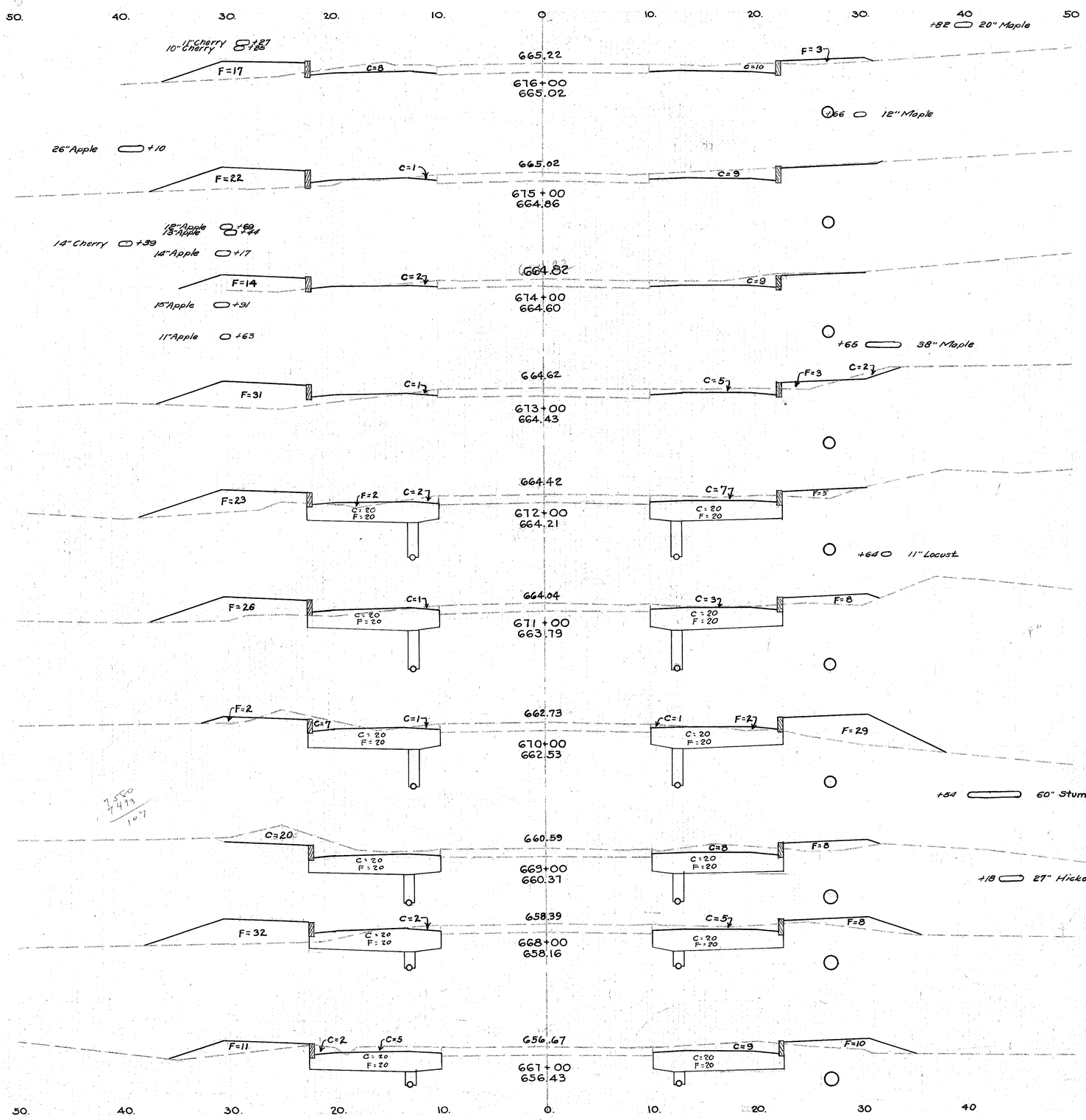
LAKE COUNTY
S.H.2. SEC.Q (Pt.)



End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
54	31		
		161	143
33	46		
		117	178
30	50		
		108	172
29	43		
		111	161
31	44		
		78	133
11	28		
		16	37
		28	67
13	28		
		46	104
12	28		
12	28	16	38
15	53		
		8	20
15	53		
		54	144
14	25		
		69	52
23	3		
		70	22
		25	
		393	
15	9		

STA. 650+89.5 To 660+64.3
EXCAVATION 924 Cu. Yds.
EMBANKMENT 603 Cu. Yds.

STA. 656+00 TO STA. 666+00



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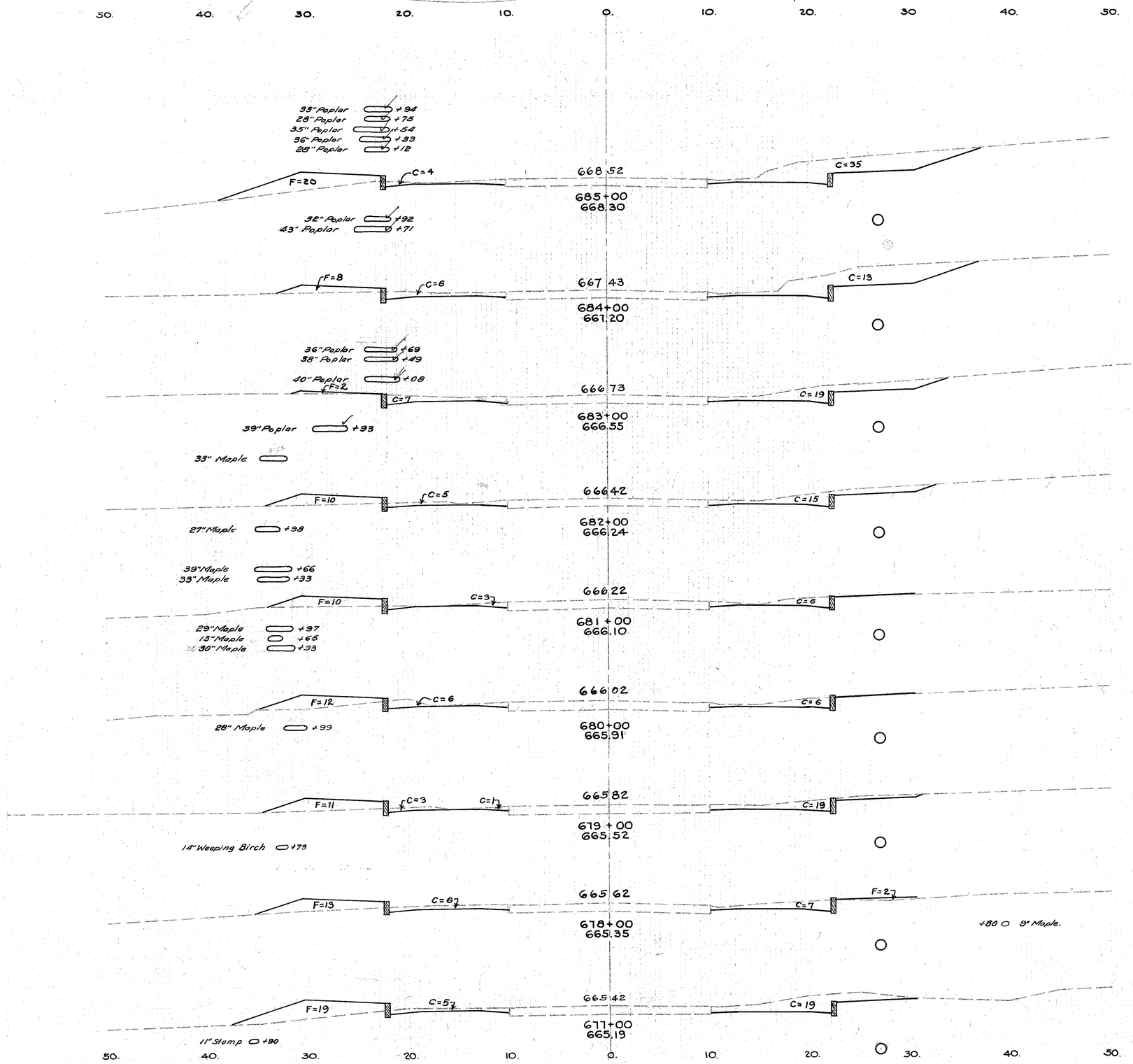
LAKE COUNTY
S.H. 2 SEC. Q (PT)

		End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
665.		18	20	52	78
665.	Drive Sta. 675+82 Lt.				13
	Drive Sta 675+19 Lt.				13
		10	22		
				39	67
665.		11	14		
				35	89
665.		8	34		
				69	156
665.		29	50		
				98	193
665.		24	54		
				98	198
660		29	53		
				143	150
660.		48	28		
				139	163
655.		27	60		
				117	187
655.		36	41		
				167	133
	Sta 666+00	54	31		

STA. 660+64 To 675+00
EXCAVATION = 1497 Cu. Yds.
EMBANKMENT = 2173 Cu. Yds.

STA. 667+00 TO STA. 676+00

LAKE COUNTY
S.H. 2 SEC. Q(PT.)



	End Area Exc.	End Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
670.	39	20		
			107	52
670.	19	8		
			83	19
670.	26	2		
			85	22
665.	20	10		
			54	37
Drive Sta 681+28 Lt. 665.	9	10		5
			39	41
665	12	12		
			65	43
Drive Sta. 679+19 Lt 665	23	11		5
			67	48
665.	13	15		
			69	63
665.	24	19		
			78	72
Sta 676+00	18	20		

STA. 675+00 TO 688+91.7
EXCAVATION = 1204 CU. YDS.
EMBANKMENT = 743 CU. YDS.

STA. 677+00 TO STA. 685+00

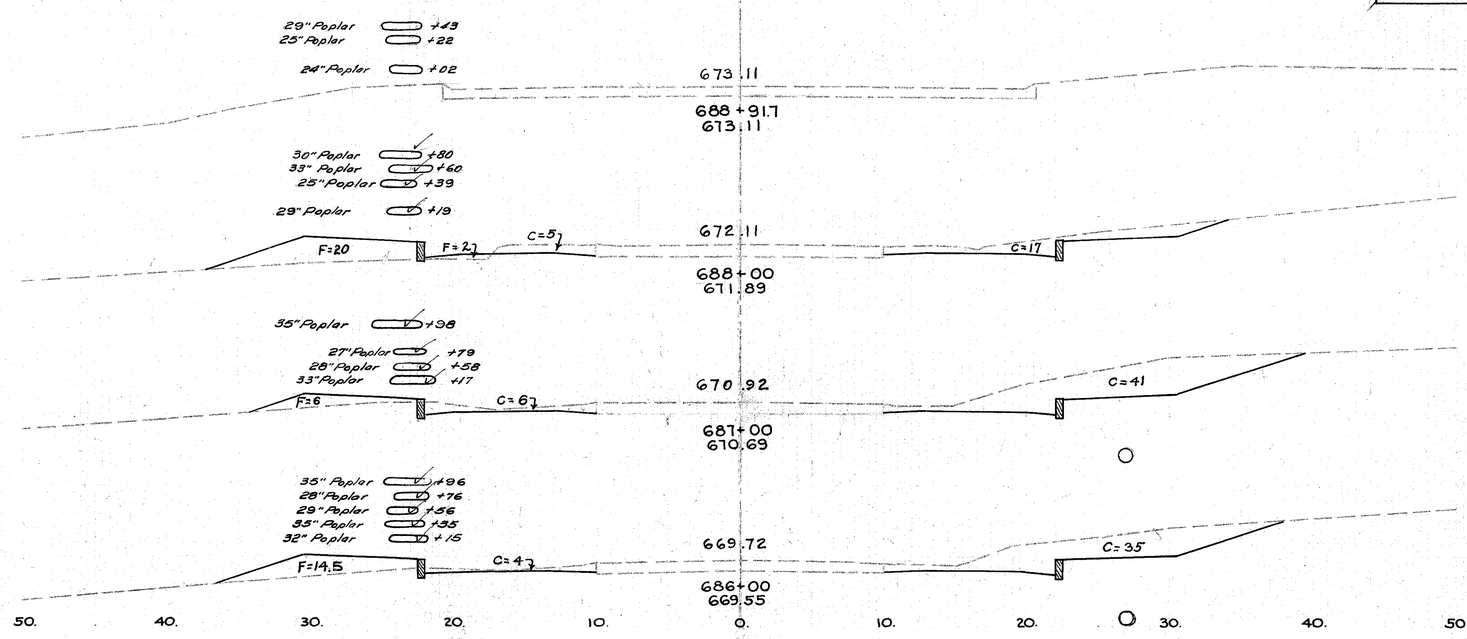
FED. AID.

10 OHIO 5A(5) 1941

34
43

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

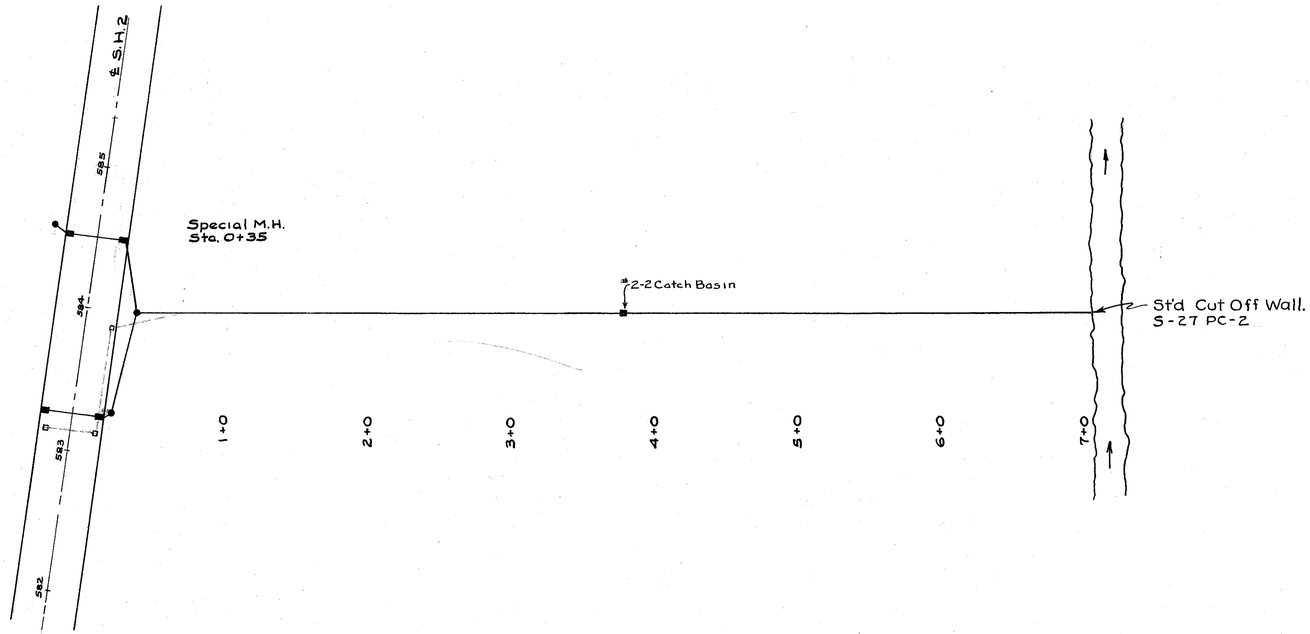
END FED AID PROJECT
NO. 5A(5) STA. 688+91.7



	End. Area Exc.	End. Area Emb.	Cu. Yards Exc.	Cu. Yards Emb.
670	22	22		
			74	74
670	22	22		
			128	52
Dr. Sta. 687+31 Lt				17
670	47	6		
			159	38
670	39	14.5		
			144	64
Sta. 685+00	39	20		

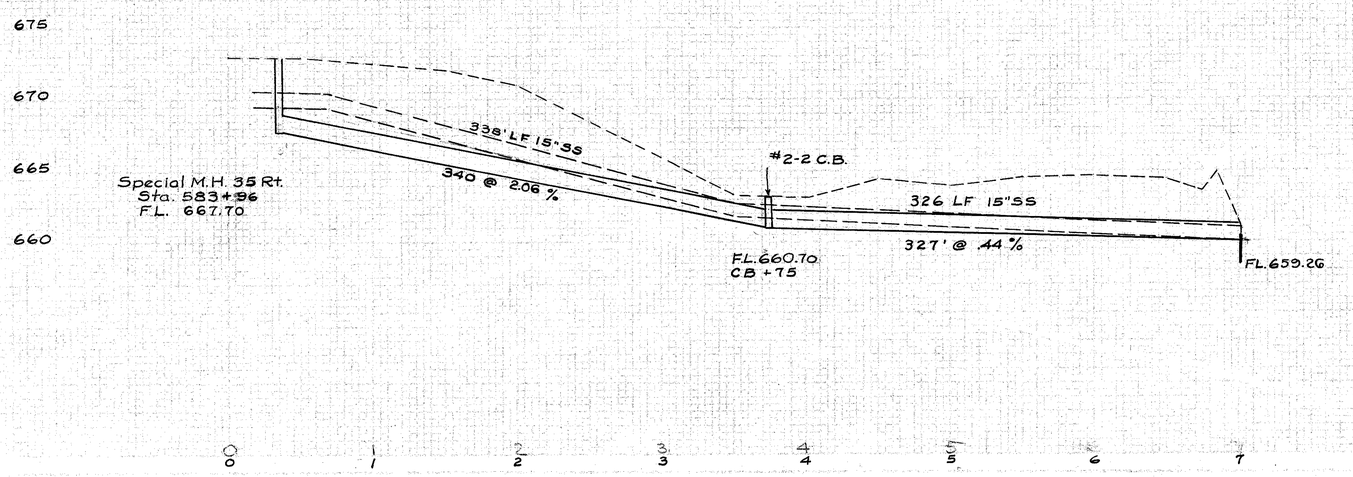
STA. 686+00 TO STA. 688+91.7

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

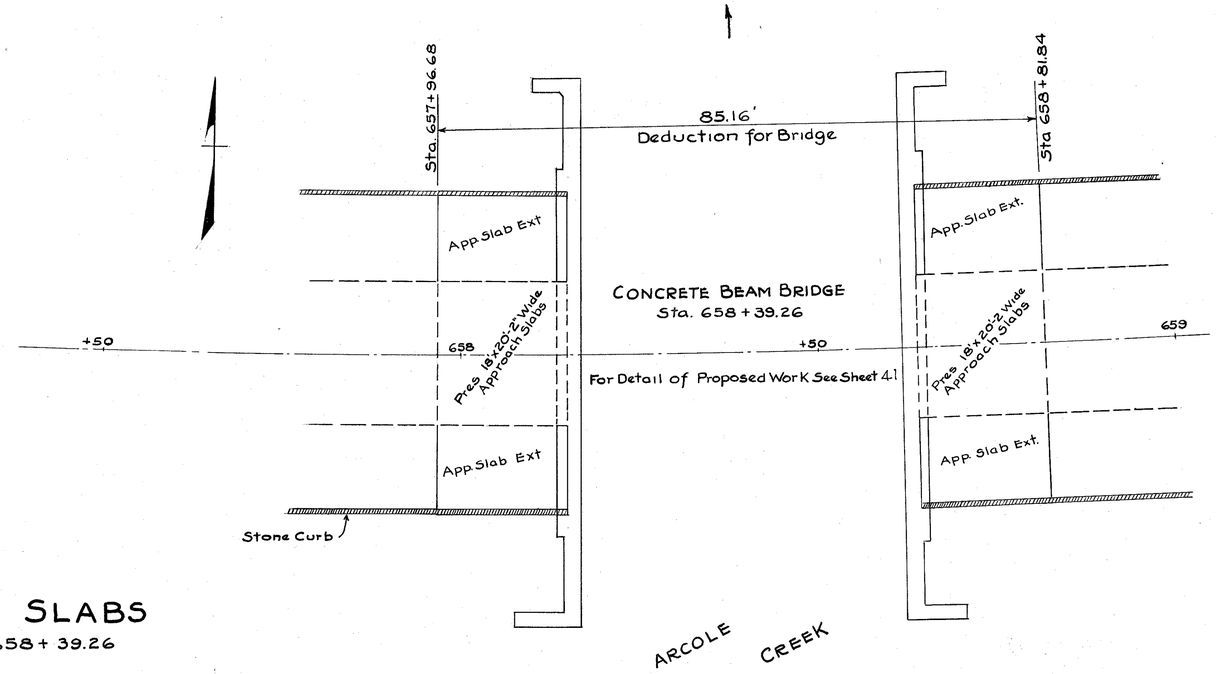


STORM SEWER OUTFALL
Rt of Sta. 583+96

12" Pipe Removed	684 Lin. Ft.
New 15" Pipe for Storm Sewer	649 Lin. Ft.
No. 2-2 Catch Basin	1 Each
Special Manhole	1 Each
Class 'C' Concrete	0.1 Cu. Yds.
15" Pipe for Storm Sewer Outlets	16 Lin. Ft.



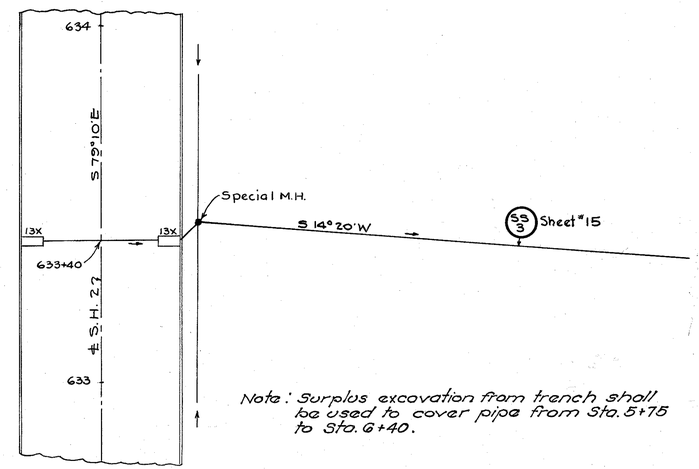
LAKE COUNTY
S.H. 2 SEC. Q(Pt)



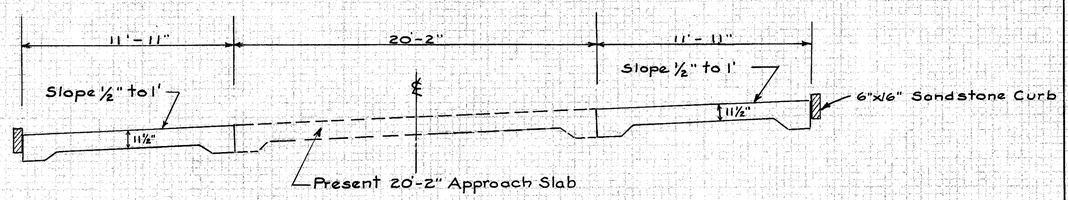
APPROACH SLABS

BRIDGE STA. 658+39.26

SEWER OUTFALL ~ Sta. 633+45



Note: Surplus excavation from trench shall be used to cover pipe from Sta. 5+75 to Sta. 6+40.

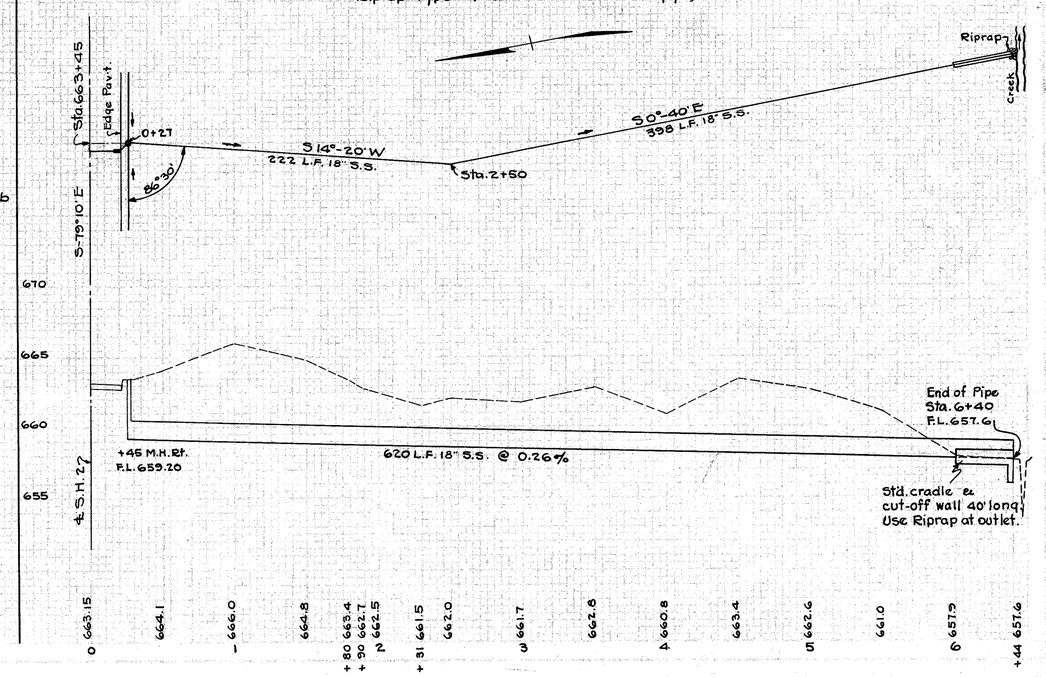


Estimated Quantities

I-11	Additional 6"x 16" Sandstone Curb	(4 x 18)	= 7.2 Lin. Ft.
S-5	Approach Slab	[4 x (18 x 11'-11")] ÷ 9	= 95.3 Sq. Yds.

QUANTITIES

18" Pipe for Storm Sewer	620 Lin. Ft.	See Sheet #15
Std. Pipe Culv. End-Class "C" conc.	2.4 Cu. yd.	
Riprap Type "A" *Grouted*	5 Sq. yd.	



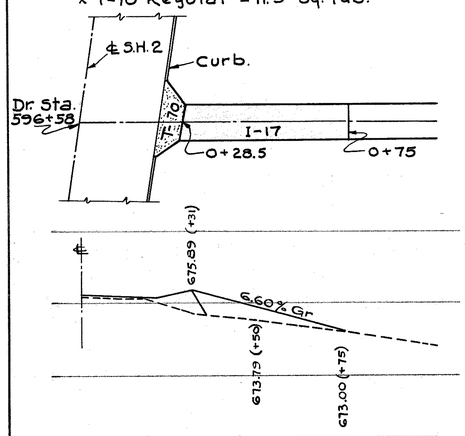
FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	37. / 43
10	OHIO	SA (5)	1941	

LAKE COUNTY
S. H. 2 SEC. Q (PT.)

DRIVES

Station	R or L	Emb.	T-70	I-17
574 + 57	R - 50'	5 C.Y.	11.9 S.Y.	2 C.Y.
575 + 65	R - 50'	5	11.9	2
587 + 40	R - 50'	5	11.9	2
588 + 29	R - 50'	8	11.9	2
595 + 75	L - 50'	5	11.9	2
597 + 10	R - 50'	5	11.9	2
609 + 60	L - 50'	5	11.9	2
617 + 32	R - 50'	5	11.9	2
631 + 12	L - 50'	5	11.9	2
641 + 00	L - 50'	5	11.9	2
642 + 42	L - 50'	5	11.9	2
643 + 01	L - 50'	5	11.9	2
646 + 37	L - 50'	5	11.9	2
646 + 78	L - 50'	5	11.9	2
651 + 00	L - 50'	5	11.9	2
679 + 19	L - 50'	5	11.9	2
681 + 88	L - 50'	5	11.9	2
			x	*

* I-17 (21.5 × 10 × 2.5) ÷ 27 = 2 Cu. Yds.
x T-70 Regular = 11.9 Sq. Yds.

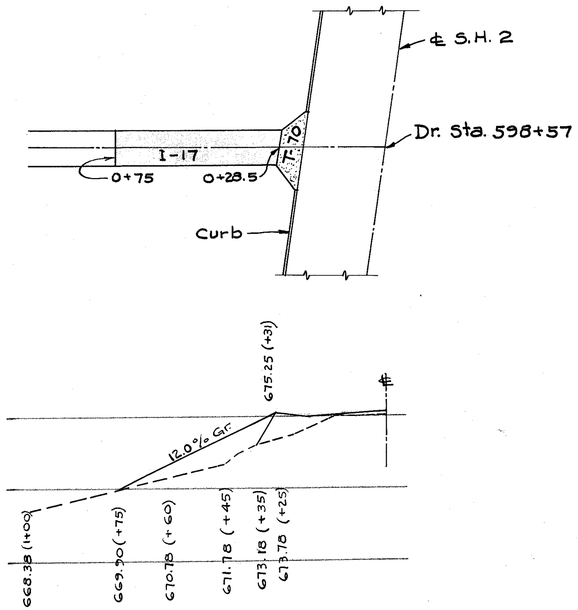


Embankment	
End Area	Cu. Yds.
0	
	15
20	
	2
0	
Total	17 C.Y.

0+75
675.63
0+35
674.20
0+31

DR. STA. 596+58 RIGHT	
Embankment =	17 Cu. Yds.
T-70	11.9 Sq. Yds
I-17	4.3 Cu. Yds

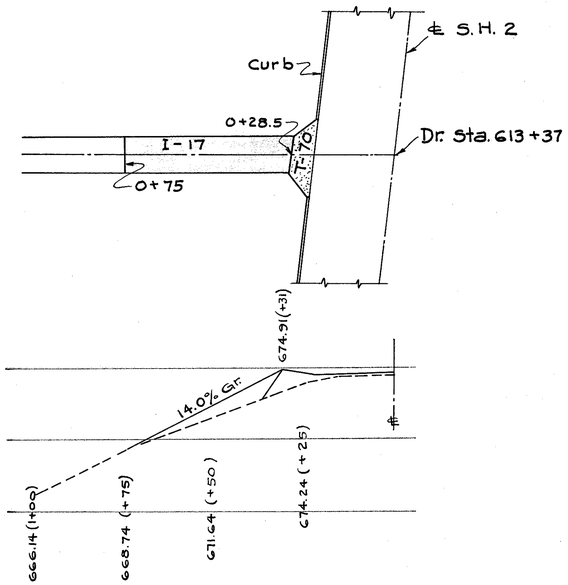
T-70 Regular = 11.9 Sq. Yds.
I-17 = 0+28.5 to 0+75
(46.5 × 10 × .25) ÷ 27 = 4.3 Cu. Yds.



Embankment	
End Area	Cu. Yds
0	
	14
20	
	2
0	
Total	16 C.Y.

0+75
674.65
0+36
673.10
0+31

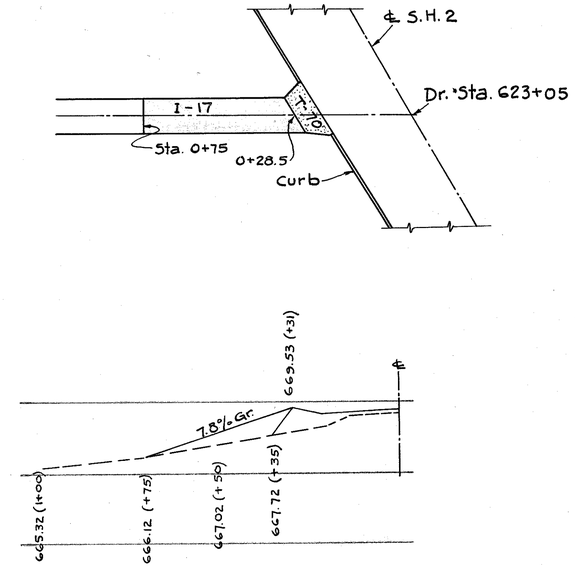
DR. STA. 598 + 57 LEFT	
Embankment =	16 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.



Embankment	
End Area	Cu. Yds.
0	
	13
18	
	2
0	
Total	15 C.Y.

0+75
674.21
0+36
672.75
0+31

DR. STA. 613+37 LEFT	
Embankment	15 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.



Embankment	
End Area	Cu. Yds.
0	
	15
20	
	2
0	
Total	17 C.Y.

0+75
669.14
0+36
667.70
0+31

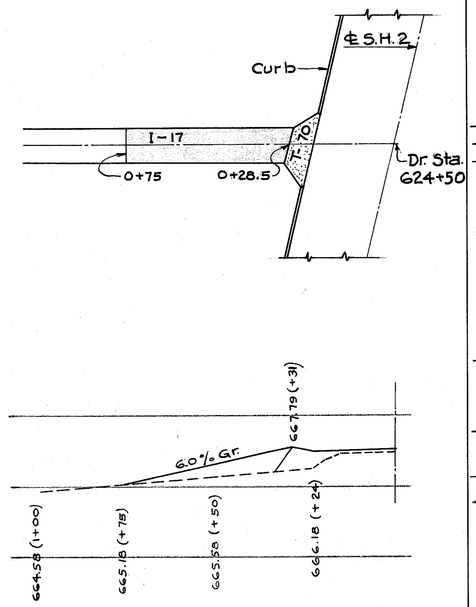
DR. STA. 623+05 LEFT	
Embankment	17 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.

DRIVE DETAILS

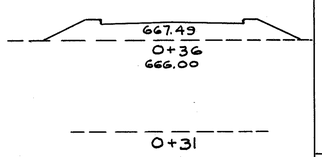
FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5A (5)	1941

38
43

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

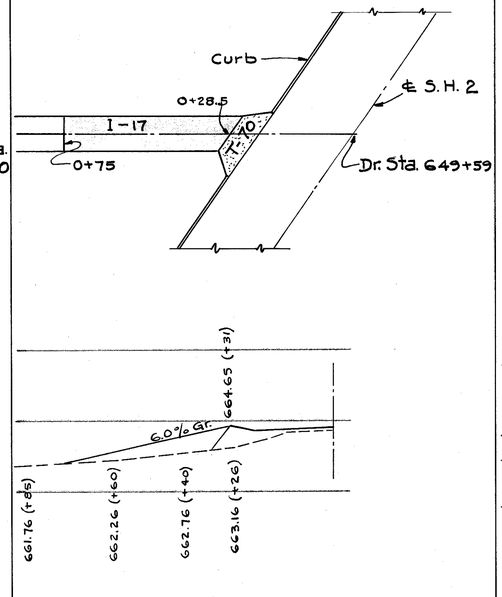


Embankment	
End Area	Cu. Yds.
0	
	15
20	
	2
0	
Total	17 C.Y.

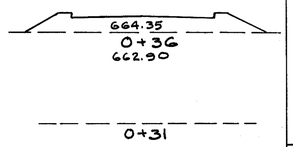


DR. STA. 624+50 LEFT	
Embankment	17 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.

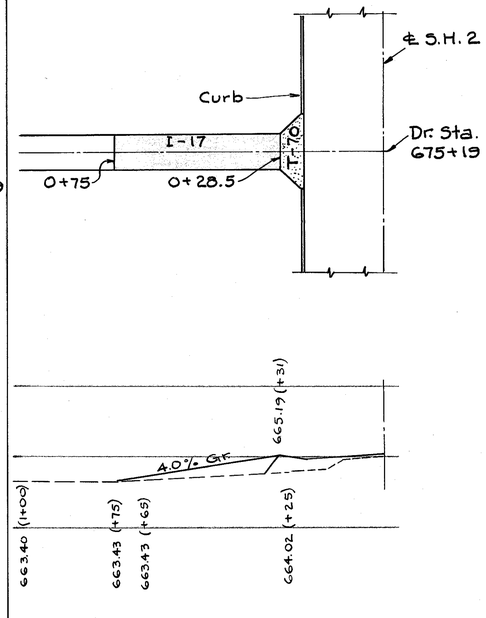
T-70 Regular = 11.9 Sq. Yds.
I-17 = 0+28.5 to 0+75
(46.5 × 10 × .25) ÷ 27 = 4.3 Cu. Yds.



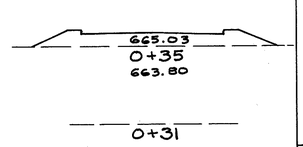
Embankment	
End Area	Cu. Yds.
0	
	13
18	
	2
0	
Total	15 C.Y.



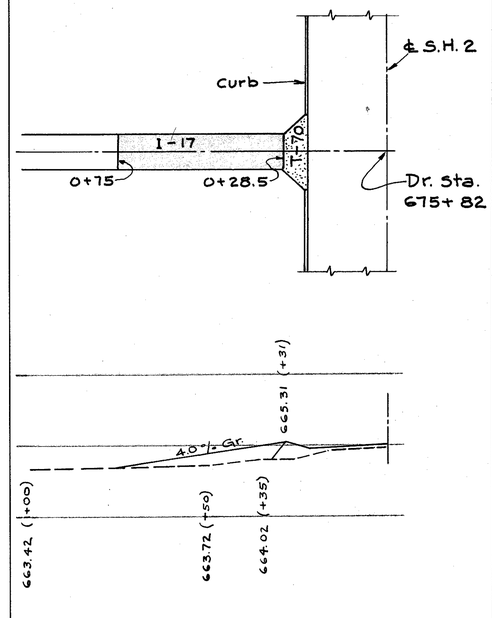
DR. STA. 649+59 LEFT	
Embankment	15 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.



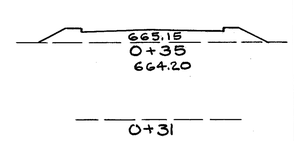
Embankment	
End Area	Cu. Yds.
0	
	12
17	
	1
0	
Totals	13 C.Y.



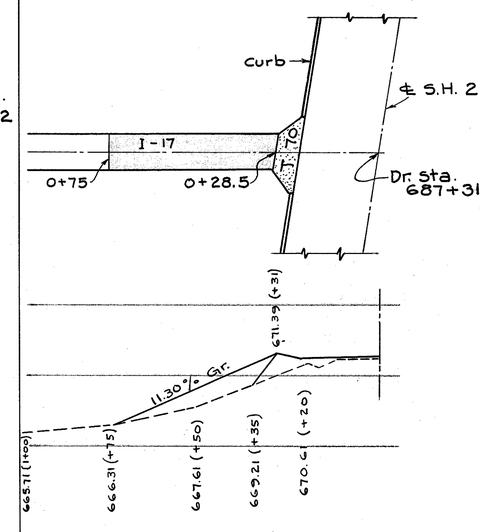
DR. STA 675+19 LEFT	
Embankment	13 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.



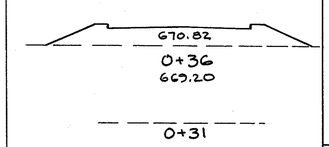
Embankment	
End Area	Cu. Yds.
0	
	12
17	
	1
0	
Totals	13 C.Y.



DR. STA. 675+82 LEFT	
Embankment	13 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.



Embankment	
End Area	Cu. Yds.
0	
	15
20	
	2
0	
Totals	17 C.Y.



DR. STA. 687+31 LEFT	
Embankment	17 Cu. Yds.
T-70	11.9 Sq. Yds.
I-17	4.3 Cu. Yds.

DRIVE DETAILS

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	39 / 43
10	OHIO	5A(5)	1941	

LAKE COUNTY
S.H. 2 SEC. Q(Pt)

Tree Protection (DUAL TYPE)

Station	Side	Size	Kind	Rip-Rap Wells & Aeration: Wells: Semi Cir Dia.	Wells: Average Height	Wells: Sq. Yd.	Aeration: Inches Average Depth	Aeration: Rect-angular	Aeration: Total Cu. Yds.	Pruning Exist. Trees, Pay Size: 6"	12"	20"	30"	36"	Berm Steepened At Tree Etc.
567+17	L	45"	Elm											1	
572+4	L	34"	Maple										1		
572+48	L	50"	Maple											1	
575+13	R	74"	Maple				2"	12'x40'	2.96						
575+83	R	57"	Maple				3"	12'x40	4.44						
576+48	R	56"	Maple				3"	12'x40	4.44						
584+64	R	48"	Maple				2"	10'x30	1.85					1	
584+80	R	35"	Maple				2"	10'x28'	1.73				1		
585+12	R	52"	Maple				2"	8'x40'	1.98						
587+30	R	56"	Maple				2"	12'x40'	2.96						
596+70	R	10"	Plum				3"	12'x20'	2.22						
597+51	R	36"	Maple				3"	12'x30	3.33					1	
609+48	L	74"	Maple											1	
613+19	L	36"	Elm				3"	6'x30'	1.67						
613+44	L	26"	Pignut				3"	6'x25'	1.39						
620+46	L	50"	Oak				3"	16'x40'	5.93						
631+49	L	67"	Maple											1	
632+01	L	63"	Maple											1	
633+79	L	57"	Maple											1	
637+11	L	34"	Maple				2"	10'x20'	1.23						
637+98	L	29"	Maple				3"	10'x30'	2.78						
639+50	L	14"	Oak				2"	8'x20'	0.99	1					
639+70	L	12"	Oak				2"	8'x30'	1.48	1					
639+92	L	43"	Triple Oak				3"	11'x40'	4.07					1	
640+35	L	29"	Oak										1		
640+36	L	17"	Oak									1			
640+38	L	27"	Oak										1		
640+39	L	17"	Oak				3"	12'x70'	7.78			1			
640+55	L	18"	Oak									1			
640+59	L	10"	Oak								1				
640+65	L	10"	Oak								1				
641+13	L	30"	Twin Oak												
641+18	L	22"	Oak												
641+23	L	10"	Oak												
641+33	L	15"	Oak								1				
641+44	L	19"	Oak									1			
641+52	L	23"	Oak									1			
641+74	L	27"	Oak				3"	12'x142'	15.78						
641+78	L	13"	Oak												
641+90	L	18"	Oak												
642+05	L	17"	Oak												
642+12	L	14"	Oak												
642+22	L	16"	Oak												
642+27	L	17"	Oak												
642+73	L	24"	Oak				3"	12'x34'	3.78				1		
642+77	L	29"	Oak												
643+53	L	16"	Oak												
643+73	L	21"	Oak				3"	12'x60'	6.67						
643+82	L	21"	Oak									1			
675+10	L	26"	Apple	10'	1.5	2.62	3"	15'x25	3.47				1		
678+73	L	14"	Wahoo Birch				3"	12'x20'	2.22		1				
678+96	L	22"	Walnut									1			
679+28	L	28"	Maple				3"	12'x20'	2.22						
679+97	L	28"	Maple										1		
680+33	L	30"	Maple										1		
680+65	L	13"	Maple								1				
680+99	L	29"	Maple										1		
681+33	L	33"	Maple				2"	11'x220	14.94				1		
681+66	L	39"	Maple											1	
681+98	L	33"	Maple										1		
682+30	L	33"	Maple										1		
					Total	2.62			102.31		7	7	12	10	

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5 A (5)	1941

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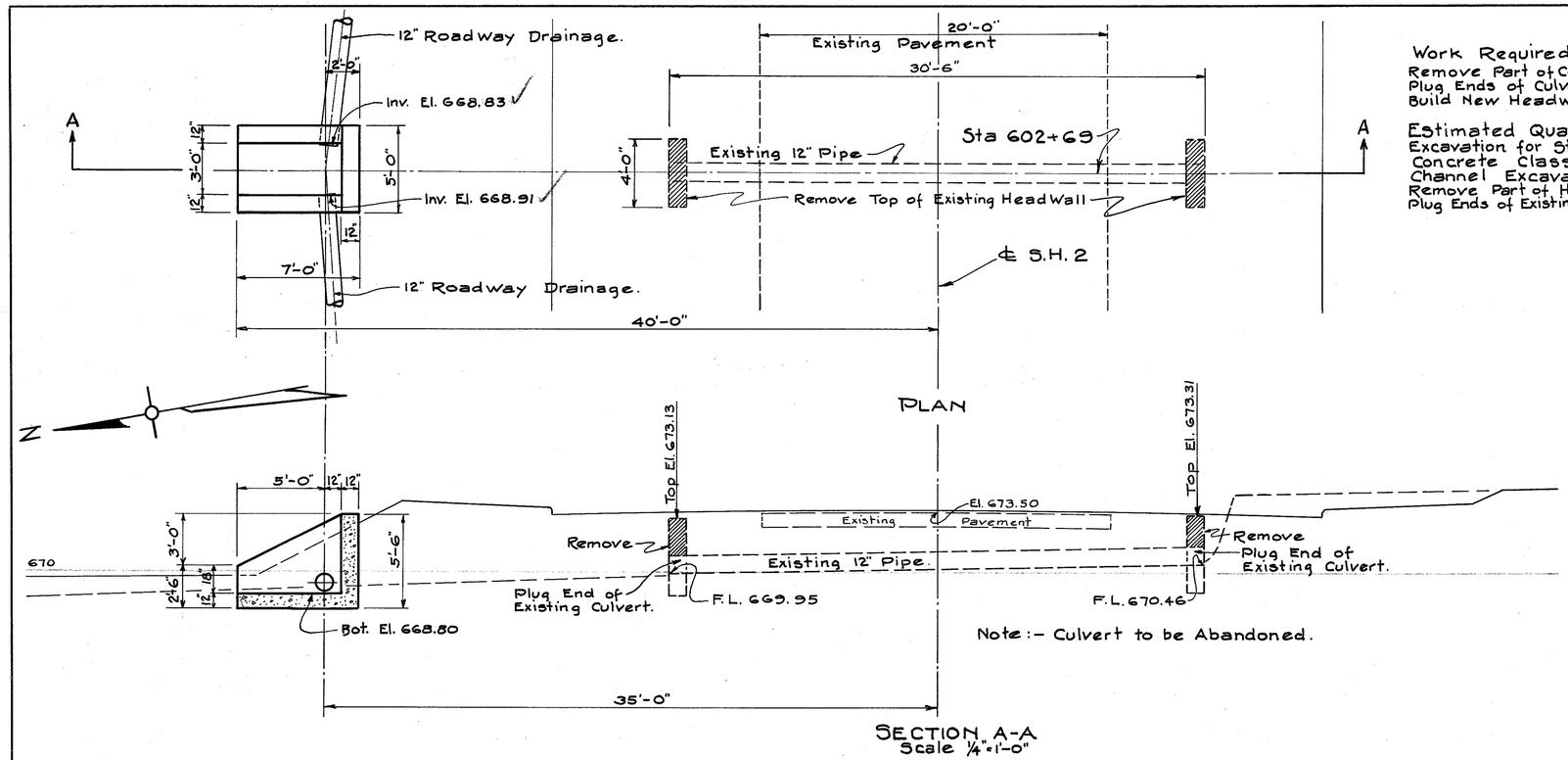
43

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

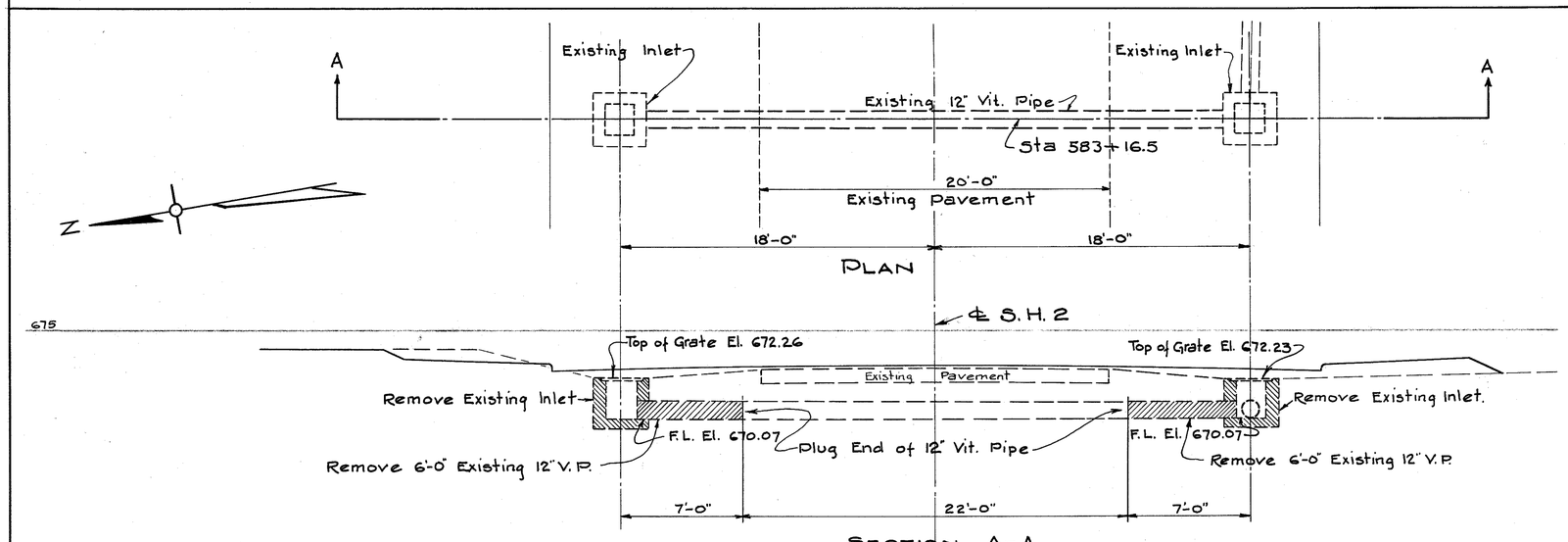


Work Required
Remove Part of Culvert Headwalls.
Plug Ends of Culvert.
Build New Headwall for Roadway Drainage.

Estimated Quantities

Excavation for Structure	2.0 Cu Yds.
Concrete Class C	3.3 Cu. Yds.
Channel Excavation	5.0 Cu. Yds.
Remove Part of Headwalls	Lump Sum
Plug Ends of Existing Culvert	2-12" Vit. Stoppers

C-2
STA. 602+69



C-1
STA. 583+16.5

Work Required
Remove two Inlets
Remove and Store 12'-0" of 12" V.P.
Plug two Ends of Remaining Pipe

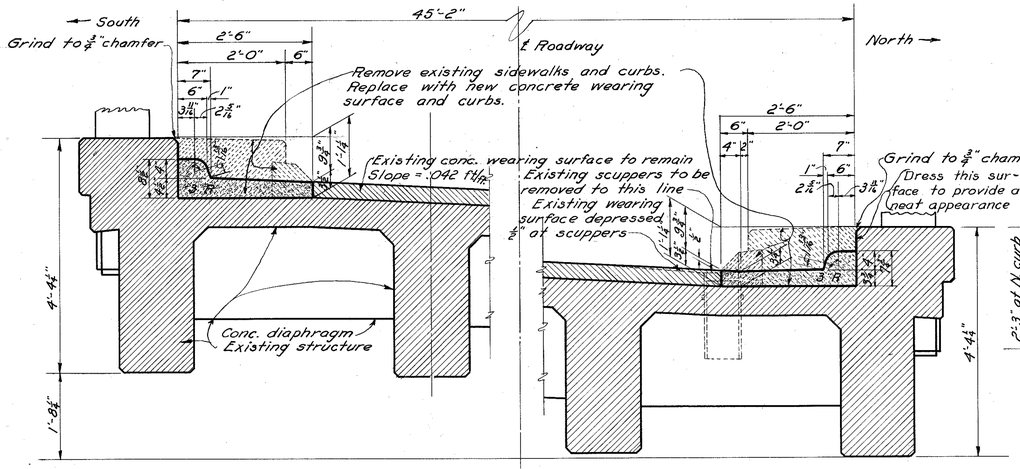
Estimated Quantities

Remove and Store 12" Vit Pipe	12 Lin Ft.
Remove two Inlets	Lump Sum.
Plug Ends of 12" V.P.	2-12" Vit. Stoppers.

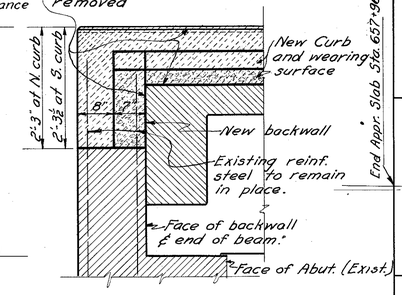
FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	FA(5)	1941

41/43

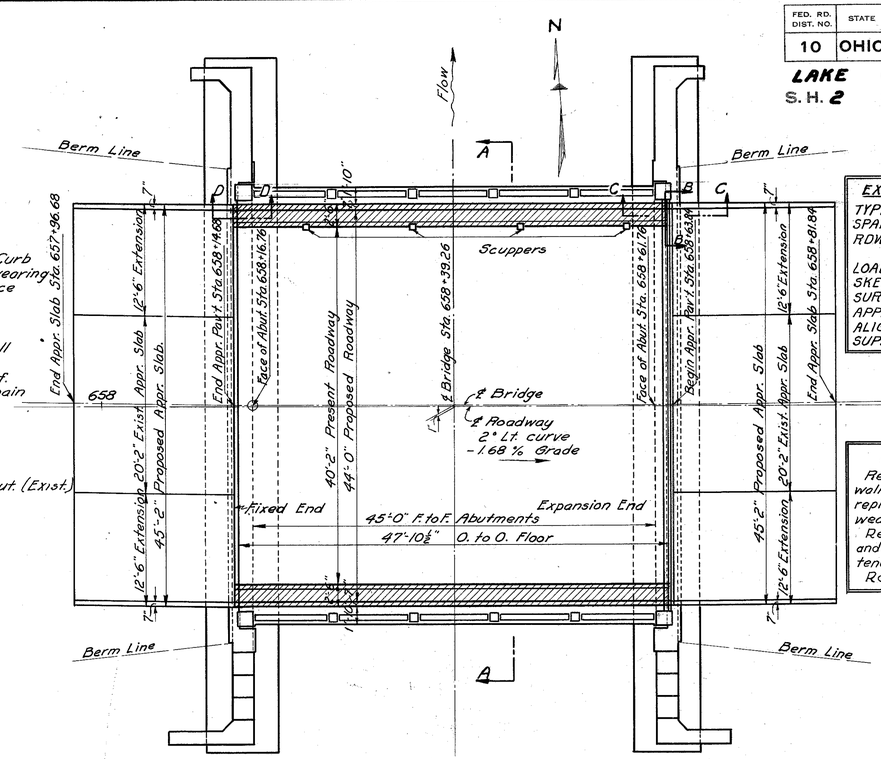
LAKE COUNTY
S.H. **2** SEC. **Q(PT)**



PART TYPICAL SECTION THRU ROADWAY - SEC "A-A"



SEC. "D-D" FIXED END



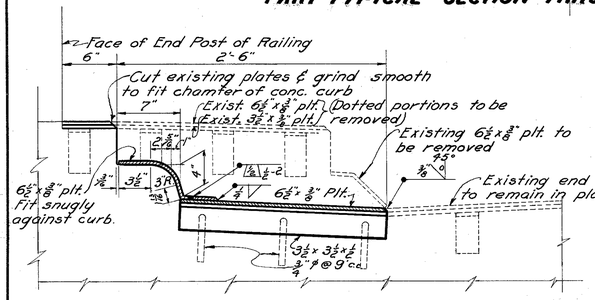
GENERAL PLAN

EXISTING STRUCTURE

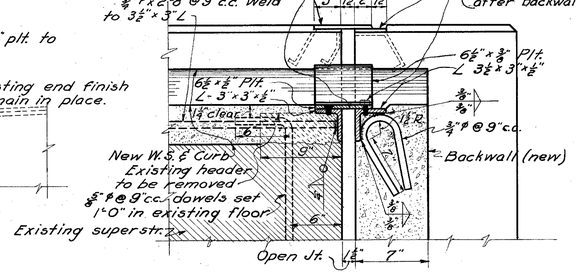
TYPE: Conc. beam bridge
SPAN: 45' f. to f. Abuts.
ROWY: 40'-2" plus 2 @ 2'-6" sidewalks.
LOADING: H-15-33
SKEW: None
SURF. COURSE: 3 1/2" conc.
APPR. SLABS: 18' x 20'-2" wide
ALIGNMENT: 2° Lt. curve
SUPERELEVATION: .042 ft/ft.

PROPOSED WORK

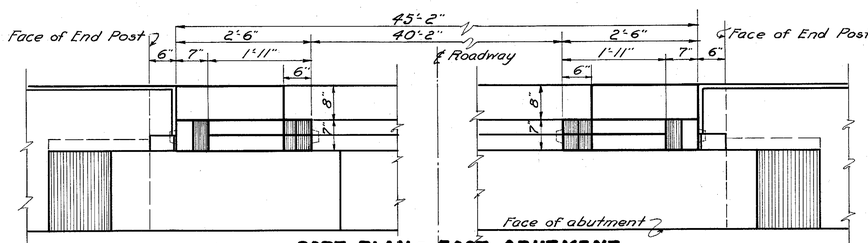
Remove existing sidewalks and lip curbs, and replace with new conc. wearing surface and curb. Reconstruct backwalls and expansion joint. Extend approach slabs. Roadway: 44'-0"



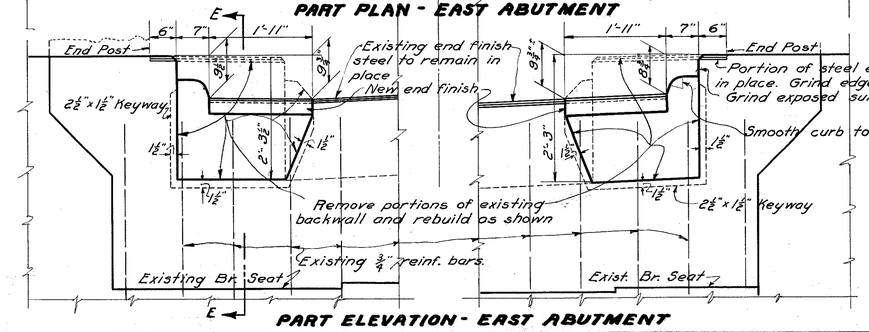
SEC. "B-B" THRU EXPANSION JOINT
North Curb shown - South Curb similar



PART SEC. "C-C" - EXPANSION JT.

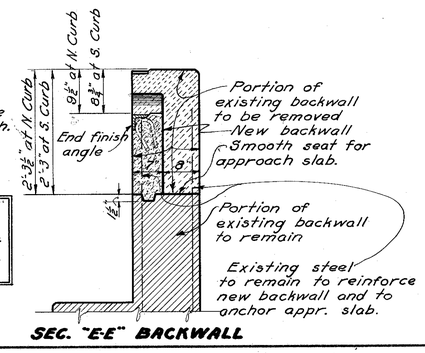


PART PLAN - EAST ABUTMENT



PART ELEVATION - EAST ABUTMENT

Note
West abutment is similar to East abutment except for omission of expansion joint steel.



SEC. "E-E" BACKWALL

GENERAL NOTES

PROPOSED WORK: Remove existing lip curbs, sidewalks, and portions of backwalls. Reconstruct backwalls to provide a seat for approach slab extensions. Replace sidewalk and curb with new 3 1/2" concrete wearing surface and lip curbs to fit existing wearing surfaces and proposed approach pavement, providing a roadway 44'-0" face to face of curbs. Reconstruct expansion joint.

EXISTING BACKWALL REINFORCING STEEL in portions of wall to be removed shall be left in place to provide reinforcement for the new sections of backwall and provide anchorage for the approach slab.

TWO WAY TRAFFIC shall be maintained at all times during construction.

ESTIMATED QUANTITIES			
S-1	Concrete-Class "C"	3	C.Y.
S-4	Reinforcing steel-(Dowels)	10	Lb.
S-9	Structural steel expansion joint	170	Lb.
S-22	Removal of Portions of exist. structure	9.5	C.Y.
S-23	Dowel Holes	6	each

REMOVAL of portions of existing structural steel paid for in price per cu. yd. for removal of portions of existing structure.

FINISHING of surfaces and edges of existing concrete that will be exposed by this reconstruction, paid for in price per cu. yd. of new concrete, and finishing of existing structural steel paid for in price per lb. for new structural steel.

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
BUREAU OF BRIDGES

GENERAL PLAN
STRUCTURAL DETAILS FOR WIDENING BRIDGE No. LA-20-298 over ARCOLE CREEK

LAKE CO. S.H. 2
SEC. Q(PT) STA. 658 + 39.26
FED. AID No. FA5-A(5) -41

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	REVISED
E.E.S.	E.E.S.	W.E.T.	C.J.W.	2-24-40 K.H.C.	7/1/40	

SUMMARY OF QUANTITIES

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	5 A (5)	1941

42
42

LAKE COUNTY
S.H. 2 - SEC. Q (PT.)

ROADWAY

Sheet No.	Storm Sewers: Full depth Por. Bk. fill Por. Con. M.P. 6"	Outlet Pipe 18"	Pipe Lin. Ft. 12"	15"	18"	24"	Pipe under Pav't, Lin. Ft. 12"	24"	Outlet Pipe 12"	15"	Catch Basins - Each 13X	13Y	2-3	2-2	G	Manholes Each Special	#1 Std.	Concrete Class 'C' Cu. Yds.	Drives T-70 Sq. Yds.	I-17 Cu. Yds.	Sidewalks - Sq. Ft. New 4" Thick	Removal Existing	Trees & Stumps Removal Each	Existing Pav't Removal Sq. Yds.	2'x9" Curb Lin. Ft.	Sealing (Only) Edges Exist. Pav't Lin. Ft.	Existing Structures Removal - Lump Manholes	Inlets	Headwalls	Guard Rail - Lin. Ft. Removed and Rebuilt	Pipe Removed Lin. Ft. 6"	12"	15"	24"	24" x 12" Tee	Pipe Specials Each 12"x6" Tee	12"x6" Dbl. Tee	12"x6" Y	Exist. Wear Course Rem. & Disp. Sq. Yd.	Paved Gutter Rem. & Disp. Lin. Ft.	Riprap Type 'A' Sq. Yds.
DUAL																																									
6																																							122.2	204	
9			56				319				2	2	1						521.8	70.8	3947.6	65	4	35.6		3822		2				62									
10			1053	649			203			16	12			1		7		0.1	71.4	6.6	4618.0		15	106.8	36.0	4640		1				751									
11			715				99				6					3			119.0	17.8	4690.6		10	53.4		4520															
12			907				165				10					5			23.8	5.4	4884.75		5	89.0		4600															
13			556				132		20		8					3			204.0	61.3	3775.5		43	71.2		4560															
14			410	474	231		165				10					5			59.5	11.9	4754.25		13	89.0		4600															
15			360		863		99				6					3		2.4	325.2	25.9	4070.0	251	15	71.2		4560		2			56	874					1			5.0
16			389	504			164				5	2				2	2		174.0	27.2	3120.8		17	53.4	79.0	3678						889							70.2		
17	392		140				29				2					1			31.5	4.3				17.8	146.4	1383										2			196.8		
18	1576	16	104	573	552		149				10					4	1	0.1					5	89.0		4600		1	1				130			6	2				
19			578	537			165				10					5			95.2	17.0			14	89.0		4600															
20			144				171				2	1				1			11.9	4.3			13	17.8		1207															
Totals	1968	16	5412	2739	1646		1866		20	16	83	5	1	1		39	3	2.6	1637.3	252.5	33861.5	316	154	783.2	261.4	46770		6	1		56	2576	130			8	2	1	389.2	204	5
T-71																																									
16			6	163	43						1						1		11.9	2.0	882.0		5			421		1				209									
17			192		245	26		32	16		3				2	1	1	0.1	334.5	65.8	844.5			322.2		1358	3	1	1	128		523		100	1						
TOTAL			198	163	288	26		32	16		4				2	1	2	0.1	346.4	67.8	1426.5		5	322.2		1779	3	2	1	128		732		100	1						

EARTHWORK

Station From	Station To	Cu. Yds. Exc.	Cu. Yds. Emb.	Cu. Yds. Emb. + 50%
566+55.54	576+00	631	300	450
576+00	587+00	877	372	558
587+00	598+00	718	766	1149
598+00	609+00	814	991	1486
609+00	620+00	673	1506	2259
620+00	631+00	940	751	1127
631+00	642+00	536	539	808
642+00	650+89.5	479	475	713
660+64.3	675+0	1497	2173	3260
675+00	688+91.7	1204	743	1115
TOTAL DUAL		8369	8617	12,925
TOTAL T-71				
650+89.5	660+64.3	929	603	904

TOTAL BORROW - DUAL = 12925 - 8369 = 4556 C.Y.
TOTAL SURPLUS - T-71 = 929 - 904 = 25 C.Y.
NET BORROW = 4556 - 25 = 4531 C.Y.

STRUCTURES REMOVED - DUAL

Detail Sheet No	Mark	Remove Pipe + Store 12" Lin. Ft.	Remove Inlets Lump	Plug Ends of Culvert 12" Vit. Stopper Each	Excavation Cu. Yds.	Channel Excavation Cu. Yds.	Concrete Class "C" Cu. Yds.	Remove Part of Headwall Cu. Yds.
40	C-1	12	2	2				
40	C-2			2	2.0	5.0	3.3	0.6
Total		12	2	4	2.0	5.0	3.3	0.6

PAVEMENT

Sheet No.	Sandstone Curb Deduction Lin. Ft.	Sandstone Curb Addition Lin. Ft.	B-71 8" Replacem't Sq. Yds.	Extra B-50 Level'g Course Cu. Yds.	Extra B-50 Base and Leveling Course Sq. Yds.	Extra Insulation Course 1¼" Sq. Yds.	T-71 9'-7'-7'-9 R. Con. Pav't Sq. Yds.	Approach Slab Class 'D' Conc. Sq. Yds.
9	786.5		35.6					
10	132.0		106.8		8.0	8.0		
11.	220.0		53.4					
12.	44.0		89.0					
13.	310.0		71.2					
14.	110.0		89.0					
15.	431.0		71.2					
16.	285.0		53.4	8.0	17.6	17.6		
17.	33.0		17.8	22.0	32.5	32.5		
18.			89.0					
19.	176.0		89.0					
20.			17.8					
Tot. Dual	2527.25		783.2	30.0	58.1	58.1		
36		72						95.3
16	22.0							
17	525.4						151.2	
Tot. T-71	547.4	72					151.2	95.3

RECAPITULATION OF "PIPE REMOVED" - DUAL

Size of Pipe	Storm Sewer Req'd. per Table Lin. Ft.	Pipe Removed per Table Lin. Ft.	Pipe Removed Reuse (60% Salvage) Lin. Ft.	Pipe Removed & Disposed of (40% Broken) Lin. Ft.	Storm Sewer Req'd. (new pipe minus salv.) Lin. Ft.	Pipe Removed and Stored Lin. Ft.	Pipe Relaid Lin. Ft.
6"	—	56	—	22	0	34	—
12"	5412	2576	1546	1030	3625	0	1787
15"	2739	130	78	52	2661	0	78
18"	1646	—	—	—	1646	0	—
24"					0		
			E-12	E-12	E-2	E-12	I-6

Above classifications used in General Summary

RECAPITULATION OF "PIPE REMOVED" T-71

Size of Pipe	St'm. Sewer Req'd Per Table Lin. Ft.	Pipe Removed Per Table Lin. Ft.	Pipe Removed For Reuse 60% Salvage - L.F.	Pipe Remov'd. & Disposed Of - 40% Broken - Lin. Ft.	St'm. Sewer Req'd. (New Pipe - Salvage) Lin. Ft.	Pipe Removed & Stored Lin. Ft.	Pipe Relaid Lin. Ft.
6'							
12"	198	732	439	293		241	198
15'	163						
18'	288				288		
24"	26	100	26	40		34	26

FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	S A (5)	1941

LAKE COUNTY
S.H. 2 SEC. Q (PT.)

SUMMARY OF QUANTITIES

PAVEMENT CALCULATIONS

T-71 9"-7"-7"-9" REINFORED PORTLAND CEMENT CONCRETE PAVEMENT

DUAL TYPE Pav't widening Length = 11,261.36 Lin. Ft. (See Sheet 2)
[(11,261.36 × 11)×2] ÷ 9 = 27,527.8 Sq. Yds.
ADDITIONS – NONE
DEDUCTIONS = 11.1 SQ.YDS.
TOTAL UNDER DUAL TYPE = 27,516.7 SQ.YDS.

TYPE T-71
(889.64 × 11'-11") × 2 ÷ 9 = 2355.9 SQ.YDS.
ADDITIONS (SEE PAV'T. TABLE) = 151.2 SQ.YDS.
DEDUCTIONS – NONE
TOTAL UNDER TYPE T-71 = 2507.1 SQ.YDS.

DUAL TYPE T-50 2½" HOT MIXED HOT LAID ASPHALTIC CONCRETE SURFACE COURSE
(11,261.36 × 22) ÷ 9 = 27,527.8 Sq. Yds.

DUAL TYPE B-50 AREA OF BASE and LEVELING COURSES
Length = 11261.36 Lin. Ft. (11261.36 × 2) ÷ 9 = 2502.5 Sq. Yds.
Addition from 1st Summary Sheet 58.1 Sq. Yds.
2502.5 + 58.1 = 2560.6 Sq. Yds.

DUAL TYPE B-50 3" HOT MIXED HOT LAID ASPHALTIC CONCRETE BASE COURSE
AREA ABOVE (2560.6 × 3/36) = 213.4 Cu. Yds.

DUAL TYPE B-50 2½" HOT MIXED HOT LAID ASPHALTIC CONCRETE LEVELING COURSE
AREA ABOVE = 2560.6 × 5/2 × 1/36 = 177.8 CU. Yds.
Addition from 1st Summary Sheet = 30 Cu. Yds.
Extra Leveling at 200 CY/Mile = 200 × 2.133 = 426.6 CU. Yds.
177.8 + 30 + 426.6 = 634.4 Cu. Yds.

DUAL TYPE I-19 1¼" INSULATION COURSE (SAME AS B-50 AREA OF BASE)

I-11 STONE CURB

DUAL TYPE
11,261.36 × 2 L.F. = 22,522.72 L.F.
22,522.72 – 2527.25 L.F. = 19,995.47 L.F.
19,995.47 – (87 BASINS @ 3' = 261') = 19,734.47 L.F.

TYPE T-71
889.64 × 2 = 1779.28 L.F.
1779.28 – 547.4 = 1231.88 L.F.
1231.88 – 72 (SEE SHEET 36) = 1303.88 L.F.
1303.88 – (5 BASINS @ 3' = 15') = 1288.88 L.F.

GENERAL SUMMARY (CONT'D)

ITEM NO.	ROADSIDE IMPROVEMENT	TYPE T-71	DUAL TYPE	TOTAL	UNIT
E-305	SEEDING & PROTECTING ROADWAY AREAS	2386	30197	32,583	SQ.YDS.
L-9	10-6-4 COMMERCIAL FERTILIZER	430	5435	5865	LBS.
L-7	12" RIPRAP FOR TREE PROTECTION		2.6	2.6	SQ.YDS.
L-8	AGGREGATE FOR TREE ROOT AERATION		102.3	102.3	CU.YDS.
L-17	PRUNING EXISTING TREES 12"		7	7	EACH
L-17	PRUNING EXISTING TREES 20"		7	7	EACH
L-17	PRUNING EXISTING TREES 30"		12	12	EACH
L-17	PRUNING EXISTING TREES 36"		10	10	EACH

Note: E-305 Areas – The quantities shown for Item E-305 were calculated by scaled dimensions of cross sections arriving at the correct yardage as follows
[(1st Width + 2nd Width) / 2 × Length] ÷ 9 = Sq. Yds

DUAL TYPE E-11 WATER
11261.36 × 25 × .5 × 10 ÷ 27 = 52,136 GAL.
EMB × 10 = 8617 × 10 = 86,170 GAL.
TOTAL WATER FOR DUAL TYPE = 138,306 GAL. OR 139 M. GAL.

TYPE T-71
889.64 × 26.83 × .5 × 10 ÷ 27 = 4420 GAL.
EMB × 10 = 603 × 10 = 6030 GAL.
TOTAL WATER FOR TYPE T-71 = 10,450 GAL. OR 11 M. GAL.

GENERAL SUMMARY

ITEM NO.	ROADWAY	TYPE T-71	DUAL TYPE	TOTAL	UNIT
E-1	Roadway Excavation. (Unclassified)	929	8369	9298	Cu. Yds.
E-4	Borrow. (Contractor to Furnish)		4531	4531	Cu. Yds.
E-8	Removal and Disposal of Existing Paved Gutter.		204	204	Lin. Ft.
E-8	Removal and Disposal of Existing Wearing Course.		389.2	389.2	Sq. Yds.
E-8	Removal and Disposal of Existing 2' × 8" Curb.		261.4	261.4	Lin. Ft.
E-8	Removal and Disposal of Existing Pavement.	322.2	783.2	1105.4	Sq. Yds.
E-8	Removal and Disposal of Existing Sidewalk.		316	316	Sq. Ft.
E-9	Removal of Trees and Stumps.	5	154	159	Each
E-10	Sealing (only) of Existing Pavement Edge	1,779	46,770	48549	Lin. Ft.
E-11	Water.	11	139	150	M. Gals
E-12	Pipe Removed for Reuse 12"	439	1546	1985	Lin. Ft.
E-12	Pipe Removed for Reuse 15"		78	78	Lin. Ft.
E-12	Pipe Removed for Reuse 24".	26		26	Lin. Ft.
E-12	Pipe Removed and Stored 6".		34	34	Lin. Ft.
E-12	Pipe Removed and Stored 24".	34		34	Lin. Ft.
E-12	Pipe Removed and Disposed of 6".		22	22	Lin. Ft.
E-12	Pipe Removed and Disposed of 12".	293	1030	1323	Lin. Ft.
E-12	Pipe Removed and Disposed of 15".		52	52	Lin. Ft.
E-12	Pipe Removed and Disposed of 24".	40		40	Lin. Ft.
S-1	Concrete for Structures Class "C".	0.1	5.9	6	Cu. Yds.
I-5	24" × 12" Tee Pipe Special for Storm Sewer	1		1	Each
S-22	Removal of 2 Existing Headwalls	Lump(1)	Lump(1)	Lump	Lump
S-22	Removal of 10 Existing Inlets	Lump(2)	Lump(8)	Lump	Lump
S-22	Removal of 3 Existing Manholes	Lump		Lump	Lump
I-2	Storm Sewers 12".		3625	3625	Lin. Ft.
I-2	Storm Sewers 15".	163	2661	2824	Lin. Ft.
I-2	Storm Sewers 18".	288	1646	1934	Lin. Ft.
I-2	Storm Sewers 12" Pipe Under Pavement.		1860	1860	Lin. Ft.
I-2	Storm Sewers 24" Pipe Under Pavement.	32		32	Lin. Ft.
I-4	Pipe Underdrains – 6" Perforated Corrugated Metal Pipe		1968	1968	Lin. Ft.
I-5	Pipe Specials 12" × 6" Tee. for Storm Sewer under Pav't.		8	8	Each
I-5	Pipe Specials 12" × 6" Double Tees. for Storm Sewer under Pav't.		2	2	Each
I-5	Pipe Specials 12" × 6" Y. for Storm Sewer		1	1	Each
I-6	Relaying Pipe 12"	198	1787	1985	Lin. Ft.
I-6	Relaying Pipe 15".		78	78	Lin. Ft.
I-6	Relaying Pipe 24".	26		26	Lin. Ft.
I-8	Manholes – Special. as per plan	1	39	40	Each
I-8	Manholes – No. 1.	2	3	5	Each
I-8	Catch Basins No. 13X. as per plan	4	83	87	Each
I-8	Catch Basins No. 13Y. as per plan.		5	5	Each
I-8	Catch Basins No. 2-3.		1	1	Each
I-8	Standard No. 2-2 Catch Basin		1	1	Each
I-8	Standard No. 6 Catch Basin	2		2	Each
I-13	4" Concrete Sidewalk	1426.5	33861.5	35288	Sq. Ft.
I-15	Guard Rail, Removed and Rebuilt.	128		128	Lin. Ft.
I-17	Traffic Bound Side Approaches. (Aggregate) 60% No. 4 40% No. 7	67.8	252.5	320.3	Cu. Yds.
I-10	Riprap Type "A" (Grouted)		5	5	Sq. Yds.
	PAVEMENT				
B-50	Hot Mixed Hot Laid Asphaltic Concrete Base		213.4	213.4	Cu. Yds.
B-50	Hot Mixed Hot Laid Asphaltic Concrete Leveling		634.4	634.4	Cu. Yds.
B-71	8" Reinforced Portland Cement Concrete Base		783.2	783.2	Sq. Yds.
T-50	2½" Hot Mixed Hot Laid Asphaltic Concrete Surface Type "B"		27527.8	27527.8	Sq. Yds.
T-70	6" Portland Cement Concrete Pavement.	346.4	1637.4	1983.8	Sq. Yds.
T-71	9"-7"-7"-9" Reinforced Portland Cement Concrete	2507.1	27,516.7	30023.8	Sq. Yds.
I-11	6" × 16" Sandstone Curb (Berea, Amherst or Equal)	1289	19734	21,023	Lin. Ft.
I-19	1¼" Insulation Course.		2560.5	2560.6	Sq. Yds.
S-5	11½" Reinforced Concrete Approach Slab	95.3		95.3	Sq. Yds.
	ROADWAY CONTINUED				
E-2	Excavation for Structures. (Unclassified)		2.0	2.0	Cu. Yds.
E-3	Channel Excavation.		5.0	5.0	Cu. Yds.
E-12	Pipe Removal and Stored 12".		12	12.0	Lin. Ft.
I-5	Pipe Specials – 12" Stoppers.		4	4	Each
I-2	18" Pipe For Storm Sewer Outlets.		16	16	Lin. Ft.
S-22	Remove Portions of Existing Structure.		0.6	0.6	Cu. Yds.
I-2	12" Pipe For Storm Sewer Outlets.	16	20	36	Lin. Ft.
I-2	15" Pipe For Storm Sewer Outlets.		16	16	Lin. Ft.
	STRUCTURES OVER 20 FT. SPAN				
	For Estimated Quantities See Sheet No. 41				