STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRIDGE REPAIR AND 404

1/8

PLAN NO. 281

PART	COUNTY	ROUTE	SECTIONS	PROJECT TERMINII BEGIN	PROJECT TERMINII END	NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
1	LIC	US 62	(18.64-19.61)	18.64	19.83	1.19			Utica
2	LIC	US 62	(19.61)	19.83	20.68	0.85	Washington		
3	LIC	US 62	(0.00)	0.00	3.64	3.64	Jersey Monroe		
4	LIC	US 62	(0.00)	3.64	3.85	0.21			Johnstown
5	LIC	661	(9.02-13.60)	9.02	14.35	5.33	Burlington		

MICROFILMED
JUN 9 - 1987

The Standard 1977 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will require the closing of the highways to traffic on Parts No. _____ and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. 1, 2, 3, 4 & 5 and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved Date 3-16-77 — Owen S. Hellmenges, District Deputy Director of Transportation

OK HAS Approved Date 4-11-77 — Robert B. Pfeifer, Engineer of Bridges

Approved Date 4-25-77 — R. L. Zook, Engineer of Maintenance

Approved Date 4-25-77 — Gene E. Melms, Chief Engineer, Operations

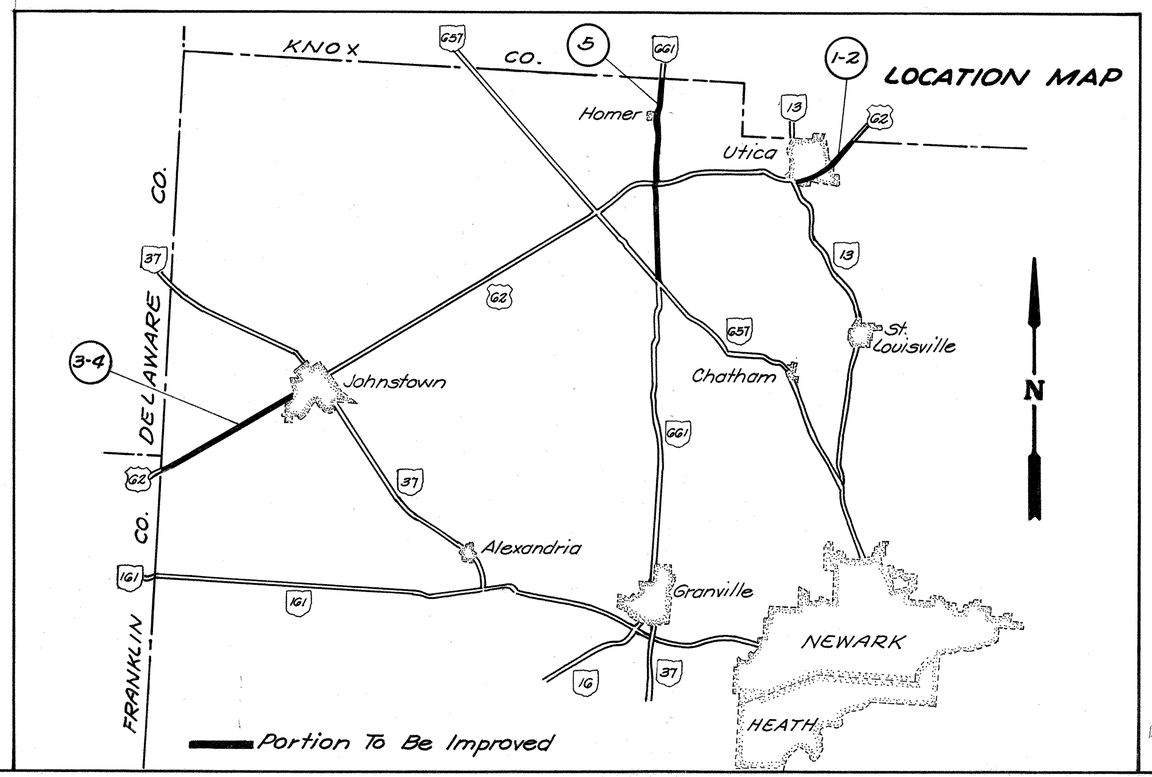
Approved Date 4-26-77 — Howard E. Nolan, Assistant Deputy Director, Program Development

Approved Date _____ — Chief Engineer, Construction

Approved Date 4-26-77 — R. E. Gatherum, Chief Engineer, Design

Approved Date 4-27-77 — Dennis R. Garwood, Assistant Director, Department of Transportation

Approved Date 4-27-77 — David L. Weir, Director, Department of Transportation



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STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BP-5	8-11-75	SS-924	9-13-74
BP-11	1-3-75	808	1-1-71
		903	1-1-69

BN

GENERAL NOTES

TRAFFIC:
Traffic shall be maintained at all times. The length of restricted traffic zones shall be kept to a minimum consistent with the specification requirements for protection of completed courses.

RAILROAD CROSSINGS:
The new surface course shall be feathered or butt jointed to meet the rail grades as specified.

INTERMEDIATE COURSE AND/OR SPOT LEVELING OR PATCHING:
This material shall be placed in a separate operation where and as directed by the Engineer.

ALIGNMENT AND PROFILE:
The work proposed by this project is for the resurfacing of the existing pavement. The alignment of the existing pavement will not be changed, and the profile of the proposed surface will be similar to that of the existing pavement except that it will be raised an amount equal to the thickness of the resurfacing course or courses specified in these plans.

TACK COAT:
The tack coat operation shall be determined at a pre-construction conference as per 407.05, and application rates shall not exceed 0.10 gal. per sq.yd.

In addition to the requirements of 407.05 the tack coat shall be applied immediately ahead of the paving operations or as otherwise determined by the Project Engineer.

CONTROL OF ONE-WAY TRAFFIC:
In addition to the requirements of Plate C-18 of the Ohio Manual of Uniform Traffic Control Devices and Item 614 of the Construction and Material Specifications the following requirements shall apply:

When flagmen stations are located such that there is no visual contact between flagmen, communication shall be by 2-way radio.

Payment for the above shall be included in Item 614 Maintaining Traffic.

REMOVED MATERIALS:
All removed materials, except those materials listed to be re-used, shall become the property of the Contractor and shall be removed by him from the job site.

DIMENSIONS:
The Contractor shall verify all dimensions at the site of the proposed work before starting operations.

LOCATION OF BACKWALLS:
Location of the face of the backwalls shall be determined by using the existing end finish as a template.

BACKWALL END FINISH:
For payment, the cost of re-erecting backwall portions of the angle end finish shall be included in the unit price bid for Item 511 Class "C" Concrete Backwall.

ITEM 614 MAINTAINING TRAFFIC:
Thru traffic shall be maintained at all times by use of half width construction. The bridge shall be repaired half width at a time while one lane traffic is maintained on the other half. The Contractor shall provide traffic signal lights for controlling the alternating flow of traffic over the one lane. These signals shall conform to the requirements of the Ohio Manual of Uniform Traffic Control Devices (Current Edition) See Sheet No. 8 for location of signals and signs.

SALVAGEABLE ITEMS:
The backwall end finish or any other part thereof which can be salvaged shall be reused. The reinforcing steel in the backwalls shall be reused.

ITEM SPECIAL- PARTIAL DEPTH PAVEMENT JOINT REPAIR:
This item of work shall consist of the removal of all loose and unsound pavement and its replacement with Asphalt Concrete as directed by the Engineer and in accordance with a note in the proposal. The units to be paid for shall be the actual number of square yards patched, as measured at pavement surface.

The locations of the repair have already been sawed by State Forces.

The following estimated quantity has been included in the General Summary for the above purposes:

Item Special- Partial Depth Pavement Joint Repair 133 Sq.Yds.

ITEM 516- VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS, AS PER PLAN:
The welding of the bars shall have a full weld.

LOCATION OF PRESSURE RELIEF JOINTS:

Station	Lin. Ft.	Part No.
152+35	24	1
156+06	24	1
159+36	24	1
169+47	24	1
179+41	24	1
189+29	24	1
199+12	24	1
209+13	24	2
219+25	24	2
229+16	24	2
239+00	24	2
249+00	24	2

Pressure relief joints may be placed 200'± of the above stations with the exception of the joints at Sta. 156+06 & 159+36 which may be placed 10'± of these stations at the direction of the Engineer.

1/8" THICK PLATE:
The 1/8" thick plate on the front of the backwalls shall be replaced and the cost shall be included in the Item 511 Cu.Yds. Class "C" Concrete (Backwall).

GENERAL SUMMARY

ITEM	PART 1	PART 2	TOTAL PARTS 1&2	PART 3	PART 4	TOTAL PARTS 3&4	PART 5		GRAND TOTAL	UNIT	DESCRIPTION
407	1708	1197	2905						2905	Gals.	Tack Coat, SS-924 Without Sand Cover
407				833	48	881	1251		2132	Gals.	Tack Coat, SS-1, SSIH, MS-2, RS-1 or RC 250
407				6	4	10	12		22	Tons.	Cover Aggregate
403	475	332	807						807	Cu.Yds.	Asphalt Concrete AC-20
404	679	477	1156	525	31	556	868		2580	Cu.Yds.	Asphalt Concrete AC-20
Special	80	53	133						133	Sq.Yds.	Partial Depth Pavement Joint Repair
Special	168	120	288						288	Lin.Ft.	Pressure Relief Joints Type "C"
Special	570		570						570	Sq.Yds.	Surface Preparation
511	60		60						60	Cu.Yds.	Concrete As Per Plan
516	59		59						59	Lin.Ft.	Vertical Extension Or Structural Expansion Joints
408	1676	1196	2872						2872	Gals.	Prime Coat (RT-2 or 3), (M-30 or 70), Primer 20
409	1048	748	1796	960	56	1016			2812	Gals.	Seal Coat Bituminous Material RS-2, CRS-2, CBAE 800, (MC-800 or 3000) or (RT 9 or 10)
409	34	24	58	31	2	33			91	Cu.Yds.	Seal Coat Cover Aggregate # 8
202	5.9		5.9						5.9	Cu.Yds.	Portions Of Structure Removed (Backwall)
511	5.9		5.9						5.9	Cu.Yds.	Class "C" Concrete (Backwall)
617	1	1	2	1	1	2	1		5	M.Gals.	Water
617	39	28	67	36	2	38	139		244	Cu.Yds.	Compacted Aggregate
614	Lump	Lump	Lump	Lump	Lump	Lump	Lump		Lump	Lump	Maintaining Traffic
623	Lump		Lump						Lump	Lump	Construction Layout Stakes

GENERAL NOTES

VERIFICATION:
Verification of all dimensions and conditions at the site shall be made by the Contractor.

ITEM SPECIAL- SURFACE PREPARATION:
The complete surface of the area to be resurfaced exclusive of areas which are unsound, shall be uniformly scarified to a minimum depth of 1/4" by power driven mechanical scarifiers. The equipment to remove unsound concrete shall be limited to chipping hammers operated at an angle of less than 45° measured from the surface of the deck, and hand tools. Hammers heavier than the nominal 35 lbs. class will not be permitted. Air compressors and all other heavy pieces of equipment shall not be permitted on span where work is in progress but may be permitted on adjacent undisturbed spans. Areas of unsound concrete shall be removed to a depth which will permit the new concrete material to bond to the entire periphery of the reinforcing bars so exposed. The area shall be cleaned, then sounded by the Engineer to insure complete removal of all unsound concrete. Care shall be exercised to prevent damaging any exposed reinforcing steel.

No more than 24 hours prior to placing the bonding grout, the entire surface including the face of curb, if any, sawed edges of previously placed concrete, exposed top flanges of existing structural steel, and exposed reinforcing steel shall be thoroughly cleaned by sandblasting or an approved method of waterblasting to remove all traces of loose and foreign material which would inhibit bonding of new material to the existing surfaces.

CONCRETE OVERLAY, AS PER PLAN:
LIMITATION OF OPERATIONS:
The placement of the new concrete shall be performed when the nominal atmospheric temperature is between 45 and 70 degrees F, and in no case shall placement be continued when the temperature exceeds 75°. The concrete shall not be placed when rain is imminent, during hot windy weather, or when any atmospheric condition would cause difficulty in the satisfactory placement, finishing or curing of the new concrete surface.

Adequate precautions shall be taken to protect freshly placed material from sudden or unexpected rain. The Engineer may order the removal of any material damaged by rainfall.

Night work will be permitted, in which case supplemental lighting will be required.

PROPORTIONING AND MIXING:
The concrete shall be a workable mixture of uniform composition and consistency meeting the requirements in Proposal Note

The specific gravities used for the determination of the weights are: Natural sand 2.62 and Limestone 2.57.

The batch weights described above shall be corrected to compensate for moisture contained in the aggregate at the time of use. The specific cement content shall be maintained and a maximum water-cement ratio of 0.44 shall not be exceeded.

A water reducing admixture conforming to the requirements of Supplemental Specification 808 will be required for improving workability. The nominal slump range shall be 1"-3" and the maximum slump shall be 4". The air content of fresh, unvibrated concrete at the time of placement shall be 7.0 percent plus or minus 1.0 percent. If the ambient temperature is 70°F or higher, a retarding mixture is required.

Payment for concrete additives is included in the bid price paid per cubic yard for resurfacing concrete bridge decks.

BONDING GROUT:
The bonding grout shall consist of equal parts by weight of Portland cement and sand, mixed with enough water to form a stiff slurry. The consistency of this slurry shall be such that it can be applied with a stiff brush or broom to the existing concrete surface and reinforcing steel in a thin, even coating that will not run or puddle. The thin coating of grout shall be scrubbed into the dry surface immediately prior to placing the new resurfacing material. Care shall be exercised to insure that all surfaces receive a thorough, even coating and that no excess grout be permitted to dry prior to placing the new concrete material. The method of spreading grout between steel bars shall be approved by the Engineer.

PLACING AND FINISHING EQUIPMENT:
This shall include adequate hand tools for placement of stiff plastic concrete and for working down to approximately the correct level for striking-off with the screed. An approved finishing machine with the following capabilities shall be required.

A mechanical strike-off shall be required to provide a uniform surface of concrete in front of the oscillating screed. At least one oscillating screed shall be designed to consolidate the concrete to the required density. A sufficient number of vibrators shall be effectively installed so that at least one vibrator is provided for each 5 feet of screed length. The bottom face of this screed shall be at least 5 inches wide with a turned up or rounded leading edge to minimize tearing of the surface of the plastic concrete. Each screed shall exert a minimum pressure of at least seventy-five pounds for each square foot of bottom face area. Each screed shall be provided with positive control of vertical position, the angle of tilt, and the shape of the crown. The length of the screed shall be sufficient to extend at least 6 inches beyond the line where a sawcut is intended to form the edge of a subsequent placement section, and shall overlap the saw edge of a previously placed course at least 6 inches. The finishing machine shall be capable of forward and reverse motion under positive control. Provision shall be made for raising the screeds to clear the screeded surface for traveling in reverse. Supporting rails upon which the finishing machine travels will be required. The support for these rails shall be fully adjustable (not shimmed) to obtain the correct profile and shall be rigid enough to provide horizontal and vertical stability. Methods for anchoring rails to the deck shall be submitted to the Engineer for approval prior to beginning the work.

CURING:
As soon as the surface of the newly finished concrete will support a single layer of wet, well drained burlap without deformation, it shall be covered. In no case except as noted or as directed by the Engineer will the elapsed time between deposition of the concrete on the deck and the beginning of the cure exceed 30 minutes. Failure to apply the wet burlap within the required time shall be cause for rejecting the work so affected.

It is intended that the surface receive a wet burlap cure for at least 72 hours. For the first 24 hours the burlap shall be kept continuously wet by means of an automatic sprinkling or wetting system. After 24 hours the Contractor may cover the wet burlap with a layer of 4 Mil Polyethylene film for a minimum of 48 hours in lieu of using a sprinkling or wetting system.

PLACING AND FINISHING CONCRETE:
An approved finishing machine will be required. Where possible, supporting rails upon which the finishing machine travels shall be placed outside the area to be concreted. The finishing machine shall be passed over the existing deck prior to placing the new concrete in order that measurements can be made to insure that proper cross slope and thickness will be achieved; that there is sufficient cover over any existing exposed reinforcing steel, and consideration shall be given to the fact that the screed elevation is to be set higher than the finished elevation to allow for consolidation.

The Contractor shall take every reasonable precaution to secure a smooth riding bridge deck. Prior to placement operations, he shall review his equipment, procedures and personnel with the Engineer, and inspection procedures will be reviewed to assure coordination. Special precautions shall include:

Assurance that concrete can be produced and placed at the specified minimum limits, continuously and with uniformity. After finishing, the Contractor shall check the surface with a 10 foot light straightedge. Causes for irregularities exceeding 1/8" shall be eliminated, and corrections should be made if practical.

After a bonding grout coat is applied, the placement of the new concrete shall be a continuous operation throughout the pour. The new concrete shall be manipulated and mechanically struck off slightly above the final grade. Internal vibration is required in addition to the surface screed vibration.

When a tight, uniform surface has been achieved, the surface shall be given a suitable transverse texture by the use of a wire broom or comb to obtain a relatively uniform pattern of grooves spaced approximately .34 inch centers, .10 to .20 inches deep, and .08 to .12 inches wide. A strip adjacent to curbs from 9 to 12 inches wide shall not be textured. As

PLACING AND FINISHING CONCRETE (Continued)
soon as finishing is completed, all vertical joints with adjacent concrete shall be sealed by painting them with thinned bonding grout.

Tarps or other approved material shall be draped over the existing railing to reduce the drying effects of wind during the placing of concrete.

Forms may be necessary to enable placement of new concrete in a full depth opening. The forms for small areas may be suspended by wires from the reinforcing steel, but in case of large openings the forms shall be supported by the beams. In all cases the forms shall be supported from the existing superstructure.

METHOD OF MEASUREMENT:
ITEM SPECIAL:
Surface preparation shall be the actual area in square yards prepared and accepted, including removal of all loose and unsound material and sandblasting the surface.

511
Concrete overlay, as per plan shall be the actual volume in cubic yards of material mixed and placed to grade including furnishing of all materials, mixing, placing, completed and accepted. Included is full depth repair of areas where necessary.

BASIS OF PAYMENT:
Payment for accepted quantities as measured above will be made at the contract price bid for:

ITEM	UNIT	DESCRIPTION
Special	Sq. Yds.	Surface Preparation
511	Cu. Yds.	Concrete As Per Plan

BRIDGE TREATMENT

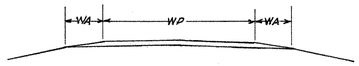
LIC-G2-18.94 511 Concrete as per plan
Patching Leveling & Overlay (183.07'x28')

LIC-G2-0328 Do Not Cover

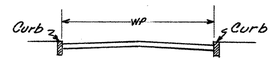
LIC-GG1-1122 Do Not Cover

LIC-GG1-1349 Do Not Cover

ASPHALT CONCRETE



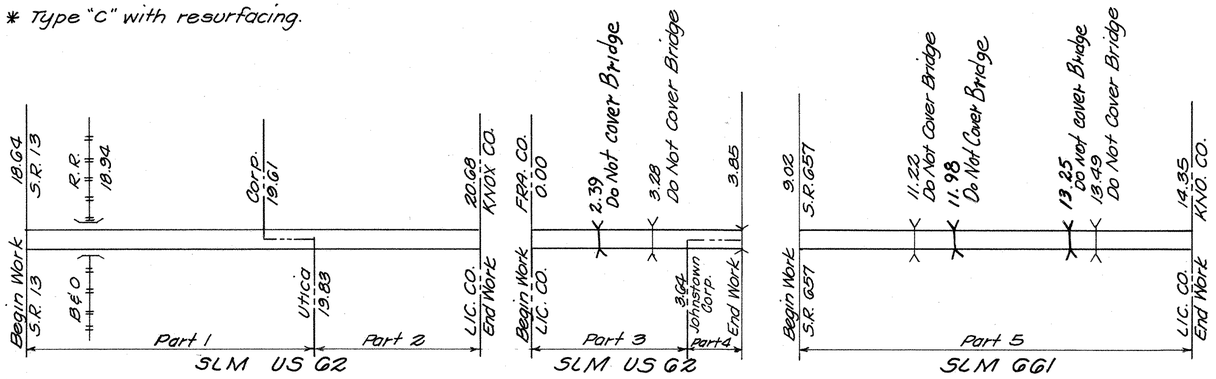
TYPICAL 1



TYPICAL 2

* Item 407 Tack Coat using SS-924 is to be used with no sand cover.

** Type "C" with resurfacing.



PAVEMENT DATA

Part	Route	Log Point To Log Point	Length Miles	Length Lin. Ft.	W.P. Feet		Existing Type Pavement	Pavement Area Sq. Yds.	Proposed Pavement: 407 * Tack Coat @ 0.10 gal/s.y. Gals.	407 * Cover Aggr. @ lbs/s.y. Tons	Asphalt Concrete Item 403 Thick Inches	Item 403 Cu. Yds.	Item 404 Thick Inches	Item 404 Cu. Yds.	202 Portions of Back-wall Removed Cu. Yds.	511 Class "C" Concrete (Back-wall) Cu. Yds.	Special Pressure Relief Joints ** Lin. Ft.	Special Surface Preparation Sq. Yds.		511 Concrete as per plan	516 Vertical Extension of Struct. Expansion Joints Lin. Ft.	Special Partial Depth Pavement Joint Repair Sq. Yds.
1	US G2	18.64-19.61	0.97	5122	24	1	451	13658	1366		1	380	1	380	5.9	5.9	144	570		60	59	
		19.61-19.83	0.22	1162	12/12	1	451	3098	310		1	86	1	86			24					
		Extra Areas						315	32		1	9	1	9								
	Total	Part 1	1.19	6284				17071	1708		1	475	1	475			168	570		60	59	80
2	US G2	19.83-20.68	0.85	4488	24	1	451	11968	1197		1	332	1	332			120					53

Item 623: Construction stakes will be required for structure Lic.-62-18.94

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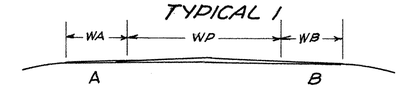
LIC-US G2 (0.00) (18.64)
LIC-SR GG1 (9.02)

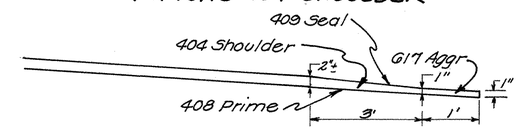
SHOULDER TREATMENT

TYPICAL 1



TYPICAL 2

TYPICAL 404 SHOULDER



SHOULDER DATA

	Route	Log Point To Log Point	Length Miles	Length Lin. Ft.	Typical	Type A Type	Width A	Type B	Width B	Type C	Width C	Type D	Width D	Area Sq. Yds.	407 Tack Bit. Mat.	407 Tack Cover Agr.	Asphalt Concrete 404 Ave. Thickness 1 3/4"	Asphalt Concrete 404 Ave. Thickness 3/4"	407 Tack Bit. Mat'l.	408 Prime Bit. Mat'l.	409 Seal Bit. Mat'l.	409 Seal Aggr.	617 Shoulder Preparation	617 Compacted Aggregate Ave. Thickness 1"
															..... @ ..... gal./s.y. Gals.	..... @ ..... lbs./s.y. Tons	Cu. Yds.	Cu. Yds.	@ 0.05 Gal./s.y. Gals	@ 0.40 gal./s.y. Gals.	@ 0.25 gal./s.y. Gals.	@ 0.0080 c.y./s.y. Cu. Yds.	Sq. Yds	Cu. Yds.
1	US G2	18.64-19.61	0.97	5122	1	404	3	404	3					3415										
		19.61-19.83	0.22	1162	1	404	3	404	3					775										
	Total	Part 1	1.19	6284										4190			204			1676	1048	34		33
2	US G2	19.83-20.68	0.85	4488	1	404	3	404	3					2992			145			1196	748	24		28
3	US G2	0.00-3.64	3.64	19219	1	404	3	404	3	30%	Spot	Treat.		3843				80	192		960	31		36
4	US G2	3.64-3.85	0.21	1109	1	404	3	404	3	30%	Spot	Treat.		222				5	11		56	2		2
5	GG1	9.02-14.35	5.33	28142	1	617	2	617	2	40%	Spot	Treat.		5003										139

SPOT TREATMENT WITH ASPHALT CONCRETE (404)

PLAN NO. 281

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US G2-0.00
LIC GG1-9.02

GENERAL NOTES

SPOT LOCATIONS:
Areas to be spot treated will be marked by State Forces for identification with paint or other appropriate methods.

SPOT TREATMENT
Mix material to be placed where and as directed by the Engineer. The resurfacing material for full and half width spot treatment shall be placed within regular lines in accordance with 401.13. At the ends, the material shall be feathered to meet existing surface on a straight line at the limits of the tack coat application.
The resurfacing material for spot treatment of areas less than a lane width may be placed as a drag patch.

SHAPING AND GRADING:
The preliminary shaping and grading for this contract shall be performed by State Forces.

SPREADING EQUIPMENT:
The second paragraph of 401.10 shall apply.

SPOT TREATMENT:
The spot treatment will be the percentage (30% or 40%) shown of the total miles shown.

TRAFFIC:
Traffic shall be maintained at all times. The length of restricted traffic zones shall be kept to a minimum consistent with the specification requirements for protection of completed courses.

TACK COAT:
The tack coat preparation shall be as determined at a pre-construction conference as per 407.05, and application rates shall not exceed 0.10 gal. per sq.yd.
The tack coat and cover aggregate shall be applied in conjunction with the placing of the resurfacing material at each spot treatment location.

ALIGNMENT AND PROFILE:
The work proposed by this project is for the spot patching of the existing pavement. The alignment of the existing pavement will not be changed, and the profile of the proposed surface will be similar to that of the existing pavement.

MINIMUM LENGTH:
The minimum length of spot treatment shall be 200'.

PAVEMENT DATA

Part	Route	Log Point to Log Point	Length Miles	Length Lin. Ft.	WP Feet	% Spot Treatment	No. of Spots	Area In Sq. Yds. To Be Spot Treated	408 Prime Bit. Matl. .... @..../.... gal./s.y. Gal.	407 Tack Bit. Matl. .... @0.05 gal./s.y. Gal.	407 Cov. Aggr. Cover Aggr. .... @.../.... lbs./s.y. Tons	404 Asph. Conc. Ave. Thickness 1½" Cu. Yd.	Asph. Conc. Cu. Yd.
3	US G2	0.00 ~ 3.64	3.64	19219	20	30	10	12813		641	6	445	
4	US G2	3.64 ~ 3.85	0.21	1109	10/10	30	2	739		37	4	26	
5	GG1	9.02 ~ 14.35	5.33	28142	20	40	19	25015		1251	12	868	

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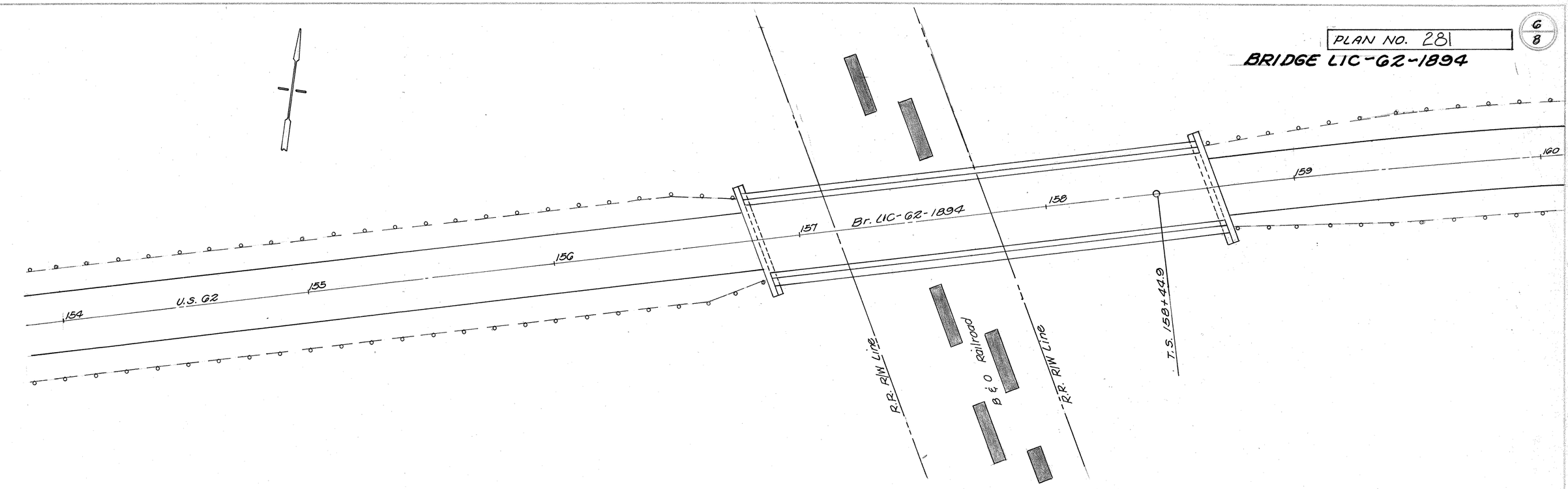
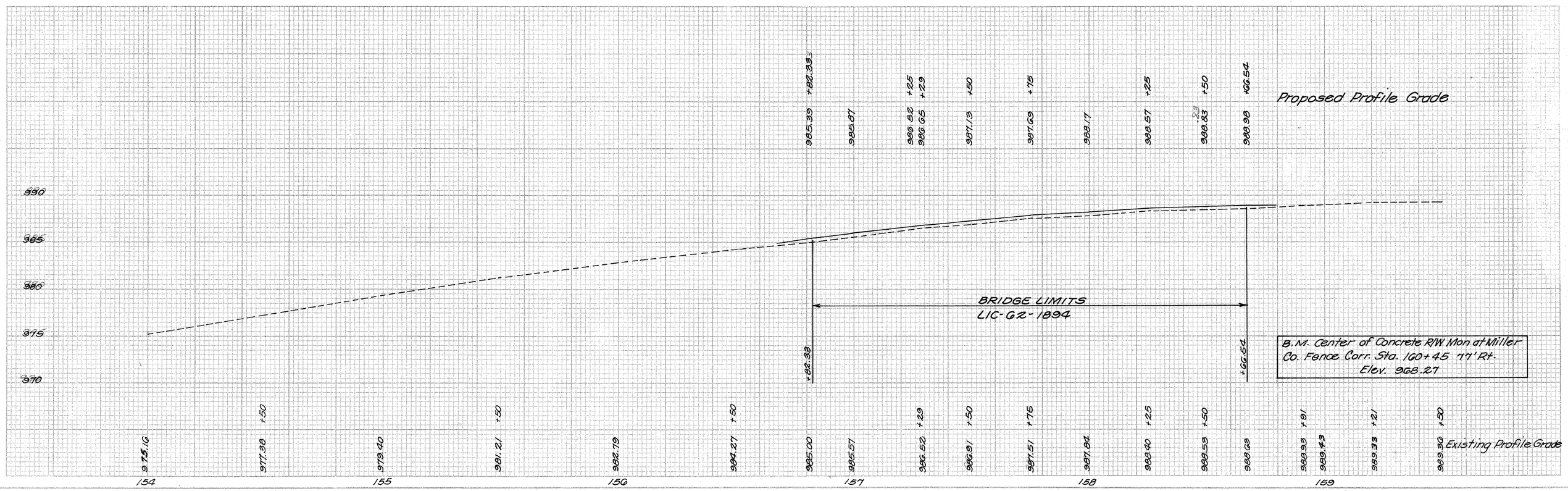
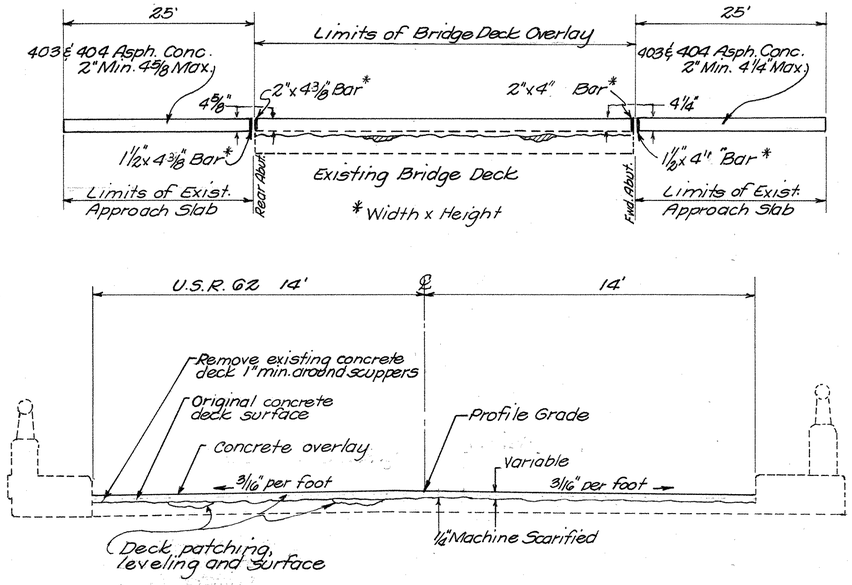
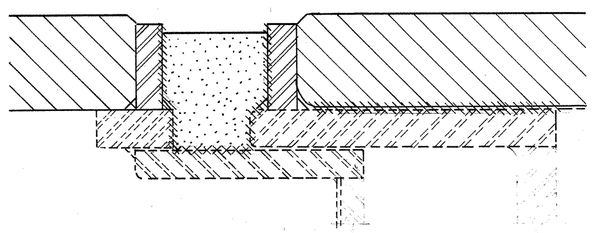
BRIDGE LIC-62-1894







BRIDGE DECK CONCRETE OVERLAY



ITEM 516 - VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS, AS PER PLAN

(For use at abutment expansion joints)

Surfaces indicated thus shall be sandblasted and wiped clean. Joints shall be filled before rust forms. If rust forms, surfaces shall be re-sandblasted.

Bond to this surface shall be prevented by use of foil or other suitable bond-breaker barrier satisfactory to the Engineer. Care shall be taken not to displace barrier when placing joint sealer.

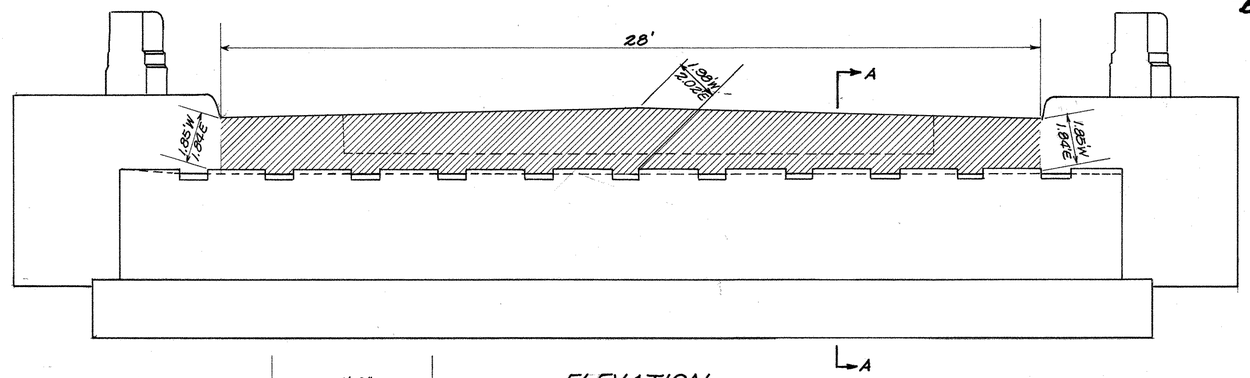
Hot-applied joint sealer, 705.01. Bridge deck waterproofing membrane materials meeting the requirements of 705.01 may be used.

See Standard Drawing BP-5 and 516.04 for notes and details not shown.

Cost of surface preparation and furnishing and placing the joint sealer shall be included in the unit price bid for Item 516-Vertical Extension of Structural Expansion Joints, As Per Plan. This item shall also include the furnishing and installation of steel bars to the existing end dam plates as detailed in Standard Drawing BP-5 and elsewhere in the plans.

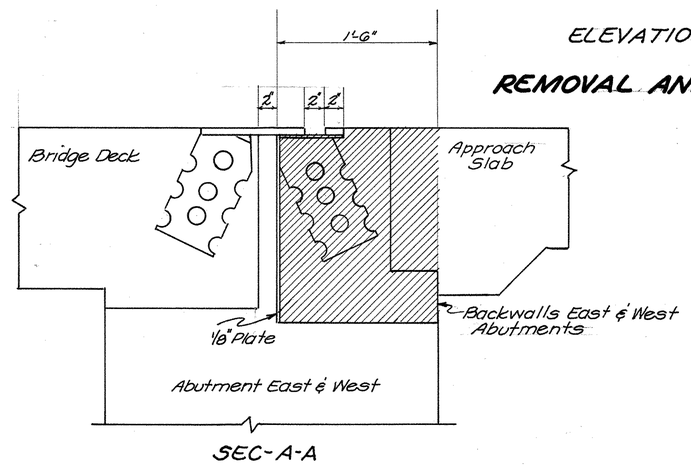
Steel bar stock utilized for the joint extensions may be any weldable grade of low or mild carbon steel available commercially. This material is to be excluded from the requirements of 501.07 for test reports.

Portion To Be Removed



ELEVATION

REMOVAL AND REPLACEMENT OF BACKWALLS



SEC-A-A

PLAN NO. 281

BRIDGE REPAIR
LIC-62-1894

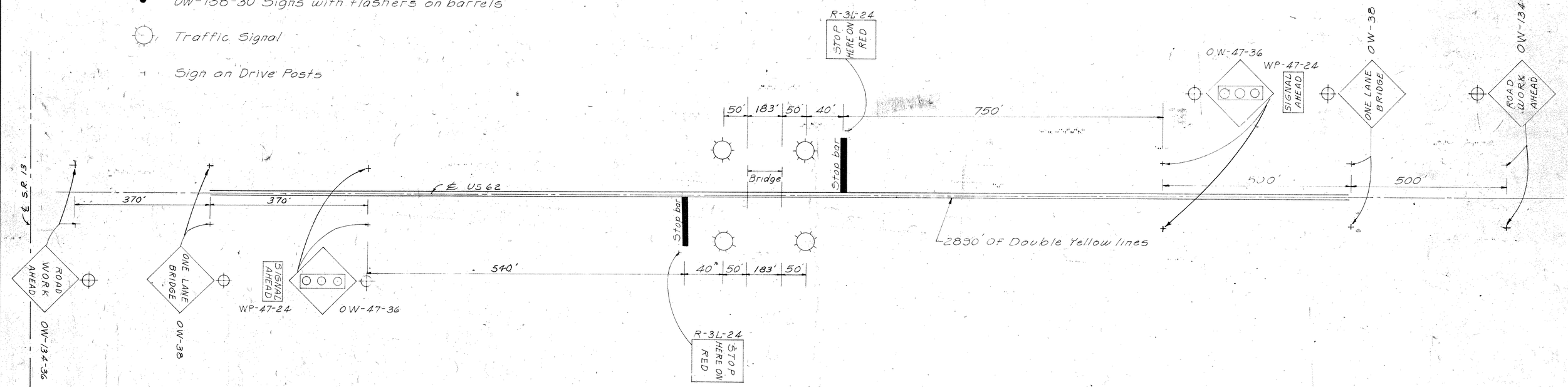
8/8

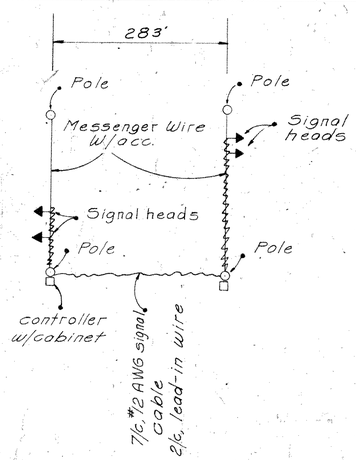
R.A.B. 3/11/76

MAINTENANCE OF TRAFFIC

LEGEND

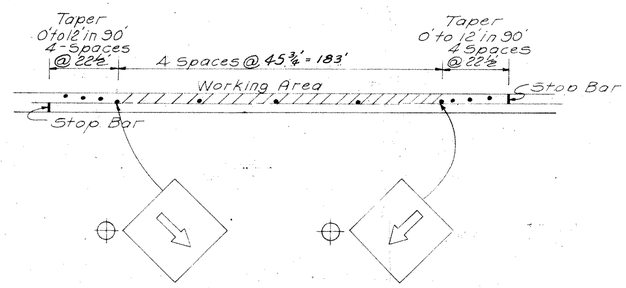
- Amber Flashers mounted above signs
- OW-138-30 Signs with flashers on barrels
- Traffic Signal
- Sign on Drive Posts





Power will be required at cabinet.

TEMPORARY SIGNAL SCHEMATIC



OW-138-30 Sign With amber flasher on 5 barrels on bridge.

OW-138-30 Sign With amber flasher on first 8 barrels.

NOTES—

1. Signals shall be installed and operated in accordance with general specifications 614.03 (D), and with the requirements of part 7, section 7H-10, of the O.M.U.T.C.D.
2. Only commercial power will be allowed.
3. Adequate area illumination to clearly reveal the hazards at night shall be provided when directed by the engineer.
4. Temporary no passing lines and stop lines shall be installed on projects of more than one week duration.
5. Dual signs indications shall be provided as shown.
6. Signal timing shall be approved per directive OP-25 D.
7. All signal heads shall have 12" diameter lenses.