

STATE OF OHIO DEPARTMENT OF TRANSPORTATION LAK-91-(4.23)(4.49)

SURFACE TRANSPORTATION PROGRAM PID-5759

ALL REFERENCES TO FEDERAL NUMBER STP-1A21(14) APPEARING IN THESE PLANS SHALL BE CONSIDERED TO READ SURFACE TRANSPORTATION PROGRAM.

BRIDGE REHABILITATION OVER NORFOLK & WESTERN AND CONRAIL RAILROADS.

1993 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, 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, and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Approved Monis Becker
Date 6-22-92 Mayor, City of Eastlake

Approved Paul E. Anderson
Date 6-23-92 Mayor, City of Willoughby

Approved Byron A. Holden
Date 7-21-92 District Deputy Director of Transportation

Approved B.D. Henderson/WSP
Date 9/9/92 Engineer, Bureau of Bridges and Structural Design

Approved Christopher L. Ryan
Date 8-11-92 Deputy Director, Design

Approved Jerry Gray
Date 8-11-92 Director, Department of Transportation

000844 Revised 11-5-93

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

| | |
|---------------------------|------------------------|
| Current A.D.T. (1992) | = 34,500 |
| Design Year A.D.T. (2012) | = 51,500 |
| D.H.V. | = 5,000 |
| D. | = 50% |
| T. | = 3% |
| V. (Design Speed) | = 50 m.p.h. |
| LEGAL SPEED | = 50 m.p.h. |
| FUNCTIONAL CLASSIFICATION | = URBAN MINOR ARTERIAL |
| DESIGN EXCEPTIONS | = NONE |

CONVENTIONAL SIGNS

| | | | |
|--------------------------|--------------------------|-----------------------------------|------------------|
| Existing Pavement | ----- | Construction Limits | ----- |
| Drives, Walks, Etc. | ----- | Signs | --- |
| Mailbox MB | MB | Traffic Signals: Proposed | ⊙ |
| Manholes: Existing | ○ | Existing | ⊙ |
| To Be Reset | ● | Inlets And Catch Basins: Existing | □ |
| Proposed | ● | To Be Reset | □ |
| | | Proposed | ■ |
| Valves | ⊗ | Temporary Right of Way | ---T--- |
| County Line | ----- | Right of Way (only) | -----R/W |
| Township Line | ----- | Limited Access & Right of Way | ---R/W-LA--- |
| Section Line | ----- | Existing Right of Way | ----- |
| Corporation Line | ----- | Property Line | ----- |
| Fence Line (existing) | ---x---(proposed) x--- | (in existing fence) | ---x---x--- |
| Center Line | ---352---353--- | Railroad | ---or--- |
| Trees | ⊙ Stumps (to be removed) | Guardrail (existing) | ---(proposed)--- |
| Utility Poles: Telephone | ⊕ | Streams | ~ ~ ~ |
| Power | ⊕ | Fire Hydrants | ⊕ w |
| Light | ⊕ | | |
| Utility Lines: Water | ---W--- | Slopes | |
| Gas | ---G--- | | |
| Storm Sewer | ---S--- | | |
| Sanitary | ---SAN--- | | |
| Electric | ---E--- | | |
| Telephone | ---T--- | | |

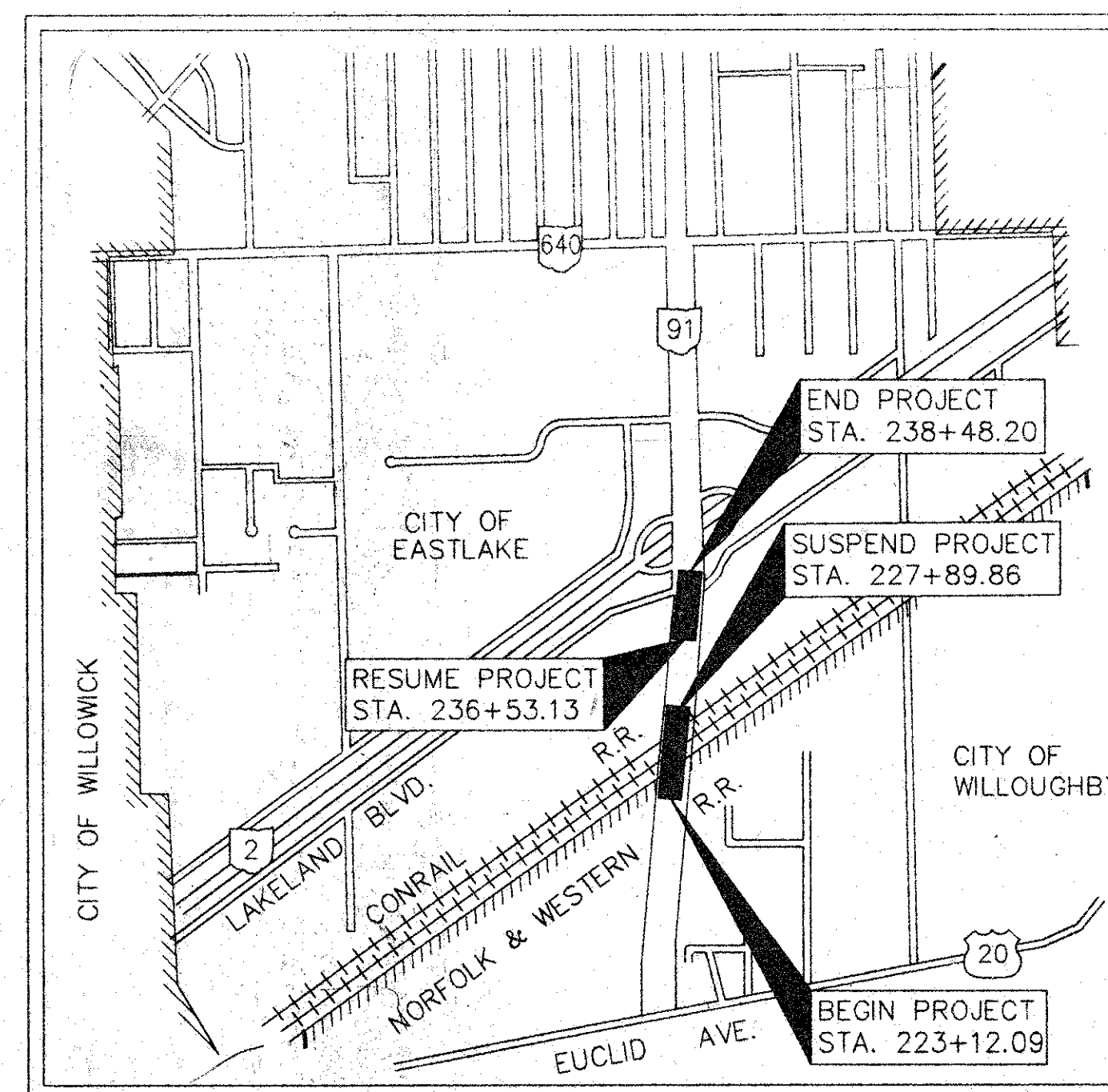
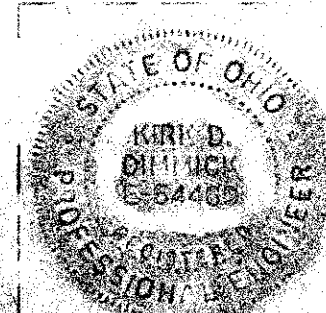
INDEX OF SHEETS

| DESCRIPTION | SHEET NO. | DESCRIPTION | SHEET NO. |
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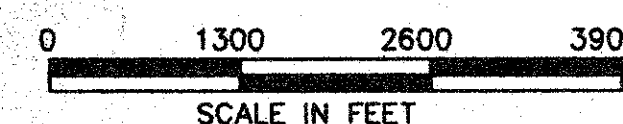
LINE DATA

| | CITY OF WILLOUGHBY | CITY OF EASTLAKE | TOTAL |
|-------------------------|---------------------------|----------------------------|----------------------------|
| Begin Work | 208+52.00 | 223+82.63 | 208+52.00 |
| Begin Project | 223+12.09 | 223+82.63 | 223+12.09 |
| End Project | 223+82.63 | 238+48.20 | 238+48.20 |
| End Work | 223+82.63 | 249+20.00 | 249+20.00 |
| Additions And Deduction | - | -863.27 L.F. -0.163 Mi. | -863.27 L.F. -0.163 Mi. |
| Length Of Project | 70.54 L.F. 0.013 Mi. | 602.30 L.F. 0.114 Mi. | 672.84 L.F. 0.127 Mi. |
| Length Of Work | 1530.63 L.F. 0.290 Mi. | 2537.37 L.F. 0.481 Mi. | 4068.00 L.F. 0.771 Mi. |

Plan Prepared By:
BURGESS & NIPLE, LIMITED
ENGINEERS AND ARCHITECTS
100 WEST ERIE STREET
PAINESVILLE, OHIO
FOR THE STATE OF OHIO



LOCATION MAP



| | |
|------------------------|-------|
| Portion to be improved | ----- |
| State & Federal Routes | ----- |
| Other Roads | ----- |

SCALES

| | | | |
|---------------------------|-------------|----------|---------|
| Plan | 0 25 50 100 | Vertical | 0 10 20 |
| Profile: Horizontal | 0 10 20 | Vertical | 0 10 20 |
| Cross Section: Horizontal | 0 10 20 | Vertical | 0 10 20 |

UNDERGROUND UTILITIES

2 WORKING DAYS
BEFORE YOU DIG

CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE.

NON-MEMBERS
MUST BE CALLED DIRECTLY

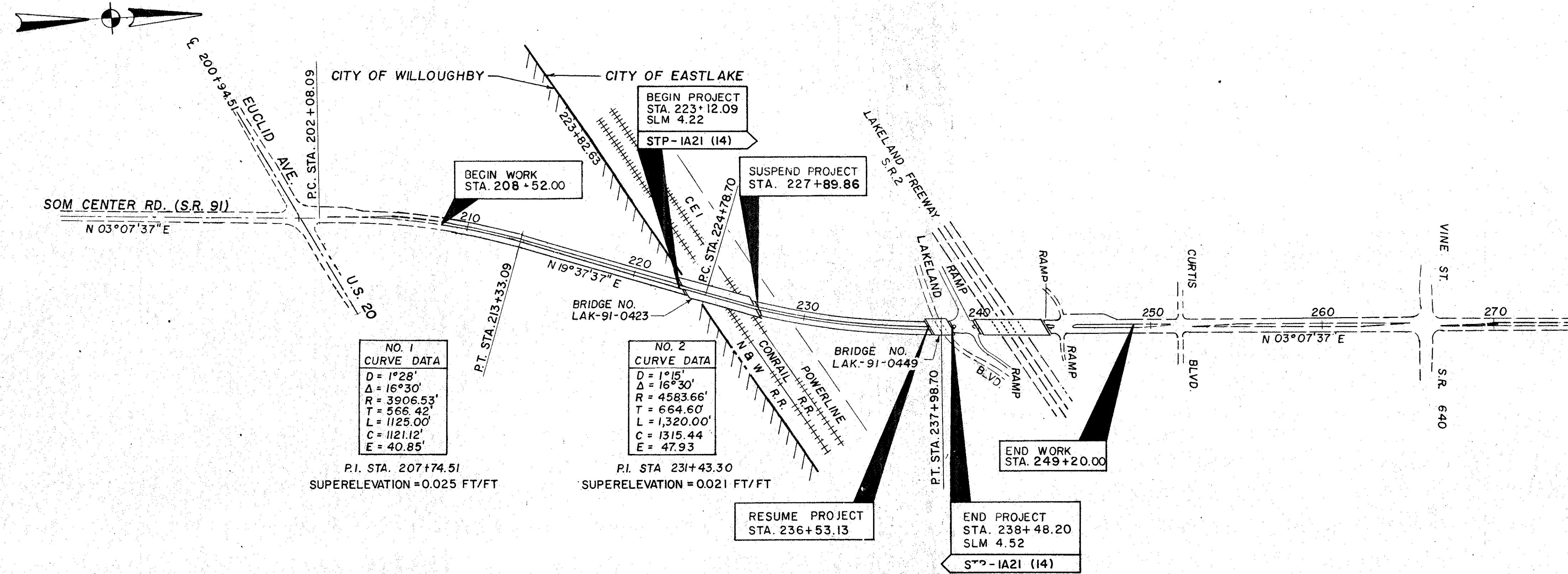
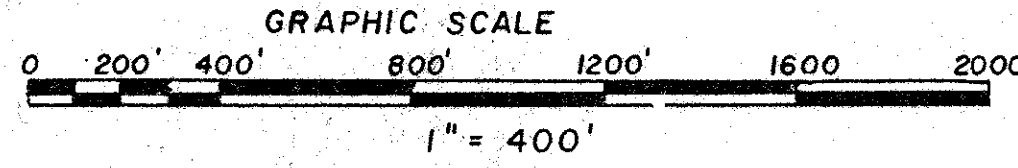
| SUPPLEMENTAL SPECIFICATIONS | | | |
|-----------------------------|---------|-----|---------|
| 802 | 4-13-90 | 931 | 3-18-92 |
| 820 | 3-18-92 | 910 | 5-20-91 |
| | | 902 | 8-31-79 |
| 852 | 7-30-93 | 921 | 12-4-72 |
| | | 923 | 1-10-69 |

| SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS | | | | | | | |
|---|----------|--------|----------|----------|----------|-----------|----------|
| BP-3.1 | 2-21-92 | BP-2.2 | 2-21-92 | AS-1-81 | 11-27-81 | TC-82.10 | 8-29-84 |
| BP-5.1 | 2-21-92 | CB-6 | 5-1-79 | BR-2-82 | 11-1-82 | MT-95.30 | 10-10-88 |
| BP-2.4 | 2-21-92 | | | SD-1-69 | 6-12-69 | MT-99.10 | 11-14-86 |
| F-1 | 11-10-83 | | | | | | |
| F-3 | 5-1-76 | | | | | | |
| F-6 | 5-1-76 | HW-4B | 4-1-80 | | | MT-97.10 | 4-29-88 |
| GR-1.1 | 5-6-91 | GR-1.3 | 2-21-92 | | | HL-30.31 | 5-1-87 |
| GR-1.2 | 10-30-92 | | | EXJ-4-87 | 1-5-89 | MT-105.10 | 7-1-92 |
| GR-2.1 | 5-6-91 | MC-11 | 8-1-78 | RB-1-55 | 2-2-59 | MT-105.11 | 7-1-92 |
| GR-3.1 | 5-6-91 | I-2A | 12-18-84 | | | | |
| GR-3.2 | 5-6-91 | MC-4 | 7-26-76 | TC-35.10 | 8-29-84 | | |
| MC-9.2 | 5-6-91 | MC-7 | 10-15-76 | TC-71.10 | 9-10-91 | | |

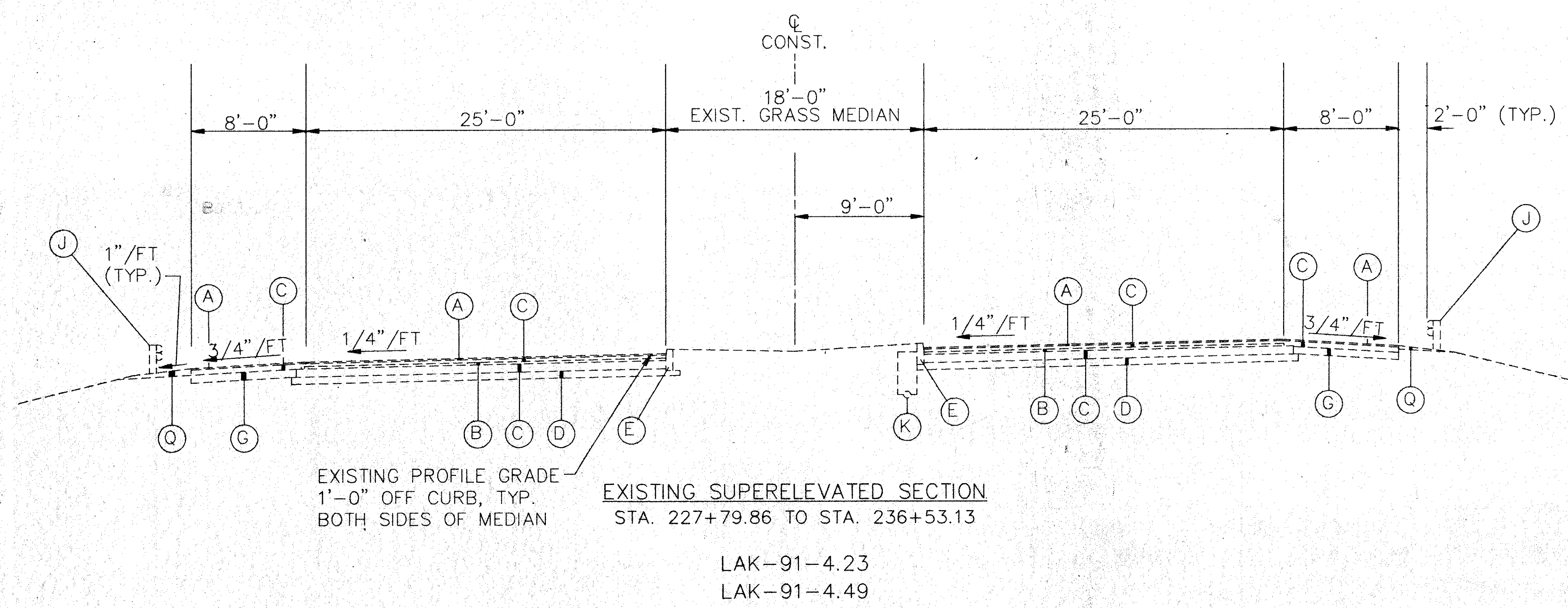
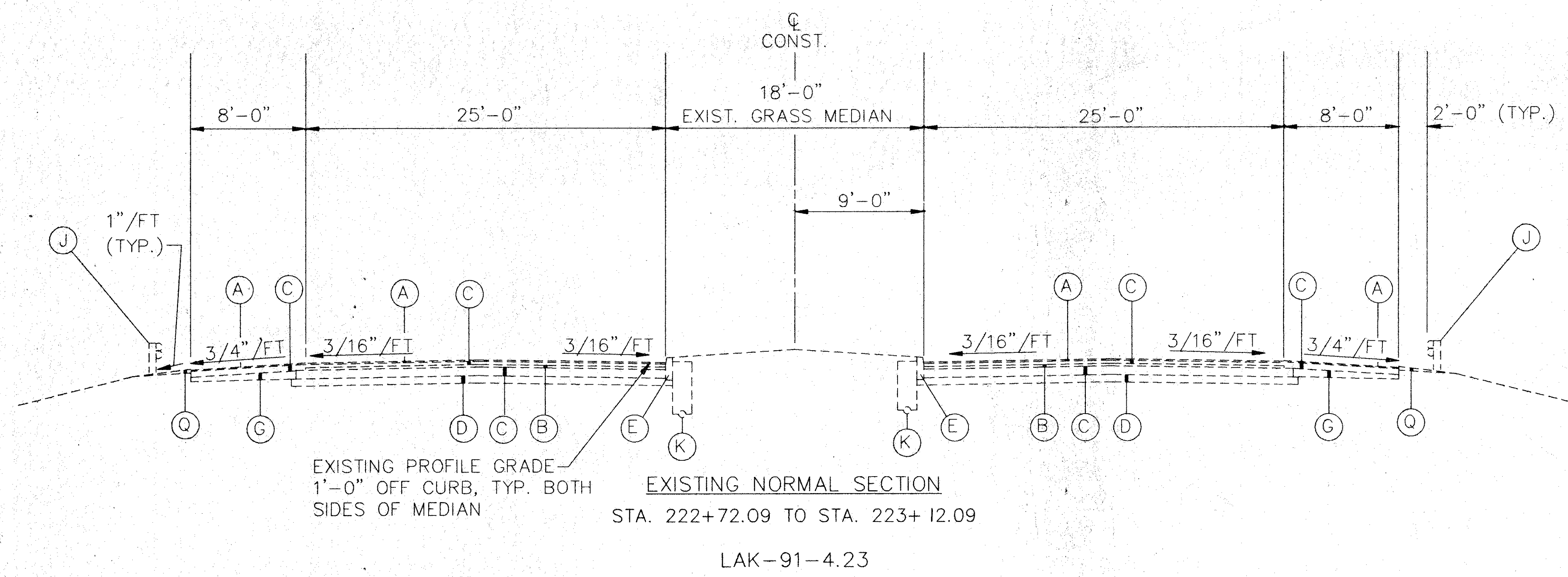
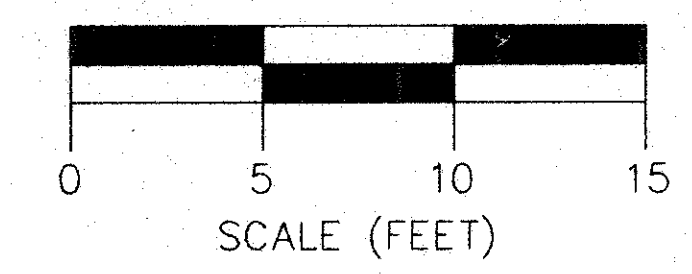
Project: LAK-91-(4.23)(4.49)
Date of Letting 19__ Contract No. ____

Kirk D. Dimmick, P.E.
KIRK D. DIMMICK, P.E. NO. E-54469

SCHEMATIC PLAN



TYPICAL SECTIONS



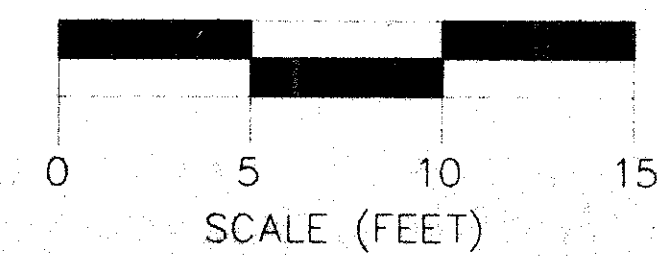
LEGEND

- (A) EXISTING ASPHALT CONCRETE SURFACE COURSE
- (B) EXISTING ASPHALT CONCRETE LEVELING COURSE
- (C) EXISTING BITUMINOUS AGGREGATE BASE
- (D) EXISTING SUBBASE
- (E) EXISTING CONCRETE CURB, TYPE 6
- (G) EXISTING AGGREGATE BASE
- (J) EXISTING GUARDRAIL, TYPE 5 *
- (K) EXISTING SHALLOW PIPE UNDERDRAIN
- (Q) EXISTING COMPACTED AGGREGATE

* SEE SHEETS 25 AND 26 FOR PROPOSED GUARDRAIL LOCATIONS.

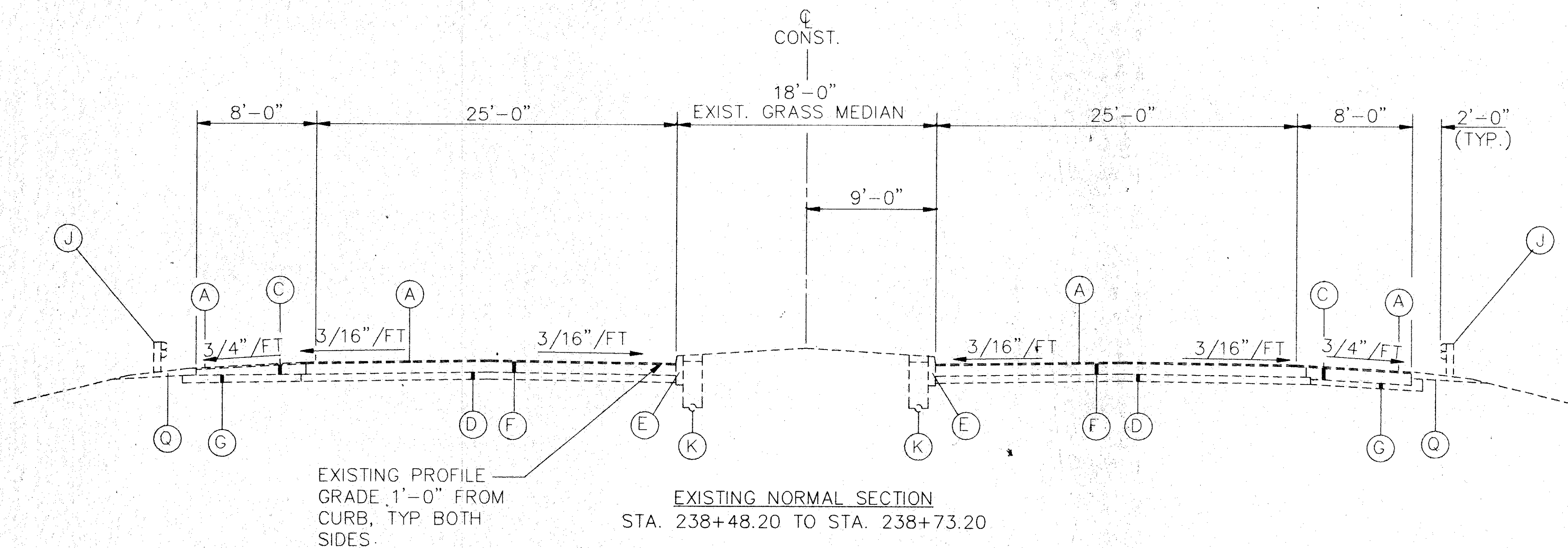
E:\PR1809\TYP\TYP SCALE 1/8"=1'-0" PLOT DATE 2-14-92

TYPICAL SECTIONS
TYPE 404



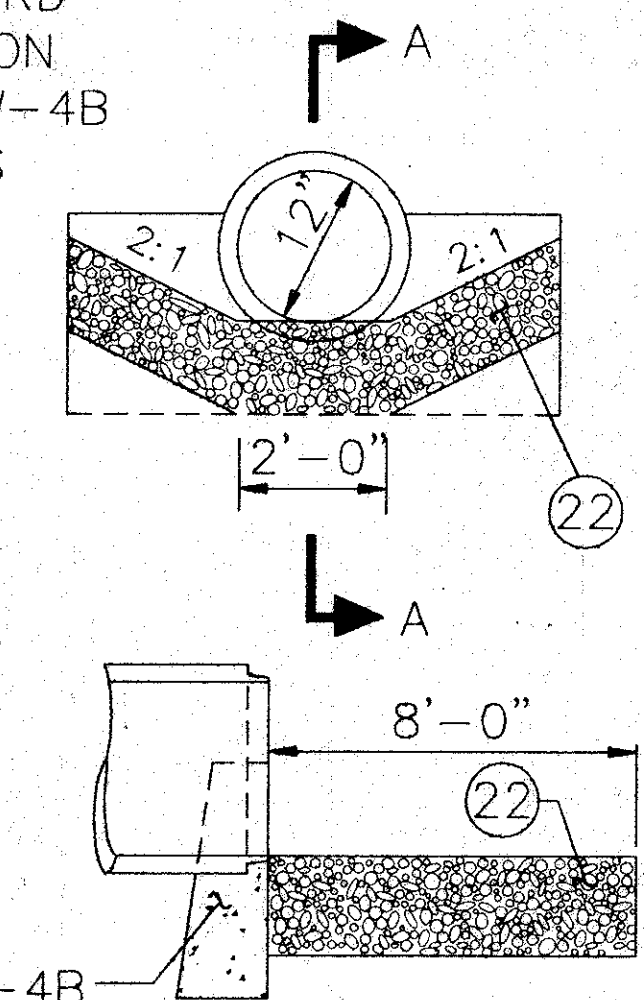
LEGEND

- (A) EXISTING ASPHALT CONCRETE SURFACE COURSE
- (C) EXISTING BITUMINOUS AGGREGATE BASE
- (D) EXISTING SUBBASE
- (E) EXISTING CONCRETE CURB, TYPE 6
- (F) EXISTING REINFORCED CONCRETE PAVEMENT
- (G) EXISTING AGGREGATE BASE
- (K) EXISTING SHALLOW PIPE UNDERDRAIN
- (Q) EXISTING COMPACTED AGGREGATE
- (J) EXISTING GUARDRAIL, TYPE 5 *
- (1) ITEM 404 - 1 1/2" ASPHALT CONCRETE, AC-20
- (2) ITEM 402 - 1 1/2" ASPHALT CONCRETE, AC-20
- (3) ITEM 301 - 9" BITUMINOUS AGGREGATE BASE, AC - 20
- (4) ITEM 310 - 6" SUBBASE, TYPE 1, GRADING A, AS PER PLAN
- (15) ITEM 407 - TACK COAT
- (16) ITEM 202 - WEARING COURSE REMOVED (1 1/2" DEPTH)
- (22) ITEM 601 - ROCK CHANNEL PROTECTION, TYPE C WITH FILTER

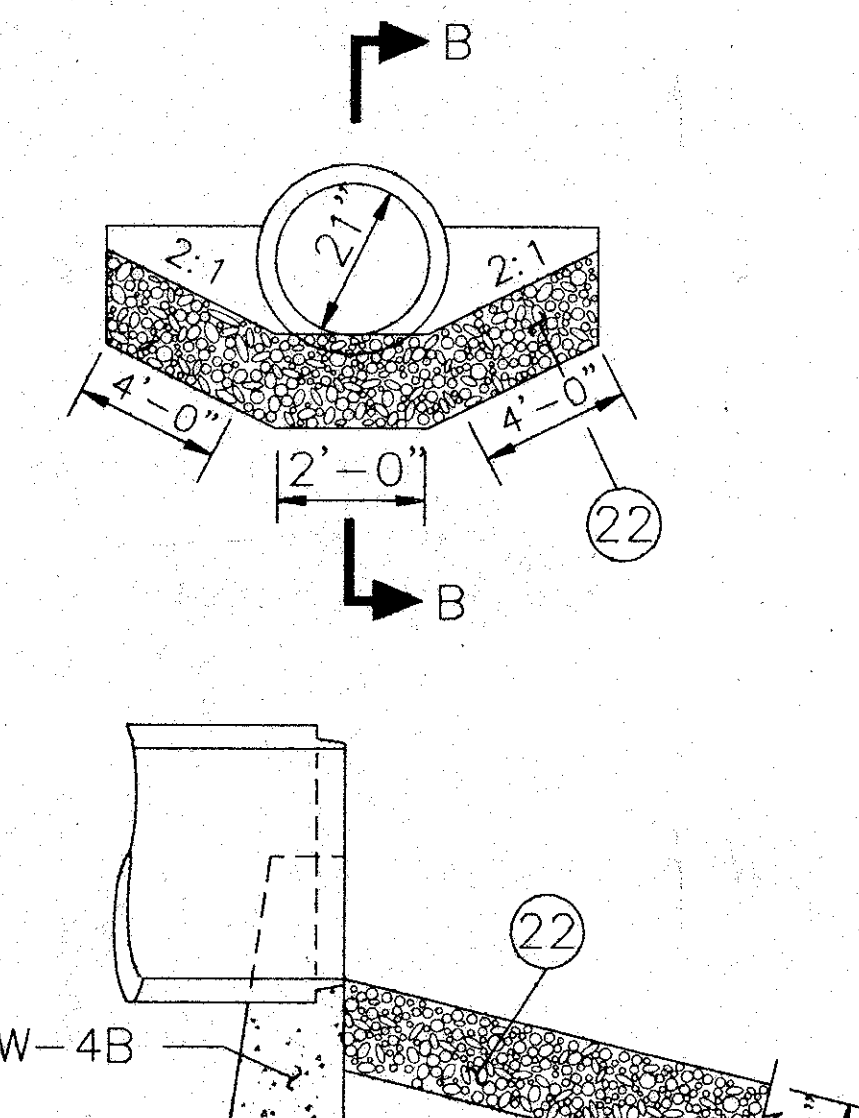


LAK-91-4.49

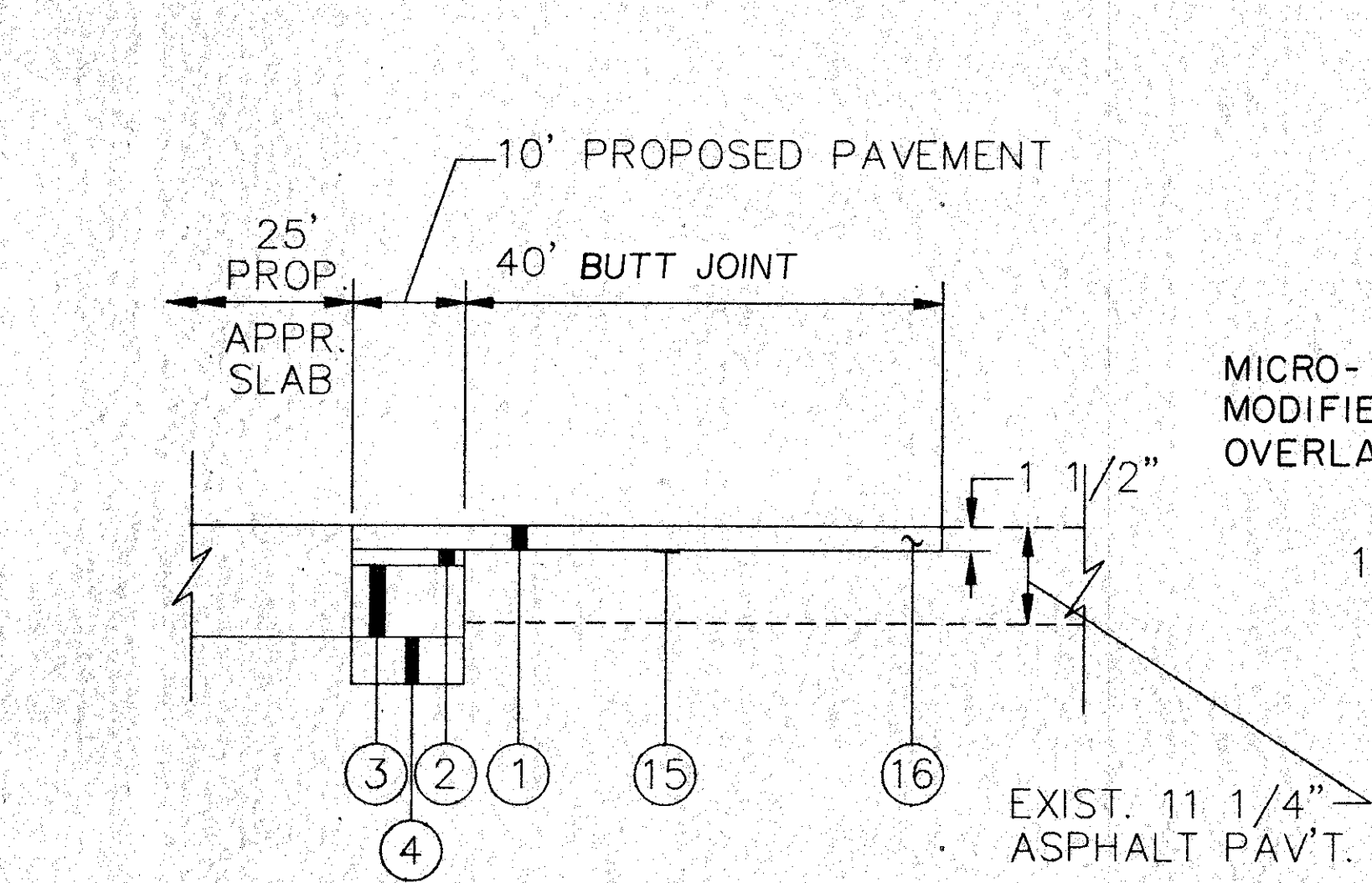
NOTE:
SEE STANDARD
CONSTRUCTION
DRAWING HW-4B
FOR DETAILS
NOT SHOWN.



NOTE:
SEE STANDARD
CONSTRUCTION
DRAWING HW-4B
FOR DETAILS
NOT SHOWN.

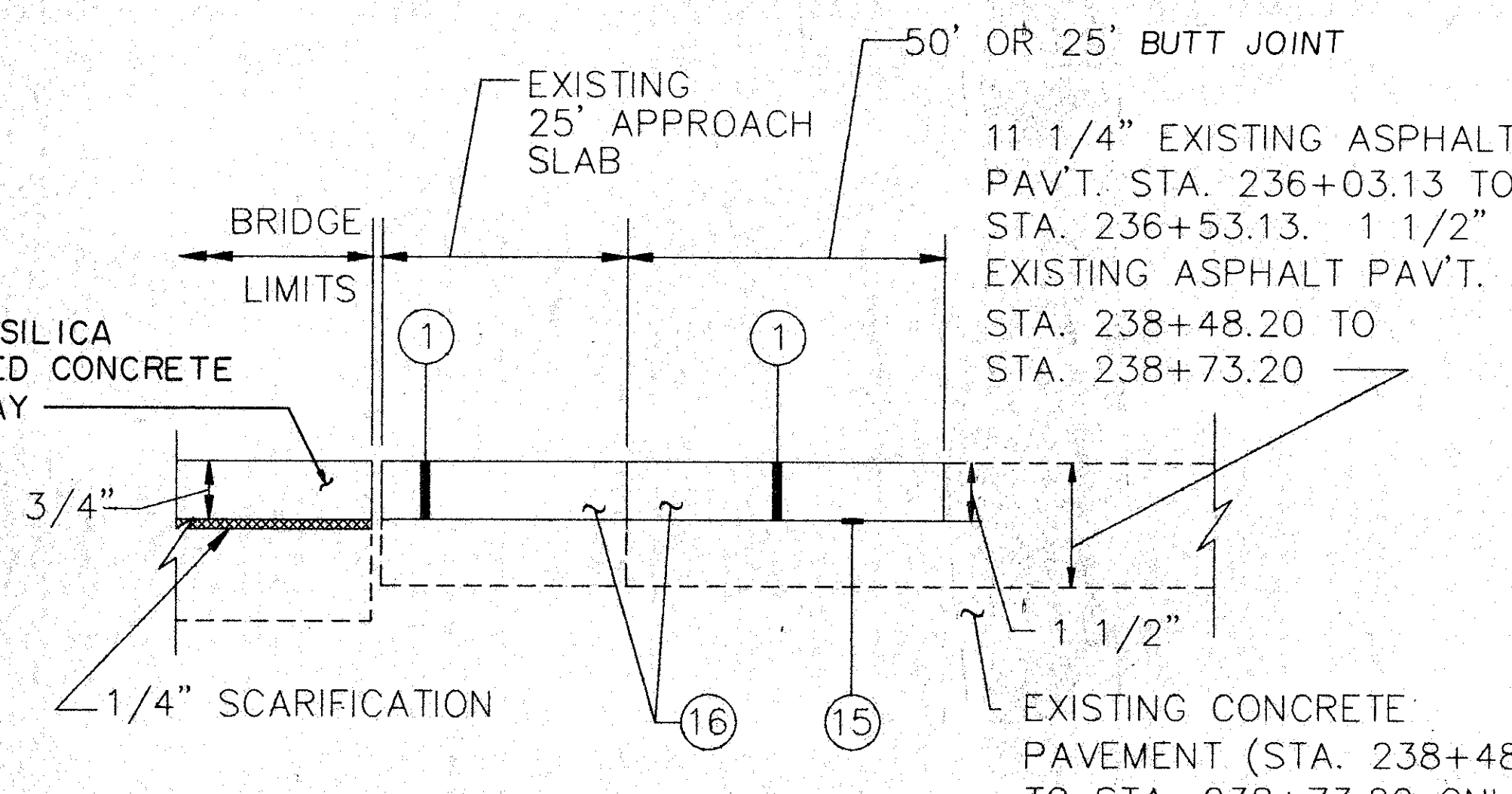


HEADWALL HW-4B



BUTT JOINT ADJACENT TO BRIDGE LAK-91-0423
SCALE: NONE

STA. 222+72.09 TO STA. 223+12.09
STA. 227+89.86 TO STA. 228+29.86



BUTT JOINT ADJACENT TO BRIDGE LAK-91-0449
SCALE: NONE

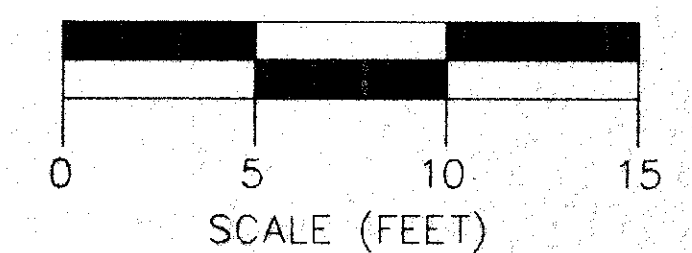
STA. 236+03.13 TO STA. 236+53.13
STA. 238+48.20 TO STA. 238+73.20

OUTLET CHANNEL PROTECTION DETAIL I
SCALE: NONE

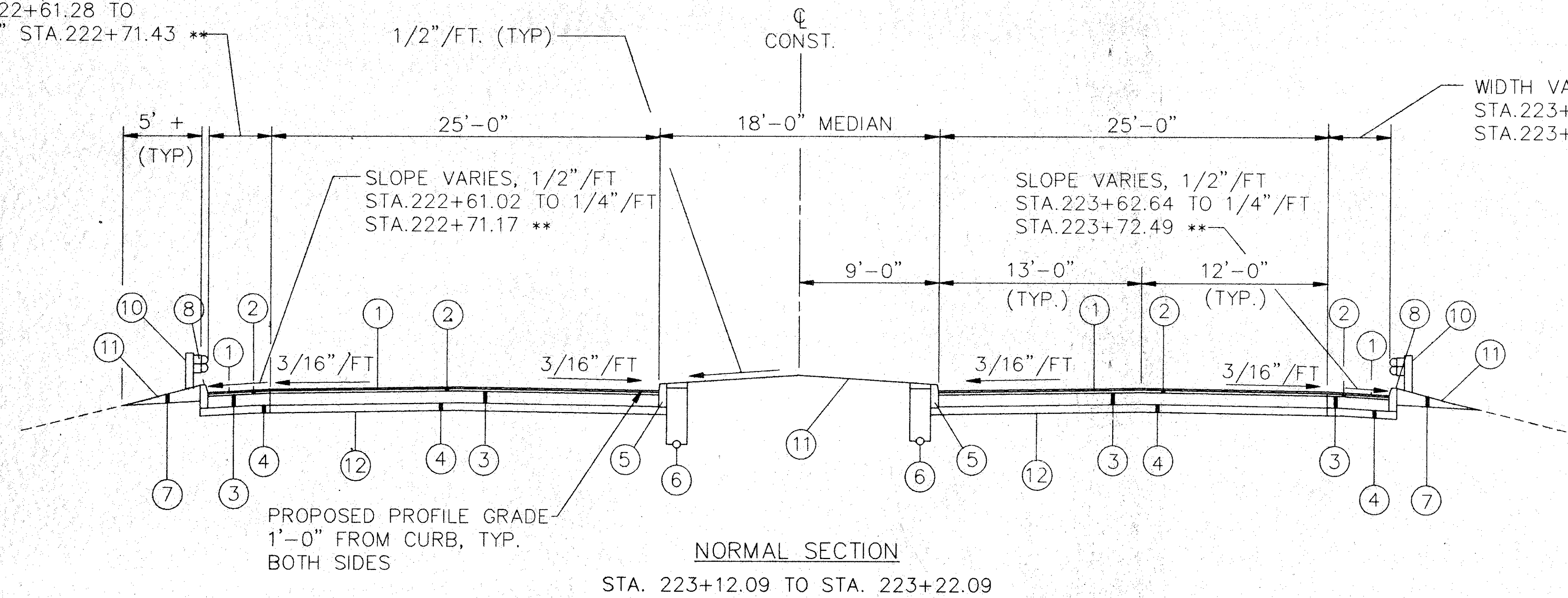
OUTLET CHANNEL PROTECTION DETAIL II
SCALE: NONE

* SEE SHEETS 25 AND 26 FOR PROPOSED GUARDRAIL LOCATIONS

TYPICAL SECTIONS
TYPE 404



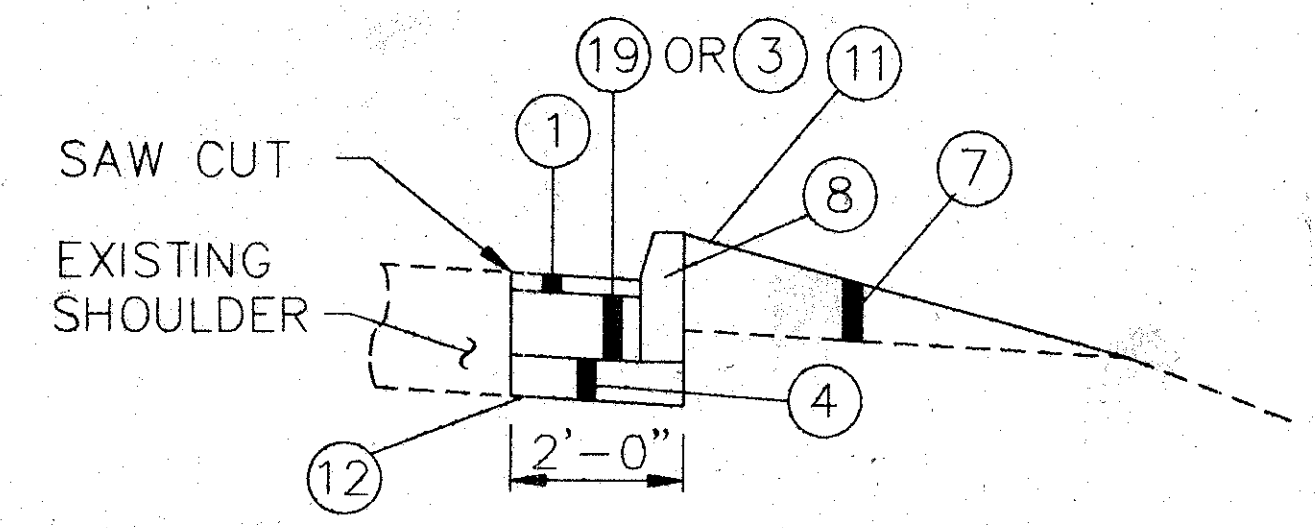
WIDTH VARIES, 4'-2"
STA. 222+61.28 TO
3'-10" STA. 222+71.43 **



WIDTH VARIES 4'-2"
STA. 223+62.90 TO 3'-10"
STA. 223+72.75 **

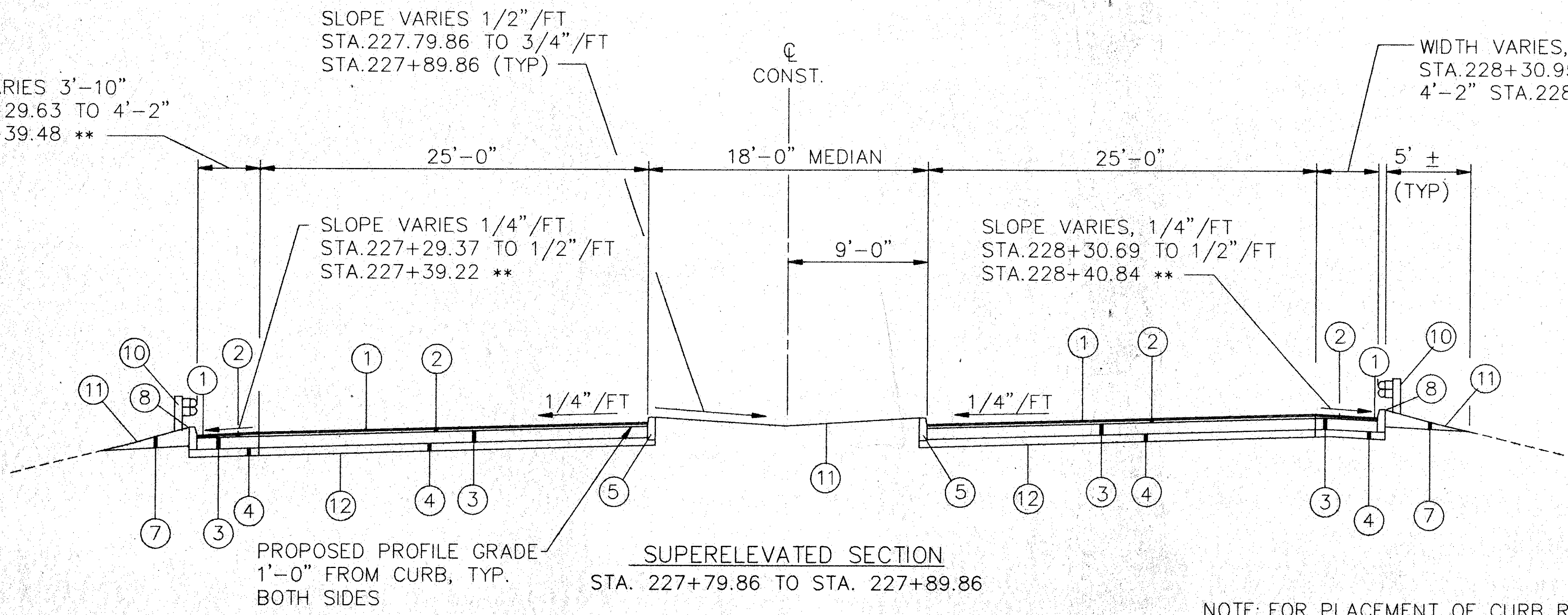
LEGEND

- ① ITEM 404 - 1 1/2" ASPHALT CONCRETE, AC-20
- ② ITEM 402 - 1 1/2" ASPHALT CONCRETE, AC-20
- ③ ITEM 301 - 9" BITUMINOUS AGGREGATE BASE, AC-20
- ④ ITEM 310 - 6" SUBBASE, TYPE 1, GRADING A, AS PER PLAN
- ⑤ ITEM 609 - CURB, TYPE 6
- ⑥ ITEM 605 - 6" SHALLOW PIPE UNDERDRAIN
- ⑦ ITEM 203 - EMBANKMENT
- ⑧ ITEM 609 - CURB, TYPE 6, AS PER PLAN
- ⑩ ITEM 606 - GUARDRAIL, TYPE 5 *
- ⑪ ITEM 659 - SEEDING & MULCHING
- ⑫ ITEM 203 - SUBGRADE COMPACTION
- ⑬ ITEM 301 - 10 1/2" BITUMINOUS AGGREGATE BASE, AC-20



EROSION CONTROL CURB PLACEMENT DETAIL
SCALE: NONE

WIDTH VARIES 3'-10"
STA. 227+29.63 TO 4'-2"
STA. 227+39.48 **

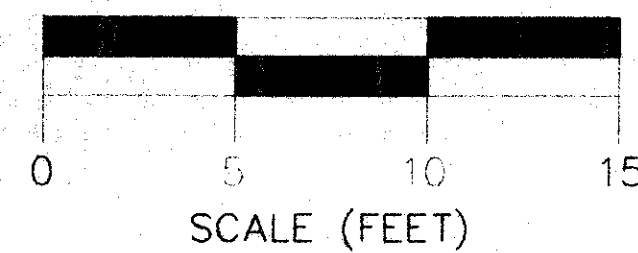


WIDTH VARIES, 3'-10"
STA. 228+30.95 TO
4'-2" STA. 228+41.10 **

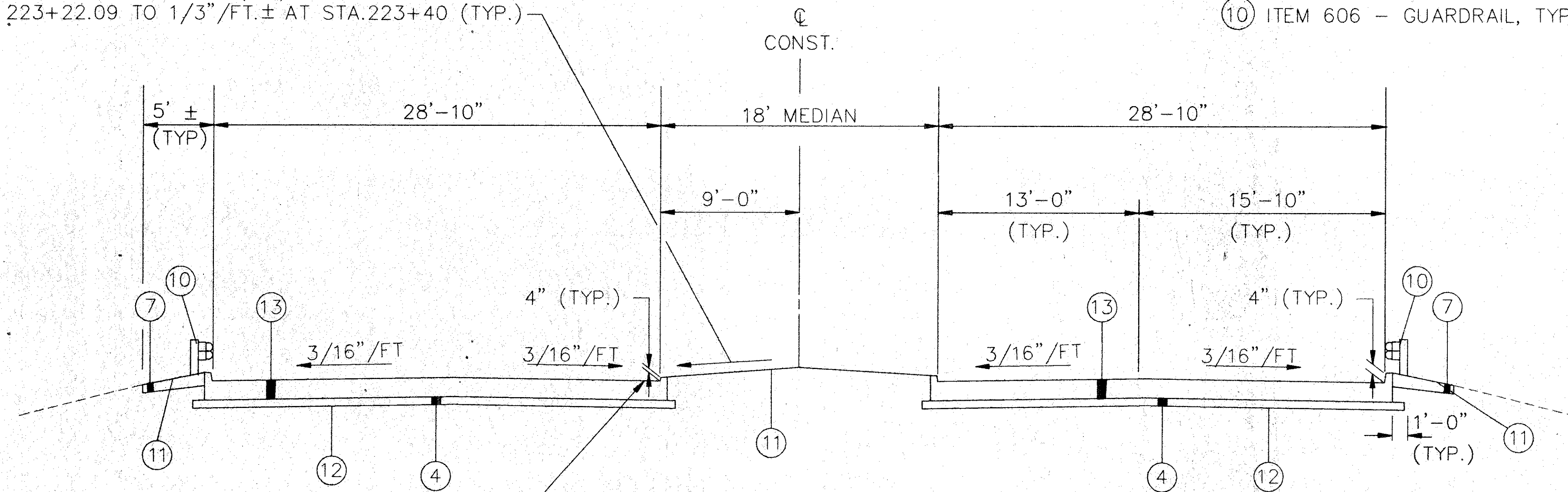
NOTE: FOR PLACEMENT OF CURB REQUIRED
FOR EROSION CONTROL AT BRIDGES,
SEE DETAIL, THIS SHEET.

* SEE SHEETS 25 AND 26 FOR
PROPOSED GUARDRAIL LOCATIONS.
**STATIONING AT OUTSIDE
EDGE OF SHOULDER

TYPICAL SECTIONS
APPROACH SLAB



SLOPE VARIES FROM 1/2"/FT. ± AT STA. 223+22.09 TO 1/3"/FT. ± AT STA. 223+40 (TYP.)



PROPOSED PROFILE GRADE 1'-0" FROM CURB, TYP. BOTH SIDES

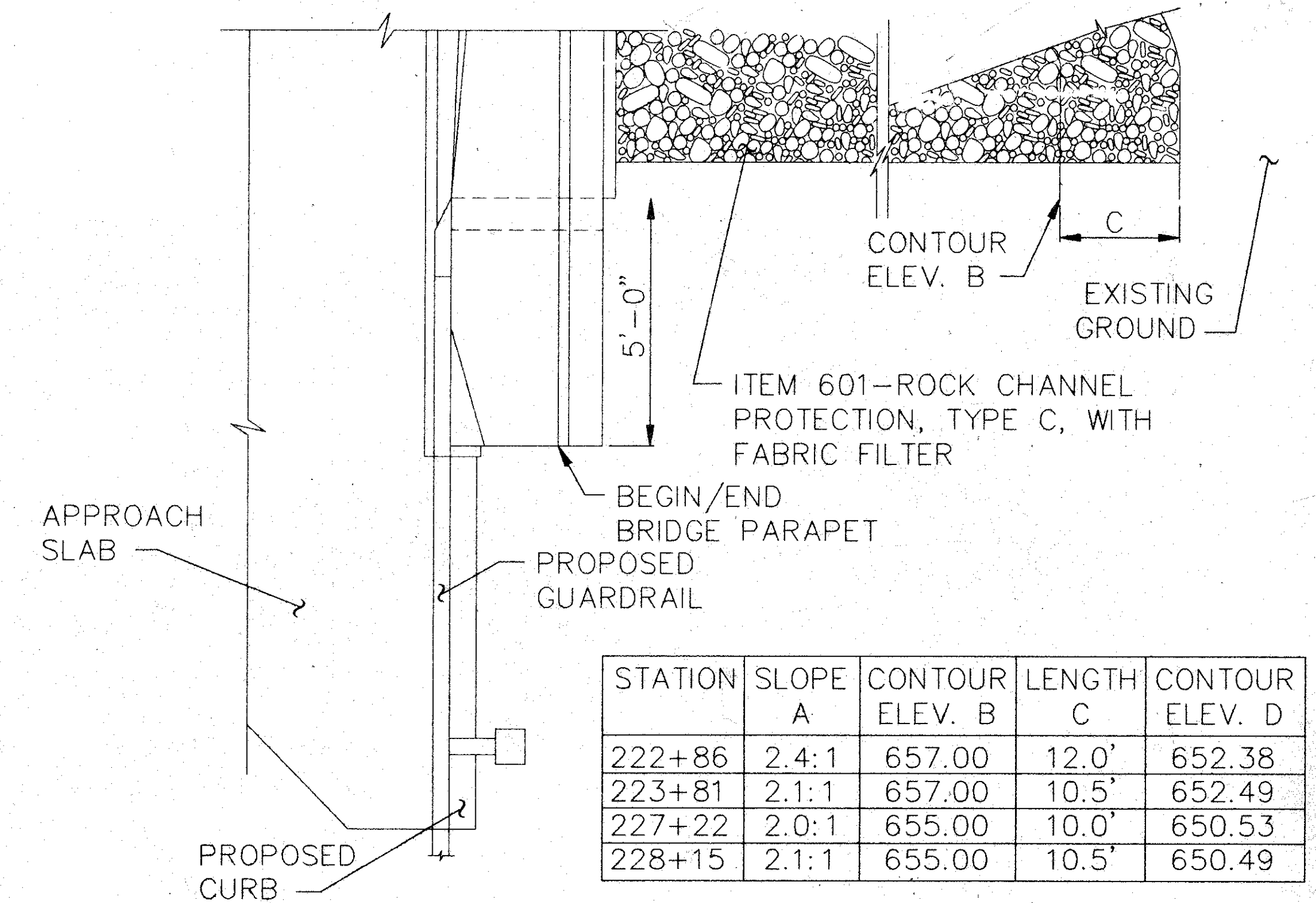
APPROACH SLAB NORMAL SECTION
STA. 223+22.09 TO STA. 223+40

LAK-91-4.23

- ④ ITEM 310 - 6" SUBBASE, TYPE 1, GRADING A, AS PER PLAN
- ⑦ ITEM 203 - EMBANKMENT
- ⑩ ITEM 606 - GUARDRAIL, TYPE 5

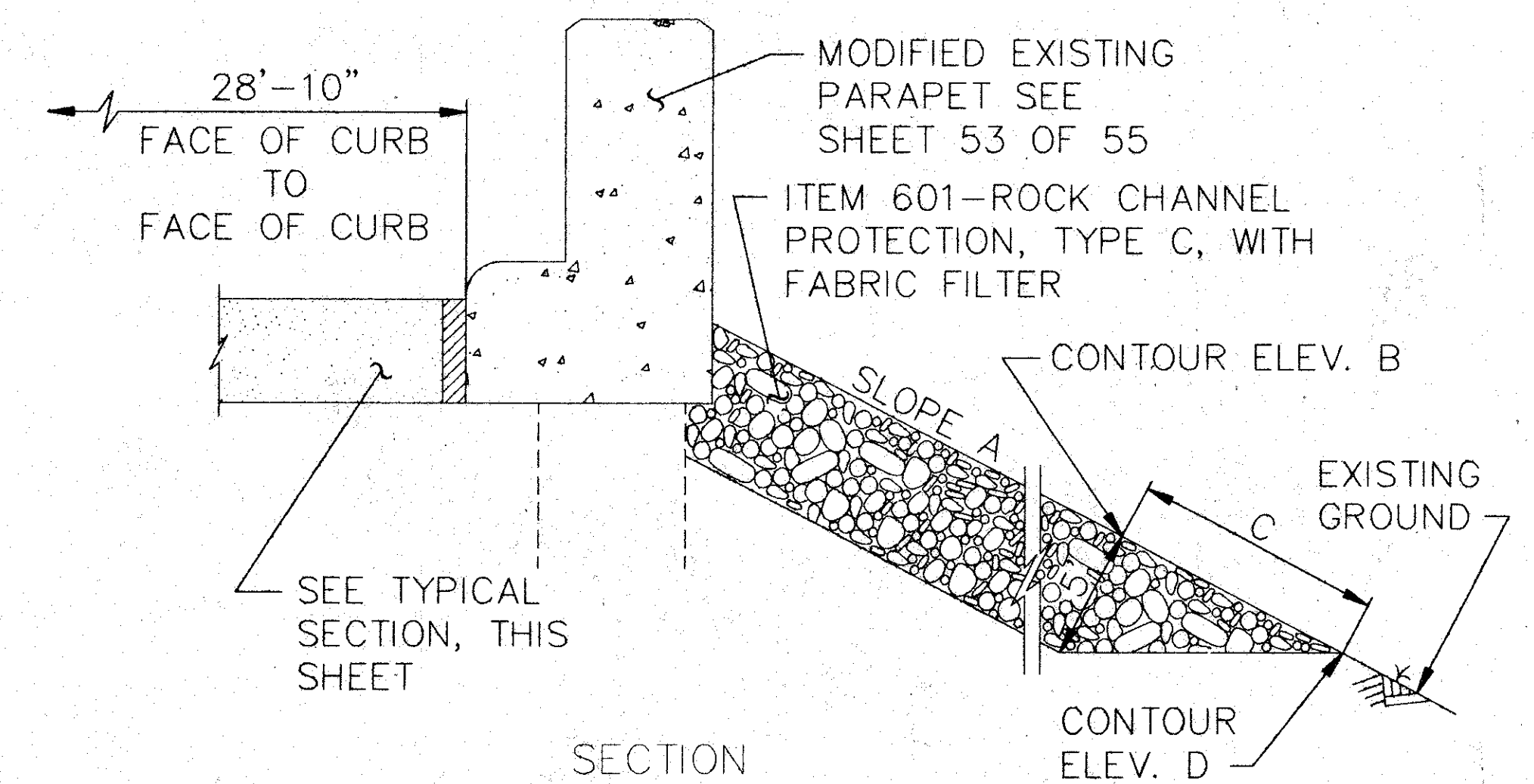
- ⑪ ITEM 659 - SEEDING AND MULCHING
- ⑫ ITEM 203 - SUBGRADE COMPACTION
- ⑬ ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN

LEGEND



| STATION | SLOPE | CONTOUR ELEV. B | LENGTH C | CONTOUR ELEV. D |
|---------|-------|-----------------|----------|-----------------|
| 222+86 | 2.4:1 | 657.00 | 12.0' | 652.38 |
| 223+81 | 2.1:1 | 657.00 | 10.5' | 652.49 |
| 227+22 | 2.0:1 | 655.00 | 10.0' | 650.53 |
| 228+15 | 2.1:1 | 655.00 | 10.5' | 650.49 |

PLAN



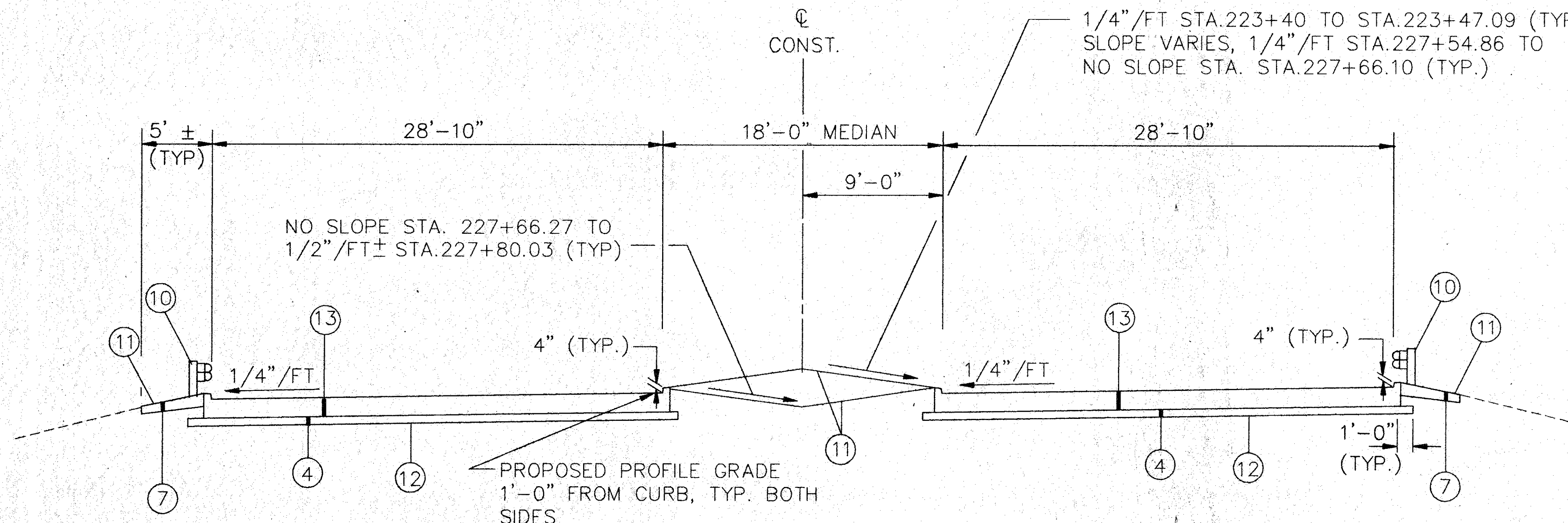
ROCK CHANNEL PROTECTION AT PARAPET DETAIL

SCALE: NONE
 BEGIN STA. 222+86±, 40'-2"± LT. TO 56± LT.
 BEGIN STA. 223+81±, 40'-2"± RT. TO 53± RT.
 END STA. 227+22±, 40'-2"± LT. TO 50± LT.
 END STA. 228+15±, 40'-2"± RT. TO 52± RT.

NOTE: DETAIL IS REVERSED FOR LOCATIONS LEFT OF CENTERLINE

LAK-91-(4.23)(4.49) - TYPICAL SECTIONS & DETAILS

1/4"/FT STA. 223+40 TO STA. 223+47.09 (TYP)
 SLOPE VARIES, 1/4"/FT STA. 227+54.86 TO
 NO SLOPE STA. STA. 227+66.10 (TYP.)



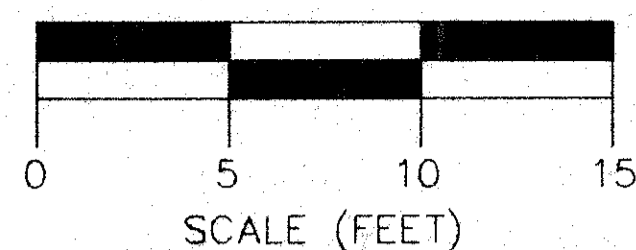
PROPOSED PROFILE GRADE 1'-0" FROM CURB, TYP. BOTH SIDES

APPROACH SLAB SUPERELEVATED SECTION
 STA. 223+40 TO STA. 223+47.09 (TRANSITION)
 STA. 227+54.86 TO STA. 227+79.86

LAK-91-4.23

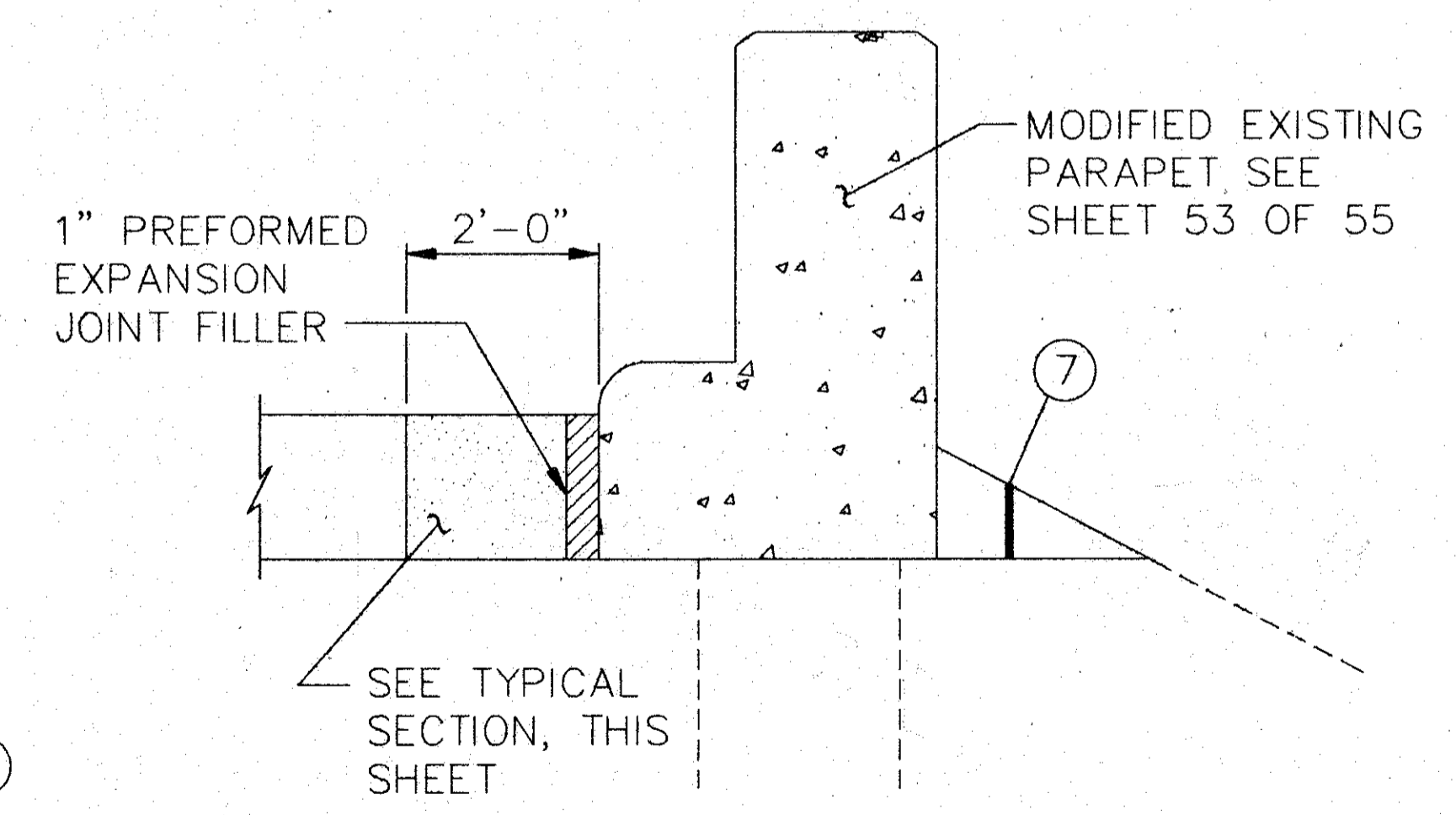
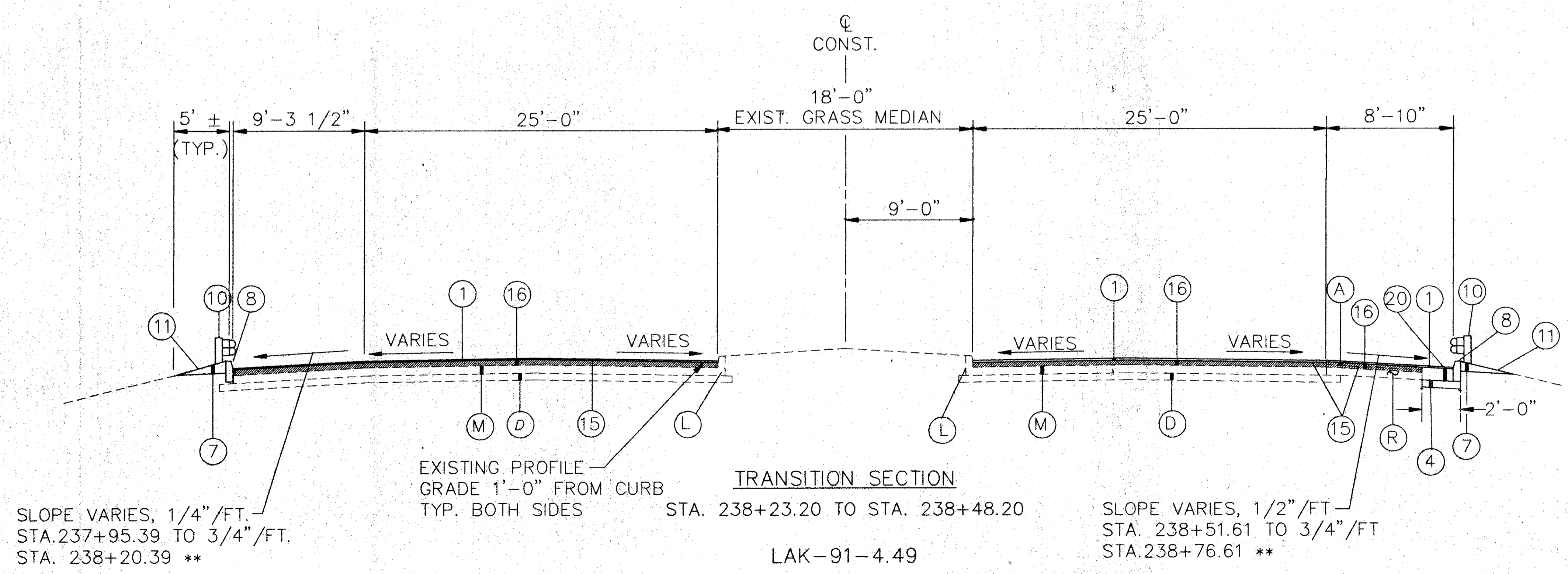
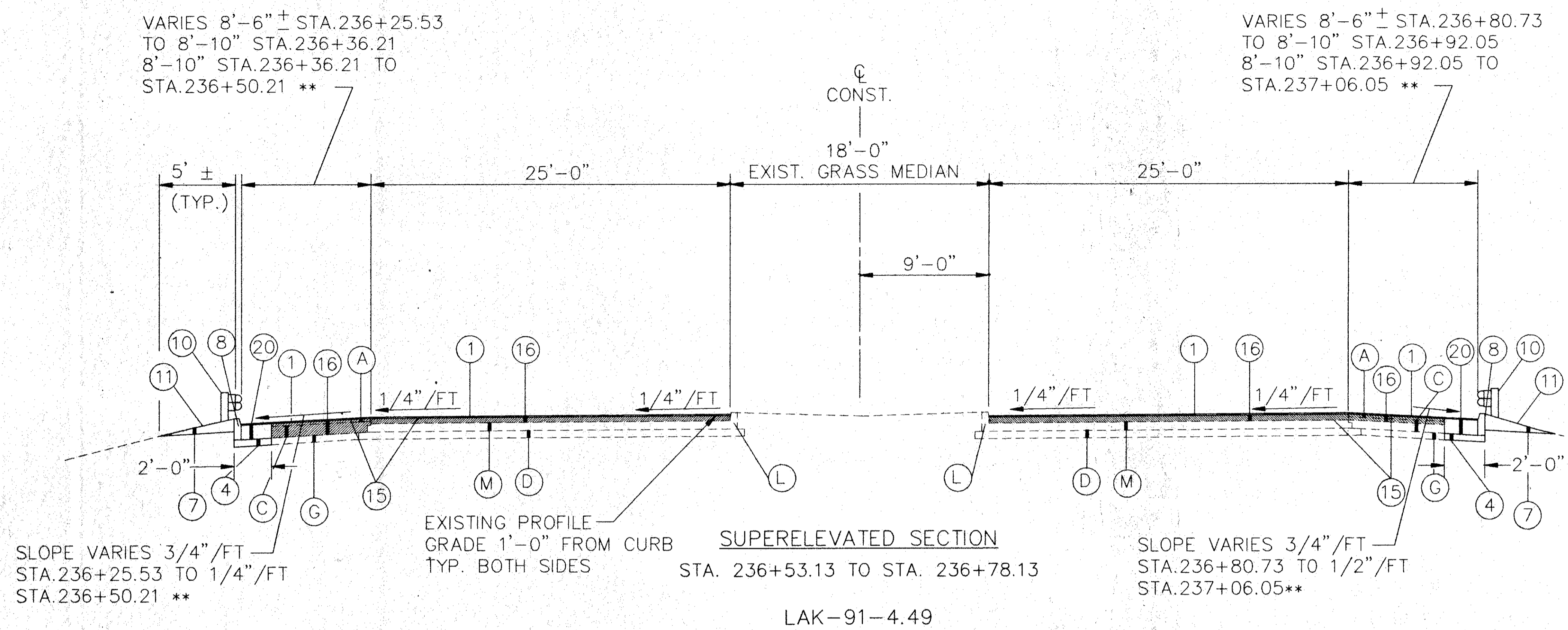
NO SLOPE STA. 227+66.27 TO
 1/2"/FT ± STA. 227+80.03 (TYP)

TYPICAL SECTIONS
TYPE 404



LEGEND

- ① ITEM 404 - 1 1/2" ASPHALT CONCRETE, AC-20
 - ④ ITEM 310 - 6" SUBBASE, TYPE 1, GRADING A, AS PER PLAN
 - ⑦ ITEM 203 - EMBANKMENT
 - ⑧ ITEM 609 - CURB, TYPE 6, AS PER PLAN
 - ⑩ ITEM 606 - GUARDRAIL, TYPE 5 *
 - ⑪ ITEM 659 - SEEDING AND MULCHING
 - ⑮ ITEM 407 - TACK COAT
 - ⑯ ITEM 202 - WEARING COURSE REMOVED (1 1/2" DEPTH)
 - ⑳ ITEM 301 - 9" BITUMINOUS AGGREGATE BASE, AC-20
-
- (A) EXISTING ASPHALT CONCRETE SURFACE COURSE
 - (C) EXISTING BITUMINOUS AGGREGATE BASE
 - (D) EXISTING SUBBASE
 - (G) EXISTING AGGREGATE BASE
 - (L) EXISTING CONCRETE CURB, TYPE 2A
 - (M) EXISTING CONCRETE APPROACH SLAB
 - (Q) EXISTING COMPACTED AGGREGATE
 - (R) EXISTING ASPHALT SHOULDER



TYPICAL SECTION AT PARAPET DETAIL - 4.49
SCALE: NONE

* SEE SHEET 25 AND 26 FOR PROPOSED GUARDRAIL LOCATIONS.
**STATIONING AT OUTSIDE EDGE OF SHOULDER

GENERAL NOTES

| | | | | |
|--------------|-------------|--|---------------|----|
| CALC BY DATE | S.W.G. 2/92 | LAKE COUNTY LAK - 91 - (4.23)(4.49) | OHIO | 8 |
| CHKD BY DATE | T.J.H. 2/92 | | FHWA REGION 5 | 56 |

RIGHT-OF-WAY

ALL WORK SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY AND WORK LIMITS SHOWN IN THE RAILROAD RIGHT-OF-WAY.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY THE PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

STORM SEWERS: CITY OF EASTLAKE
35150 LAKE SHORE BOULEVARD
EASTLAKE, OH 44094
TELEPHONE: 951-1416

STORM & SANITARY SEWERS: CITY OF WILLOUGHBY
ONE PUBLIC SQUARE
WILLOUGHBY, OH 44094
TELEPHONE: 953-4111

WATER LINES: LAKE COUNTY WATER DEPARTMENT
38270 AQUARIUS PARKWAY
WILLOUGHBY, OH 44094
TELEPHONE: 942-8222

ELECTRIC: CLEVELAND ELECTRIC ILLUMINATING CO.
P.O. BOX 5000, ROOM 477
CLEVELAND, OH 44101
TELEPHONE: 622-9800

TELEPHONE: AT&T COMMUNICATIONS
3833 WEYMOUTH ROAD
MEDINA, OH 44256
TELEPHONE: 723-9109

U.S. SPRINT
3065 HARGROVE ROAD
ATLANTA, GA 30339
TELEPHONE: 1-800-521-0579

OHIO BELL TELEPHONE CO.
34 S. ST. CLAIR STREET
PAINESVILLE, OH 44077
TELEPHONE: 352-5827

GAS: EAST OHIO GAS CO.
1201 E. 55TH STREET
CLEVELAND, OH 44103
TELEPHONE: 432-6651

RAILROAD COMMUNICATION: NORFOLK SOUTHERN CORPORATION
99 SPRING STREET, S.W.
ATLANTA, GA 30303
TELEPHONE: (404) 529-1256

THE CONSOLIDATED RAILROAD CORP.
15 NORTH 32ND STREET, ROOM 1200
PHILADELPHIA, PA 19104-2849
TELEPHONE: (215) 596-2923

COOPERATION WITH RAILROADS

SEE SPECIAL CLAUSES IN PROPOSAL

RAILROAD PROTECTIVE LIABILITY INSURANCE

SEE SPECIAL CLAUSES IN PROPOSAL

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES AND/OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THIS PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

ITEM 310 SUBBASE, TYPE 1, GRADING A, AS PER PLAN

MATERIALS FURNISHED FOR THIS ITEM SHALL EXCLUDE ALL SLAG EXCEPT GRANULATED SLAG OR CRUSHED AIR-COOLED BLAST FURNACE SLAG AND

PAVEMENT PASSING THE NO. 4 SIEVE. BROKEN SALVAGED PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE OBTAINED ON THIS PROJECT OR OTHER PROJECTS CONSTRUCTED UNDER ODOT SPECIFICATIONS.

CONNECTIONS BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "BEAM RAIL SPLICE" AS SHOWN ON STANDARD DRAWING GR-1.1. PAYMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE RESPECTIVE GUARDRAIL RUNS.

LOCATION OF GUARDRAIL

THE LOCATIONS OF THE GUARDRAIL RUNS AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO THE FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS SHALL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

GUARDRAIL REPLACEMENT

NO EXISTING GUARDRAIL SHALL BE REMOVED UNTIL THE REQUIRED MAINTENANCE OF TRAFFIC IS IMPLEMENTED. THE REQUIRED MAINTENANCE OF TRAFFIC SHALL NOT BE REMOVED UNTIL THE REPLACEMENT GUARDRAIL IS IN PLACE.

ITEM SPECIAL BERM RESHAPING

BERMS AT LOCATIONS WHERE GUARDRAIL IS REMOVED OR WHERE NEW GUARDRAIL IS TO BE ERRECTED SHALL BE RESHAPED AS DIRECTED BY THE ENGINEER TO INSURE A SMOOTH SURFACE FREE OF ALL IRREGULARITIES. EXCESS EXCAVATION AS THE RESULT OF RESHAPING BERMS SHALL BE DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT FOR RESHAPING BERMS AS DESCRIBED SHALL BE INCLUDED IN THE CONTRACT PRICE BID PER LINEAL FOOT FOR ITEM SPECIAL BERM RESHAPING.

ITEM 607 FENCE, TYPE CL

ALL PROPOSED FENCE LOCATIONS CROSSING DITCHES SHALL USE FENCE CROSSING TYPE 3, AS SHOWN IN STANDARD CONSTRUCTION DRAWING F-6.

ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN

DOWEL BARS (D802) EXTENDING INTO THE EXISTING BACKWALLS OF BRIDGE NO. LAK-91-0423 SHALL BE INSTALLED AS SHOWN IN DETAIL ON SHEET 46. COST FOR THIS WORK SHALL BE INCLUDED IN ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN. THE COST FOR DOWEL BAR HOLES IN THE EXISTING BACKWALLS SHALL BE PAID SEPARATELY UNDER ITEM 510, DOWEL HOLES (SEE SHEET 37 FOR QUANTITY). THE CURB USED ON THE APPROACH SLAB SHALL BE TYPE 4-A AS PER STANDARD CONSTRUCTION DRAWING BP-5.1.

ITEM 609 CURB, TYPE 6, AS PER PLAN

ALL CURB, TYPE 6 USED FOR EROSION CONTROL AT BRIDGES, AS SHOWN IN STANDARD CONSTRUCTION DRAWING MC-7, SHALL HAVE A 4-INCH REVEAL FROM THE TOP OF THE SHOULDER PAVEMENT TO THE TOP OF THE CURB.

GENERAL NOTES

JOINT SEALERS

ALL REFERENCES TO 705.01 OR 705.02, APPEARING ON STANDARD DRAWINGS OR ON THE PLANS, SHALL BE CONSIDERED TO READ 705.04.

ITEM 407 TACK COAT

THE RATE OF APPLICATION OF ITEM 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER, PER 407.05 OF THE SPECIFICATIONS. THE APPLICATION RATE SHALL BE 0.10 GALLONS PER SQUARE YARD FOR ESTIMATING PURPOSES ONLY.

ITEM SPECIAL PRESSURE RELIEF JOINT, TYPE C

ITEM SPECIAL PRESSURE RELIEF JOINT SHALL BE AS PER STANDARD DRAWING BP-2.4, DATED 2-21-92. DRAINS WILL BE PROVIDED BY CONNECTING TO THE EXISTING UNDERDRAINS IN THE MEDIAN AND BY AGGREGATE DRAINS ON THE OUTSIDE SHOULDERS AS PER STD. DRAWINGS BP-3.1 AND BP-2.4 AND 605.05.

ITEM 601 CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN:

THIS ITEM SHALL CONSIST OF THE INSTALLATION OF CRUSHED AGGREGATE SLOPE PROTECTION, ITEM 601.05, AS REQUIRED TO RESTORE THE ABUTMENT SLOPE PROTECTION AT EACH ABUTMENT AT BRIDGE NO. LAK-91-0449 TO ITS ORIGINAL CONDITION. THE CRUSHED AGGREGATE SLOPE PROTECTION SHALL BE INSTALLED AT LOCATIONS WHERE THE ORIGINAL PROTECTION HAS ERODED AWAY AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. PAYMENT QUANTITIES SHALL BE MEASURED IN SQ. YDS.

SEEDING AND MULCHING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE WORK LIMITS, AS SHOWN ON THE PLAN SHEETS. SEE SHEET 49 FOR LOCATIONS.

WATERING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09:

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| ITEM 659 | WATER | 2 M. GAL |
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TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

| | | |
|----------|-----------------------------|----------|
| ITEM 207 | STRAW OR HAY BALES | 50 EACH |
| ITEM 659 | REPAIR SEEDING AND MULCHING | 100 S.Y. |

THESE QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY.

| | | |
|----------|-----------------------|----------|
| ITEM 659 | WATER | 1 M. GAL |
| ITEM 659 | COMMERCIAL FERTILIZER | 0.01 TON |

ITEM 207 - FILTER FABRIC FENCE

MATERIALS

FILTER FABRIC SHALL MEET THE REQUIREMENT OF ITEM 207.02.

CONSTRUCTION

THE BOTTOM OF THE FENCE SHALL BE BURIED 6" BELOW THE GROUND. THE FENCE SHALL BE HIGH ENOUGH TO RETAIN SEDIMENT LADEN WATER AND ADEQUATELY SUPPORTED TO PREVENT COLLAPSE OR BURSTING. THE GROUND ELEVATION OF THE FENCE SHALL BE HELD CONSTANT EXCEPT THAT THE END ELEVATIONS SHALL BE RAISED TO PREVENT FLOW AROUND THE END OF THE FENCE.

MAINTENANCE

THE FILTER FABRIC SHALL, AT THE DIRECTION OF THE ENGINEER, BE MAINTAINED TO BE FUNCTIONAL. THIS SHALL INCLUDE REMOVAL OF TRAPPED SEDIMENT AND REQUIRED CLEANING, REPAIR, AND/OR REPLACEMENT OF THE FILTER FABRIC.

PAYMENT

THE COST OF ALL MATERIALS, CONSTRUCTION, MAINTENANCE AND REMOVAL REQUIRED SHALL BE PAID FOR UNDER ITEM 207 LIN. FT. FILTER FABRIC FENCE.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

| | | |
|----------|---------------------|---------|
| ITEM 207 | FILTER FABRIC FENCE | 300L.F. |
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ITEM 660 REINFORCED SODDING, AS PER PLAN

WORK UNDER THIS ITEM SHALL INCLUDE PROVIDING REINFORCED SODDING FOR EROSION CONTROL AT BRIDGES, PER STANDARD CONSTRUCTION DRAWING MC-7. THIS ITEM SHALL ALSO INCLUDE RESETTING ANY EXISTING FENCE POSTS CONFLICTING WITH THE PROPOSED REINFORCED SODDING AS PER STANDARD CONSTRUCTION DRAWING F-6, FENCE CROSSING TYPE 3.

ITEM 203 LINEAR GRADING

THIS WORK SHALL CONSIST OF PREPARING A SWALE GRADE UNDER BRIDGE NO. LAK-91-0449 FOR DRAINAGE BY EXCAVATING THE EXISTING MATERIAL AS SHOWN ON THE "V" SWALE DETAIL, SHEET 49, OR AS DIRECTED BY THE ENGINEER. COMPACTION SHALL BE CARRIED OUT TO THE SATISFACTION OF THE ENGINEER BY MEANS OF A TRENCH ROLLER, 401.11. AREAS GRADED IN EXCESS OF DEPTHS SPECIFIED OR DIRECTED BY THE ENGINEER SHALL BE BACKFILLED TO DESIRED GRADE USING 203 EMBANKMENT AT THE CONTRACTOR'S EXPENSE. CRUSHED AGGREGATE SLOPE PROTECTION SHALL BE USED IN THE LIMITS INDICATED ON PLAN SHEET 49, TO A DEPTH OF 1 FOOT. LINEAR GRADING OUTSIDE THE SLOPE PROTECTION LIMITS SHALL BE TO A WIDTH OF 5 FEET AND TREATED WITH SEEDING AND MULCHING, UNLESS OTHERWISE INDICATED. ALL OF THE ABOVE WILL BE PAID FOR BY ITEM 203-LINEAR GRADING.

ITEM SPECIAL - LOW STRENGTH MORTAR BACKFILL MATERIAL

UNDER THE ROADWAY ITEM, THIS WORK SHALL CONSIST OF PLUGGING THE EXISTING 21" STORM SEWER FROM SOUTH BASELINE STATION 0+87.5 TO STATION 3+62, RT. WITH CLASS LSM-50 MORTAR. THIS ITEM IS TO CONFORM TO PROPOSAL NOTE No. 62-91.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF THE EXISTING SEWERS WITHIN THE WORK LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTIONS SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE-MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE PERTINENT 603 CONDUIT ITEMS OF THE CONTRACT.

ITEM 604-INLET No 2-A-12, AS PER PLAN

ALL REINFORCING STEEL LISTED IN THE STEEL LIST ON STANDARD CONSTRUCTION DRAWING I-2A SHALL BE EPOXY-COATED IN ACCORDANCE WITH 709.00 AND PLACED AS PER 509.10. ADDITIONAL REQUIRED REINFORCEMENT FOR PRE-CAST "BASE" SECTIONS ARE NOT SUBJECT TO THIS REQUIREMENT

PAVEMENT ELEVATIONS

WHERE NO PROPOSED PAVEMENT ELEVATIONS ARE INDICATED IN THE PLANS, THE PROPOSED ELEVATIONS SHALL MATCH THE EXISTING FIELD ELEVATIONS.

MAINTENANCE OF TRAFFIC NOTES

NOTIFICATION

THE CONTRACTOR SHALL CONDUCT HIS OPERATION AS TO MAKE THE PROPOSED DECK REPAIR WITH A MINIMUM OF HAZARD, DELAY AND INCONVENIENCE TO THE MOTORISTS USING THE HIGHWAY AFFECTED BY THE WORK BEING DONE UNDER THIS CONTRACT. THROUGH TRAFFIC LANES OF 12 FEET MINIMUM EFFECTIVE WIDTH SHALL BE MAINTAINED AT ALL TIMES.

THE CITIES OF EASTLAKE AND WILLOUGHBY POLICE, FIRE AND SERVICE DEPARTMENTS SHALL BE NOTIFIED AT LEAST ONE (1) WEEK PRIOR TO THE ACTUAL START OF CONSTRUCTION BY THE CONTRACTOR.

CITY OF EASTLAKE:

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|--------------------|----------|
| POLICE DEPARTMENT | 951-1400 |
| FIRE DEPARTMENT | 951-2135 |
| SERVICE DEPARTMENT | 951-1416 |

CITY OF WILLOUGHBY:

| | |
|--------------------|----------|
| POLICE DEPARTMENT | 953-4212 |
| FIRE DEPARTMENT | 953-4348 |
| SERVICE DEPARTMENT | 953-4111 |

SYSTEM FOR MAINTAINING TRAFFIC

WHENEVER ANY TRAVELED SURFACE IS BEING WORKED ON OR OTHERWISE NOT SUITABLE FOR SAFE AND CONVENIENT USE BY VEHICLES, TRAFFIC CONTROL DEVICES SUFFICIENT TO PROTECT SUCH AREAS AND TO ASSURE THE SAFE PASSAGE OF VEHICULAR TRAFFIC SHALL BE INSTALLED AND MAINTAINED. SUCH TRAFFIC CONTROL DEVICES AND THE MANNER IN WHICH THEY ARE USED SHALL BE CONSISTENT WITH THESE PLANS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. THE TRAFFIC CONTROL DEVICE SYSTEM CONTAINED HEREIN SHALL CONSTITUTE THE MINIMUM PROVISIONS FOR TRAFFIC CONTROL FOR EACH PARTICULAR SITUATION. WHENEVER THE ENGINEER DEEMS IT NECESSARY, HE MAY DIRECT THAT ADDITIONAL OR ALTERNATIVE DEVICES BE USED. ALSO, THE CONTRACTOR SHALL PROVIDE SUFFICIENT ADDITIONAL BARRICADES, ETC. TO PROTECT THE FRESH CONCRETE DURING THE CURING PERIOD FROM ANY VEHICLES WHICH DRIVE AROUND OR THROUGH THE TRAFFIC CONTROL.

TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION, AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER. WHERE OPERATIONS ARE PERFORMED IN PHASES, THERE SHALL BE IN PLACE ONLY THOSE DEVICES THAT APPLY TO THE CONDITION PRESENT DURING THE PHASE IN PROGRESS. ALL SIGNS WITH MESSAGES WHICH DO NOT APPLY DURING A CERTAIN PERIOD SHALL BE COVERED OR SET ASIDE OUT OF THE VIEW OF TRAFFIC.

ADVANCE WARNING SIGNS

ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHENEVER THEY ARE NOT APPLICABLE.

RESTRICTIONS

NO TRAFFIC LANE CLOSURES EXCEPT AS SHOWN ON MAINTENANCE OF TRAFFIC PLANS OR AS INDICATED HEREIN SHALL BE ALLOWED.

THE CONTRACTOR SHALL NOT ROUTE OR DIRECT TRAFFIC ON BOTH SIDES OF A LANE CLOSURE.

THE CONTRACTOR SHALL FURNISH, ERECT, MAINTAIN AND REMOVE ALL SIGNS AND ROADWAY MARKINGS REQUIRED FOR MAINTENANCE OF TRAFFIC DURING CONSTRUCTION AS SHOWN ON THESE PLANS.

NO STOPPAGE OF TRAFFIC OR ESTABLISHMENT OF LANE RESTRICTIONS SHALL OCCUR WITHOUT LAW ENFORCEMENT PERSONNEL AT EACH LOCATION TO DIRECT TRAFFIC.

CONDITIONS

DURING ALL PARTS OF THIS PROJECT, SIGNING, TEMPORARY PAVEMENT MARKINGS, ETC., SHALL BE LOCATED AS INDICATED ON SHEETS NUMBERED 13 THROUGH 16. THE NUMBER OF LANES AND THE MINIMUM LANE WIDTHS MAINTAINED SHALL BE AS INDICATED ON THE MAINTENANCE OF TRAFFIC SHEETS.

ITEM 614 MAINTAINING TRAFFIC

THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 614 MAINTAINING TRAFFIC. TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT, TEMPORARY PAVEMENT AND THE COMPLETED PAVEMENT. IN ADDITION TO THE REQUIREMENTS OF ITEM 614, THE FOLLOWING SPECIFIC PROVISIONS SHALL APPLY:

1. THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO INTERSECTING STREETS AT ALL TIMES DURING CONSTRUCTION.
2. ALL SIGNS, DRUMS, TRAFFIC CONTROL DEVICES AND TEMPORARY PAVEMENT MARKINGS SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (OMUTCD), MAINTAINING TRAFFIC STANDARD CONSTRUCTION DRAWINGS, THE MAINTENANCE OF TRAFFIC PLANS, AND ITEM 614.
3. TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS ARE TO BE INSTALLED OR REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.
4. MAINTENANCE OF TRAFFIC FOR CONSTRUCTING ITEM 615 TEMPORARY PAVEMENT AND ITEM 615 TEMPORARY ROADS SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING MT-95.30, WITH THE EXCEPTION THAT THE ADVANCE WARNING SIGNS SHALL BE PLACED AS INDICATED IN THE MAINTENANCE OF TRAFFIC PLANS. THE APPLICABLE SPEED LIMIT SHALL BE 35 MPH.
5. THE COST OF PLACEMENT OF TEMPORARY LOOP DETECTOR AT STA. 239+95 IS TO BE COVERED UNDER ITEM 614 MAINTAINING TRAFFIC. THE APPLICABLE CONNECTIONS/DISCONNECTIONS ARE TO OCCUR AT THE PULL BOX SO THAT THE TEMPORARY LOOP DETECTOR WILL REPLACE THE EXISTING LOOP DETECTORS IN THE CURRENT SOUTHBOUND LEFT TURN LANE DURING PHASE I OF CONSTRUCTION. AT THE END OF PHASE I, THE TEMPORARY LOOP DETECTOR IS TO BE DISCONNECTED AT THE PULL BOX AND THE EXISTING LEFT TURN LOOP DETECTORS RECONNECTED TO ACHIEVE NORMAL, PRECONSTRUCTION SIGNAL OPERATION. THE CONTRACTOR IS TO TAKE CARE TO NOT DAMAGE THE EXISTING LOOP DETECTORS OR LEAD WIRES TO THE PULL BOXES DURING PAVEMENT SAWING.

6. ADJUSTMENT OF EXISTING TRAFFIC SIGNAL HEADS MAY BE REQUIRED DUE TO THE REALIGNMENT OF THE TRAVELED LANES FOR MAINTENANCE OF TRAFFIC. THE TRAFFIC SIGNAL HEADS REQUIRING ADJUSTMENT, IF ANY, SHALL BE AT THE DISCRETION OF THE ENGINEER. THE COST FOR ADJUSTING THE TRAFFIC SIGNAL HEADS SHALL BE PAID FOR UNDER ITEM 614 MAINTAINING TRAFFIC.

7. THE CONTRACTOR SHALL ESTABLISH MAINTENANCE OF TRAFFIC OF LAKELAND BLVD. WHILE PERFORMING CONSTRUCTION TASKS UNDER BRIDGE NO. LAK - 91 - 0449. THE MAINTENANCE OF TRAFFIC PROVIDED SHALL BE SUBJECT TO THE APPROVAL OF ENGINEER.

8. FAILURE TO COMPLY

IF THE CONTRACTOR FAILS TO COMPLY WITH THE PROVISIONS OF TRAFFIC CONTROL AS SET FORTH IN THESE PLANS AND PROVISIONS OF THE OMUTCD AND THE FAILURE RESULTS IN A CONDITION AT THE WORK SITE WHICH IS UNSAFE FOR TRAFFIC, THE ENGINEER SHALL SUSPEND WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS.

9. TEMPORARY LANE CLOSURES OR LANE WIDTH REDUCTION

A MINIMUM OF TWO 12-FOOT LANES (1 LANE IN EACH DIRECTION) SHALL BE OPEN TO TRAFFIC AT ALL TIMES EXCEPT TO IMPLEMENT MAINTENANCE OF TRAFFIC PHASE WORK. THE CONTRACTOR SHALL ONLY INSTITUTE SUCH PHASE WORK CLOSURE OR WIDTH REDUCTION ON SATURDAY OR SUNDAY, WEEKENDS OR AS APPROVED BY THE ENGINEER.

10. TEMPORARY TRAFFIC MARKINGS

TEMPORARY PAVEMENT MARKINGS AND TEMPORARY BARRIER REFLECTORS SHALL BE PROVIDED FOR EACH STAGE OF CONSTRUCTION, WITHIN THE LIMITS SHOWN ON THE PLANS.

11. FLASHING ARROW REQUIREMENT

WHENEVER ANY PART OF THE HIGHWAY SURFACE IS CLOSED, MOTORISTS SHALL BE WARNED AND DIRECTED BY THE CONTRACTOR THROUGH THE USE OF ONE FLASHING ARROW PANEL FOR EACH LANE CLOSED. THE FLASHING ARROW PANELS SHALL BE TYPE A AND SHALL CONFORM TO THOSE PROVISIONS SET FORTH IN THE OMUTCD AND STANDARD DRAWING TC-35.10.

12. SIGNS

SIGN DIMENSION AND SPECIFICATIONS, INCLUDING LETTER SIZES SHALL BE AS PROVIDED IN THE MANUAL, OR IN SIGN DESIGN DRAWINGS PROVIDED BY THE DEPARTMENT OF TRANSPORTATION. THE SIGNS SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER PRIOR TO THE START OF THE PROJECT.

13. SIGN SUPPORTS

SIGN SUPPORTS SHALL BE OF SUFFICIENT SIZES AND HEIGHT TO SUPPORT THE SIGNS AT THE HEIGHT INDICATED IN THE MANUAL. SUPPORTS SHALL ALSO BE ADEQUATE IN MASS AND STABILITY TO PREVENT SIGNS FROM BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE.

14. DRUMS

DRUMS SHALL BE LOCATED AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS.

MAINTENANCE OF TRAFFIC NOTES

15. WORK ZONE PAVEMENT MARKINGS

PAVEMENT MARKINGS SHALL BE OF THE TYPE AND LOCATION AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS, AND SHALL BE IN ACCORDANCE WITH STANDARD DRAWING MT-99.10.

QUANTITIES FOR WORK ZONE PAVEMENT MARKINGS ARE SHOWN IN A TABLE ON SHEET 17. METHOD OF MEASUREMENT AND BASIS OF PAYMENT FOR THESE ITEMS ARE GIVEN IN STANDARD CONSTRUCTION DRAWING MT-99.10.

ALL WORK AND COSTS FOR INSTALLING, MAINTAINING, AND SUBSEQUENT REMOVAL OF ITEMS REQUIRED FOR THE ABOVE MENTIONED MAINTENANCE OF TRAFFIC WORK, UNLESS PAID FOR SEPARATELY, INCLUDING DRUMS, SIGNS, SIGN SUPPORTS, ETC., SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR ITEM 614 MAINTAINING TRAFFIC.

ITEM 614 MAINTAINING TRAFFIC LUMP SUM

DUST CONTROL

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR APPLICATION FOR PREVENTION OR ALLEVIATION OF DUST:

ITEM 616 WATER 50 M. GAL.
ITEM 616 CALCIUM CHLORIDE 10 TONS

ITEM 615 TEMPORARY PAVEMENT

ON THIS PROJECT, THE TEMPORARY CLASS A PAVEMENT SHALL BE 18 FEET WIDE. THE ALIGNMENT AND PAVEMENT SECTION SHALL BE AS DETAILED ON THE ASSOCIATED MAINTENANCE OF TRAFFIC PLAN SHEETS AND AS DESCRIBED UNDER ITEM 615 TEMPORARY PAVEMENT IN THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED IN CONSTRUCTING THE TEMPORARY CLASS A PAVEMENT.

ITEM 615 TEMPORARY PAVEMENT, CLASS A 2788 SQ. YD.

ITEM 615 TEMPORARY ROAD

ALTHOUGH ESTIMATES FOR TEMPORARY EXCAVATION AND EMBANKMENT, REMOVING AND REPLACING CONCRETE CURB, TYPE 6, AND SEEDING AND MULCHING HAVE BEEN SHOWN ON PLAN SHEET 17 THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED WITH, PAYMENT FOR ITEM 615 TEMPORARY ROADS.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED DURING CONSTRUCTION.

ITEM 615 TEMPORARY ROAD LUMP SUM

ITEM 604 CATCH BASIN, NO.6, AS PER PLAN

WORK PERFORMED UNDER THIS ITEM SHALL INCLUDE REMOVAL OF THE TWO EXISTING PAVED SHOULDER INLETS AT STA. 219+00, LT. AND RT. REMOVAL OF THE EXISTING CATCH BASIN AT STA. 232+00, CENTERLINE AND INSTALLATION OF A CATCH BASIN, NO. 6 AT THE SAME LOCATIONS. THE REPLACEMENT CATCH BASIN, NO. 6 SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING CB-6. PRIOR TO BEGINNING REMOVAL OF THE EXISTING INLETS AND CATCH BASIN, THE CONTRACTOR SHALL OBTAIN APPROPRIATE ELEVATIONS OF THE GUTTER OR RIM HEIGHTS AND ALL INVERT ELEVATIONS IN ORDER TO MATCH THESE ELEVATIONS WITH THE REPLACEMENT CATCH BASINS. CONSTRUCTION WILL COINCIDE WITH THE PLACEMENT OF ITEM 615 TEMPORARY PAVEMENT. ANY ADDITIONAL BACKFILL OR CONDUIT REQUIRED WILL BE PAID UNDER ITEM 604 CATCH BASIN, NO. 6; AS PER PLAN. AFTER COMPLETION OF THE PHASED WORK, CATCH BASINS, NO. 6 AT STA. 219+00, LT. AND RT. SHALL BE RESTORED TO THE ORIGINAL INLET, NO. 2-A-8, AS PER STD. CONSTRUCTION DRAWING I-2A. THE EXISTING INLET CASTINGS SHALL BE SALVAGED FOR USE ON THE REPLACEMENT INLETS. THE CATCH BASIN, NO. 6 AT STA. 232+00 SHALL BE REPLACED WITH A CATCH BASIN, TYPE 2-2B AS PER STANDARD CONSTRUCTION DRAWING CB-2-2-A&B.

ITEM 604 CATCH BASIN, NO. 6, AS PER PLAN 3 EACH

ITEM 202 INLET ABANDONED, AS PER PLAN

WORK PERFORMED UNDER THIS ITEM WILL INCLUDE ABANDONMENT OF THE PAVED SHOULDER INLET AT STA. 232+00, RT. THIS ITEM WILL COINCIDE WITH THE PLACEMENT OF ITEM 615 TEMPORARY PAVEMENT. AFTER COMPLETION OF THE PHASED WORK, AN ORIGINAL TYPE INLET, NO. 2-A-8, AS PER STANDARD CONSTRUCTION DRAWING I-2A, SHALL BE PLACED AT STA. 232+00, RT. TO FUNCTION AS IN PRECONSTRUCTION CONDITIONS. THE EXISTING CASTING SHALL BE SALVAGED FOR USE ON THE REPLACEMENT INLET.

ITEM 202 INLET ABANDONED, AS PER PLAN 1 EACH

ITEM 622 PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING, AND SUBSEQUENTLY REMOVING TEMPORARY PRECAST CONCRETE BARRIER SECTIONS.

THE COST OF FURNISHING, INSTALLING AND REMOVING TEMPORARY HARDWOOD OR CONCRETE BLOCKING AND ASPHALT ROLL ROOFING REQUIRED FOR THE INSTALLATION OF PORTABLE CONCRETE BARRIERS ON THE BRIDGE DECK SHALL BE INCLUDED WITH THE PAYMENT FOR ITEM 622 PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN.

THE TEMPORARY PRECAST CONCRETE BARRIER SECTIONS (10 FEET LONG) NECESSARY TO PERFORM THIS ITEM OF WORK SHALL BE SUPPLIED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LOADING, UNLOADING AND TRANSPORTATION OF THE BARRIER SECTIONS.

THE FOLLOWING GUIDELINES APPLY TO THE USE OF TEMPORARY PRECAST CONCRETE BARRIERS TO SEPARATE BRIDGE WORK AREAS FROM THRU TRAFFIC:

ROADWAY (APPROACHES TO BRIDGE WORK AREAS) - THE STANDARD BARRIER AS SHOWN ON STD. DWG. MC-9.2 APPLIES TO ALL ROADWAY BARRIERS. THE BARRIER SECTIONS SHALL BE PINNED TOGETHER. PAYMENT SHALL BE INCLUDED UNDER ITEM 622 PORTABLE CONCRETE BARRIER.

THE FOLLOWING "STRUCTURE" BARRIERS APPLY TO THE BARRIERS PLACED ON THE APPROACH SLABS AND BRIDGES.

STRUCTURE (BRIDGE OVERLAY OR RAILING FACING) - THE STANDARD BARRIER AS SHOWN ON STD. DWG. MC-9.2 APPLIES. SEE NOTES AND DETAILS ON SHEET 55 REGARDING SPECIAL DECK SURFACE PREPARATION. BOLTED END CONNECTIONS AND JOINT BLOCKING. ANCHORING OF THE BARRIER SECTIONS TO THE BRIDGE DECK SHALL NOT BE REQUIRED AND THEREFORE THE REQUIREMENTS TO ANCHOR THE BARRIER SECTIONS SHALL BE WAIVED. PAYMENT SHALL BE INCLUDED UNDER ITEM 622 PORTABLE CONCRETE BARRIER 32", BRIDGE MOUNTED, AS PER PLAN.

SEE SHEET 17 FOR TABULATION AND ESTIMATED QUANTITIES.

LAW ENFORCEMENT OFFICER WITH PATROL CAR

THE CONTRACTOR SHALL PROVIDE AND PAY ALL COST FOR THE SERVICES OF LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR THE EXCLUSIVE PURPOSE OF CONTROLLING TRAFFIC WHENEVER A CHANGE IN THE TRAFFIC PATTERN TAKES PLACE. THE NUMBER OF OFFICERS AND CARS REQUIRED FOR THIS PURPOSE SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE OFFICERS SHALL MOVE THEIR PATROL CARS AS NECESSARY TO INSURE THEIR CONSTANT PRESENCE AT THE POINT(S) OF SLOW DOWN, STOPPAGE OR BACK-UP. PAYMENT FOR THE ABOVE WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL LAW ENFORCEMENT OFFICER WITH PATROL CAR.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS REGARDING SCHEDULING AND PAYMENT OF LAW ENFORCEMENT OFFICER WITH PATROL CAR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614 LAW ENFORCEMENT OFFICER WITH PATROL CAR 24 HRS.

MAINTENANCE OF TRAFFIC NOTES

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|--------------|----------------|--|---------------|----|
| CALC BY DATE | S.W.G. 2/92 | LAKE COUNTY LAK - 91 - (4.23)(4.49) | OHIO | 12 |
| CHKD BY DATE | T.J.H. 2/92 | | FHWA REGION 5 | 56 |

BARRIER REFLECTORS

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING AND MAINTAINING BARRIER REFLECTORS ON PORTABLE CONCRETE BARRIER SECTIONS USED IN WORK ZONES. THE LOCATION, COLOR, AND TYPE SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 802. THE SPACING WILL BE HALF THE DISTANCE INDICATED IN SUPPLEMENTAL SPECIFICATION 802.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR BARRIER REFLECTORS.

ITEM 614 BARRIER REFLECTOR, TYPE B 35 EACH

BARRIER REFLECTORS MOUNTED ON THE BRIDGE PARAPETS AFTER COMPLETION SHALL CONFORM AND BE MOUNTED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 802.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR BARRIER REFLECTORS.

ITEM 802 BARRIER REFLECTOR, TYPE B 18 EACH

REMOVAL OF PAVEMENT MARKINGS

THIS ITEM SHALL CONSIST OF REMOVING EXISTING PAVEMENT MARKINGS AS INDICATED IN THE MAINTENANCE OF TRAFFIC PLANS, SUB-SUMMARY FOR REMOVAL OF PAVEMENT MARKINGS (SEE SHEET NO. 17). THE MARKINGS SHALL BE REMOVED ACCORDING TO SECTION 641.10 OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS.

SEE SHEET 17 FOR THE ESTIMATED QUANTITY.

FINAL PAVEMENT MARKING

WHEN THE ROADWAY AND BRIDGE DECK OVERLAY AND RAILING FACING ARE COMPLETE, THE CONTRACTOR SHALL PROVIDE FINAL PAVEMENT MARKINGS WITHIN THE WORK LIMITS. REFER TO THE PAVEMENT MARKINGS SUB-SUMMARY, SHEET 17, FOR STATIONING.

EDGE LINES, AS REQUIRED ON THE INSIDE (YELLOW EDGE LINES) AND OUTSIDE (WHITE EDGE LINE) TRAVEL LANES, SHALL MATCH THE EXISTING LANE WIDTH BEYOND THE WORK LIMITS.

THE FINAL LOCATION AND LENGTH OF PAVEMENT MARKINGS ARE SUBJECT TO APPROVAL BY THE ENGINEER.

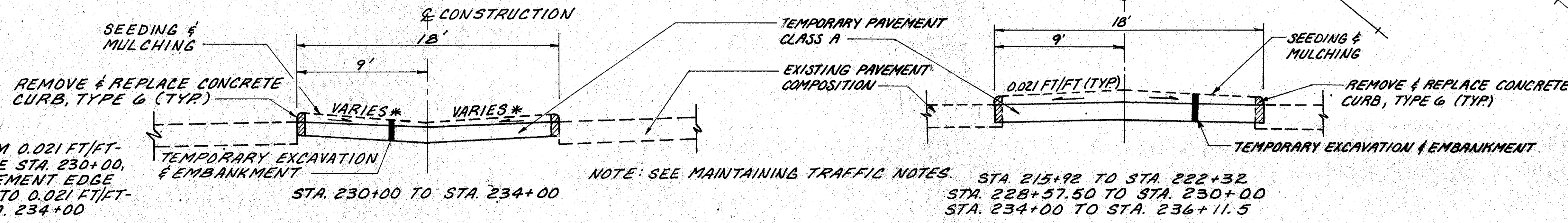
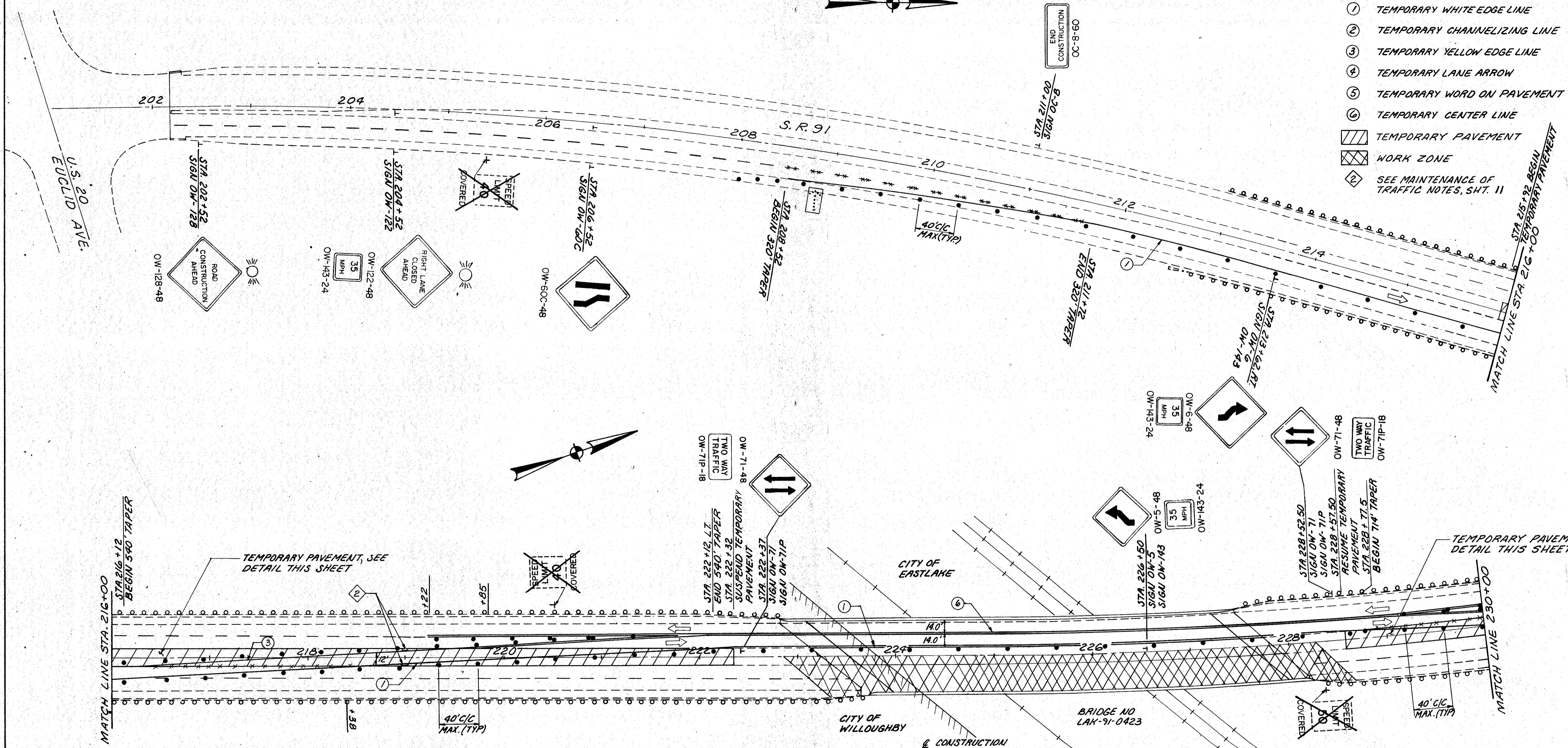
SEE SHEET 17 FOR THE ESTIMATED QUANTITIES.

PROTECTION OF PUBLIC

WHENEVER ANY WORK IS BEING DONE DIRECTLY OVER A TRAVELED LANE OR SHOULDER THE CONTRACTOR SHALL SUPPLY SUFFICIENT SAFETY EQUIPMENT AS APPROVED BY THE ENGINEER TO PROTECT THE TRAVELING PUBLIC FROM ANY CONSTRUCTION DEBRIS. IF TRAVELED LANES UNDER STRUCTURES ARE TO BE CLOSED FOR REASONS OF SAFETY, METHOD AND TIME OF CLOSURE MUST BE APPROVED PRIOR TO IMPLEMENTATION. PERSONAL CARS SHALL NOT BE PARKED WITHIN THE RIGHT-OF-WAY. PAYMENT FOR THIS WORK, INCLUDING ALL MATERIALS, LABOR AND EQUIPMENT, SHALL BE INCLUDED IN ITEM 614 MAINTAINING TRAFFIC.

LEGEND

- ① TEMPORARY WHITE EDGE LINE
- ② TEMPORARY CHANNELIZING LINE
- ③ TEMPORARY YELLOW EDGE LINE
- ④ TEMPORARY LANE ARROW
- ⑤ TEMPORARY WORD ON PAVEMENT
- ⑥ TEMPORARY CENTER LINE
- ▨ TEMPORARY PAVEMENT
- ▩ WORK ZONE
- ② SEE MAINTENANCE OF TRAFFIC NOTES, SHT. 11



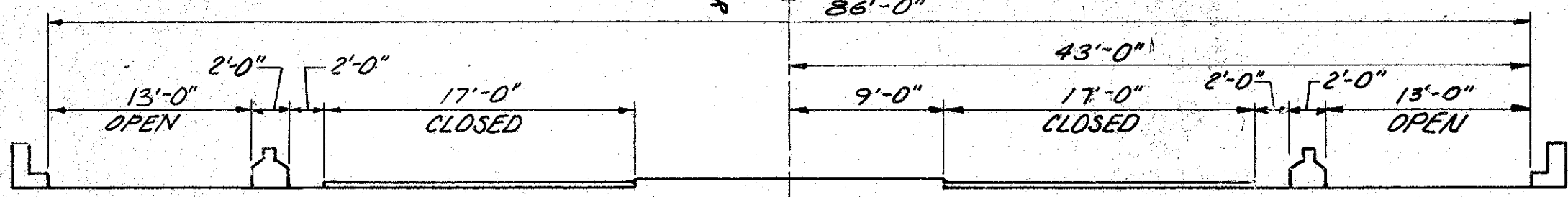
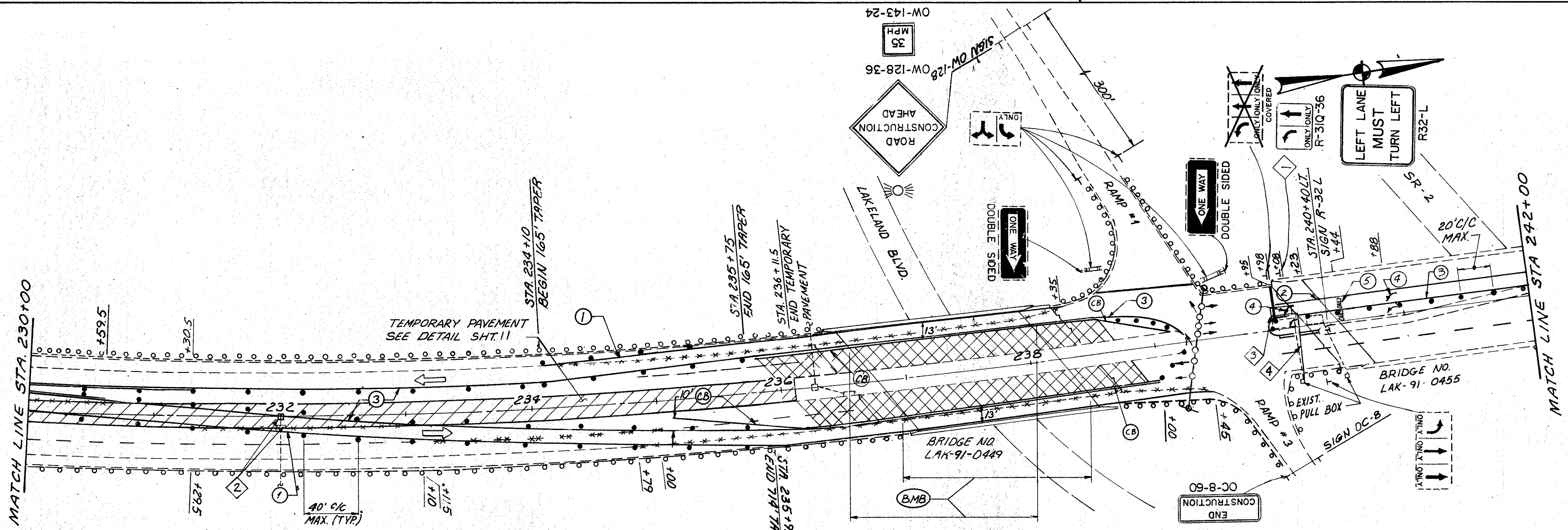
* SLOPE VARIES FROM 0.021 FT/FT-
TO PAVEMENT EDGE STA. 230+00,
TO 0.021 FT/FT- PAVEMENT EDGE
TO E, STA. 232+00, TO 0.021 FT/FT-
TO PAVEMENT, STA. 234+00

NOTE: SEE MAINTAINING TRAFFIC NOTES. STA. 215+92 TO STA. 222+32
STA. 228+57.50 TO STA. 230+00
STA. 234+00 TO STA. 236+11.5

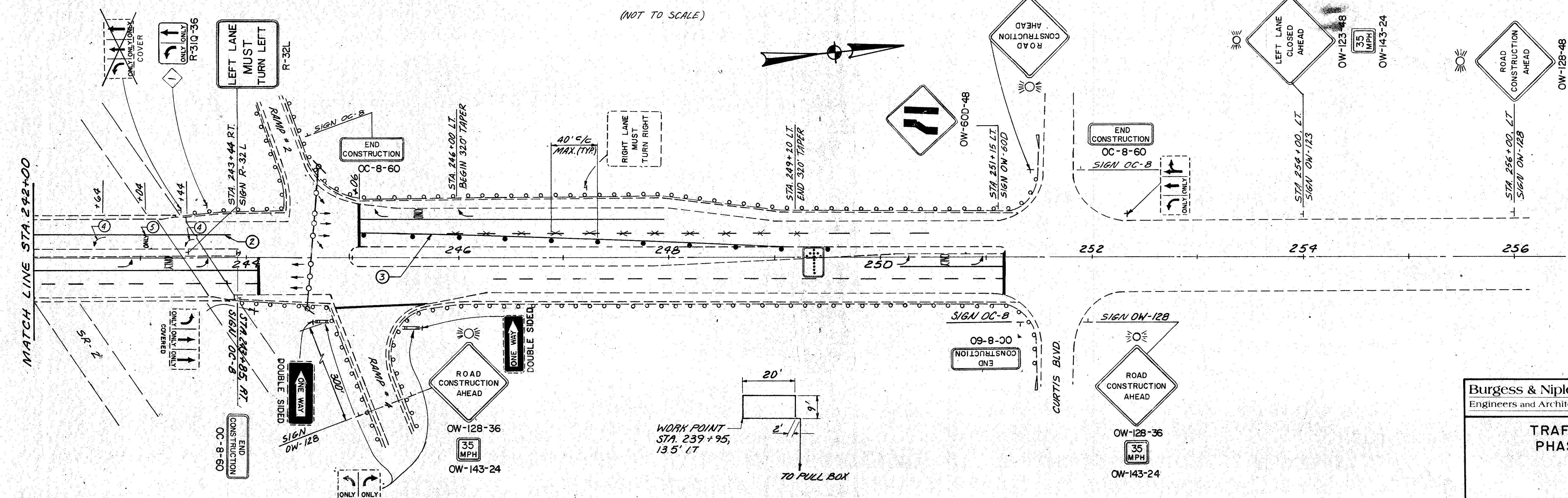
Burgess & Niple, Limited **bn**
Engineers and Architects

**TRAFFIC CONTROL
PHASE I**

| | | | | | |
|----------|-------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| | | | | | |



- LEGEND**
- ① TEMPORARY WHITE EDGE LINE
 - ② TEMPORARY CHANNELIZING LINE
 - ③ TEMPORARY YELLOW EDGE LINE
 - ④ TEMPORARY LANE ARROW
 - ⑤ TEMPORARY WORD ON PAVEMENT
 - Ⓞ PORTABLE CONCRETE BARRIER
 - ▨ TEMPORARY PAVEMENT
 - ▩ WORK ZONE
 - Ⓜ ITEM 622 PORTABLE CONCRETE BARRIER, 32" BRIDGE MOUNTED, AS PER PLAN.
- ① ERECT R-31Q-36 REGULATORY SIGN BEFORE BEGINNING OF CONSTRUCTION PHASE I SIGN TO BE REMOVED UPON COMPLETION OF CONSTRUCTION PHASE I
 - ② SEE MAINTENANCE OF TRAFFIC NOTES ITEM 604, SHT. 11 AND TEMPORARY PAVEMENT DETAILS SHT. 13
 - ③ TEMPORARY LOOP DETECTOR TO BE PAID FOR UNDER ITEM 614-MAINTAINING TRAFFIC. SEE MAINTENANCE OF TRAFFIC NOTES, SHT. 10
 - ④ SEE TEMPORARY LOOP DETECTOR DETAIL, THIS SHEET
- NOTE: SEE PORTABLE CONCRETE BARRIER SUB-SUMMARY SHT. 17, FOR STATION LIMITS OF ALL PORTABLE CONCRETE BARRIERS.



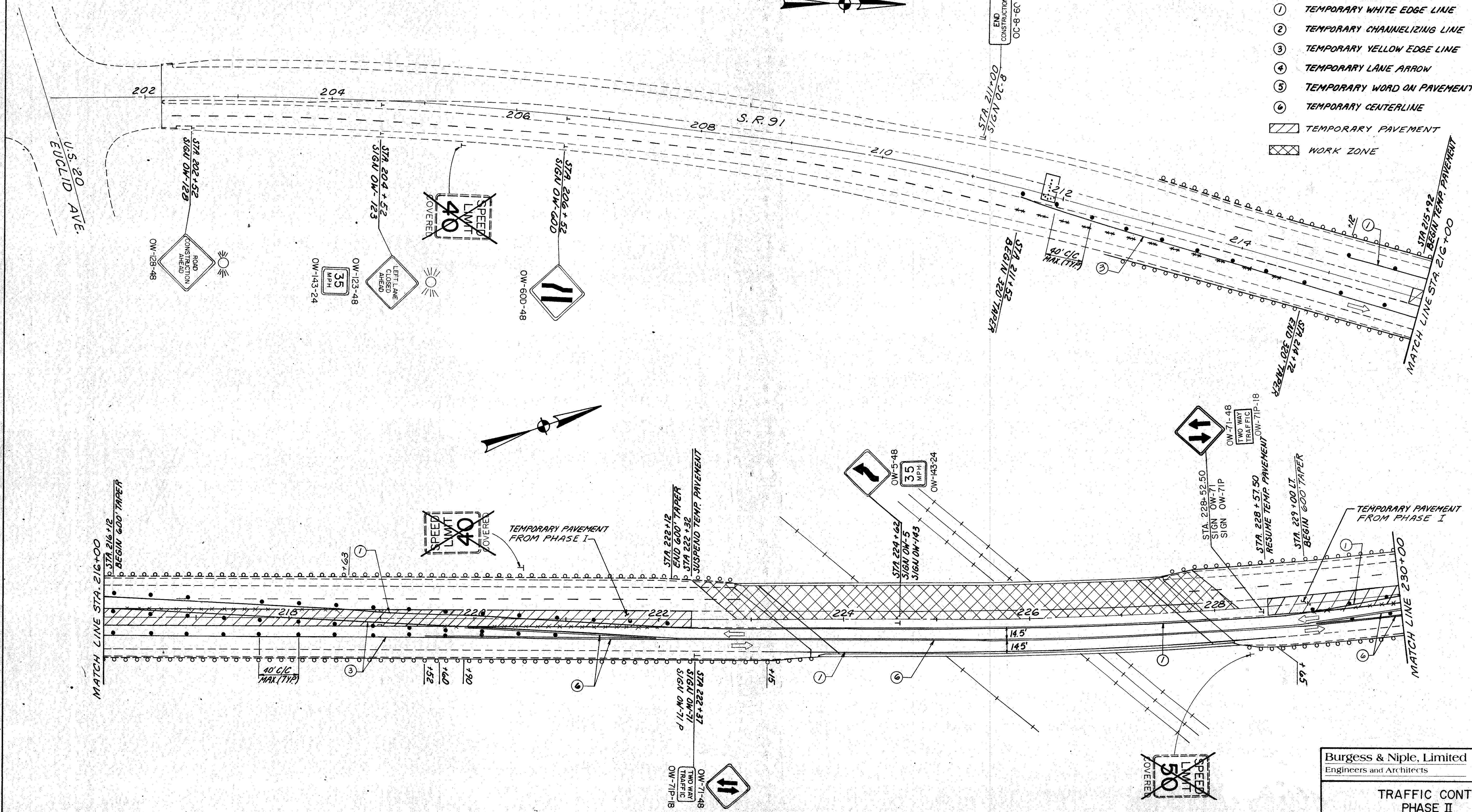
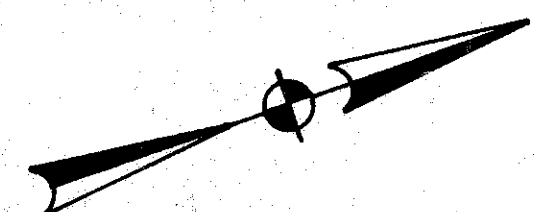
Burgess & Niple, Limited
Engineers and Architects

TRAFFIC CONTROL PHASE I

| | | | | | | |
|----------|-------|--------|---------|----------|------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED | DATE | REVISED |
|----------|-------|--------|---------|----------|------|---------|

LEGEND

- ① TEMPORARY WHITE EDGE LINE
- ② TEMPORARY CHANNELIZING LINE
- ③ TEMPORARY YELLOW EDGE LINE
- ④ TEMPORARY LANE ARROW
- ⑤ TEMPORARY WORD ON PAVEMENT
- ⑥ TEMPORARY CENTERLINE
- ▨ TEMPORARY PAVEMENT
- ▩ WORK ZONE



Burgess & Niple, Limited
Engineers and Architects

**TRAFFIC CONTROL
PHASE II**

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| | | | | | |

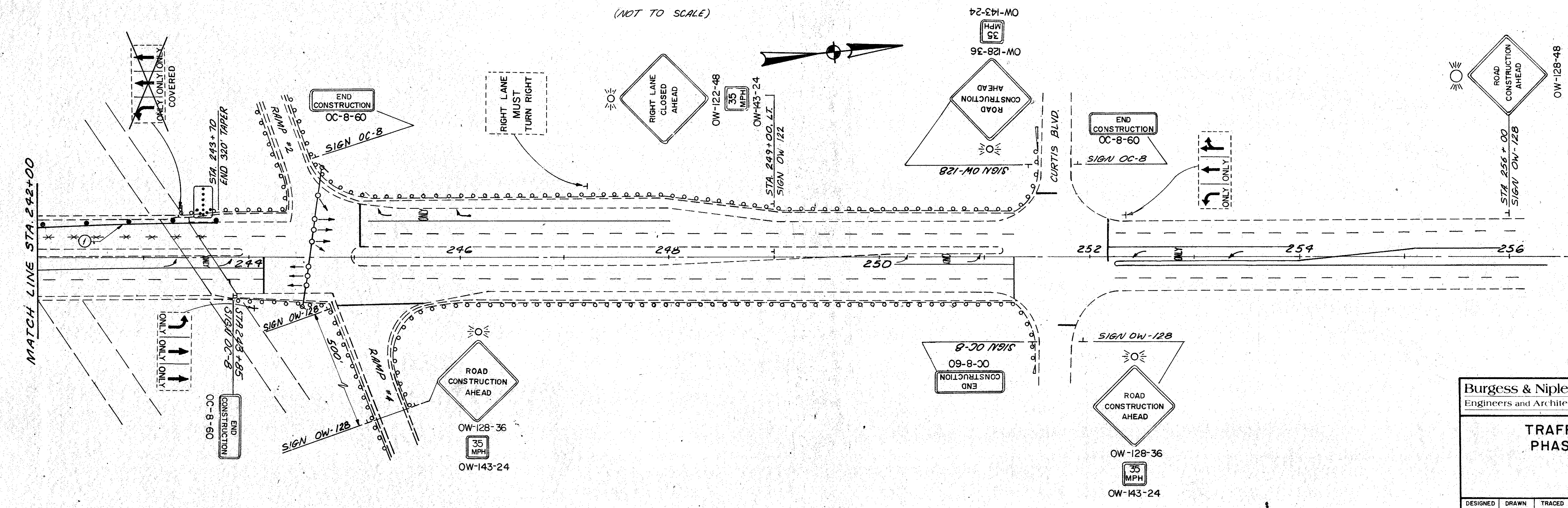
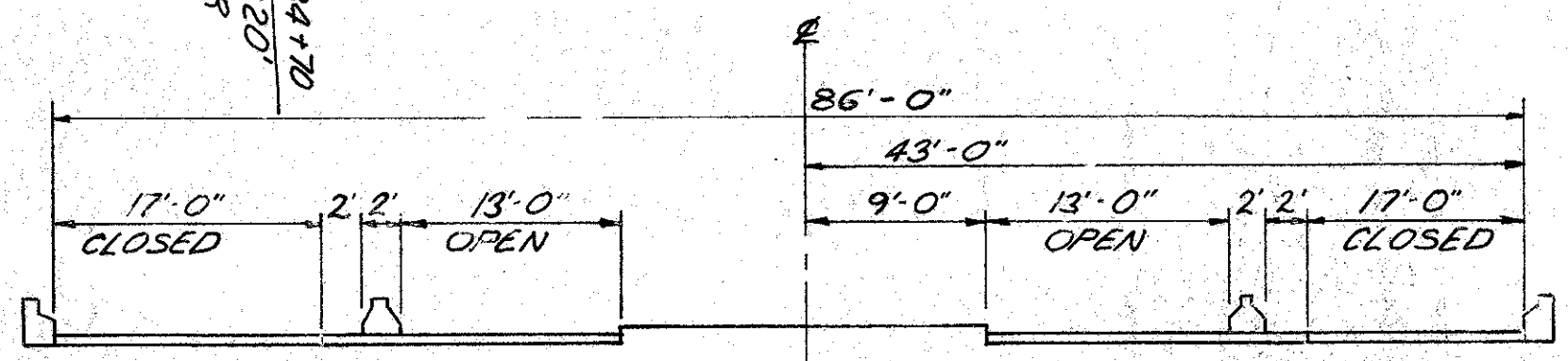
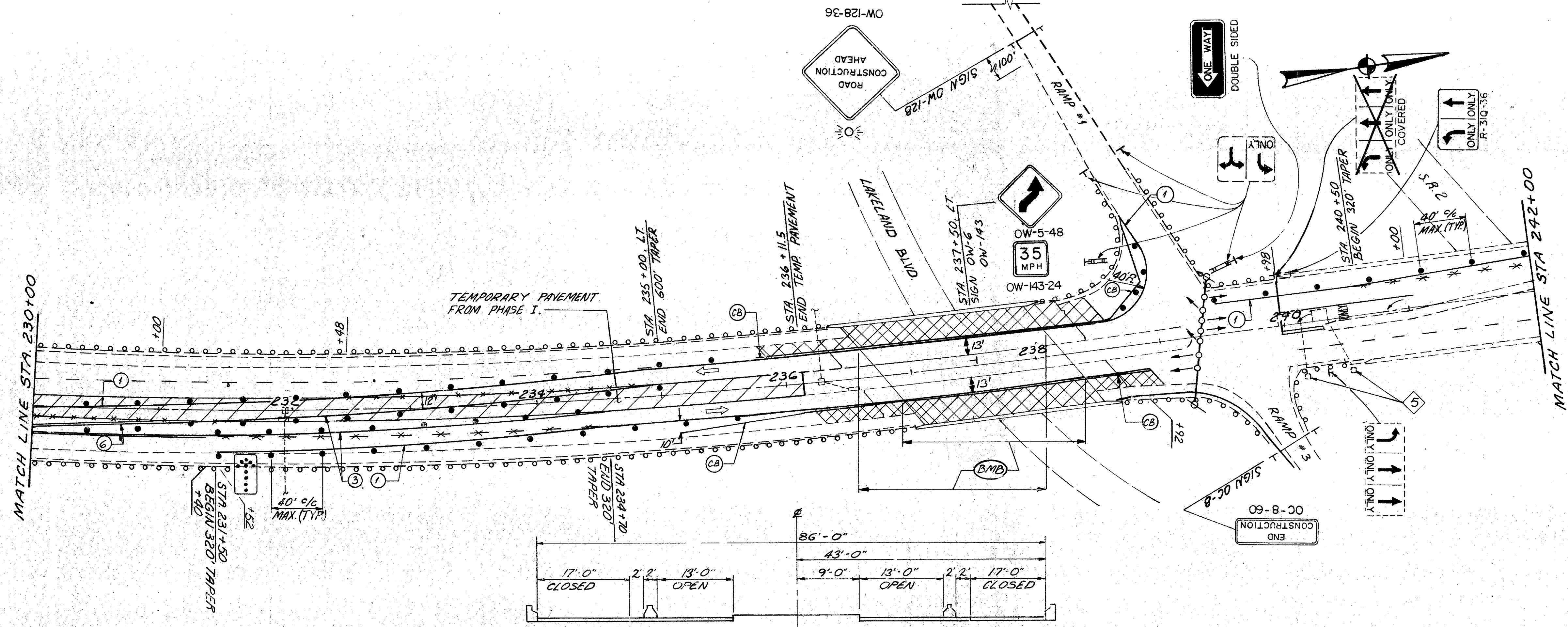
LEGEND

- ① TEMPORARY WHITE EDGE LINE
- ② TEMPORARY CHANNELIZING LINE
- ③ TEMPORARY YELLOW EDGE LINE
- ④ TEMPORARY LANE ARROW
- ⑤ TEMPORARY WORD ON PAVEMENT
- CB PORTABLE CONCRETE BARRIER 32"
- ⑥ TEMPORARY CENTER LINE
- BMB ITEM 622 PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN.

- [Hatched Box] TEMPORARY PAVEMENT
- [Cross-hatched Box] WORK ZONE

NOTE: SEE PORTABLE CONCRETE BARRIER SUB SUMMARY, SH. 17 FOR STATION LIMITS OF ALL PORTABLE CONCRETE BARRIERS.

⑤ EXISTING LOOP DETECTORS TO BE RECONNECTED AT PULL BOX FOR PHASE II CONSTRUCTION.



Burgess & Niple, Limited **bn**
Engineers and Architects

TRAFFIC CONTROL PHASE II

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| | | | | | |

ITEM 614 - TEMPORARY PAVEMENT MARKING SUB-SUMMARY

| PHASE | STATIONING (FROM - TO) (SIDE) | 4" EDGE LINE, WHITE CLASS I, 740.05, TYPE C | 4" EDGE LINE, YELLOW CLASS I, 740.05, TYPE C | 4" DOUBLE YELLOW CENTERLINE CLASS I, 740.05, TYPE C | 4" LANE LINE WHITE CLASS I, 740.05, TYPE C | 8" CHANNELIZING LINE CLASS I, 740.05, TYPE C | LANE ARROW CLASS I, 740.05, TYPE C | WORD "ONLY" ON PAVEMENT CLASS I, 740.05, TYPE C |
|-------------------|----------------------------------|--|---|--|---|---|---------------------------------------|--|
| | | MILE | | | LIN FT | EACH | | |
| I | 208+52-239+45, RT | 0.59 | | | | | | |
| | 215+92-219+85, RT to LT | | 0.08 | | | | | |
| | 219+22-231+30.5, LT | | | 0.23 | | | | |
| | 219+85-222+12, LT | | | 0.05 | | | | |
| | 228+77.5-230+59.5, RT | | | 0.04 | | | | |
| | 230+59.5-239+00, LT to RT | | 0.16 | | | | | |
| | 231+30.5-239+25, LT | | 0.16 | | | | | |
| | 234+10-238+35, LT | 0.09 | | | | | | |
| | 239+98-242+00, LT | | 0.04 | | | | | |
| | 239+98-243+85, LT | | | | 387 | | | |
| | 240+44, LT | | | | | | 1 | 1 |
| | 240+88, LT | | | | | | 1 | |
| | 242+00, LT | | | | | | 1 | |
| | 243+04, LT | | | | | | | 1 |
| | 243+44, LT | | | | | | 1 | |
| 245+06-249+20, LT | | 0.08 | | | | | | |
| II | 208+52-211+52, RT | | | | 0.06 | | | |
| | 211+52-219+52, RT | | 0.16 | | | | | |
| | 215+12-238+98, LT | 0.47 | | | | | | |
| | 216+12-219+90, LT to RT | | 0.08 | | | | | |
| | 219+52-231+40, RT | | | 0.23 | | | | |
| | 219+90-222+12, RT | | | 0.05 | | | | |
| | 223+15-228+65, RT | 0.11 | | | | | | |
| | 229+00-231+00, RT | | | 0.04 | | | | |
| | 231+00-235+00, RT to LT | | 0.08 | | | | | |
| | 231+40-234+70, RT | | 0.07 | | | | | |
| | 231+50-238+92, RT | 0.15 | | | | | | |
| | 239+45-243+70, LT | 0.09 | | | | 102 | | |
| 239+98-241+00, LT | | | | | | | | |
| 246+00-249+20, LT | | | | 0.07 | | | | |
| Subtotal | | 1.5 | 0.91 | | | | | |
| TOTAL | | 2.41 * | 0.64 * | 0.13 * | 489 * | 3 * | 2 * | |

ITEM 615 TEMPORARY ROAD

(Note: See Maint. of Traffic Notes, Sheet 11.)

| STATION (FROM - TO) (SIDE) | CURB REMOVED | CURB, TYPE 6 | EXCAVATION | EMBANKMENT | SEEDING AND MULCHING |
|--|-----------------|-----------------|------------|------------|-------------------------|
| | L.F. | | C.Y. | | S.Y. |
| STA. 215+92 TO STA. 222+32, LT & RT | 1264 | 1264 | 743 | 743 | 1209 |
| STA. 228+57.5 TO STA. 23611.5, LT & RT | 1500 | 1500 | 831 | 831 | 1425 |
| TOTAL | 2764 | 2764 | 1574 | 1574 | 2634 |

* QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY
** SEE SHEET 31 FOR PAVEMENT MARKING PLAN

ITEM 622 - PORTABLE CONCRETE BARRIER SUB -SUMMARY

| PHASE | STATIONING (FROM - TO) (SIDE) | PORTABLE CONCRETE BARRIER | PORTABLE CONCRETE BARRIER, 32" . BRIDGE MOUNTED, AS PER PLAN | |
|-------|----------------------------------|---------------------------------|--|--|
| I | 235+10-236+10, RT (100' TAPER) | 100 | | |
| | 236+10-236+60, RT | 50 | | |
| | 236+60-238+80, RT | | 220 | |
| | 238+80-239+00, RT | 20 | | |
| | 235+80-236+30, LT | 50 | | |
| | 236+30-238+40, LT | | 210 | |
| | 238+40-238+60, LT | 20 | | |
| | 238+60-239+20, LT (60' TAPER) | 60 | | |
| | 235+10-236+10, RT (100' TAPER) | 100 | | |
| | 236+10-236+60, RT | 50 | | |
| II | 236+60-238+70, RT | | 210 | |
| | 238+70-238+90, RT | 20 | | |
| | 235+80-236+30, LT | 50 | | |
| | 236+30-238+40, LT | | 210 | |
| | 238+40-238+60, LT | 20 | | |
| | 238+60-238+92, RT | 90 | | |
| | TOTALS | 630 * | 850 * | |

CALC BY SWG
DATE 2/92
CHKD BY TJH
DATE 2/92

LAKE COUNTY
LAK-91 - (4.23) (4.49)

OHIO
FHWA REGION 5
17
56

ITEM 642 - REMOVAL OF PAVEMENT MARKING SUB-SUMMARY

| PHASE | STATIONING (FROM - TO) (SIDE) | EDGE LINE | LANE LINE | CHANNELIZING LINE |
|-------|----------------------------------|-------------|-----------|----------------------|
| | | LINEAR FEET | | |
| I | 208+52-211+72, RT | | 320 | |
| | 216+12-218+38, RT | 226 | | |
| | 219+85-222+12, LT | 227 | | |
| | 219+22-231+30.5, LT | | 1209 | |
| | 228+77.5-231+29.5, LT | 252 | | |
| | 233+10-235+00, RT | | 190 | |
| | 234+10-238+35, LT | 425 | | |
| | 234+79-239+45, RT | 466 | | |
| | 246+00-249+20, LT | | 320 | |
| | 211+72-214+72, RT | | 300 | |
| II | 216+12-218+63, LT | 251 | | |
| | 219+52-223+10, RT | | 358 | |
| | 219+60-222+12, RT | 252 | | |
| | 228+50-231+40, RT | | 290 | |
| | 229+00-231+52, RT | 252 | | |
| | 231+40-233+10, RT | | 170 | |
| | 232+48-235+00, LT | 252 | | |
| | 240+50-243+70, LT | | 320 | |
| | Subtotals | 2063 | 3477 | |
| | TOTAL | | 5540 * | |

ITEM 642 - PAVEMENT MARKING SUB-SUMMARY **

| STATION | | LOCATION | SIDE | | WHITE EDGE LINE | YELLOW EDGE LINE | LANE LINE | 4" DOUBLE YELLOW CENTERLINE | 8" CHANNELIZING LINE | 24" WHITE STOP LINE | LANE ARROWS | WORD "ONLY" ON PAVEMENT |
|-----------|--------|----------|------|----|--------------------|---------------------|-----------|--------------------------------|-------------------------|------------------------|----------------|----------------------------|
| FROM | TO | | RT | LT | | | | | | | | |
| 208+52 | 239+05 | S.R. 91 | X | | 0.58 | 0.58 | 0.58 | | | | | |
| 208+52 | 239+00 | S.R. 91 | | X | | 0.58 | 0.58 | | | | | |
| 208+52 | 238+25 | S.R. 91 | | X | 0.57 | | | | | | | |
| 239+05 | - | S.R. 91 | X | | | | | | | 24 | | |
| 239+50 | 244+40 | S.R. 91 | | X | 0.10 | | | | | | | |
| 239+99 | - | S.R. 91 | | X | | | | | | 35 | | |
| 239+99 | 240+85 | S.R. 91 | | X | | | | | 86 | | | |
| 239+99 | 240+32 | S.R. 91 | X | | | | 0.01 | | | | | |
| 239+99 | 244+40 | S.R. 91 | | X | | | | 0.09 | | | | |
| 239+99 | 244+09 | S.R. 91 | X | | | | | 0.08 | | | | |
| 239+99 | 244+79 | S.R. 91 | X | | 0.10 | | | | | | | |
| 240+08 | - | S.R. 91 | | X | | | | | | | 1 | |
| 240+33 | 243+96 | S.R. 91 | X | X | | 0.14 | | | | | | 1 |
| 240+38 | - | S.R. 91 | | X | | | | | | | 1 | |
| 240+68 | - | S.R. 91 | | X | | | | | | | | 1 |
| 242+15 | 244+09 | S.R. 91 | X | | | | | | 194 | | | |
| 243+19 | - | S.R. 91 | X | | | | | | | | 1 | |
| 243+49 | - | S.R. 91 | X | | | | | | | | | 1 |
| 243+79 | - | S.R. 91 | X | | | | | | | | 1 | |
| 244+09 | - | S.R. 91 | X | | | | | | | 35 | | |
| 244+97 | 249+20 | S.R. 91 | X | X | | 0.17 | | | | | | |
| 245+06 | 249+20 | S.R. 91 | | X | 0.08 | | 0.08 | | | | | |
| 245+06 | 248+00 | S.R. 91 | | X | | | | | 294 | | | |
| 245+06 | - | S.R. 91 | | X | | | | | | 36 | | |
| 245+36 | - | S.R. 91 | | X | | | | | | | 1 | |
| 245+66 | - | S.R. 91 | | X | | | | | | | | 1 |
| 245+96 | - | S.R. 91 | | X | | | | | | | 1 | |
| 246+20 | 249+20 | | X | | 0.06 | | 0.06 | | | | | |
| Subtotals | | | | | 1.49 | 1.47 | 0.06 | | | | | |
| TOTALS | | | | | 2.96 * | 1.47 * | 0.01 * | 574 * | 130 * | 6 * | 3 * | |

614 - TEMPORARY RAISED PAVEMENT MARKERS

| | | |
|---------------------------------------|-----------------------|----------|
| LAKE COUNTY LAK-91 - (4.23) (4.49) | OHIO FHWA REGION 5 | 18 56 |
| STP-1A21 (14) | FEDERAL PROJECT | |

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING, AND SUBSEQUENTLY REMOVING TEMPORARY RAISED PAVEMENT MARKERS (TRPM'S). THE TRPM'S SHALL BE YELLOW OR WHITE, AS DESCRIBED IN THE PLAN.

MATERIAL

ALL UNITS SHALL BE OF SUFFICIENT STRENGTH AND PROPERLY SHAPED SO AS NOT TO BE DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR DAMAGED BY IMPACTS FROM VEHICLES TIRES, INCLUDING THOSE OF HIGH PRESSURE TRUCK TIRES LOADED TO 4500 POUNDS.

RETROREFLECTORS SHALL BE PROVIDED IN ONE OR TWO DIRECTIONS ON EACH UNIT AS REQUIRED BY THE USAGE AND SHALL RETURN WHITE OR YELLOW LIGHT AS IS APPROPRIATED FOR THE APPLICATION.

THE REFLECTOR SHALL HAVE AN EFFECTIVE AREA OF 0.35 SQUARE INCH FOR TYPE A OR 3.0 SQUARE INCH FOR TYPE B. ITS BRIGHTNESS OR SPECIFIC INTENSITY (WHEN TESTED AT 0.2 DEGREE ANGLE OF OBSERVATION AND THE FOLLOWING ANGLES OF INCIDENCE) SHALL MEET OR EXCEED THE FOLLOWING:

| INCIDENCE ANGLE (DEGREES) | SPECIFIC INTENSITY | |
|---------------------------|--------------------|--------|
| | TYPE A | |
| | WHITE | YELLOW |
| 0 | 1.0 | 0.6 |
| 20 | 0.4 | 0.24 |
| 45 | - | - |

| INCIDENCE ANGLE (DEGREES) | TYPE B | |
|---------------------------|--------|--------|
| | WHITE | |
| | WHITE | YELLOW |
| 0 | 3.0 | 1.8 |
| 20 | 1.2 | 0.72 |
| 45 | 0.3 | 0.2 |

ANGLE OF INCIDENCE FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE NORMAL TO THE LEADING EDGE OF THE MARKER FACE (ALSO HORIZONTAL ENTRANCE ANGLE).

ANGLE OF OBSERVATION FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE RETURNED RAY FROM THE MARKER TO THE MEASURING RECEPTOR.

SPECIFIC INTENSITY IS THE MEAN CANDLEPOWER OF THE REFLECTED LIGHT (AT GIVEN INCIDENCE AND DIVERGENCE ANGLES) FOR EACH FOOT-CANDLE AT THE REFLECTOR (ON A PLANE PERPENDICULAR TO THE INCIDENT LIGHT).

TYPE A UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY BOTH AT NIGHT AND DURING DAYLIGHT. THEIR DAY TIME VISIBILITY SHALL BE ASSURED BY SIZE, SHAPE AND COLOR AS FOLLOWS:

1) THE UNITS SHALL BE A HIGH VISIBILITY YELLOW OR WHITE COLOR WHICH WILL NOT DEGRADE SUBSTANTIALLY DUE TO TRAFFIC WEAR AND WHICH WILL MATCH THE COLOR OF THE REFLECTOR.

2) WHEN VIEWED FROM ABOVE, THE UNITS SHALL HAVE A VISIBLE AREA OF NOT LESS THAN 14 SQUARE INCHES.

3) WHEN VIEWED FROM THE FRONT, PARALLEL TO THE PAVEMENT, AS FROM APPROACHING TRAFFIC, THE UNIT SHALL HAVE A WIDTH OF APPROXIMATELY 4 INCHES AND A VISIBLE AREA OF NOT LESS THAN 15 SQUARE INCHES.

TYPE B UNITS ARE INTENDED TO PROVIDE HIGH VISIBILITY AT NIGHT BY RETRO-REFLECTING AUTOMOTIVE HEADLIGHT BACK TO THE DRIVER.

INSTALLATION: THEY SHALL BE ATTACHED TO CLEAN, DRY PAVEMENT BY A BUTYL ADHESIVE PAD, A BITUMINOUS ADHESIVE OR OTHER CONSTRUCTION GRADE ADHESIVES (SUCH AS FRANKLIN PANEL AND METAL ADHESIVE) SUITABLE TO ANCHOR THE UNIT UNDER THE ABOVE CONDITIONS. WHEN IT IS NECESSARY TO ATTACH UNITS TO NEW CONCRETE WITH CURING COMPOUND REMAINING, THE CURING COMPOUND MEMBRANE SHALL BE REMOVED BY SANDBLASTING OR OTHER MECHANICAL CLEANING METHOD. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL IMMEDIATELY REPLACE, AT HIS COST, ANY UNITS WHICH FAIL (BROKEN HOUSING, HOUSING WORN TO THE EXTENT THAT DAYTIME VISIBILITY IS SIGNIFICANTLY DIMINISHED OR OF AN UNACCEPTABLE COLOR, DETACHED OR BROKEN REFLECTOR, HOUSING DETACHED FROM ADHESIVE).

TRPM'S ARE LIKELY TO BE REMOVED BY SNOW PLOWING OPERATIONS, THUS THEY ARE NOT CONSIDERED SUITABLE FOR USE DURING THE PERIOD FROM OCTOBER 15 UNTIL APRIL 30. THE CONTRACTOR IS ADVISED TO SCHEDULE HIS WORK AND/OR THE USE OF THESE DEVICES TO AVOID THIS PERIOD. SHOULD THE CONTRACTOR CHOOSE TO USE TRPM'S DURING THIS PERIOD AND THEY ARE SUBSEQUENTLY REMOVED OR DESTROYED BY SNOW AND ICE CONTROL ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY, AT HIS COST, PROVIDE A SUBSTITUTE TRAFFIC GUIDANCE SYSTEM EFFECTIVE DURING LIGHT AND DARK AND WHICH IS ACCEPTABLE TO THE ENGINEER.

THE UNITS SHALL BE PLACED ACCURATELY TO DEPICT STRAIGHT OR UNIFORMLY CURVING LINES. WHEN USED TO SUPPLEMENT TEMPORARY PAVEMENT MARKINGS, THEY MAY BE PLACED ON OR IMMEDIATELY ADJACENT TO THE PAVEMENT MARKING. LOCATIONS SHALL BE ADJUSTED UP TO ONE FOOT LONGITUDINALLY OR SIX INCHES Laterally TO AVOID PLACEMENT ON JOINTS, CRACKED OR DETERIORATED PAVEMENT. THEY SHALL NOT BE PLACED DIRECTLY ON PAVEMENT MARKINGS IF THIS WILL DETRACT FROM THEIR ABILITY TO REMAIN ATTACHED TO THE PAVEMENT.

APPLICATION

1) WHEN REQUIRED TO SUPPLEMENT PAVEMENT MARKING; THEY SHALL BE PLACED AS FOLLOWS:

| LINE | TYPE | SPACING |
|---|--------|---|
| EDGE LINE | A OR B | 20' C/C |
| LANE LINE | A OR B | 40' C/C* |
| CENTER LINE (SINGLE/BROKEN) | A OR B | 40' C/C * |
| CENTER LINE (DOUBLE/SOLID) | A OR B | 2 UNITS SIDE BY SIDE 4 INCHES APART 20' C/C |
| CHANNELIZING LINE (INCLUDES EXIT GORE NOSE) | A OR B | 10' C/C |

* CENTERED IN GAP

2) WHEN USED TO SIMULATE (REPLACE) PAVEMENT MARKING THEY SHALL BE PLACED AS FOLLOWS:

| LINE | TYPE | SPACING |
|---|------|---------------------------------|
| EDGE LINE | A | 5' C/C |
| LANE LINE | A | 4@3.33' C/C 30' GAP (40' CYCLE) |
| CENTER LINE (DOUBLE SOLID) | A | 2 UNITS SIDE BY SIDE 5' C/C |
| CENTER LINE (SINGLE BROKEN) | A | 4@3.33' C/C 30' GAP (40' CYCLE) |
| CHANNELIZING LINE (INCLUDES EXIT GORE NOSE) | A | 5' C/C |
| EDGE LINE (TWO COLOR) (WHITE/YELLOW) | A | BACK TO BACK 5' C/C |

YELLOW TRPM'S USED TO SEPARATE OPPOSITE FLOWS OF TRAFFIC (CENTER LINES) SHALL INCLUDE REFLECTIONS FOR BOTH DIRECTIONS. ALL OTHER YELLOW TRPM'S AND WHITE TRPM'S SHALL PROVIDE RETROREFLECTIVITY FOR ONE DIRECTION.

REMOVAL

REMOVAL SHALL BE ACCOMPLISHED IN A MANNER THAT LITTLE OR NONE OF THE ADHESIVE REMAINS ON THE PAVEMENT AND PERMANENT PAVEMENT SURFACES SHALL NOT BE SCARRED, BROKEN OR ROUGHENED SIGNIFICANTLY.

PAYMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER EACH TRPM AND SHALL INCLUDE ALL LABOR, EQUIPMENT, HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT AT NO ADDITIONAL COST OF ALL TRPM'S WHICH, IN THE JUDGEMENT OF THE ENGINEER, FAIL FOR ANY REASON, EXCEPT DUE TO FAILURE OF THE PAVEMENT TO WHICH THEY ARE ATTACHED.

| ITEM | UNIT | DESCRIPTION |
|------|------|-----------------------------------|
| 614 | EACH | TEMPORARY RAISED PAVEMENT MARKERS |

| PHASE | STATIONING * (FROM-TO) DIRECTION | SPACING (FEET C/C) | TYPE A | | | TYPE B | | | REMARKS (LINE TYPE) | | | | |
|----------------------|-------------------------------------|-----------------------|--------|---|-----|--------|----|-----------|------------------------|-----------|----|--|-----|
| | | | W | Y | Y/Y | W | Y | Y/Y | | | | | |
| I | 208+52 TO 239+45 NB | 20 | | | | 156 | | | EDGE LINE | | | | |
| | 216+72 TO 219+85 NB | 20 | | | | | 16 | | EDGE LINE | | | | |
| | 219+22 TO 222+12 SB | 20 | | | | | 16 | | CENTERLINE | | | | |
| | 219+85 TO 222+12 NB | 20 | | | | | 13 | | CENTERLINE | | | | |
| | 222+12 TO 228+77.5 NB | 20 | | | | | | 35 | CENTERLINE | | | | |
| | 228+77.5 TO 231+30.5 SB | 20 | | | | | | 14 | CENTERLINE | | | | |
| | 228+77.5 TO 230+59.5 NB | 20 | | | | | | 11 | CENTERLINE | | | | |
| | 230+59.5 TO 239+00 NB | 20 | | | | | | 44 | EDGE LINE | | | | |
| | 231+30.5 TO 239+25 SB | 20 | | | | | | 41 | EDGE LINE | | | | |
| | 234+10 TO 238+35 SB | 20 | | | | | | 23 | EDGE LINE | | | | |
| | 239+98 TO 242+00 SB | 20 | | | | | | 12 | EDGE LINE | | | | |
| | 239+98 TO 243+85 SB | 10 | | | | | | 40 | CHANNELIZING LINE | | | | |
| | 245+06 TO 249+20 SB | 20 | | | | | | 22 | EDGE LINE | | | | |
| | II | 211+52 TO 219+52 NB | 20 | | | | | 41 | | EDGE LINE | | | |
| 215+12 TO 238+98 SB | | 20 | | | | 121 | | | EDGE LINE | | | | |
| 216+12 TO 219+90 SB | | 20 | | | | | 20 | | EDGE LINE | | | | |
| 219+52 TO 222+12 NB | | 20 | | | | | 14 | | CENTERLINE | | | | |
| 219+90 TO 222+12 SB | | 20 | | | | | 13 | | CENTERLINE | | | | |
| 222+12 TO 229+00 NB | | 20 | | | | | | 36 | CENTERLINE | | | | |
| 229+00 TO 231+00 SB | | 20 | | | | | | 11 | CENTERLINE | | | | |
| 229+00 TO 231+40, NB | | 20 | | | | | | 13 | CENTERLINE | | | | |
| 231+00 TO 235+00, SB | | 20 | | | | | | 21 | EDGE LINE | | | | |
| 231+40 TO 234+70, NB | | 20 | | | | | | 18 | EDGE LINE | | | | |
| 231+50 TO 238+92 NB | 20 | | | | | | 39 | EDGE LINE | | | | | |
| 239+45 TO 243+70 SB | 20 | | | | | | 23 | EDGE LINE | | | | | |
| SUBTOTAL | | | | | | | | | 379 | 363 | 76 | | |
| TOTAL | | | | | | | | | | | | | 818 |

*NB NORTHBOUND
SB SOUTHBOUND

5-87

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

614 TEMPORARY RAISED PAVEMENT MARKERS

| | | | | |
|----------|--------|---------|----------|---------|
| DESIGNED | TRACED | CHECKED | REVIEWED | REVISED |
| | | | | |

PLOT SUBMITTED BY: GRMOVSEK
PLOT SUBMITTED: 24-JAN-1992 15:00

CALCULATIONS

ITEM 202 FENCE REMOVED

| | | |
|---------------------------------|---|--------------|
| A. STA 223+75 TO STA 224+35, RT | = | 80 LIN. FT. |
| B. STA 226+25 TO STA 227+00, LT | = | 40 LIN. FT. |
| C. STA 227+95 TO STA 228+16, RT | = | 40 LIN. FT. |
| SUBTOTAL | = | 225 LIN. FT. |

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| TOTAL OF ITEM 202 | = | 225 LIN. FT. |
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ITEM 202 WEARING COURSE REMOVED

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| A. STA 222+72.09 TO STA 223+09.59, LT 37.5 FT. x 33 FT. / 9 SQ. FT./SQ. YD. | = | 137.50 SQ. YDS. |
| B. STA 222+72.09 TO STA 223+09.59, RT 37.5 FT. x 33 FT. / 9 SQ. FT./SQ. YD. | = | 17.50 SQ. YDS. |
| C. STA 227+92.36 TO STA 228+29.86, LT 37.5 FT. x 33 FT. / 9 SQ. FT./SQ. YD. | = | 137.50 SQ. YDS. |
| D. STA 227+92.36 TO STA 228+29.86, RT 37.5 FT. x 33 FT. / 9 SQ. FT./SQ. YD. | = | 137.50 SQ. YDS. |
| E. STA 236+03.13 TO STA 236+78.13, LT 75 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. | = | 281.92 SQ. YDS. |
| F. STA 236+03.13 TO STA 236+78.13, RT 75 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. | = | 281.92 SQ. YDS. |
| G. STA 238+23.20 TO STA 238+73.20, LT 50 FT. x 34.3 FT. / 9 SQ. FT./SQ. YD. | = | 190.56 SQ. YDS. |
| H. STA 238+23.20 TO STA 238+73.20, RT 50 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. | = | 187.94 SQ. YDS. |
| SUBTOTAL | = | 1492.34 SQ. YDS. |

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| TOTAL OF ITEM 202 | = | 1493 SQ. YDS. |
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ITEM 203 EXCAVATION OF UNSUITABLE MATERIAL

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|--|---|-----------------|
| A. STA 223+33.59 TO STA 223+47.09 | | |
| AREA BEHIND ABUTMENT 81 S.F. END AREA X 116.5 FT / 27 CU. FT./CU. YD. | = | 349.50 CU. YDS. |
| MEDIAN BEHIND ABUTMENT 13.5 FT LENGTH X 2 FT DEPTH X 17 FT WIDTH / 27 CU. FT./CU. YD. | = | 17.00 CU. YDS. |
| SUBTOTAL | = | 366.50 CU. YDS. |
| B. STA 227+54.86 TO STA 227+68.36 | | |
| AREA BEHIND ABUTMENT 81 S.F. END AREA X 116.5 FT / 27 CU. FT./CU. YD. | = | 349.50 CU. YDS. |
| MEDIAN BEHIND ABUTMENT 13.5 FT LENGTH X 2 FT DEPTH X 17 FT WIDTH / 27 CU. FT./CU. YD. | = | 17.00 CU. YDS. |
| SUBTOTAL | = | 366.50 CU. YDS. |

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| TOTAL OF ITEM 203 | = | 733 CU. YDS. |
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ITEM 203 LINEAR GRADING

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| A. STA 237+59, 50' RT TO STA 236+45, 115' LT | = | 2.00 STA. |
| B. STA 238+22, 67' RT TO STA 237+70, 70' LT | = | 2.25 STA. |
| SUBTOTAL | = | 4.25 STA. |

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| TOTAL OF ITEM 203 | = | 4.25 STA. |
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ITEM 203 EMBANKMENT

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| A. STA 222+55.27 TO STA 222+81.27, LT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| B. STA 223+49.59 TO STA 223+75.59, RT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| C. STA 227+26.52 TO STA 227+52.52, LT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| D. STA 228+20.83 TO STA 228+46.83, RT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| E. STA 236+08.23 TO STA 236+34.23, LT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| F. STA 236+67.18 TO STA 236+93.18, RT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| G. STA 238+08.13 TO STA 238+34.13, LT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| H. STA 238+67.11 TO STA 238+93.11, RT 26 FT. x (1/2 x 5 FT. x 1 FT.) / 27 CU. FT./CU. YD. | = | 2.41 CU. YDS. |
| I. STA 223+33.59 TO STA 223+47.09 | = | |
| AREA BEHIND ABUTMENT 60 S.F. END AREA X 116.5 FT / 27 CU. FT./CU. YD. | = | 258.89 CU. YDS. |
| MEDIAN BEHIND ABUTMENT 27 S.F. END AREA X 17 FT LENGTH / 27 CU. FT./CU. YD. | = | 17.00 CU. YDS. |
| J. STA 227+54.86 TO STA 227+68.36 | = | |
| AREA BEHIND ABUTMENT 60 S.F. END AREA X 116.5 FT / 27 CU. FT./CU. YD. | = | 258.89 CU. YDS. |
| MEDIAN BEHIND ABUTMENT 27 S.F. END AREA X 17 FT LENGTH / 27 CU. FT./CU. YD. | = | 17.00 CU. YDS. |
| SUBTOTAL | = | 571.06 CU. YDS. |

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| TOTAL OF ITEM 203 | = | 572 CU. YDS. |
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ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION

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| A. STA 222+55.27 TO STA 222+77.27, LT 22 FT. X 2 FT. X 1.50 FT. / 27 CU. FT./CU. YD. | = | 2.44 CU. YDS. |
| B. STA 223+12.09 TO STA 223+22.09, LT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 1.50 FT. / 27 CU. FT./CU. YD. | = | 16.11 CU. YDS. |
| C. STA 223+12.09 TO STA 223+22.09, RT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 1.50 FT. / 27 CU. FT./CU. YD. | = | 16.11 CU. YDS. |
| D. STA 223+49.59 TO STA 223+54.59, LT 5 FT. X 2 FT. X 1.50 FT. / 27 CU. FT./CU. YD. | = | 0.56 CU. YDS. |
| E. STA 227+47.52 TO STA 227+52.52, LT 5 FT. X 2 FT. X 1.50 FT. / 27 CU. FT./CU. YD. | = | 0.56 CU. YDS. |
| F. STA 227+79.86 TO STA 227+89.86, LT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 1.50 FT. / 27 CU. FT./CU. YD. | = | 16.11 CU. YDS. |
| G. STA 227+79.86 TO STA 227+89.86, RT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 1.50 FT. / 27 CU. FT./CU. YD. | = | 16.11 CU. YDS. |
| H. STA 228+24.83 TO STA 228+46.83, RT 22 FT. X 2 FT. X 1.50 FT. / 27 CU. FT./CU. YD. | = | 2.44 CU. YDS. |
| I. STA 236+08.23 TO STA 236+49.98, LT 41.75 FT. X 2 FT. X 1.23 FT. / 27 CU. FT./CU. YD. | = | 3.80 CU. YDS. |
| J. STA 236+67.18 TO STA 237+08.93, RT 41.75 FT. X 2 FT. X 1.23 FT. / 27 CU. FT./CU. YD. | = | 3.80 CU. YDS. |
| K. STA 238+08.13 TO STA 238+34.13, LT 26 FT. X 2 FT. X 1.23 FT. / 27 CU. FT./CU. YD. | = | 2.37 CU. YDS. |
| L. STA 238+51.36 TO STA 238+93.11, RT 41.75 FT. X 2 FT. X 1.23 FT. / 27 CU. FT./CU. YD. | = | 3.80 CU. YDS. |
| SUBTOTAL | = | 84.21 CU. YDS. |

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| TOTAL OF ITEM 203 | = | 85 CU. YDS. |
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ITEM 203 SUBGRADE COMPACTION

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| A. STA 222+55.27 TO STA 222+77.27, LT 22 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 4.89 SQ. YDS. |
| B. STA 223+12.09 TO STA 223+22.09, LT 10 FT. x (29.83 FT. + 30.17 FT.) / 2 / 9 SQ. FT./SQ. YD. | = | 33.33 SQ. YDS. |
| C. STA 223+12.09 TO STA 223+22.09, RT 10 FT. x (29.83 FT. + 30.17 FT.) / 2 / 9 SQ. FT./SQ. YD. | = | 33.33 SQ. YDS. |
| D. STA 223+22.09 TO STA 223+47.09, LT 25 FT. x 31.83 FT. / 9 SQ. FT./SQ. YD. | = | 88.42 SQ. YDS. |
| E. STA 223+22.09 TO STA 223+47.09, RT 25 FT. x 31.83 FT. / 9 SQ. FT./SQ. YD. | = | 88.42 SQ. YDS. |
| F. STA 223+49.59 TO STA 223+54.5. RT 5 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 1.11 SQ. YDS. |
| G. STA 227+47.52 TO STA 227+52.52, LT 5 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 1.11 SQ. YDS. |
| H. STA. 227+54.86 TO STA 227+79.86, LT 25 FT. x 31.83 FT. / 9 SQ. FT./SQ. YD. | = | 88.42 SQ. YDS. |
| I. STA. 227+54.86 TO STA 227+79.86, RT 25 FT. x 31.83 FT. / 9 SQ. FT./SQ. YD. | = | 88.42 SQ. YDS. |
| J. STA 227+79.86 TO STA 227+89.86, LT 10 FT. x (29.83 FT. + 30.17 FT.) / 2 / 9 SQ. FT./SQ. YD. | = | 33.33 SQ. YDS. |
| K. STA 227+79.86 TO STA 227+89.86, RT 10 FT. x (29.83 FT. + 30.17 FT.) / 2 / 9 SQ. FT./SQ. YD. | = | 33.33 SQ. YDS. |
| L. STA 228+24.83 TO STA 228+46.83, RT 22 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 4.89 SQ. YDS. |
| M. STA 236+08.23 TO STA 236+49.98, LT 41.75 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 9.28 SQ. YDS. |
| N. STA 236+67.18 TO STA 237+08.93, RT 41.75 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 9.28 SQ. YDS. |
| C. STA 238+08.13 TO STA 238+34.13, LT 26 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 5.78 SQ. YDS. |
| P. STA 238+51.36 TO STA 238+93.11, RT 41.75 FT. X 2 FT. / 9 SQ. FT./SQ. YD. | = | 9.28 SQ. YDS. |
| SUBTOTAL | = | 532.62 SQ. YDS. |

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| TOTAL OF ITEM 203 | = | 533 SQ. YDS. |
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ITEM 301 BITUMINOUS AGGREGATE BASE, AC-20

| | | |
|--|---|----------------|
| 9" THICKNESS | | |
| A. STA 223+12.09 TO STA 223+22.09, LT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 0.750 FT. / 27 CU. FT./CU. YD. | = | 8.06 CU. YDS. |
| B. STA 223+12.09 TO STA 223+22.09, RT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 0.750 FT. / 27 CU. FT./CU. YD. | = | 8.06 CU. YDS. |
| C. STA 227+79.86 TO STA 227+89.86, LT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 0.750 FT. / 27 CU. FT./CU. YD. | = | 8.06 CU. YDS. |
| D. STA 227+79.86 TO STA 227+89.86, RT 10 FT. X (29.17 FT. + 28.83 FT.) / 2 x 0.750 FT. / 27 CU. FT./CU. YD. | = | 8.06 CU. YDS. |
| E. STA 236+08.23 TO STA 236+49.98, LT 41.75 FT. x 1.5 FT. x 0.750 FT. / 27 CU. FT./CU. YD. | = | 1.74 CU. YDS. |
| F. STA 236+67.18 TO STA 237+08.93, RT 41.75 FT. x 1.5 FT. x 0.750 FT. / 27 CU. FT./CU. YD. | = | 1.74 CU. YDS. |
| G. STA 238+08.13 TO STA 238+34.13, LT 26 FT. X 1.5 FT. X 0.750 FT. / 27 CU. FT./CU. YD. | = | 1.08 CU. YDS. |
| H. STA 238+51.36 TO STA 238+93.11, RT 41.75 FT. x 1.5 FT. x 0.750 FT. / 27 CU. FT./CU. YD. | = | 1.74 CU. YDS. |
| SUBTOTAL | = | 38.54 CU. YDS. |
| 10.5" THICKNESS | | |
| I. STA 222+55.27 TO STA 222+77.27, LT 22 FT. X 1.5 FT. X 0.875 FT. / 27 CU. FT./CU. YD. | = | 1.07 CU. YDS. |
| J. STA 223+49.59 TO STA 223+54.59, RT 5 FT. X 1.5 FT. X 0.875 FT. / 27 CU. FT./CU. YD. | = | 0.24 CU. YDS. |
| K. STA 227+47.52 TO STA 227+52.52, LT 5 FT. X 1.5 FT. X 0.875 FT. / 27 CU. FT./CU. YD. | = | 0.24 CU. YDS. |
| L. STA 228+24.83 TO STA 228+46.83, RT 22 FT. X 1.5 FT. X 0.875 FT. / 27 CU. FT./CU. YD. | = | 1.07 CU. YDS. |
| SUBTOTAL | = | 2.62 CU. YDS. |

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| TOTAL OF ITEM 301 | = | 42 CU. YDS. |
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CALCULATIONS

ITEM 310 SUBBASE, TYPE I, GRADING A, AS PER PLAN

| | | |
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| A. STA 222+55.27 TO STA 222+77.27, LT 22 FT. X 2 FT. X 0.50 FT. / 27 CU. FT./CU. YD. | = | 0.81 CU. YDS. |
| B. STA 223+12.09 TO STA 223+22.09, LT 10 FT. x (30.17 FT. + 29.83 FT.)/2 x 0.5 FT. / 27 CU. FT./CU. YD. | = | 5.56 CU. YDS. |
| C. STA 223+12.09 TO STA 223+22.09, RT 10 FT. x (30.17 FT. + 29.83 FT.)/2 x 0.5 FT. / 27 CU. FT./CU. YD. | = | 5.56 CU. YDS. |
| D. STA 223+22.09 TO STA 223+47.09, LT 25 FT. x 31.83 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 14.74 CU. YDS. |
| E. STA 223+22.09 TO STA 223+47.09, RT 25 FT. x 31.83 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 14.74 CU. YDS. |
| F. STA 223+49.59 TO STA 223+54.59, RT 5 FT. x 2 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 0.19 CU. YDS. |
| G. STA 227+47.52 TO STA 227+52.52, LT 5 FT. x 2 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 0.19 CU. YDS. |
| H. STA 227+54.86 TO STA 227+79.86, LT 25 FT. x 31.83 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 14.74 CU. YDS. |
| I. STA 227+54.86 TO STA 227+79.86, RT 25 FT. x 31.83 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 14.74 CU. YDS. |
| J. STA 227+79.86 TO STA 227+89.86, LT 10 FT. x (30.17 FT. + 29.83 FT.)/2 x 0.5 FT. / 27 CU. FT./CU. YD. | = | 5.56 CU. YDS. |
| K. STA 227+79.86 TO STA 227+89.86, RT 10 FT. x (30.17 FT. + 29.83 FT.)/2 x 0.5 FT. / 27 CU. FT./CU. YD. | = | 5.56 CU. YDS. |
| L. STA 228+24.83 TO STA 228+46.83, RT 22 FT. X 2 FT. X 0.50 FT. / 27 CU. FT./CU. YD. | = | 0.81 CU. YDS. |
| M. STA 236+08.23 TO STA 236+49.98, LT 41.75 FT. x 2 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 1.55 CU. YDS. |
| N. STA 236+67.18 TO STA 237+08.93, RT 41.75 FT. x 2 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 1.55 CU. YDS. |
| O. STA 238+08.13 TO STA 238+34.13, LT 26 FT. X 2 FT. X 0.50 FT. / 27 CU. FT./CU. YD. | = | 0.96 CU. YDS. |
| P. STA 238+51.36 TO STA 238+93.11, RT 41.75 FT. x 2 FT. x 0.5 FT. / 27 CU. FT./CU. YD. | = | 1.55 CU. YDS. |
| SUBTOTAL | | = 88.81 CU. YDS. |

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| TOTAL OF ITEM 310 | = | 89 CU. YDS. |
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ITEM 402 ASPHALT CONCRETE, AC-20

1 - 1/2" Depth

| | | |
|---|---|-----------------|
| A. STA 223+12.09 TO STA 223+22.09, LT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| B. STA 223+12.09 TO STA 223+22.09, RT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| C. STA. 227+79.86 TO STA 227+89.86, LT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| D. STA. 227+79.86 TO STA 227+89.86, RT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| SUBTOTAL | | = 5.36 CU. YDS. |

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| TOTAL OF ITEM 402 | = | 6 CU. YDS. |
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ITEM 404 ASPHALT CONCRETE, AC-20

1 - 1/2" Depth

| | | |
|--|---|---------------|
| A. STA 222+55.27 TO STA 222+77.27, LT 22 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.15 CU. YDS. |
| B. STA 222+72.09 TO STA 223+12.09, LT 40 FT. x (33 FT. + 29.17 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 5.76 CU. YDS. |
| C. STA 222+72.09 TO STA 223+12.09, RT 40 FT. x (33 FT. + 29.17 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 5.76 CU. YDS. |
| D. STA 223+12.09 TO STA 223+22.09, LT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| E. STA 223+12.09 TO STA 223+22.09, RT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| F. STA 223+49.59 TO STA 223+54.59, RT 5 FT. X 1.5 FT X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.03 CU. YDS. |
| G. STA 227+47.52 TO STA 227+52.52, LT 5 FT. X 1.5 FT X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.03 CU. YDS. |
| H. STA 227+79.86 TO STA 227+89.86, LT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| I. STA 227+79.86 TO STA 227+89.86, RT 10 FT. x (29.17 FT. + 28.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.34 CU. YDS. |
| J. STA 227+89.86 TO STA 228+29.86, LT 40 FT. x (33 FT. + 29.17 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 5.76 CU. YDS. |

| | | |
|--|---|------------------|
| K. STA 227+89.86 TO STA 228+29.86, RT 40 FT. x (33 FT. + 29.17 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 5.76 CU. YDS. |
| L. STA 228+24.83 TO STA 228+46.83, RT 22 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.15 CU. YDS. |
| M. STA 236+03.13 TO STA 236+53.13, LT 50 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 7.83 CU. YDS. |
| N. STA 236+03.13 TO STA 236+53.13, RT 50 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 7.83 CU. YDS. |
| O. STA 236+53.13 TO STA 236+63.87, LT 10.74 FT. x (33.5 FT. + 33.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.67 CU. YDS. |
| P. STA 236+53.13 TO STA 236+63.87, RT 10.74 FT. x (33.5 FT. + 33.83 FT.)/2 x 0.125 FT. / 27 CU. FT./CU. YD. | = | 1.67 CU. YDS. |
| Q. STA 236+63.87 TO STA 236+78.13, RT 14.26 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 2.23 CU. YDS. |
| R. STA 236+63.87 TO STA 236+78.13, RT 14.26 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 2.23 CU. YDS. |
| S. STA 238+23.20 TO STA 238+48.20, LT 25 FT. x 34.3 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 3.97 CU. YDS. |
| T. STA 238+23.20 TO STA 238+48.20, RT 25 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 3.92 CU. YDS. |
| U. STA 238+48.20 TO STA 238+73.20, LT 25 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 3.92 CU. YDS. |
| V. STA 238+48.20 TO STA 238+66.95, RT 25 FT. x 33.83 FT. x 0.125 FT. / 27 CU. FT./CU. YD. | = | 3.92 CU. YDS. |
| W. STA 236+08.23 TO STA 236+49.98, LT 41.75 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.29 CU. YDS. |
| X. STA 236+67.18 TO STA 237+08.93, RT 41.75 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.29 CU. YDS. |
| Y. STA 238+08.13 TO STA 238+34.13, LT 26 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.18 CU. YDS. |
| Z. STA 238+51.36 TO STA 238+93.11, RT 41.75 FT. X 1.5 FT. X 0.125 FT. / 27 CU. FT./CU. YD. | = | 0.29 CU. YDS. |
| SUBTOTAL | | = 69.00 CU. YDS. |

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| TOTAL OF ITEM 404 | = | 69 CU. YDS. |
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ITEM 407 TACK COAT

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|---|---|---------------|
| A. STA 222+72.09 TO STA 223+12.09, LT 40 FT. x (29.17 FT. + 33 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 13.82 GAL. |
| B. STA 222+72.09 TO STA 223+12.09, RT 40 FT. x (29.17 FT. + 33 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 13.82 GAL. |
| C. STA 227+89.86 TO STA 228+29.86, LT 40 FT. x (29.17 FT. + 33 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 13.82 GAL. |
| D. STA 227+89.86 TO STA 228+29.86, RT 40 FT. x (29.17 FT. + 33 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 13.82 GAL. |
| E. STA 236+03.13 TO STA 236+53.13, LT 50 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 18.79 GAL. |
| F. STA 236+03.13 TO STA 236+53.13, RT 50 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 18.79 GAL. |
| G. STA 238+48.20 TO STA 238+73.20, LT 25 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 9.40 GAL. |
| H. STA 238+48.20 TO STA 238+73.20, RT 25 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 9.40 GAL. |
| I. STA 236+53.13 TO STA 236+63.81, LT 10.68 FT x (33.5 FT. + 33.83 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL./SQ. YD. | = | 3.99 GAL. |
| J. STA 236+53.13 TO STA 236+63.81, RT 10.68 FT x (33.5 FT. + 33.83 FT.)/2 / 9 SQ. FT./SQ. YD. x 0.1 GAL./SQ. YD. | = | 3.99 GAL. |
| K. STA 236+63.81 TO STA 236+78.13, LT 14.32 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL./SQ. YD. | = | 5.38 GAL. |
| L. STA 236+63.81 TO STA 236+78.13, RT 14.32 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL./SQ. YD. | = | 5.38 GAL. |
| M. STA 238+23.20 TO STA 238+48.20, LT 25 FT. x 34.3 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 9.53 GAL. |
| N. STA 238+23.20 TO STA 238+48.20, RT 25 FT. x 33.83 FT. / 9 SQ. FT./SQ. YD. x 0.1 GAL/SQ. YD. | = | 9.40 GAL. |
| SUBTOTAL | | = 149.33 GAL. |

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| TOTAL OF ITEM 407 | = | 150 GAL. |
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ITEM 601 CRUSHED AGGREGATE SLOPE PROTECTION (CU. YDS.)

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| A. STA 223+17 TO STA 223+45, LT 1 FT DEPTH AT 1.8:1 SLOPE = 1.15 FT DEPTH 238.88 S.F. AREA X 1.15 FT / 27 CU. FT./CU. YD. | = | 10.17 CU. YDS. |
| VARYING DEPTH, 5.72 FT AT ROCK CHANNEL PROTECTION TO 1.15 FT DEPTH 161.5 S.F. AREA X (5.72 FT + 1.15 FT)/2 / 27 CU. FT./CU. YD. | = | 20.55 CU. YDS. |
| LESS VOLUME FOR RETAINING WALL SHAFTS 4 SHAFTS X 25.13 S.F. AREA X (5.72 FT + 3.52 FT)/2 / 27 CU. YD./CU. FT. | = | -17.20 CU. YDS. |
| SUBTOTAL A | | = 13.52 CU. YDS. |
| B. SOUTH BASELINE STA 2+00 TO STA 3+00 | | |
| | | END AREA (S.F.) VOLUME (CU. FT.) |
| STA 2+00 | 39.05 | |
| STA 2+50 | 38.49 | 38.77 |
| STA 3+00 | 39.05 | 38.77 |
| SUBTOTAL B | | = 77.54 CU. YDS. |
| C. STA 224+08 TO STA 224+69, RT | | |
| | | 1 FT DEPTH AT 1.8:1 SLOPE = 1.15 FT DEPTH |
| | | 629 S.F. AREA X 1.15 FT / 27 CU. FT./CU. YD. |
| | | = 29.47 CU. YDS. |
| | | VARYING DEPTH, 5.72 FT AT ROCK CHANNEL PROTECTION TO 1.15 FT DEPTH |
| | | 307.7 S.F. AREA X (5.72 FT + 1.15 FT)/2 / 27 CU. FT./CU. YD. |
| | | = 39.15 CU. YDS. |
| | | LESS VOLUME FOR RETAINING WALL SHAFTS |
| | | 7 SHAFTS X 25.13 S.F. AREA X (5.72 FT + 3.52 FT)/2 / 27 CU. YD./CU. FT. |
| | | = -30.10 CU. YDS. |
| SUBTOTAL C | | = 38.52 CU. YDS. |
| D. STA 226+52 TO STA 227+03, LT | | |
| | | 1 FT DEPTH AT 1.8:1 SLOPE = 1.15 FT DEPTH |
| | | 773.63 S.F. AREA X 1.15 FT / 27 CU. FT./CU. YD. |
| | | = 32.95 CU. YDS. |
| | | VARYING DEPTH, 5.72 FT AT ROCK CHANNEL PROTECTION TO 1.15 FT DEPTH |
| | | 416.5 S.F. AREA X (5.72 FT + 1.15 FT)/2 / 27 CU. FT./CU. YD. |
| | | = 52.99 CU. YDS. |
| | | LESS VOLUME FOR RETAINING WALL SHAFTS |
| | | 7.5 SHAFTS X 25.13 S.F. AREA X (5.72 FT + 3.52 FT)/2 / 27 CU. YD./CU. FT. |
| | | = -32.25 CU. YDS. |
| SUBTOTAL D | | = 53.69 CU. YDS. |
| E. NORTH BASELINE STA 5+00 TO STA 6+00 | | |
| | | END AREA (S.F.) VOLUME (CU. YD.) |
| STA 5+00 | 40.20 | |
| STA 5+50 | 37.91 | 72.33 |
| STA 6+00 | 37.34 | 69.68 |
| SUBTOTAL E | | = 142.01 CU. YDS. |
| F. STA 227+66 TO STA 227+76, RT | | |
| | | 1 FT DEPTH AT 1.8:1 SLOPE = 1.15 FT DEPTH |
| | | 90.25 S.F. AREA X 1.15 FT / 27 CU. FT./CU. YD. |
| | | = 3.84 CU. YDS. |
| | | VARYING DEPTH, 5.72 FT AT ROCK CHANNEL PROTECTION TO 1.15 FT DEPTH |
| | | 25.50 S.F. AREA X (5.72 FT + 1.15 FT)/2 / 27 CU. FT./CU. YD. |
| | | = 3.24 CU. YDS. |
| SUBTOTAL F | | = 7.09 CU. YDS. |

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| TOTAL OF ITEM 601 | = | 333 CU. YDS. |
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CALCULATIONS

ITEM 601 ROCK CHANNEL PROTECTION, TYPE C, WITH FABRIC FILTER

| | | |
|--|-------------------|-----------------|
| A. STA 222+86 TO STA 223+32, LT | | |
| 5 FT DEPTH AT 2.4:1 SLOPE TO 1.8:1 SLOPE = 5.42 FT TO 5.72 FT DEPTHS | | |
| 976.48 S.F. AREA X (5.42 FT + 5.72 FT)/2 / 27 CU. FT./CU. YD. | = | 201.44 CU. YDS. |
| VARYING DEPTH, 4.75 FT TO 5.00 FT BEHIND RETAINING WALL SHAFTS AT 1.8:1 SLOPE = 5.72 FT TO 5.43 FT | | |
| 339.30 S.F. AREA X (5.72 FT + 5.43 FT)/2 / 27 CU. FT./CU. YD. | = | 70.06 CU. YDS. |
| VARYING DEPTH, OUTSIDE CRUSHED AGGREGATE SLOPE PROTECTION, 5.72 FT DEPTH TO 0 FT. DEPTH | | |
| 435.56 S.F. AREA X (5.72 FT + 0 FT)/2 / 27 CU. FT./CU. YD. | = | 46.14 CU. YDS. |
| LESS VOLUME FOR RETAINING WALL SHAFTS | | |
| 4 SHAFTS X 25.13 S.F. AREA X (5.72 FT + 3.52 FT)/2 / 27 CU. YD./CU. FT. | = | -17.20 CU. YDS. |
| SUBTOTAL A | = | 300.44 CU. YDS. |
| B. SOUTH BASELINE STA 2+00 TO STA 3+00 | | |
| END AREA (S.F.) | VOLUME (CU. YDS.) | |
| STA. 2+00 139.51 | 258.36 | |
| STA. 2+50 139.51 | 258.36 | |
| STA. 3+00 139.51 | | |
| SUBTOTAL B | = | 516.72 CU. YDS. |
| C. STA 223+81 TO STA 224+36.50, RT | | |
| 5 FT DEPTH AT 2.1:1 SLOPE TO 1.8:1 SLOPE = 5.54 FT TO 5.72 FT DEPTHS | | |
| 3126.28 S.F. AREA X (5.54 FT + 5.72 FT)/2 / 27 CU. FT./CU. YD. | = | 651.89 CU. YDS. |
| VARYING DEPTH, 4.75 FT TO 5.00 FT BEHIND RETAINING WALL SHAFTS AT 1.8:1 SLOPE = 5.72 FT TO 5.43 FT | | |
| 261 S.F. AREA X (5.43 FT + 5.72 FT)/2 / 27 CU. FT./CU. YD. | = | 53.89 CU. YDS. |
| VARYING DEPTH, OUTSIDE CRUSHED AGGREGATE SLOPE PROTECTION, 5.72 FT DEPTH TO 0 FT. DEPTH | | |
| 623.45 S.F. AREA X (5.72 FT + 0 FT)/2 / 27 CU. FT./CU. YD. | = | 66.04 CU. YDS. |
| SUBTOTAL C | = | 771.82 CU. YDS. |
| D. STA 226+69 TO STA 227+22, LT | | |
| 5 FT DEPTH AT 2.0:1 SLOPE TO 1.8:1 SLOPE = 5.59 FT TO 5.72 FT DEPTHS | | |
| 1446.06 S.F. AREA X (5.59 FT + 5.72 FT)/2 / 27 CU. FT./CU. YD. | = | 302.87 CU. YDS. |
| VARYING DEPTH, 4.75 FT TO 5.00 FT BEHIND RETAINING WALL SHAFTS AT 1.8:1 SLOPE = 5.72 FT TO 5.43 FT | | |
| 397.50 S.F. AREA X (5.43 FT + 5.72 FT)/2 / 27 CU. FT./CU. YD. | = | 82.08 CU. YDS. |
| VARYING DEPTH, OUTSIDE CRUSHED AGGREGATE SLOPE PROTECTION, 5.72 FT DEPTH TO 0 FT. DEPTH | | |
| 592 S.F. AREA X (5.72 FT + 0 FT)/2 / 27 CU. FT./CU. YD. | = | 62.71 CU. YDS. |
| SUBTOTAL D | = | 447.66 CU. YDS. |
| E. NORTH BASELINE STA 5+00 TO STA 6+00 | | |
| END AREA (S.F.) | VOLUME (CU. FT.) | |
| STA 5+00 139.51 | 258.36 | |
| STA 5+50 139.51 | 258.36 | |
| STA 6+00 139.51 | | |
| SUBTOTAL E | = | 516.72 CU. YDS. |
| F. STA 227+76 TO STA 228+15 | | |
| 5 FT DEPTH AT 2.0:1 SLOPE TO 1.8:1 SLOPE = 5.54 FT TO 5.72 FT DEPTHS | | |
| 1173 S.F. AREA X (5.72 FT + 5.54 FT)/2 / 27 CU. FT./CU. YD. | = | 244.59 CU. YDS. |
| VARYING DEPTH, OUTSIDE CRUSHED AGGREGATE SLOPE PROTECTION, 5.72 FT DEPTH TO 0 FT DEPTH | | |
| 511.5 S.F. AREA X (5.72 FT + 0 FT)/2 / 27 CU. FT./CU. YD. | = | 54.18 CU. YDS. |
| LESS VOLUME FOR RETAINING WALL SHAFTS | | |
| 4 SHAFTS X 25.13 S.F. AREA X (5.72 FT + 3.52 FT)/2 / 27 CU. YD./CU. FT. | = | -17.20 CU. YDS. |
| SUBTOTAL F | = | 281.57 CU. YDS. |
| TOTAL FOR ITEM 601 | = | 2835 CU. YDS. |

ITEM SPECIAL BERM RESHAPING

| | | |
|---------------------------------------|---|----------|
| A. STA 221+33.27 TO STA 222+83.27, LT | = | 150 L.F. |
| B. STA 222+27.59 TO STA 223+77.59, RT | = | 150 L.F. |
| C. STA 227+24.53 TO STA 228+74.53, LT | = | 150 L.F. |
| D. STA 228+18.83 TO STA 229+68.83, RT | = | 150 L.F. |
| SUBTOTAL | = | 600 L.F. |
| TOTAL OF ITEM SPECIAL | = | 600 L.F. |

ITEM 607 FENCE, TYPE CL

| | | |
|---------------------------------|---|----------|
| A. STA 223+80 TO STA 224+35, RT | = | 105 L.F. |
| B. STA 226+45 TO STA 227+23, LT | = | 145 L.F. |
| C. STA 228+16, RT | = | 40 L.F. |
| SUBTOTAL | = | 290 L.F. |
| TOTAL OF ITEM 607 | = | 290 L.F. |

ITEM 609 CURB, TYPE 6 (FOR MEDIAN CURB)

| | | |
|---------------------------------------|---|---------|
| A. STA 223+12.09 TO STA 223+22.09, LT | = | 10 L.F. |
| B. STA 223+12.09 TO STA 223+22.09, RT | = | 10 L.F. |
| D. STA 227+79.86 TO STA 227+89.86, LT | = | 10 L.F. |
| E. STA 227+79.86 TO STA 227+89.86, RT | = | 10 L.F. |
| SUBTOTAL | = | 40 L.F. |
| TOTAL OF ITEM 609 | = | 40 L.F. |

ITEM 609 CURB, TYPE 6, AS PER PLAN

| | | |
|---------------------------------------|---|----------|
| A. STA 222+55.27 TO STA 222+81.27, LT | = | 26 L.F. |
| B. STA 223+49.59 TO STA 223+59.59, RT | = | 10 L.F. |
| C. STA 227+42.52 TO STA 227+52.52, LT | = | 10 L.F. |
| D. STA 228+20.83 TO STA 228+46.83, RT | = | 26 L.F. |
| E. STA 236+08.23 TO STA 236+34.23, LT | = | 26 L.F. |
| F. STA 236+67.18 TO STA 236+93.18, RT | = | 26 L.F. |
| G. STA 238+08.13 TO STA 238+34.13, LT | = | 26 L.F. |
| H. STA 238+67.11 TO STA 238+93.11, RT | = | 26 L.F. |
| SUBTOTAL | = | 176 L.F. |
| TOTAL OF ITEM 609 | = | 176 L.F. |

ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN

| | | |
|--|---|-----------------|
| A. STA. 223+22.09 TO STA 223+47.09, LT 25 FT. x 29.83 FT. / 9 SQ. FT./SQ. YD. | = | 82.86 SQ. YDS. |
| B. STA. 223+22.09 TO STA 223+47.09, RT 25 FT. x 29.83 FT. / 9 SQ. FT./SQ. YD. | = | 82.86 SQ. YDS. |
| C. STA. 227+54.86 TO STA 227+79.86, LT 25 FT. x 29.83 FT. / 9 SQ. FT./SQ. YD. | = | 82.86 SQ. YDS. |
| D. STA. 227+54.86 TO STA 227+79.86, RT 25 FT. x 29.83 FT. / 9 SQ. FT./SQ. YD. | = | 82.86 SQ. YDS. |
| SUBTOTAL | = | 331.44 SQ. YDS. |
| TOTAL OF ITEM 611 | = | 332 SQ. YDS. |

ITEM 659 COMMERCIAL FERTILIZER

| | |
|---|-----|
| SHT. 21 - 248 x 9 x 20 ÷ 1000 ÷ 2000 = 0.02 | TON |
| SHT. 28 - 767 x 9 x 20 ÷ 1000 ÷ 2000 = 0.07 | TON |
| TOTAL = 0.09 | TON |

ITEM 659 SEEDING AND MULCHING

| | | |
|--|---|-----------------|
| A. STA 222+55.27 TO STA 222+81.27, LT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| B. STA 223+12.09 TO STA 223+47.09, CL 35 FT. x 17 FT. / 9 SQ. FT./SQ. YD. | = | 66.11 SQ. YDS. |
| C. STA 223+49.59 TO STA 223+75.59, RT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| D. STA 227+26.52 TO STA 227+52.52, LT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| E. STA 227+54.86 TO STA 227+86.86, CL 35 FT. x 17 FT. / 9 SQ. FT./SQ. YD. | = | 66.11 SQ. YDS. |
| F. STA 228+20.83 TO STA 228+46.83, RT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| G. STA 236+08.23 TO STA 236+34.23, LT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| H. STA 236+67.18 TO STA 236+93.18, RT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| I. STA 238+08.13 TO STA 238+34.13, LT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| J. STA 238+67.11 TO STA 239+93.11, RT 26 FT. x 5 FT. / 9 SQ. FT./SQ. YD. | = | 14.44 SQ. YDS. |
| SUBTOTAL | = | 247.74 SQ. YDS. |
| TOTAL OF ITEM 659 | = | 248 SQ. YDS. |

ITEM 659 WATER

| | | |
|---|---|------------|
| TOTAL PROJECT = 1015 SQ. YDS. (FROM ITEM 659 SEEDING AND MULCHING) X 9 SQ. FT./SQ. YD X 120 GAL/1000 SQ. FT. X 2 APPLICATIONS | = | 2,192 GAL. |
|---|---|------------|

* 767 SQ YDS. FROM SHEET 28

| | | |
|-------------------|---|----------|
| TOTAL OF ITEM 659 | = | 2 M.GAL. |
|-------------------|---|----------|

ITEM 660 REINFORCED SODDING, AS PER PLAN

| | | |
|--|---|-----------------|
| A. STA 222+53.27, LT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 62 FT.) / 9 SQ. FT./SQ. YD. | = | 81.11 SQ. YDS. |
| B. STA 223+47.59, RT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 62 FT.) / 9 SQ. FT./SQ. YD. | = | 81.11 SQ. YDS. |
| C. STA 227+54.52, LT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 62 FT.) / 9 SQ. FT./SQ. YD. | = | 81.11 SQ. YDS. |
| D. STA 236+08.23, LT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 35 FT.) / 9 SQ. FT./SQ. YD. | = | 54.11 SQ. YDS. |
| E. STA 236+65.18, RT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 35 FT.) / 9 SQ. FT./SQ. YD. | = | 54.11 SQ. YDS. |
| F. STA 238+36.13, LT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 35 FT.) / 9 SQ. FT./SQ. YD. | = | 54.11 SQ. YDS. |
| G. STA 238+95.11, RT (5 FT. x 2 FT. + 6 FT. x 2 FT. + (6 FT. + 7.5 FT.)/2 x 10 FT + (7.5 FT. + 9 FT.)/2 x 10 FT + 9 FT. x 20 FT.) / 9 SQ. FT./SQ. YD. | = | 39.11 SQ. YDS. |
| SUBTOTAL | = | 444.77 SQ. YDS. |
| TOTAL OF ITEM 660 | = | 445 SQ. YDS. |

GENERAL SUMMARY

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|-----------|------|
| CALC. BY: | SWC |
| DATE: | 2/92 |
| CHKD. BY: | J.H. |
| DATE: | 2/92 |

LAKE COUNTY
LAK-91-(4.23) (4.49)

| |
|---------------|
| OHIO |
| FHWA REGION 5 |

| |
|----|
| 22 |
| 56 |

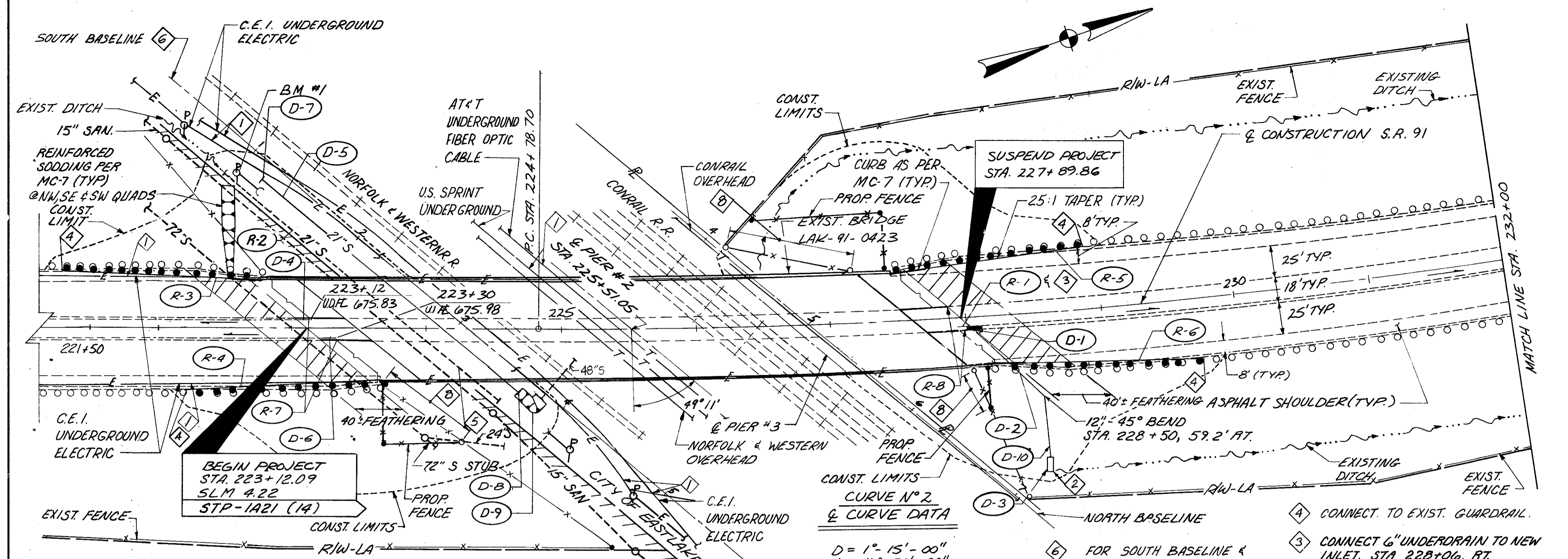
| SHEET NUMBER | | | | | | | | | | | | | | | | ITEM | ITEM EXT | TOTAL | UNIT | DESCRIPTION | AS PER PLAN REF. SHT. NO. | |
|--------------|--|--|------|--|--|--|------|------|----|----|------|--|--|----|--|---------|----------|-------|----------|---|---------------------------|--|
| | | | 8 | | | | 11 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | ROADWAY | |
| | | | LUMP | | | | | | | | | | | | | 201 | 11000 | LUMP | | | Clearing and Grubbing | |
| | | | | | | | 1493 | | | | | | | | | 202 | 23500 | 1493 | Sq. Yd. | Wearing Course Removed | | |
| | | | | | | | | 40 | | | | | | | | 202 | 32000 | 40 | Lin. Ft. | Curb Removed | | |
| | | | | | | | | 550 | 50 | | | | | | | 202 | 38200 | 600 | Lin. Ft. | Guardrail Removed For Reuse | | |
| | | | | | | | | | | | | | | | | 202 | 47000 | 8 | Each | Bridge Terminal Assembly Removed | | |
| | | | | | | | | | 4 | 4 | | | | | | 202 | 58401 | 1 | Each | Inlet Abandoned, As Per Plan | 11 | |
| | | | | | | | 225 | | | | | | | | | 202 | 75000 | 225 | Lin. Ft. | Fence Removed | | |
| | | | | | | | 733 | | | | | | | | | 203 | 13100 | 733 | Cu. Yd. | Excavation of Unsuitable Material | | |
| | | | | | | | 572 | | | | 58 | | | 40 | | 203 | 20000 | 670 | Cu. Yd. | Embankment | | |
| | | | | | | | 85 | | | | 2745 | | | | | 203 | 12000 | 2830 | Cu. Yd. | Excavation Not Including Embankment Construction | | |
| | | | | | | | 533 | | | | | | | | | 203 | 50000 | 533 | Sq. Yd. | Subgrade Compaction | | |
| | | | | | | | 5 | | | | | | | | | 203 | 60000 | 5 | Station | Linear Grading | | |
| | | | | | | | | 525 | 25 | | | | | | | 606 | 16500 | 550 | Lin. Ft. | Guardrail Rebuilt, Type 5 | | |
| | | | | | | | | 2 | 2 | | | | | | | 606 | 35000 | 4 | Each | Bridge Terminal Assembly, Type 1 | | |
| | | | | | | | | 2 | 2 | | | | | | | 606 | 35100 | 4 | Each | Bridge Terminal Assembly, Type 2 | | |
| | | | | | | | | | | | 600 | | | | | SPECIAL | 60650000 | 600 | Lin. Ft. | Berm Reshaping | 8 | |
| | | | | | | | | | | | 290 | | | | | 607 | 20000 | 290 | Lin. Ft. | Fence, Type CL | | |
| | | | | | | | | | | | | | | | | | | | | | DRAINAGE | |
| | | | | | | | | 25 | | | | | | | | SPECIAL | 50341200 | 25 | Cu. Yd. | Low Strength Mortar Backfill Material, Class LSM-50 | 9 | |
| | | | | | | | | 0.94 | | | | | | | | 602 | 20000 | 0.94 | Cu. Yd. | Concrete Masonry | | |
| | | | | | | | | 49 | | | | | | | | 603 | 04400 | 49 | Lin. Ft. | 12" Conduit, Type B, 706.02 | | |
| | | | | | | | | 82 | | | | | | | | 603 | 04600 | 82 | Lin. Ft. | 12" Conduit, Type C, 706.02 | | |
| | | | | | | | | 250 | | | | | | | | 603 | 09100 | 250 | Lin. Ft. | 21" Conduit, Type C, 706.02 | | |
| | | | | | | | | | | | | | | | | 604 | 02001 | 3 | Each | Catch Basin, No. 6, As Per Plan | 11 | |
| | | | | | | | | | | | | | | | | 604 | 18701 | 1 | Each | Inlet, No. 2-A-12, AS PER PLAN | 9 | |
| | | | | | | | | | | | | | | | | 605 | 11100 | 20 | Lin. Ft. | 6" Shallow Pipe Underdrain | | |
| | | | | | | | | | 20 | 30 | | | | | | 605 | 31100 | 30 | Lin. Ft. | Aggregate Drain | | |

\\DATA\PR10519\CAD\GEN1.DWG | 06-11-92

GENERAL SUMMARY

| SHEET NUMBER | | | | | | | | | | | | | | | ITEM | ITEM EXT | TOTAL | UNIT | DESCRIPTION | AS PER PLAN REF. SHT. NO. |
|-----------------|-----|----|----|----|-----|------|----|----|----|--|-----|--|--|-----|---------|----------|-------|----------|--|---------------------------|
| 9 | 12 | 17 | 19 | 20 | 21 | 25 | 26 | 28 | 49 | | | | | | | | | | | |
| PAVEMENT | | | | | | | | | | | | | | | | | | | | |
| | | | 42 | | | | | | | | | | | | 301 | 10002 | 42 | Cu. Yd. | Bituminous Aggregate Base, AC-20 | |
| | | | | 89 | | | | | | | | | | | 310 | 12001 | 89 | Cu. Yd. | Subbase, Type I, Grading A, As Per Plan | 8 |
| | | | | | 6 | | | | | | | | | | 402 | 20000 | 6 | Cu. Yd. | Asphalt Concrete, AC-20 | |
| | | | | | 69 | | | | | | | | | | 404 | 20000 | 69 | Cu. Yd. | Asphalt Concrete, AC-20 | |
| | | | | | 150 | | | | | | | | | | 407 | 10000 | 150 | Gal. | Tack Coat | |
| | | | | | | | 66 | | | | | | | | SPECIAL | 45132000 | 66 | Lin. Ft. | Pressure Relief Joint, Type C | 9 |
| | | | | | | 40 | | | | | | | | | 609 | 26000 | 40 | Lin. Ft. | Curb, Type 6 | |
| | | | | | | 176 | | | | | | | | | 609 | 26001 | 176 | Lin. Ft. | Curb, Type 6, As Per Plan | 8 |
| | | | | | | 332 | | | | | | | | | 611 | 25001 | 332 | Sq. Yd. | Reinforced Concrete Approach Slab (T=15"), As Per Plan | 8 |
| EROSION CONTROL | | | | | | | | | | | | | | | | | | | | |
| | 300 | | | | | | | | | | | | | | 207 | 30000 | 300 | Lin. Ft. | Filter Fabric Fence | |
| | 50 | | | | | | | | | | | | | | 207 | 70000 | 50 | Each | Straw or Hay Bales | |
| | | | | | | | | | | | | | | 110 | 601 | 20001 | 110 | Sq. Yd. | Crushed Aggregate Slope Protection, As Per Plan | 9 |
| | | | | | 333 | | | | | | | | | | 601 | 20500 | 333 | Cu. Yd. | Crushed Aggregate Slope Protection | |
| | | | | | | | 20 | | | | | | | | 601 | 32200 | 20 | Cu. Yd. | Rock Channel Protection, Type C, with Filter | |
| | | | | | | 2835 | | | | | | | | | 601 | 32204 | 2835 | Cu. Yd. | Rock Channel Protection, Type C, with Fabric Filter | |
| | | | | | | 248 | | | | | 767 | | | | 659 | 10000 | 1015 | Sq. Yd. | Seeding and Mulching | |
| | 100 | | | | | | | | | | | | | | 659 | 14000 | 100 | Sq. Yd. | Repair Seeding and Mulching | |
| | 3 | | | | | | | | | | | | | | 659 | 35000 | 3 | M. Gal. | Water | |
| | | | | | | 445 | | | | | | | | | 660 | 20001 | 445 | Sq. Yd. | Reinforced Sodding, As Per Plan | 9 |
| | 0.1 | | | | | 0.09 | | | | | | | | | 659 | 20000 | 0.10 | Ton | Commercial Fertilizer | |
| TRAFFIC CONTROL | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 2.96 | | | | | | | | | 642 | 00102 | 2.96 | Mile | Edge Line, Type 2 | |
| | | | | | | 1.47 | | | | | | | | | 642 | 00202 | 1.47 | Mile | Lane Line, Type 2 | |
| | | | | | | 0.01 | | | | | | | | | 642 | 00302 | 0.01 | Mile | Centerline, Type 2 | |
| | | | | | | 574 | | | | | | | | | 642 | 00402 | 574 | Lin. Ft. | Channelizing Line, Type 2 | |
| | | | | | | 130 | | | | | | | | | 642 | 00502 | 130 | Lin. Ft. | Stop Line, Type 2 | |
| | | | | | | 6 | | | | | | | | | 642 | 01302 | 6 | Each | Lane Arrow, Type 2 | |
| | | | | | | 3 | | | | | | | | | 642 | 01402 | 3 | Each | Word On Pavement, 72", Type 2 | |
| | | | | | 18 | | | | | | | | | | 802 | 00200 | 18 | Each | Barrier Reflector, Type B | |

\\DATA\PR11810\CAD\GEN2.dwg | 06-11-92

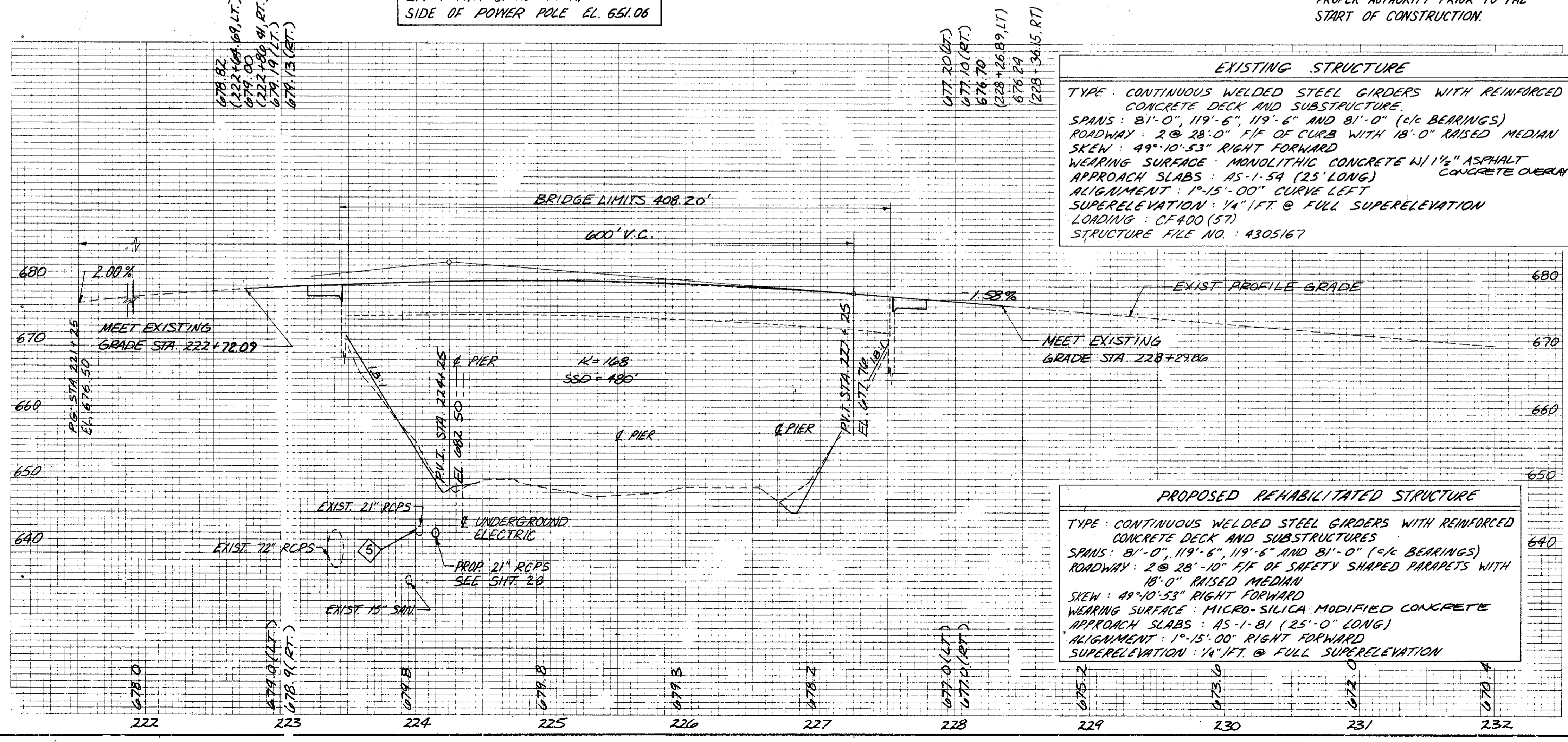


D = 1° 15' - 00"
 Δ = 16° 30' - 00"
 R = 4583.00'
 T = 664.60'
 L = 1320.00'
 C = 1315.44'
 E = 47.93'
 P.T. STA = 231+43.30 ±
 SUPERELEVATION = 0.021 FT/FT

- 1 EXACT LOCATION OF UNDERGROUND UTILITY TO BE DETERMINED BY THE PROPER AUTHORITY PRIOR TO THE START OF CONSTRUCTION.
- 2 SEE OUTLET CHANNEL PROTECTION DETAIL I, SHT. NO. 4
- 3 CONNECT 6" UNDERDRAIN TO NEW INLET, STA. 228+06, RT.
- 4 FOR SOUTH BASELINE & 21" STORM SEWER RELOCATION DETAILS, SEE SHT. 28.
- 5 EXISTING 21" STORM SEWER TO BE BACKFILLED WITH LOW STRENGTH MORTAR BACKFILL MATERIAL

NOTE: FOR SOUTH AND NORTH BASELINE REFERENCE POINTS, SEE SHT. 28

BM #1 RIR SPIKE IN N/E SIDE OF POWER POLE EL. 651.06



EXISTING STRUCTURE

TYPE: CONTINUOUS WELDED STEEL GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.
 SPANS: 81'-0", 119'-6", 119'-6" AND 81'-0" (c/c BEARINGS)
 ROADWAY: 2 @ 28'-0" F/F OF CURB WITH 18'-0" RAISED MEDIUM SKEW: 49°10'53" RIGHT FORWARD
 WEARING SURFACE: MONOLITHIC CONCRETE W/ 1 1/2" ASPHALT CONCRETE OVERLAY
 APPROACH SLABS: 15'-1.54' (25' LONG)
 ALIGNMENT: 1°-15'-00" CURVE LEFT
 SUPERELEVATION: 1/4" FT. @ FULL SUPERELEVATION
 LOADING: CF400 (57)
 STRUCTURE FILE NO.: 4305167

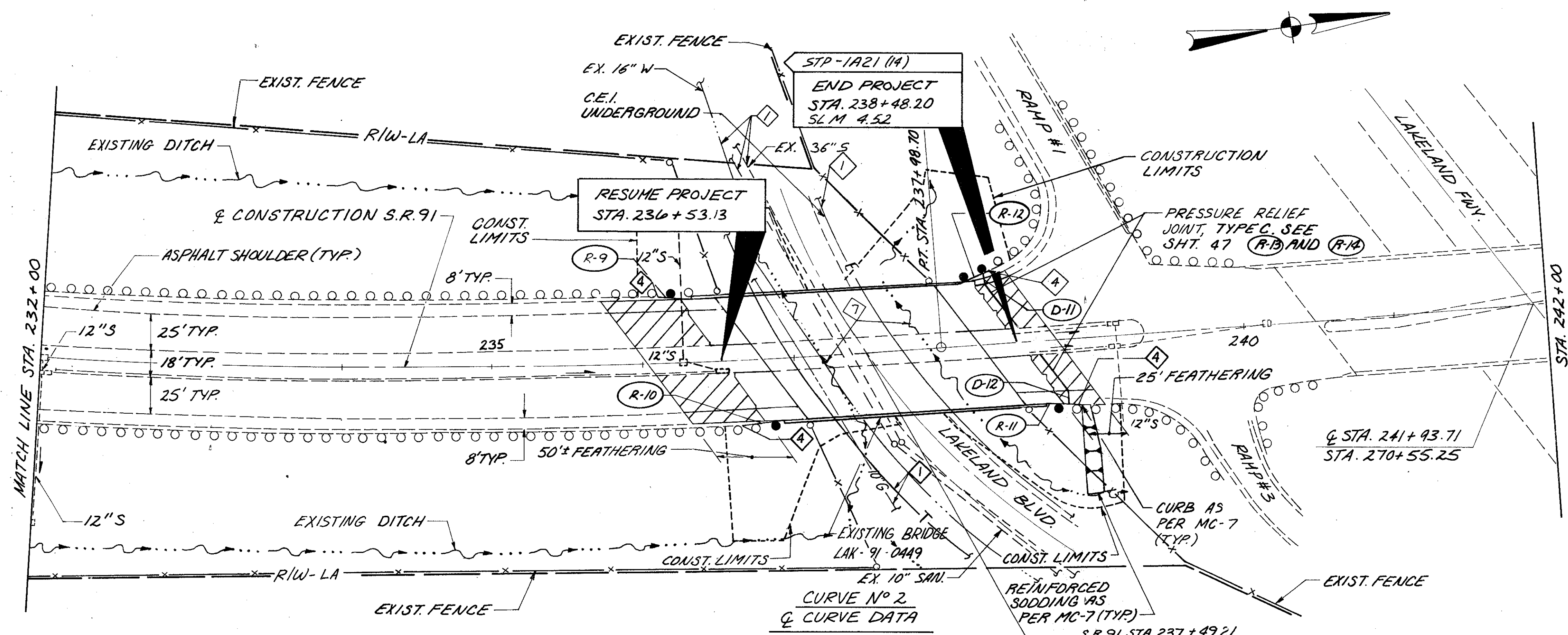
PROPOSED REHABILITATED STRUCTURE

TYPE: CONTINUOUS WELDED STEEL GIRDERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURES
 SPANS: 81'-0", 119'-6", 119'-6" AND 81'-0" (c/c BEARINGS)
 ROADWAY: 2 @ 28'-10" F/F OF SAFETY SHAPED PARAPETS WITH 18'-0" RAISED MEDIUM SKEW: 49°10'53" RIGHT FORWARD
 WEARING SURFACE: MICRO-SILICA MODIFIED CONCRETE
 APPROACH SLABS: 15'-1.81' (25'-0" LONG)
 ALIGNMENT: 1°-15'-00" RIGHT FORWARD
 SUPERELEVATION: 1/4" FT. @ FULL SUPERELEVATION

| REF. | LOCATION | C.Y. | LIN. FT. | EACH | LIN. FT. | LIN. FT. | EACH | EACH |
|---------------|----------------------------------|------|----------|------|----------|----------|------|------|
| R-1 | | | | | | | | |
| R-2 | STA. 0+87.5 TO 3+62, RT. | 25 | | | | | | |
| R-3 | STA. 221+33.27 TO 222+83.27, LT | | 137.5 | 1 | | 137.5 | | 1 |
| R-4 | STA. 222+27.59 TO 223+77.59, RT. | | 137.5 | 1 | | 125 | 1 | |
| R-5 | STA. 227+24.53 TO 228+74.53, LT | | 137.5 | 1 | | 125 | 1 | |
| R-6 | STA. 228+18.83 TO 229+68.83, RT | | 137.5 | 1 | | 137.5 | | 1 |
| R-7 | STA. 223+12.09 TO 223+22.09 | | | | 20 | | | |
| R-8 | STA. 227+79.86 TO 227+89.86 | | | | 20 | | | |
| TOTALS | | 25 | 550 | 4 | 40 | 525 | 2 | 2 |

| REF. | LOCATION | C.Y. | LIN. FT. | EACH | LIN. FT. | C.Y. | LIN. FT. | LIN. FT. |
|---------------|----------------------------------|------|----------|------|----------|------|----------|----------|
| D-1 | STA. 228+06, 9' RT. | | | 1 | | | | |
| D-2 | STA. 228+06 TO 228+50 | | | | 49 | | | |
| D-3 | STA. 228+50, 115 RT. | 3 | | | | 0.2 | | |
| D-4 | STA. 223+02.57 TO 223+12.57 | | | | | | 10 | |
| D-5 | STA. 1+16.14 TO 3+66.14, 12' RT. | | | | | | | 250 |
| D-6 | STA. 223+21.09 TO 223+31.09 | | | | | | 10 | |
| D-7 | STA. 1+16.14, 12' RT. | | | | | 0.37 | | |
| D-8 | STA. 3+66.14, 12' RT. | | | | | 0.37 | | |
| D-9 | STA. 3+66.14 TO 3+80.14, 12 RT. | 17 | | | | | | |
| *D-10 | STA. 228+50, RT. | | 82 | | | | | |
| TOTALS | | 20 | 82 | 1 | 49 | 0.94 | 20 | 250 |

* BENDS & BRANCHES, 1-12" x 45°, 2-12" x 45°



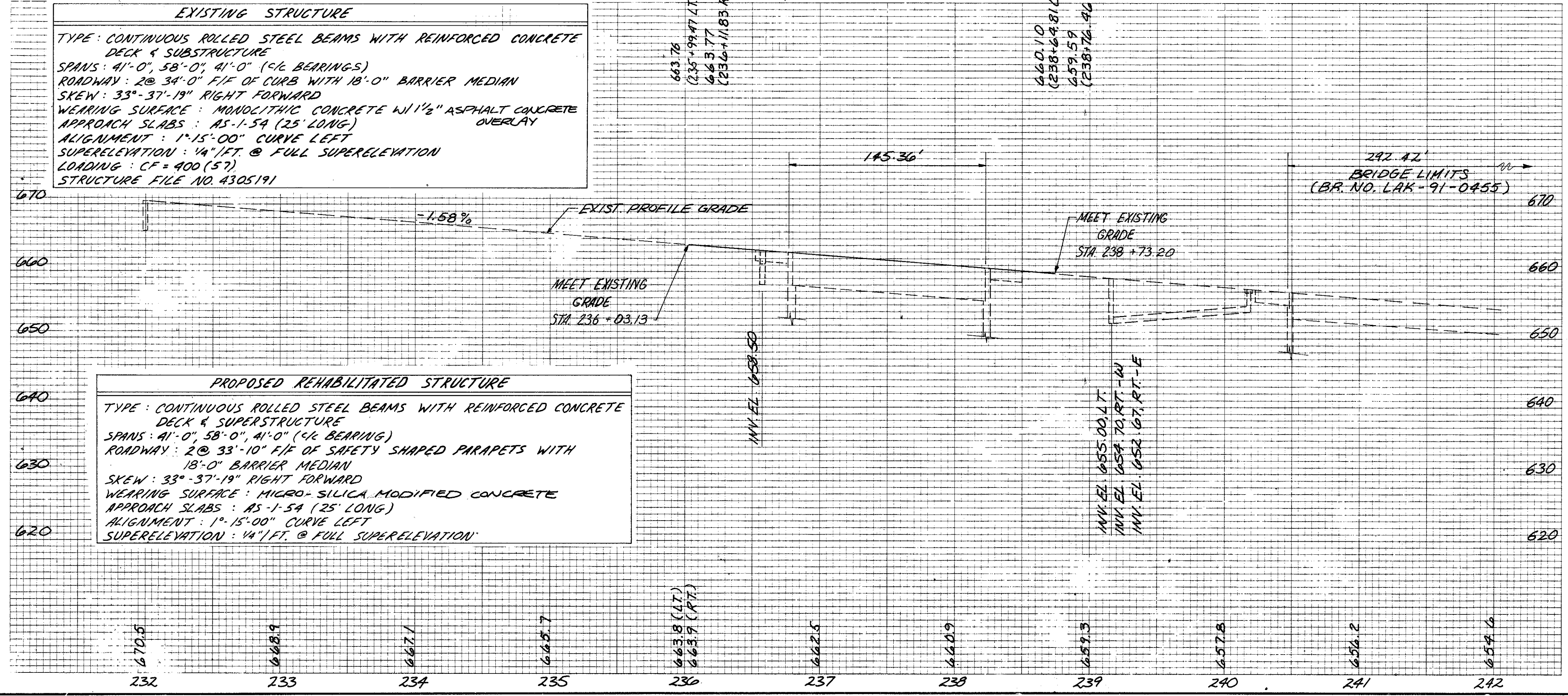
- ⓐ CONNECT TO EXISTING GUARDRAIL
- ⓑ EXACT LOCATION OF UNDERGROUND UTILITY TO BE DETERMINED BY THE PROPER AUTHORITY PRIOR TO THE START OF CONSTRUCTION.

CURVE NO. 2
CURVE DATA
 D = 1° 15' 00"
 Δ = 16° 30' 00"
 R = 4583.66'
 T = 664.60'
 L = 1320.00'
 C = 1315.44'
 E = 47.93'
 P.I. STA. = 231+43.30 ±
 SUPERELEVATION = 0.021 FT/FT

⑦ SEE SHT. 49 FOR LINEAR GRADING DETAIL ADJACENT TO BRIDGE PIERS.

| REF. | LOCATION | LINE FT. EACH | L.F. | EACH | EACH | L.F. |
|---------------|---------------------------------|---------------|------|------|------|------|
| R-9 | STA. 236+27.63 - 236+52.63, LT. | 12.5 | 1 | 12.5 | 1 | |
| R-10 | STA. 236+87.71 - 237+12.71, RT. | 12.5 | 1 | | | |
| R-11 | STA. 237+99.63 - 238+13.63, LT. | 12.5 | 1 | | 1 | |
| R-12 | STA. 238+48.71 - 238+73.71, RT. | 12.5 | 1 | 12.5 | 1 | |
| R-13 | STA. 238+55, LT. | | | | | 37 |
| R-14 | STA. 238+60, RT. | | | | | 29 |
| TOTALS | | 50 | 4 | 25 | 2 | 66 |

| REF. | LOCATION | LINE FT. EACH | L.F. | EACH | EACH | L.F. |
|---------------|--------------------|---------------|------|------|------|------|
| D-11 | STA. 238+33.5, LT. | | | | | 15 |
| D-12 | STA. 238+79, RT. | | | | | 15 |
| TOTALS | | | | 1 | 30 | |



EXISTING STRUCTURE
 TYPE: CONTINUOUS ROLLED STEEL BEAMS WITH REINFORCED CONCRETE DECK & SUBSTRUCTURE
 SPANS: 41'-0", 58'-0", 41'-0" (C/L BEARINGS)
 ROADWAY: 2 @ 34'-0" F/F OF CURB WITH 18'-0" BARRIER MEDIAN
 SKEW: 33°-37'-19" RIGHT FORWARD
 WEARING SURFACE: MONOLITHIC CONCRETE W/ 1/2" ASPHALT CONCRETE OVERLAY
 APPROACH SLABS: AS-1-54 (25' LONG)
 ALIGNMENT: 1°-15'-00" CURVE LEFT
 SUPERELEVATION: 1/4" FT. @ FULL SUPERELEVATION
 LOADING: CF = 400 (S7)
 STRUCTURE FILE NO. 4305191

PROPOSED REHABILITATED STRUCTURE
 TYPE: CONTINUOUS ROLLED STEEL BEAMS WITH REINFORCED CONCRETE DECK & SUPERSTRUCTURE
 SPANS: 41'-0", 58'-0", 41'-0" (C/L BEARING)
 ROADWAY: 2 @ 33'-10" F/F OF SAFETY SHAPED PARAPETS WITH 18'-0" BARRIER MEDIAN
 SKEW: 33°-37'-19" RIGHT FORWARD
 WEARING SURFACE: MICRO-SILICA MODIFIED CONCRETE
 APPROACH SLABS: AS-1-54 (25' LONG)
 ALIGNMENT: 1°-15'-00" CURVE LEFT
 SUPERELEVATION: 1/4" FT. @ FULL SUPERELEVATION

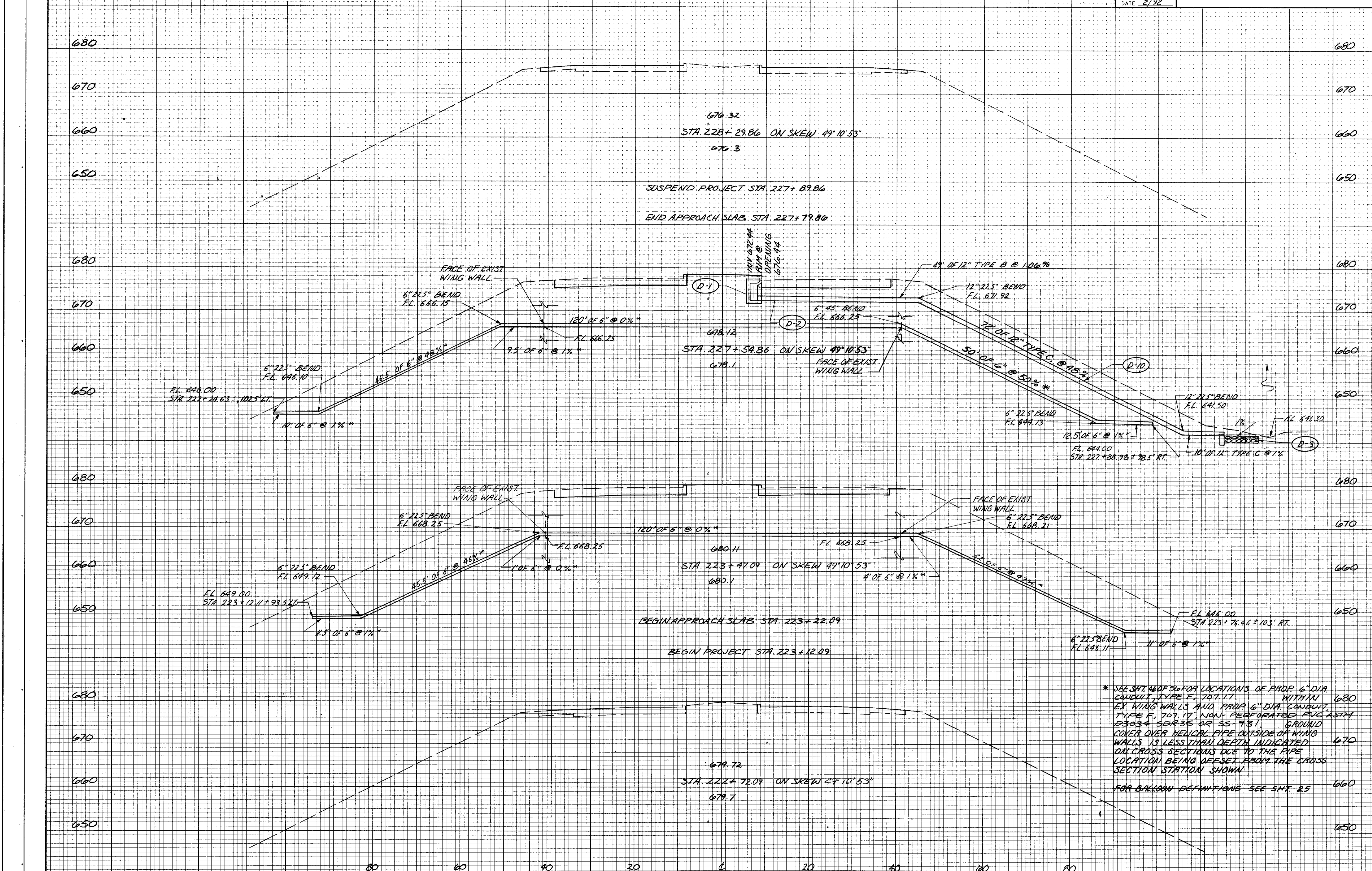
SEEDING
END WIDTH SQ. YDS.

CALC BY SWG
DATE 11/92
CHKD BY TJH
DATE 2/92

LAKE COUNTY
LAK - 91 - (4.23)(4.49)

OHIO
FHWA REGION 5
27
56

END AREA VOLUME
CUT FILL CUT FILL



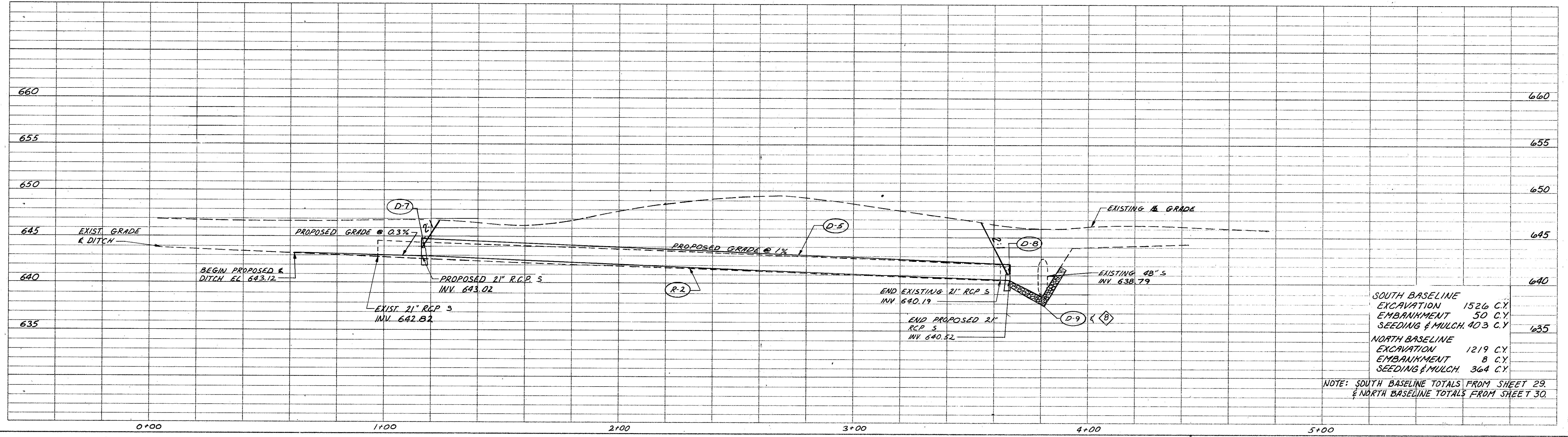
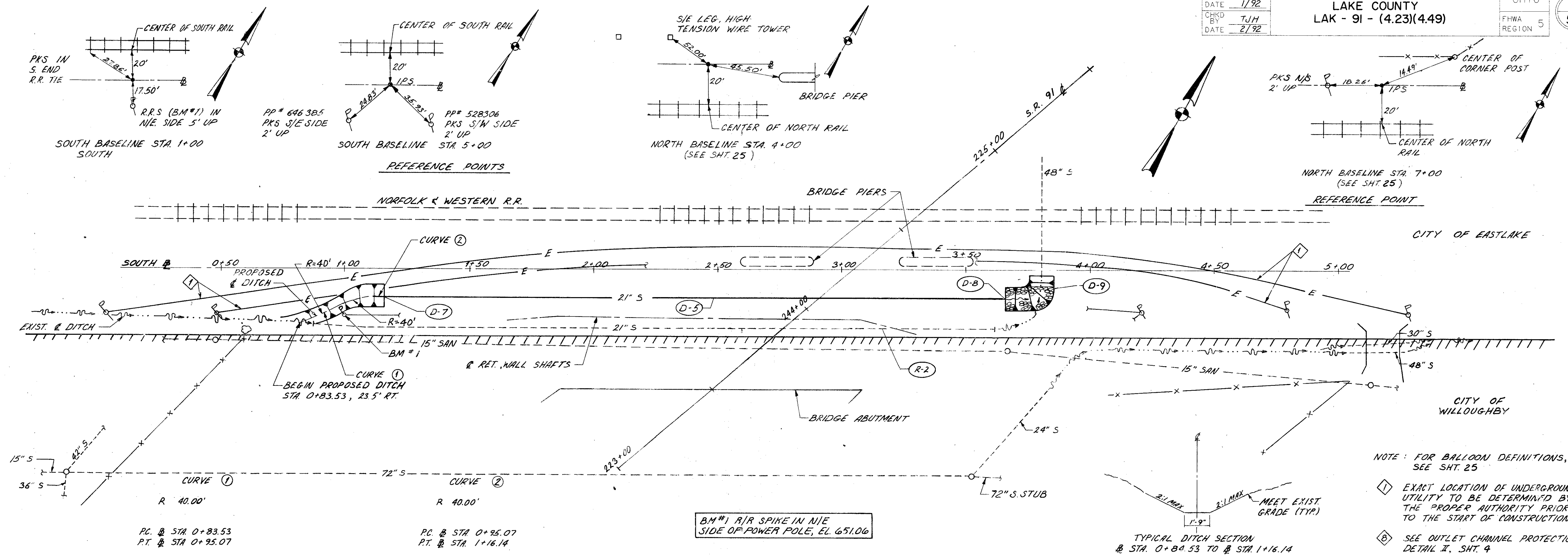
* SEE SH. 46 OF 56 FOR LOCATIONS OF PROP. 6" DIA. CONDUIT, TYPE F, 707.17. WITHIN EX. WING WALLS AND PROP. 6" DIA. CONDUIT, TYPE F, 707.17, NON-PERFORATED PVC ASTM D3034 SER 36 OR 55-731. GROUND COVER OVER HELICAL PIPE OUTSIDE OF WING WALLS IS LESS THAN DEPTH INDICATED ON CROSS SECTIONS DUE TO THE PIPE LOCATION BEING OFFSET FROM THE CROSS SECTION STATION SHOWN.

FOR BALLOON DEFINITIONS SEE SH. 25

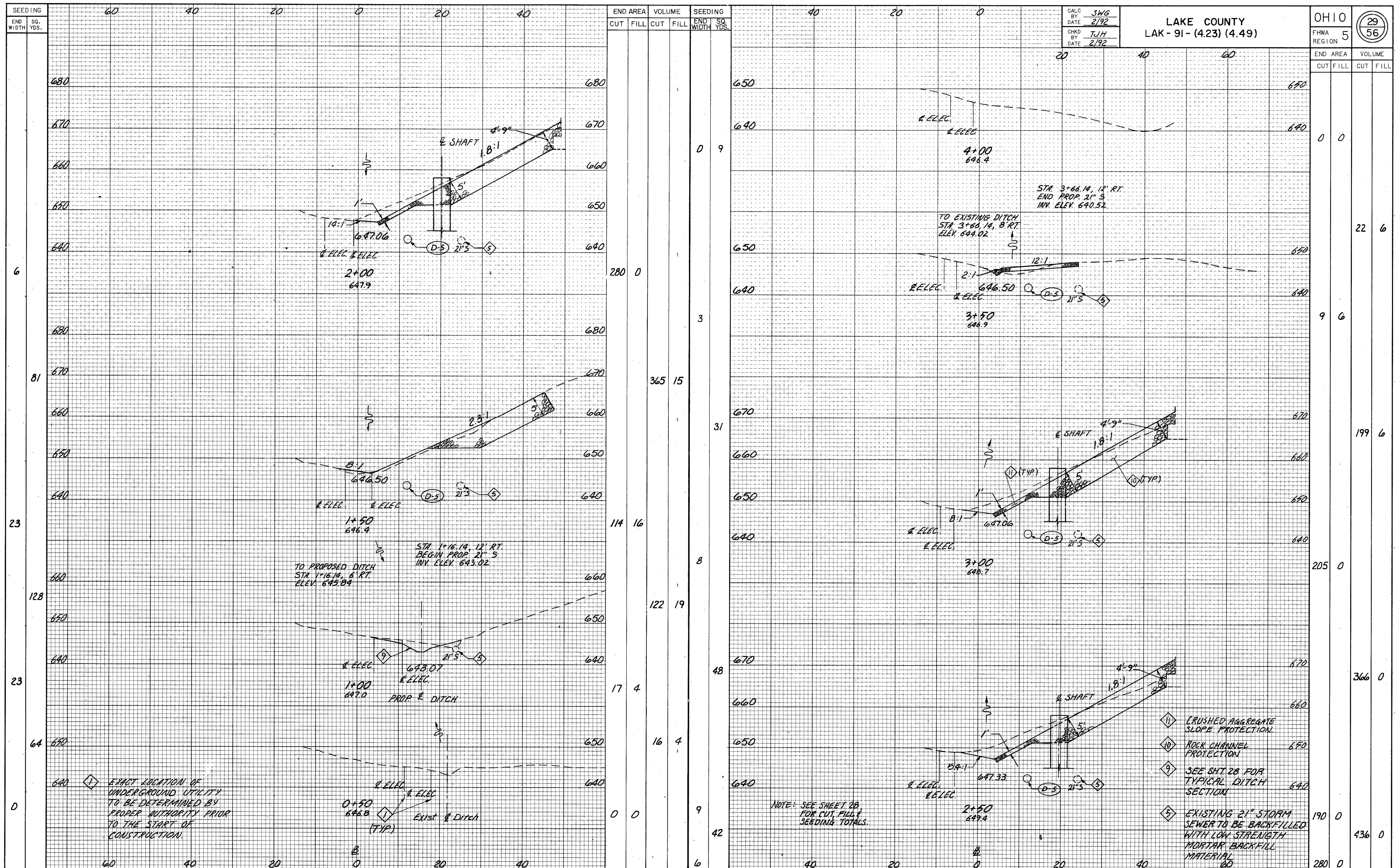
CALC BY SWG
 DATE 1/92
 CHKD BY TJH
 DATE 2/92

LAKE COUNTY
 LAK - 91 - (4.23)(4.49)

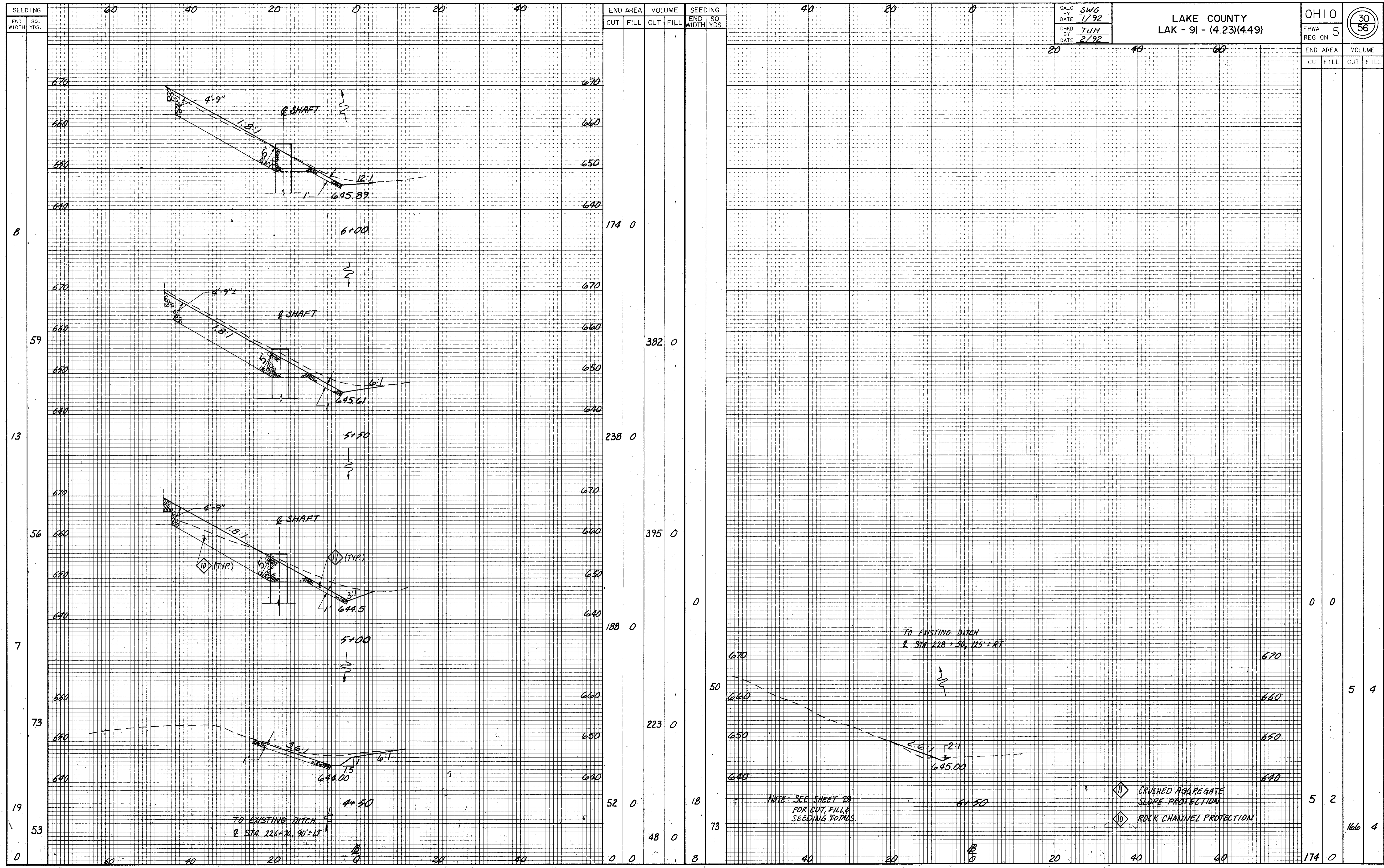
OHIO 28
 FHWA REGION 5 56



SOUTH BASELINE STA. 0+00 TO STA. 5+00



SOUTH BASELINE X-SECTIONS STA. 0+50 TO STA. 4+00



CALC BY: SWG
 DATE: 1/92
 CHKD BY: TJH
 DATE: 2/92

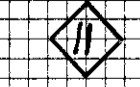
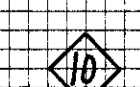
LAKE COUNTY
 LAK - 91 - (4.23)(4.49)

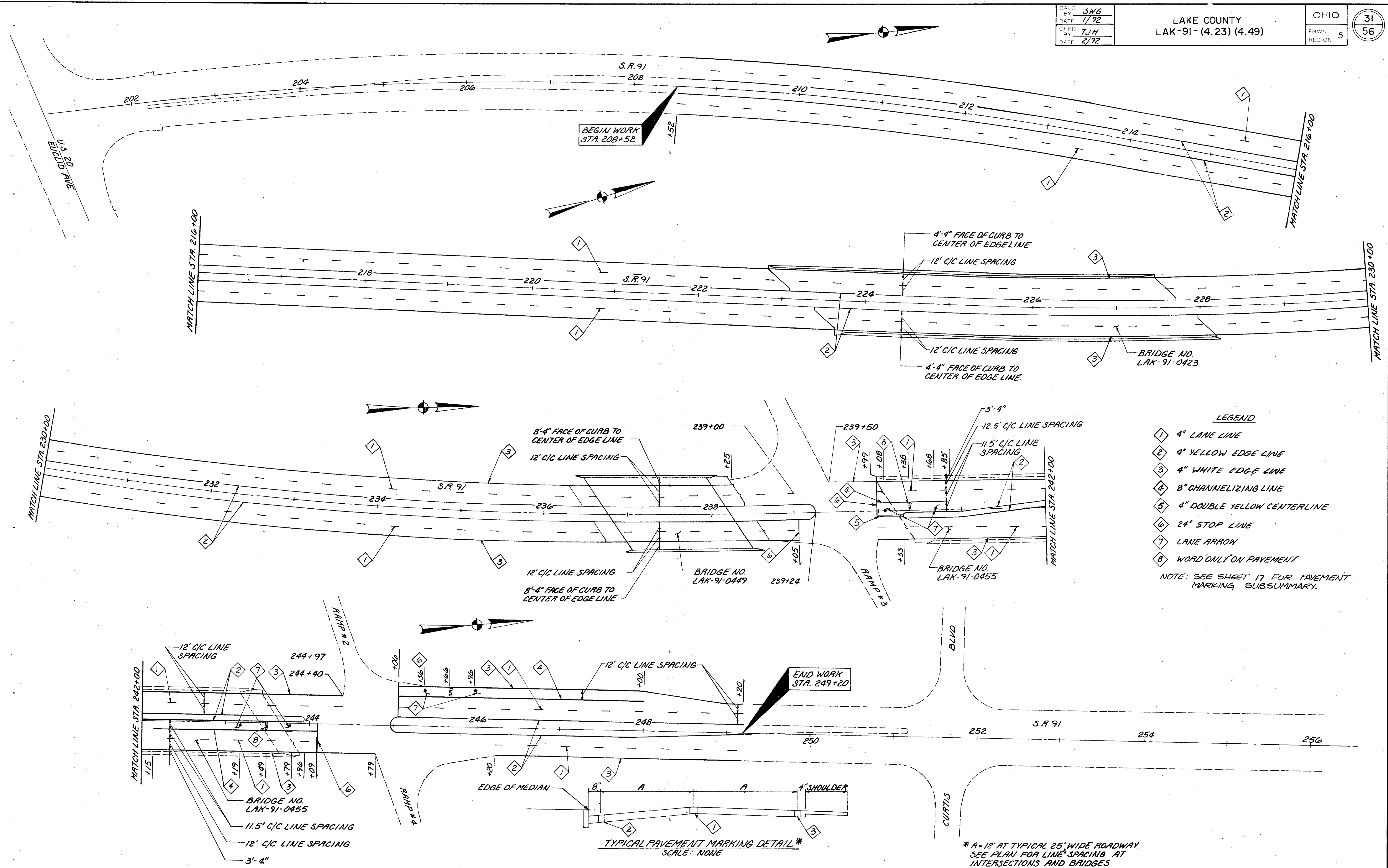
OHIO
 FHWA REGION 5
 30
 56

| SEEDING | | END AREA | | VOLUME | | SEEDING | |
|-----------|----------|----------|------|--------|------|-----------|----------|
| END WIDTH | SO. YDS. | CUT | FILL | CUT | FILL | END WIDTH | SO. YDS. |
| 60 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| 40 | 8 | 174 | 0 | 0 | 0 | 40 | 8 |
| 20 | 59 | 382 | 0 | 0 | 0 | 20 | 59 |
| 0 | 13 | 238 | 0 | 0 | 0 | 0 | 13 |
| 20 | 56 | 395 | 0 | 0 | 0 | 20 | 56 |
| 40 | 7 | 188 | 0 | 0 | 0 | 40 | 7 |
| 60 | 73 | 223 | 0 | 0 | 0 | 60 | 73 |
| 80 | 19 | 52 | 0 | 18 | 0 | 80 | 19 |
| 100 | 53 | 48 | 0 | 0 | 0 | 100 | 53 |
| 120 | 0 | 0 | 0 | 0 | 0 | 120 | 0 |

TO EXISTING DITCH
 @ STA 228+50, 125 ± RT.

NOTE: SEE SHEET 28
 FOR CUT, FILL &
 SEEDING TOTALS.

-  CRUSHED AGGREGATE SLOPE PROTECTION
-  ROCK CHANNEL PROTECTION



- LEGEND**
- 1 4" LANE LINE
 - 2 4" YELLOW EDGE LINE
 - 3 4" WHITE EDGE LINE
 - 4 8" CHANNELIZING LINE
 - 5 4" DOUBLE YELLOW CENTERLINE
 - 6 24" STOP LINE
 - 7 LANE ARROW
 - 8 WORD 'ONLY' ON PAVEMENT
- NOTE: SEE SHEET 17 FOR PAVEMENT MARKING SUBSUMMARY.

TYPICAL PAVEMENT MARKING DETAIL *
SCALE: NONE

* A = 12' AT TYPICAL 25' WIDE ROADWAY.
SEE PLAN FOR LINE SPACING AT INTERSECTIONS AND BRIDGES

GENERAL NOTES

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81 DATED 11-27-81 BR-2-82 DATED 11-1-82
SD-1-69 DATED 6-12-69
EXJ-4-87 DATED 1-5-89
RB-1-55 REVISED 2-2-59

AND TO SUPPLEMENTAL SPECIFICATIONS:

852 DATED 7-30-93

DESIGN STRESSES:

CONCRETE CLASS S - UNIT STRESS 1,500 PSI
REINFORCING STEEL - ASTM A615, A616, OR A617
GRADE 60 - UNIT STRESS 24,000 PSI

DECK PROTECTION METHOD: SUPERPLASTICIZED DENSE CONCRETE OVERLAY

PLAN OF OPERATIONS AND PROTECTION:

THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR A COMPLETE SCHEDULE OF CONSTRUCTION OPERATIONS ALONG WITH PLANS CONTAINING HIS PROPOSED METHODS OF PREVENTING DEBRIS FROM FALLING ON THE ROADWAY OR RAILWAY BELOW. THESE PLANS MUST BE SUBMITTED AND APPROVED PRIOR TO COMMENCING THE WORK. NO REMOVAL WORK SHALL BE STARTED WITHOUT PRIOR APPROVAL OF THE ENGINEER. FOR RESTRICTIONS ON LANE CLOSURES, SEE MAINTENANCE OF TRAFFIC NOTES ON SHEET 10 OF 56.

THE MAJOR WORK ON BOTH BRIDGES IS AS FOLLOWS:

- PATCH CONCRETE STRUCTURES WITH ITEM 519 AS PER PLAN OR ITEM SPECIAL-TROWELABLE MORTAR, AS GIVEN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.
- INSTALL 1-3/4" SDC OVERLAY ON THE BRIDGE DECK, INCLUDING VARIABLE AND FULL DEPTH REPAIRS.
- SEAL CONCRETE SURFACES AS SHOWN ON SHEETS 5/24 & 16/24 & 23/24
- INSTALL SAFETY SHAPED PARAPETS AND TRANSITIONS.
- CLEAN AND PAINT ALL EXISTING AND PROPOSED STRUCTURAL STEEL.
- INSTALL LONGITUDINAL DECK JOINT SEAL.
- VERTICALLY EXTEND STRUCTURAL EXPANSION JOINTS INCLUDING ELASTOMERIC STRIP SEALS AS PER PLAN.
- REPAIR OR REPLACE ABUTMENT DRAINAGE SYSTEM AND PLUG DECK SCUPPERS.
- RESET BRIDGE BEARINGS AT LOCATIONS INDICATED IN THE PLANS.

ADDITIONAL MAJOR WORK ON BRIDGE NO. LAK-91-0423 ONLY IS AS FOLLOWS:

- REMOVE AND REPLACE EXISTING CONCRETE APPROACH SLAB.
- INSTALLATION OF A RETAINING WALL SYSTEM WITHIN THE ABUTMENT FORESLOPE AREAS.

EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTION 102.05 AND 105.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR, HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS, DIMENSIONS, ELEVATIONS, AND SKEW ANGLES WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

ANY ADDITIONAL COST RESULTING FROM VARIATIONS FROM PLAN DIMENSIONS IS THE RESPONSIBILITY OF THE CONTRACTOR AND NO ADDITIONAL PAYMENT OVER THE UNIT PRICE BID WILL BE AWARDED.

EXISTING STRUCTURE PLANS:

THE ORIGINAL DESIGN PLANS MAY BE EXAMINED BY PROSPECTIVE BIDDERS AT THE DEPARTMENT OF TRANSPORTATION, DISTRICT 12 OFFICE, 5500 TRANSPORTATION BLVD., GARFIELD HEIGHTS, OHIO. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS.

ITEM 202--PORTIONS OF STRUCTURES REMOVED:

WORK TO BE PAID FOR UNDER THIS ITEM SHALL INCLUDE THE REMOVAL OF STRUCTURAL COMPONENTS AS DETAILED IN THE PLANS AND AS DIRECTED BY THE ENGINEER. THESE REMOVALS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING LIST:

- PORTIONS OF BRIDGE NOT ASSOCIATED WITH CONCRETE RAILING REFACE WORK AND EXP. JOINT REHABILITATION WORK.
- APPROACH SLABS (BRG. NO. LAK-91-0423 ONLY)
- REMOVE DEBRIS FROM EXISTING ABUTMENT BRIDGE SEATS.
- EXISTING ASPHALT WEARING SURFACE ON BRIDGE DECKS

ONLY PNEUMATIC OR HAND TOOLS THAT WILL GIVE RESULTS SATISFACTORY TO THE ENGINEER SHALL BE USED IN THE REMOVAL OF THE DISINTEGRATED CONCRETE. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGING THE EXISTING REINFORCING STEEL WHICH IS TO REMAIN IN PLACE. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 60 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18-INCH LIMIT HAMMERS NOT TO EXCEED 90 POUNDS MAY BE USED WITH THE APPROVAL OF THE ENGINEER. NO HOE RAMS SHALL BE USED. ANY STEEL WHICH IS MADE UNUSABLE BY THE CONTRACTOR'S CONCRETE REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT HIS COST.

ALL NECESSARY PRECAUTIONS SHALL BE EXERCISED TO PREVENT DEBRIS FROM FALLING TO AND/OR DAMAGING THE GROUND, THE RAILROAD TRACKS AND BED OR LAKELAND BLVD. NO DEBRIS SHALL BE ALLOWED TO REMAIN ON THE SITE.

ITEM 509--EPOXY COATED REINFORCING STEEL, AS PER PLAN:

THIS ITEM SHALL BE USED TO REPLACE REINFORCING STEEL WHICH IS BENT, ELONGATED, MISSING OR EXTREMELY CORRODED. BARS SHALL BE THE SAME SIZE AS ORIGINAL BARS AND SHALL BE PLACED AS NEAR AS POSSIBLE TO THEIR ORIGINAL LOCATION. BARS SHALL BE LAPPED ACCORDING TO SECTION 509.08. PAYMENT FOR THIS ITEM SHALL INCLUDE THE COST OF ALL MATERIALS AND LABOR NECESSARY TO COMPLETE THE ABOVE WORK, INCLUDING REMOVAL OF EXISTING STEEL. ANY EXISTING REINFORCING BARS WHICH ARE TO INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNUSABLE BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT HIS COST.

THE FOLLOWING ESTIMATED QUANTITY OF REINFORCING STEEL IS TO BE USED WHERE AND AS DIRECTED BY THE ENGINEER, AND HAS BEEN CARRIED TO THE ESTIMATED QUANTITIES FOR BRIDGE NO. LAK-91-0423 AND BRIDGE NO. LAK-91-0449

| ITEM | DESCRIPTION | QUANTITY |
|------|---|-------------------------|
| 509 | EPOXY COATED REINFORCING STEEL, AS PER PLAN | 200 POUNDS (EA. BRIDGE) |

STRUCTURAL STEEL CLEANING AND PAINTING:

A. AREA TO BE PAINTED

- ALL NEW STRUCTURAL STEEL.
- ALL EXISTING STRUCTURAL STEEL TO REMAIN AS PART OF THE RECONSTRUCTED BRIDGE

PROPOSAL NOTE "FIELD PAINTING OF EXISTING STEEL, SYSTEM OZEU" (HEREIN REFERRED TO AS OZEU) SHALL APPLY WHEN COATING ALL EXISTING STRUCTURAL STEEL ON THIS PROJECT. THE EXISTING STRUCTURAL STEEL SURFACES ON BRG. NO. LAK-91-0423 SHALL BE SOLVENT CLEANED PER PROPOSAL NOTE 119-88. PROPOSAL NOTE "OZEU" SHALL ALSO APPLY TO THE INTERMEDIATE COAT AND TOP COAT WHEN COATING NEW STRUCTURAL STEEL. ALL NEW STRUCTURAL STEEL HOWEVER, SHALL BE SHOP COATED IN ACCORDANCE WITH CMS 514, SYSTEM A, EXCEPT TYPE 111 PRIMER AS SPECIFIED IN 708.17 SHALL NOT BE ALLOWED. PAYMENT FOR THE SHOP SURFACE PREPARATION AND PRIME COAT SHALL BE INCLUDED IN THE PRICE BID FOR THE PERTINENT STEEL ITEMS. THE TOP OF ALL TOP FLANGES SHALL ALSO RECEIVE A PRIME COAT IN THE SHOP. NEW STEEL RECEIVING THE PRIME COAT IN THE SHOP SHALL NOT NEED TO BE WASHED AS REQUIRED BY PROPOSAL NOTE "OZEU."

NBS CALIBRATION TEST PLATES AS SPECIFIED IN PROPOSAL NOTE "OZEU" ARE NOT REQUIRED FOR STRUCTURAL STEEL PAINTED IN THE SHOP.

THE WORK LIMITATION DATES AS SPECIFIED IN PROPOSAL NOTE "OZEU" SHALL NOT APPLY TO THE SHOP COAT FOR NEW STRUCTURAL STEEL.

THE FINISH COAT SHALL BE BLUE AS PER FEDERAL COLOR STANDARD NO. FS-595A-15450. THE TOP COAT COLORS AS SPECIFIED IN PROPOSAL NOTE "OZEU" SHALL NOT APPLY.

THE APPLICATION OF THE INTERMEDIATE COAT WITHIN TEN DAYS OF THE PRIME COAT APPLICATION AS PER PROPOSAL NOTE "OZEU" SHALL BE WAIVED WHEN COATING NEW STEEL THAT WAS PRIMED IN THE SHOP.

THE INTERMEDIATE COAT AND TOP COAT SHALL BE MANUFACTURED BY THE SAME COMPANY WHEN COATING NEW STEEL THAT WAS PRIMED IN THE SHOP. HOWEVER, THE INTERMEDIATE AND TOP COAT NEED NOT BE MANUFACTURED BY THE SAME COMPANY AS THE SHOP PRIME COAT.

AFTER ALL STEEL IS ERECTED, FIELD WELDS AND ADJACENT SURFACES, THE EDGES OF CONTACT SURFACES, ANY EXPOSED UNPAINTED AREAS CREATED BY STRUCTURAL MODIFICATION IN THIS CONTRACT, AND ALL SURFACES FROM WHICH THE PRIME COAT WAS OMITTED, OR HAS BEEN REMOVED OR BECOME DEFECTIVE, SHALL BE CLEANED AND PAINTED USING PROCEDURES SPECIFIED IN PROPOSAL NOTE "OZEU."

PAYMENT FOR PAINTING NEW STRUCTURAL STEEL SHALL BE MADE UNDER ITEM SPECIAL - FIELD PAINTING NEW STEEL COMPLETE (INTERMEDIATE AND FINISH COATS), UNIT-POUND.

B. LIMITATIONS OF OPERATIONS

NO NIGHT-TIME STRUCTURAL STEEL CLEANING AND PAINTING OPERATIONS SHALL BE PERMITTED.

NEW STRUCTURAL STEEL: HAS BEEN INCLUDED AS A CONTINGENCY QUANTITY DUE TO THE POSSIBLE PARTIAL REPLACEMENT OF EXISTING DEFICIENT END CROSS FRAME MEMBERS AT BRIDGE NO. LAK-91-0423 AND BRIDGE NO. LAK-91-0449. FOLLOWING EXISTING STEEL CLEANING OPERATIONS, THE END CROSS FRAME MEMBERS SHALL BE INSPECTED BY THE ENGINEER FOR PARTIAL SECTION LOSS. STRUCTURALLY DEFICIENT MEMBERS SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER. PAINTING OF NEW CROSS FRAME MEMBERS SHALL CONFORM TO THE OZEU PAINT SYSTEM PROPOSAL NOTE EXCEPT THAT PAYMENT FOR PAINTING SHALL BE INCLUDED UNDER ITEM 513. THIS WORK SHALL BE IN ACCORDANCE WITH AND PAID FOR UNDER THE FOLLOWING:

| ITEM | DESCRIPTION | QUANTITY |
|------|--|-----------------------|
| 513 | STRUCTURAL STEEL REPLACEMENT OF DETERIORATED END CROSS FRAMES, AS PER PLAN | 200 LBS (EACH BRIDGE) |

ITEM 519--PATCHING CONCRETE STRUCTURES, AS PER PLAN:

THIS ITEM SHALL CONSIST OF PATCHING EXISTING DAMAGED STRUCTURAL CONCRETE AT THE LOCATIONS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. WORK SHALL BE IN ACCORDANCE WITH ITEM 519 AND THE FOLLOWING ADDITIONAL REQUIREMENTS:

THE SURFACE OF ALL AREAS TO BE PATCHED SHALL BE CLEANED BY ABRASIVE BLASTING.

ITEM SPECIAL--PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR:

THIS ITEM SHALL CONSIST OF PATCHING EXISTING DAMAGED STRUCTURAL CONCRETE AT THE LOCATIONS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. WORK SHALL BE IN ACCORDANCE WITH THE PROPOSAL NOTE "PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR" AND THE FOLLOWING ADDITIONAL REQUIREMENTS.

GENERALLY, THIS ITEM MAY BE USED WHERE THE SURFACE TO BE REPAIRED CANNOT READILY BE FORMED AND POURED OR THE REPAIR DEPTH IS 3 INCHES OR LESS.

Burgess & Niple, Limited  1/24
Engineers and Architects

GENERAL STRUCTURE NOTES

BRIDGE NO. LAK - 91 - 0423
BRIDGE NO. LAK - 91 - 0449

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|---|------------|--------|---------|---------------|---------|
|  | SJS TPM | | WAC | RBB 4/1/92 | |

GENERAL NOTES

LAKE COUNTY
LAK-91-(4.23)(4.49)

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ITEM 516-VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEALS, AS PER PLAN:

THIS ITEM SHALL INCLUDE ALL THE WORK REQUIRED TO REMOVE EXISTING VERTICAL EXTENSION BARS, IF ANY ARE PRESENT, TRIM EXISTING TOP ANGLE IF NECESSARY, AND THE FURNISHING, FABRICATION AND INSTALLATION OF ALL ANCHOR PLATES, STUDS, STEEL PLATE BARS, STEEL RETAINERS AND ELASTOMERIC STRIP SEAL GLANDS, AND PAINT EXPOSED STRUCTURAL STEEL AS PER DETAILS SHOWN ON THE PLANS. WORK SHALL CONFORM TO ITEM 516 AND THE FOLLOWING ADDITIONAL REQUIREMENTS. THE STRIP SEAL GLAND SHALL BE FURNISHED AND INSTALLED IN ONE CONT. PIECE.

THE STEEL RETAINERS SHALL BE FURNISHED IN MAXIMUM LENGTHS POSSIBLE TO ALLOW FOR TRAFFIC MAINTENANCE AND SHALL BE BUTT WELDED TOGETHER TO FORM A WATERTIGHT JOINT.

MATERIALS: THE STEEL RETAINERS, ANCHOR PLATES AND STEEL PLATE BARS SHALL CONFORM TO ASTM A36.

THE PREFORMED STRIP SEAL GLAND SHALL BE EXTRUDED POLYCHLOROPRENE MATERIAL MEETING THE REQUIREMENTS OF ASTM D2628. DUE TO THE CONFIGURATIONS OF THE STRIP SEAL, THE RECOVERY TESTS ARE NOT APPLICABLE. PHYSICAL PROPERTIES SHALL MEET THE REQUIREMENTS SPECIFIED ON THIS SHEET.

EACH LOT STRIP SEAL GLANDS SHALL BE TESTED BY THE MANUFACTURER OR AN ACCREDITED LABORATORY TO ENSURE COMPLIANCE WITH THESE PROVISIONS. TWO CERTIFIED COPIES OF THE QUALIFICATION TEST DATA INDICATING THAT THE TESTED MATERIALS COMPLY WITH THESE PROVISIONS SHALL BE SUBMITTED TO THE TESTING LABORATORY.

EACH STRIP SEAL GLAND DESIGN, SHAPE, WIDTH, DEPTH AND THICKNESS SHALL BE APPROVED BY THE DIRECTOR. MATERIAL ACCEPTANCE WILL BE BASED UPON LABORATORY EVALUATION OF CERTIFIED TEST DATA AND THE TE-30 FIELD INSPECTION REPORT.

LUBRICANT: ADHESIVE USED TO INSTALL THE PREFORMED STRIP SEALS SHALL BE A POLYURETHANE AND HYDROCARBON SOLVENT MIXTURE AS SPECIFIED BY THE SEAL MANUFACTURER (UNLESS OTHERWISE APPROVED BY THE DIRECTOR). IT SHALL HAVE SUITABLE CONSISTENCY AT THE TEMPERATURE AT WHICH THE SEALS ARE INSTALLED AND SHALL BE COMPATIBLE WITH THE SEALS AND THE STEEL RETAINERS.

SPLICE OR JOINT IN SEAL GLAND: SEAL GLANDS FOR BRIDGE NO. LAK-91-0423 DECK JOINTS SHALL BE FURNISHED IN ONE CONTINUOUS PIECE FOR EACH HALF SECTION OF DECK. FOR BRIDGE NO. LAK-91-0449 THE GLAND MAY BE SPLICED AT THE CONSTRUCTION JOINT IN THE MIDDLE OF EACH HALF DECK UNIT.

COMPLETED SPLICES SHALL HAVE NO OFFSETS ON EXTERIOR SURFACES, AND AFTER INSTALLATION, THERE SHALL BE NO EVIDENCE OF BOND FAILURE AT THE SPLICES.

FOR OTHER THAN STRAIGHT SEALS WITHOUT INTERMEDIATE SPLICES, SEAL GLANDS SHALL BE SHOP FABRICATED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. SHOP DRAWING DIMENSIONS FOR EXISTING JOINTS OR FOR JOINTS WHICH ARE BEING MODIFIED SHALL BE BASED ON FIELD MEASUREMENTS PROVIDED BY THE CONTRACTOR.

PREPARATION FOR INSTALLATION: TO AVOID THE SUBSEQUENT CONTAMINATION OF THE PREPARED SURFACES, ALL SURFACES OF ELASTOMERIC STRIP SEAL GLANDS SHALL BE CLEANED WITH METHYL ETHYL KETONE (MEK), TOLUENE (T) OR OTHER APPROVED SOLVENT USING CLEAN DISPOSABLE CLOTHS.

THE BONDING SURFACES OF THE STEEL RETAINERS (THE INTERIOR OF THE ANCHOR GROOVES) SHALL BE PREPARED TO GRADE Sa 3, ASTM D2200. PREPARATION SHALL BE ACCOMPLISHED NOT MORE THAN 24 HOURS PRIOR TO ADHESIVE BONDING.

INSTALLATION: IMMEDIATELY PRIOR TO APPLICATION OF LUBRICANT-ADHESIVE, BONDING SURFACES SHALL BE CLEAN, DRY AND WARMER THAN 45 DEGREES F, AND THEY SHALL BE MAINTAINED AT OR ABOVE THIS TEMPERATURE UNTIL THE ADHESIVE HAS CURED. LUBRICANT-ADHESIVE SHALL BE APPLIED LIBERALLY TO BOTH STEEL AND ELASTOMERIC BONDING SURFACES USING A STIFF BRUSH IF NECESSARY TO ACHIEVE A COMPLETE AND RELATIVELY UNIFORM COATING. THEN THE BULBED EDGES OF THE ELASTOMERIC SEAL SHALL BE INSERTED INTO THE ANCHOR GROOVES. AFTER INSTALLATION, EXCESS LUBRICANT-ADHESIVE SHALL BE REMOVED FROM THE EXPOSED SEAL SURFACES.

SEAL GLANDS SHALL BE INSTALLED WITH EQUIPMENT DESIGNED OR SPECIFICALLY ADAPTED FOR THE INSTALLATION OF ELASTOMERIC JOINT SEAL GLANDS. THIS EQUIPMENT SHALL NOT ELONGATE THE SEAL GLAND OR CAUSE STRUCTURAL DAMAGE TO THE COMPLETED INSTALLATION.

THE STEEL RETAINERS AND ELASTOMERIC STRIP SEAL GLANDS SHALL BE TYPE SSE WITH SS300 GLANDS AS MANUFACTURED BY THE D.S. BROWN COMPANY, P.O. BOX 158, NORTH BALTIMORE, OHIO 45872 OR TYPE E1 WITH S-300E GLANDS BY THE WATSON-BOWAN AND ACME CORP., 95 PINEVIEW DRIVE, AMHERST, NEW YORK 14120 OR AN APPROVED ALTERNATE.

ALL EXPOSED STRUCTURAL STEEL SHALL BE PAINTED IN ACCORDANCE WITH ITEM 514 AND THE OZEU PAINT SYSTEM PROPOSAL NOTE. EXCEPT THAT PAYMENT SHALL BE INCLUDED UNDER ITEM 516, VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEALS, AS PER PLAN.

PHYSICAL PROPERTIES OF SEAL ELEMENT

| PROPERTY | REQUIREMENT | ASTM METHOD |
|--|-------------|-------------|
| TENSILE STRENGTH, MIN. PSI | 2,000 | D412 |
| ELONGATION AT BREAK, MIN. % | 250 | D412 |
| OVEN AGING, 70 HR. @ 212° F | | |
| TENSILE STRENGTH, LOSS, MAX. | 20% | |
| ELONGATION, LOSS, MAX. | 20% | D573 |
| HARDNESS, TYPE A DUROMETER (POINTS CHANGE) | 0 TO +10 | |
| OZONE RESISTANCE | | |
| 20% STRAIN, 300 PPHM, IN AIR AT 104° F (WIPE WITH TOLUENE TO REMOVE SURFACE CONTAMINATION) | NO CRACKS | D1149 |

MEASUREMENT FOR PAY PURPOSES SHALL BE BASED ON THE LINEAR FEET OF SEALED JOINT SYSTEM, MEASURED HORIZONTALLY ALONG THE BACK OF THE STEEL RETAINER AND BETWEEN THE OUTER LIMITS OF THE FABRICATED JOINT, FURNISHED AND PLACED, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE JOINT IN PLACE.

PAYMENT SHALL BE MADE PER LINEAR FOOT FOR ITEM 516-VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEALS, AS PER PLAN.

ITEM SPECIAL-PARAPET MODIFICATIONS AT EXPANSION JOINTS

THIS ITEM SHALL INCLUDE ALL THE WORK AND MATERIALS NECESSARY TO REMOVE, MODIFY AND RECONSTRUCT THE EXISTING PARAPETS AND EXISTING MEDIAN AT THE EXPANSION JOINTS AS PER DETAILS SHOWN ON THE PLANS.

REMOVAL SHALL BE AS PER 202.03 WITH THE LIMITS CLEANLY SAW CUT TO A DEPTH OF ONE INCH WHERE THE EXISTING REINFORCING STEEL IS INDICATED TO BE PRESERVED. TROWELABLE MORTAR SHALL BE IN ACCORDANCE WITH PROPOSAL NOTE "PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, AS PER PLAN." EPOXY COATED REINFORCING STEEL SHALL BE AS PER 509. REPLACEMENT CONCRETE SHALL BE CLASS S AS PER 511.

ALL REINFORCING STEEL TO BE PRESERVED SHALL BE CLEANED TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL THE ABOVE SHALL BE AT THE UNIT PRICE BID PER EACH ITEM SPECIAL, PARAPET MODIFICATIONS AT EXPANSION JOINTS, AS PER PLAN WHICH SHALL INCLUDE ALL REMOVALS, REINFORCING STEEL, MECHANICAL REBAR SPLICE CONNECTORS, CONCRETE, TROWELABLE MORTAR, LABOR, EQUIPMENT, OTHER MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK ABOVE.

ITEM 503-UNCLASSIFIED EXCAVATION, AS PER PLAN:

AS A CONTINGENCY, 2 CUBIC YARDS OF UNCLASSIFIED EXCAVATION HAS BEEN INCLUDED IN THE ESTIMATED QUANTITIES FOR EXPOSING AND SUBSEQUENTLY BACKFILLING PORTIONS OF EXISTING PIER COLUMNS, WHERE CONCRETE PATCHING MAY EXTEND BELOW GRADE, AS DIRECTED BY THE ENGINEER. ALL APPLICABLE PROVISIONS OF ITEM 503 SHALL APPLY. EXCEPT THAT THE METHOD OF MEASUREMENT SHALL BE TO THE LIMITS SHOWN ON SHEET 19/24. THE COST FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PERFORM THE ABOVE WORK SHALL BE INCLUDED IN THE CUBIC YARD PRICE BID FOR ITEM 503 UNCLASSIFIED EXCAVATION, AS PER PLAN. THIS APPLIES TO BRIDGE NO. LAK-91-0449 ONLY.

ITEM SPECIAL-REFURBISH AND RESET BEARING

THIS WORK SHALL INCLUDE FURNISHING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO REMOVE ALL OR PORTIONS OF THE EXISTING EXPANSION BEARING DEVICES, AND TO CLEAN, REASSEMBLE (OR REPLACE AT THE CONTRACTOR'S OPTION), AND PAINT THE ENTIRE DEVICE IN THE CORRECT LOCATION ON THE BEAM AND SUPPORTING MASONRY PLATE, AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PERFORM THE WORK IN SUCH A MANNER AS TO NOT ENDANGER THE STABILITY OR INTEGRITY OF THE STRUCTURE DURING THE BEARING RESETTING OPERATIONS. MAJOR RESETTING OPERATIONS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:


- JACKING AND BLOCKING BEAMS TO REMOVE BEARING ASSEMBLY.
- CLEANING ALL PARTS BY ABRASIVE BLASTING (LAK-91-0449 BRG) OR SOLVENT CLEANING THEN SANDBLASTING (LAK-91-0423 BRG).
- PAINTING ALL NON-BEARING AREAS.
- GRINDING THE TOP OF THE SOLE PLATE AND THE BOTTOM FLANGE OF THE BEAM TO A BEARING FIT.
- REASSEMBLING THE BEARING.
- REWELDING THE SOLE PLATE TO THE BOTTOM OF THE BEAM IN THE POSITION CENTERED OVER THE MASONRY PLATE AT 60°.
- REPAIR OR REPLACE EXISTING 1/2" KEEPER PLATE AS DIRECTED BY THE ENGINEER. USE 5/16" FILLET WELD.
- REPLACING THE BEARING ASSEMBLY AT THE CONTRACTOR'S OPTION.

RESET EXISTING ROCKER BEARINGS:

THE BEARINGS SHALL BE RESET FOLLOWING THE PROCEDURE OUTLINED BELOW, PRIOR TO THE DECK EXPANSION JOINT MODIFICATIONS AND PLACEMENT OF THE NEW MSMC OVERLAY.


AT EACH BEARING:

- REMOVE ALL WELDS CONNECTING THE SOLE PLATE TO THE BOTTOM OF THE BEAM. WELDS SHALL BE REMOVED BY AIR ARC PROCESS.
- RAISE THE END OF THE BEAM BY JACKING UNTIL THERE IS NO CONTACT BETWEEN THE BOTTOM FLANGE AND THE SOLE PLATE. REMOVE BEARING COMPONENTS.
- CLEAN AND/OR GRIND FLAT THE SURFACE OF THE BOTTOM FLANGE OF THE BEAM WHERE THE SOLE PLATE WILL BE BEARING.
- CLEAN AND ABRASIVE BLAST ALL COMPONENTS IN ACCORDANCE WITH ITEM 514.
- RESET THE BEARING BY SHIFTING THE SOLE PLATE SO THE PLATE IS CENTERED OVER THE MASONRY PLATE AT 60° F. REMOVE JACKS AND BLOCKING.
- CHECK ALL BEARINGS ON A SUBSTRUCTURE UNIT TO INSURE TOTAL CONTACT OF BEARING SURFACES.
- REWELD THE SOLE PLATE TO THE BOTTOM FLANGE OF THE BEAM.
- RECLEAN AND ABRASIVE BLAST AS REQUIRED, AND PAINT BEARINGS.

Burgess & Niple, Limited  2/24
Engineers and Architects

GENERAL STRUCTURE NOTES

BRIDGE NO. LAK - 91 - 0423
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| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|---|-------|--------|---------|---------------|---------|
|  | TPM | | WAC | EBB 4/14/92 | |

GENERAL NOTES

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REQUIREMENTS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF AN ADEQUATE SUPPORT AND JACKING SYSTEM CAPABLE OF RAISING THE STRUCTURE AND WILL BE RESPONSIBLE FOR PROPERLY ARRANGING ALL TEMPORARY SUPPORTS SO AS NOT TO DAMAGE OR INDUCE OVERSTRESS IN ANY EXISTING BRIDGE MEMBERS AND DIAPHRAGMS.

JACKING AND/OR TEMPORARY SUPPORTS SHALL BE LIMITED TO ONE (1) SUBSTRUCTURE UNIT AT ANY GIVEN TIME (E.G. JACKING AND/OR TEMPORARY SUPPORTS WILL NOT BE PERMITTED AT REAR ABUTMENT AND FORWARD ABUTMENT SIMULTANEOUSLY). ALL BEAMS AT A GIVEN SUBSTRUCTURE UNIT SHALL BE RAISED SIMULTANEOUSLY. E.G. BEAM LINES 1-10 SHALL BE RAISED SIMULTANEOUSLY WHEN REMOVING THE ABUTMENT BEARINGS. THE STRUCTURE SHALL NOT BE RAISED MORE THAN 1/4".

ANY DAMAGE TO STRUCTURAL MEMBERS, CONNECTIONS OR PARTS THAT ARE TO REMAIN AS PART OF THE PERMANENT CONSTRUCTION SHALL BE CORRECTED AND/OR REPAIRED BY THE CONTRACTOR AT HIS EXPENSE TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR'S DETAILED PROCEDURES FOR SETTING THE BEARINGS SHALL BE SUBMITTED, TO THE ENGINEER FOR APPROVAL. THE SUBMITTAL SHALL INCLUDE DETAILS OF THE PROPOSED TEMPORARY SUPPORT AND JACKING SYSTEM, INDICATING MATERIALS, MEMBER SIZES, SPACINGS, SUPPORT LOCATIONS, JACKING POINTS, REACTION AND REMOVAL PROCEDURES.

CONTRACTOR OPTION

AT THE CONTRACTOR'S OPTION, THE EXISTING EXPANSION BEARING DEVICE INDICATED TO BE RESET MAY BE REMOVED AND REPLACED WITH A NEW EXPANSION BEARING DEVICE EQUAL TO THAT OF THE EXISTING DEVICE AND IN CONFORMANCE WITH PROVISIONS UNDER ITEM 516.

METHOD OF MEASUREMENT

THE QUANTITY WILL BE MEASURED AS THE ACTUAL NUMBER OF BEARINGS RESET

BASIS OF PAYMENT

WORK UNDER RESETTING EXPANSION BEARING DEVICES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH BEARING REFURBISHED AND RESET, AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO PERFORM THE WORK, COMPLETE AND ACCEPTED. PAINTING OF EXISTING AND/OR NEW BEARINGS SHALL CONFORM TO ITEM 514, FIELD PAINTING OF EXISTING STEEL AND THE OZEU PAINT SYSTEM PROPOSAL NOTE.

| ITEM | UNIT | DESCRIPTION |
|---------|------|-----------------------------|
| SPECIAL | EACH | REFURBISH AND RESET BEARING |

ITEM 517--RAILING FACED, AS PER PLAN:

THIS ITEM SHALL CONSIST OF FACING CURB STYLE PARAPETS TO ATTAIN A DEFLECTOR PARAPET SHAPE USING CAST-IN-PLACE CONCRETE AS SHOWN ON THE DETAIL SHEETS.

REMOVAL: THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING ALUMINUM RAILING, POSTS, PORTIONS OF CURB PLATE AND EXISTING CONCRETE CURB TO PROVIDE CLEARANCE FOR PLACING CONCRETE AS DETAILED IN THE PLANS. THE WINGWALL PARAPET AND CURB SHALL BE REMOVED WITHIN THE END 14 FOOT WINGWALL TRANSITION LENGTH AS DETAILED IN THE PLANS. ALL LOOSE OR UNSOUND PARAPET CONCRETE SHALL ALSO BE REMOVED. ALL WORK SHALL BE DONE IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE IN ANY WAY THE REINFORCING STEEL WHICH IS TO REMAIN. CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. NO BACKHOE-RAMS SHALL BE PERMITTED.

DOWEL HOLES AND REINFORCING STEEL: DOWEL HOLES SHALL BE DRILLED WHERE SHOWN ON THE PLANS. THE TOE DECK STEEL EPOXY GROUT AND HOLES SHALL BE IN ACCORDANCE WITH SS852. ANY REINFORCING STEEL WHICH IS TO REMAIN THAT IS BROKEN DURING REBENDING SHALL BE REPLACED WITH A NEW, DOWELED IN BAR AS DETAILED. ALL REINFORCING STEEL, DOWEL HOLES AND GROUTING ARE INCLUDED UNDER THIS ITEM OF WORK.

ANY DAMAGE DONE TO THE EXISTING 2" DIAMETER LIGHTING CONDUIT AND ASSOCIATED ELECTRICAL WIRING EMBEDDED IN THE EXISTING WINGWALL PARAPET SHALL BE REPAIRED AND/OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND IN ACCORDANCE WITH STANDARD DRAWING HL-30.31.

SURFACE PREPARATION: THE PARAPET SURFACE NEXT TO THE REFACING SHALL BE THOROUGHLY CLEANED BY SANDBLASTING FOLLOWED BY AN AIR BLAST. USE OF HAND TOOLS MAY BE NECESSARY TO REMOVE SCALE FROM THE REINFORCING STEEL. THE SURFACE SHALL BE MADE FREE OF SPALLS, LAITANCE AND ALL TRACES OF FOREIGN MATERIAL. DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING AS NECESSARY TO ENSURE THE REMOVAL OF CONTAMINANTS THAT ARE DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND.

MATERIALS

REINFORCING STEEL 509.10, GRADE 60
CONCRETE 511. CLASS "S"

SHRINKAGE CRACK CONTROL JOINTS: SHRINKAGE CRACK CONTROL JOINTS SHALL BE PLACED IN THE NEW CONCRETE PARAPETS AT THE SAME LOCATION AND MIDWAY BETWEEN THE EXISTING DEFLECTION JOINTS AND SHALL BE MADE AT A RIGHT ANGLE TO THE DECK BY SAWING. THE MAXIMUM SPACING BETWEEN SHRINKAGE CRACK CONTROL JOINTS IN THE PARAPET REFACING SHALL BE 10'. THE SAWING SHALL BE DONE AFTER THE CONCRETE HAS TAKEN ITS INITIAL SET AND BEFORE ANY SHRINKAGE CRACKS CAN DEVELOPE. THE USE OF AN EDGE GUIDE, FENCE OR JIG IS REQUIRED TO INSURE THAT THE JOINT IS CUT STRAIGHT, TRUE AND ALIGNED ON ALL FACES OF THE PARAPET. DEPTH OF THE SAW CUT SHALL BE ONE AND ONE HALF INCHES. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, NOT TO EXCEED ONE QUARTER INCH. THE OUTSIDE ONE INCH OF THE PERIMETER OF THE SHRINKAGE CRACK CONTROL JOINT SHALL BE SEALED WITH A POLYURETHANE OR POLYMERIC JOINT SEALANT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-S-002.7E. THE BOTTOM ONE HALF INCH OF THE SHRINKAGE CRACK CONTROL JOINT AT BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET SHOULD BE LEFT UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

METHOD OF MEASUREMENT: THE QUANTITY SHALL BE THE ACTUAL LENGTH OF THE RAILING FACED AS MEASURED BETWEEN THE OUTSIDE ENDS OF THE WINGWALLS. THIS ITEM SHALL INCLUDE THE FURNISHING OF ALL LABOR EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS WORK. ALL COSTS OF REMOVAL, DOWEL HOLES, REINFORCING STEEL, CONCRETE, INSTALLING SHRINKAGE CRACK CONTROL JOINTS, LIGHTING CONDUIT REPAIR/REPLACEMENT AND CONSTRUCTION OF WINGWALL RAILING TRANSITIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR:

| ITEM | UNIT | DESCRIPTION |
|------|----------|----------------------------|
| 517 | LIN. FT. | RAILING FACED, AS PER PLAN |

ITEM SPECIAL - STRUCTURE DRAINAGE, MISC.: ABUTMENT DRAIN EXTENSION

THIS ITEM SHALL CONSIST OF ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR INSTALLING THE ABUTMENT DRAIN EXTENSIONS AT BRIDGE NO. LAK-91-0449, INCLUDING THE CUTTING AND REMOVING OF PORTIONS OF THE EXISTING ABUTMENT DRAINS, CLEANING THE EXISTING ABUTMENT DRAINS, INSERTING THE NEW 5-INCH P.V.C. DRAIN, PACKING THE OPENING WITH 3/8-INCH DIAMETER BACKING ROD AND ENCASING THE DRAIN EXTENSION IN CONCRETE AT THE ABUTMENT OPENING AS SHOWN IN THE DETAIL ON SHEET 18/24. PAYMENT WILL BE AT THE UNIT PRICE BID FOR:

| ITEM | DESCRIPTION | UNIT |
|---------|--|----------|
| SPECIAL | STRUCTURE DRAINAGE, MISC.; ABUTMENT DRAIN EXTENSION | LIN. FT. |

ITEM 622--PORTABLE CONCRETE BARRIER, 32" BRIDGE MOUNTED, AS PER PLAN

PAYMENT FOR THIS ITEM IS CARRIED IN THE MAINTENANCE OF TRAFFIC QUANTITIES. SEE TRAFFIC NOTES, SHEET 11 OF 56.

ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC:

DESCRIPTION: THIS WORK SHALL INCLUDE FURNISHING AND INSTALLING A NEOPRENE SEAL ALONG THE CENTER OF THE RAISED CONCRETE MEDIAN IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

MATERIAL: THE NEOPRENE PIECES SHALL MEET THE FOLLOWING SPECIFICATIONS.

| PROPERTY | REQUIREMENT | ASTM METHOD |
|---|------------------------------|-----------------|
| TENSILE STRENGTH, MIN. | 2000 | D-412-62T |
| PSI ELONGATION AT BREAK, | 250% | D-412-51T |
| MIN. HARDNESS, DUROMETER A | 60 +5 | D-2240 MODIFIED |
| OZONE RESISTANCE, 20% ELONGATION 300 PPHM 40°C (104°F) (70HRS) WIPE SURFACES WITH SOLVENT TO REMOVE CONTAMINATION | NO CRACKS | D-1149 |
| HEATING AGING 70HRS 0212°F | | D-573 |
| TENSILE STRENGTH, MAX% | -20 | |
| DECREASE ELONGATION, | -20 | |
| MAX.% DECREASE HARDNESS, | +10/-0 | |
| MAX. CHANGE | | |
| OIL SWELL, ASTM OIL #3 70 HRS @ 212F MAX. | +45 | |
| WEIGHT INCREASE AT SPECIFIC GRAVITY 1.35+3 | +45 | |
| COMPRESSION SET, 70HRS. 0212°F LOW TEMP. | 40% MAX. NOT BRITTLER-746 | D-395(B) |
| RESISTANCE TO SALT, VARIATION OF VOLUME IN % 70 HRS AT 40°C IN CAC12 SOLUTION | -5% TO +10% | |
| ADHESIVES SHALL BE SIKADUR 31 MANUFACTURED BY THE SIKA CHEMICAL COMPANY OF LYNDHURST, NEW JERSEY, FEL-POXY FP-01 MANUFACTURED BY THE FELT PRODUCTS MANUFACTURING COMPANY OF SKOKID, ILLINOIS, OR AN APPROVED EQUAL. ADHESIVES SHALL BE STORED AT TEMPERATURES BETWEEN 50°F AND 80°F AND SHALL BE USED WITHIN 270 DAYS AFTER THE DATE OF MANUFACTURE. | | |

REQUIREMENTS: THE MEDIAN SEAL SHALL BE CONTINUOUS ALONG THE LENGTH OF THE BRIDGE. ELASTOMERIC SHEETS SHALL BE AS LONG AS PRACTICAL WITH FIELD SPLICES BONDED TOGETHER WITH ADHESIVE.

SURFACE PREPARATION:

NEOPRENE: TO AVOID THE SUBSEQUENT CONTAMINATION OF PREPARED SURFACES, ALL SURFACES OF THE NEOPRENE SHALL BE CLEANED WITH METHYL ETHYL KETON (MEK), TOLUENE (T) OR OTHER APPROVED SOLVENT USING CLEAN DISPOSABLE CLOTHS. THEN NOT MORE THAN 7 DAYS PRIOR TO THE SEAL INSTALLATION. A THIN (1/8" MIN. THICKNESS) COATING OF CYCLIZING PASTE SHALL BE APPLIED TO THE BONDING SURFACE. AFTER 25 TO 40 MINUTES, THE PASTE SHALL BE WASHED FROM THE SURFACES WITH CLEAN WATER.

CYCLIZING PASTE IS A MIXTURE OF ONE POUND OF PITTSBURGH PLATE GLASS INDUSTRIES' HISIL 223 OR AN APPROVED ALTERNATE AND SIX POUNDS OF CONCENTRATED SULFURIC ACID (18 MOLAR). TO MIX THE PASTE, ADD HISIL TO ACID SLOWLY WHILE STIRRING MIXTURE TO ACHIEVE A SMOOTH VISCOUS PASTE. NOTE: SINCE CONCENTRATED SULFURIC ACID IS VERY CORROSIVE AND HISIL IS AN EXTREMELY FINE NON-TOXIC POWDER, RUBBER GLOVES AND GLASSES SHOULD BE USED BY THOSE USING THE PASTE WHILE GLOVES, GLASSES AND A RESPIRATOR SHOULD BE USED BY THOSE MIXING THE PASTE.

CONCRETE: THE CONCRETE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE DUST, CURING COMPOUND, LAITANCE AND OTHER FOREIGN MATERIALS BY MEANS OF SANDBLASTING FOLLOWED BY AIR BROOMING OR POWER SWEEPING TO REMOVE DUST AND SAND FROM THE SURFACE AND OPENED PORES.

Burgess & Niple, Limited
Engineers and Architects



3 / 24

GENERAL STRUCTURE NOTES

BRIDGE NO. LAK - 91 - 0423

BRIDGE NO. LAK - 91 - 0449

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|------------|--------|---------|---------------|---------|
| RJ | SJS TPM | | WAC | EBB 4/19/92 | |

GENERAL NOTES

LAKE COUNTY
LAK-91-(4.23)(4.49)

OHIO
FHWA
REGION 5

35
56

FIELD BONDING

IMMEDIATELY PRIOR TO ADHESIVE APPLICATION, BONDING SURFACES SHALL BE CLEAN, DRY AND WARMER THAN 45°F AND SHALL BE MAINTAINED ABOVE 45°F UNTIL THE ADHESIVE HAS CURED.

ADHESIVE COMPONENTS SHALL BE COMBINED IN THE EXACT RATIOS RECOMMENDED BY THE ADHESIVE MANUFACTURER AND SHALL BE CAREFULLY AND THOROUGHLY MIXED TO ENSURE A UNIFORM MATERIAL FREE FROM ENTRAPPED AIR. THE BONDING PROCEDURES AND RATE OF APPLICATION SHALL BE IN ACCORDANCE WITH THE ADHESIVE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. FOR PROPER CONTROL DURING CURING, LIGHT PRESSURE SHOULD BE MAINTAINED UNTIL THE ADHESIVE HAS CURED.


MEASUREMENT AND PAYMENT

RAISED CONCRETE MEDIAN SEAL WILL BE MEASURED BY THE LINEAR FOOT COMPLETED IN PLACE AND PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR ITEM 516, STRUCTURAL JOINT OR JOINT SEALER, MISC. RAISED CONCRETE MEDIAN SEAL. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR TO COMPLETE THE WORK AS SPECIFIED. LABOR TO COMPLETE THE WORK AS SPECIFIED.


ITEM SPECIAL - SEALING OF CONCRETE SURFACES:

A CONCRETE SEALER SHALL BE APPLIED TO THE FOLLOWING CONCRETE SURFACES: SEE SHEET 5/24 AND 6/24, TYPICAL TRANSVERSE MODIFIED DECK SECTIONS, SHEET 23/24, PIER SECTION AND ABUTMENT WINGWALL ELEVATION. SEE THE PROPOSAL NOTE FOR SURFACE PREP REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

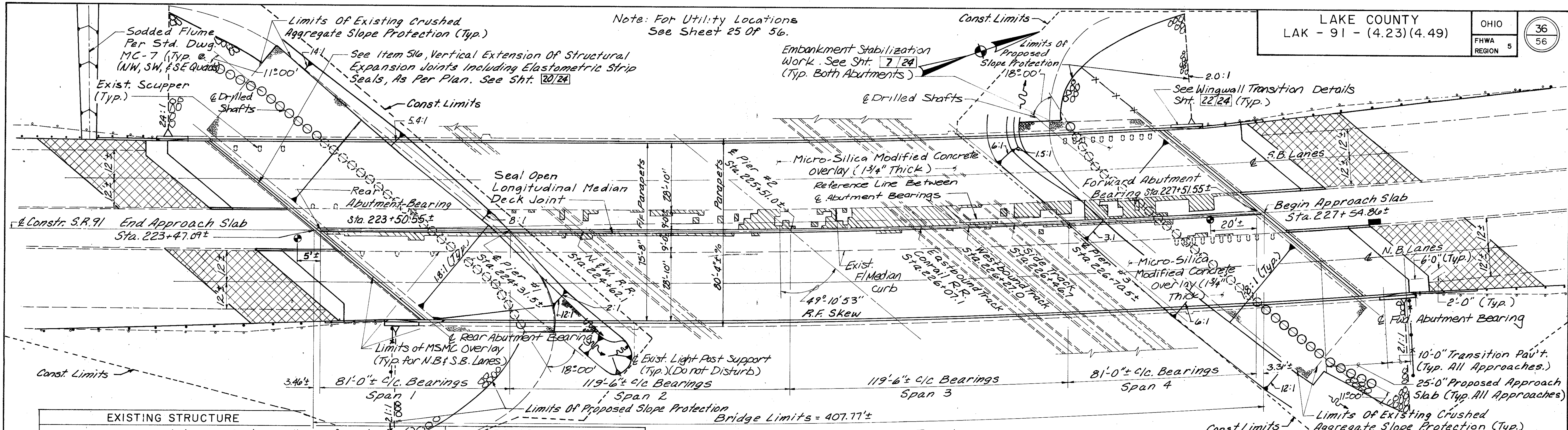
E:\PR1608\NOTE\PILOT SCALE 14-17-91

Burgess & Niple, Limited
Engineers and Architects  4 / 24

GENERAL STRUCTURE NOTES
BRIDGE NO. LAK - 91 - 0423
BRIDGE NO. LAK - 91 - 0449

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|---|------------|--------|---------|---------------|---------|
|  | SJS TPM | | WAC | 2-27-92 | |

Note: For Utility Locations
See Sheet 25 Of 56.

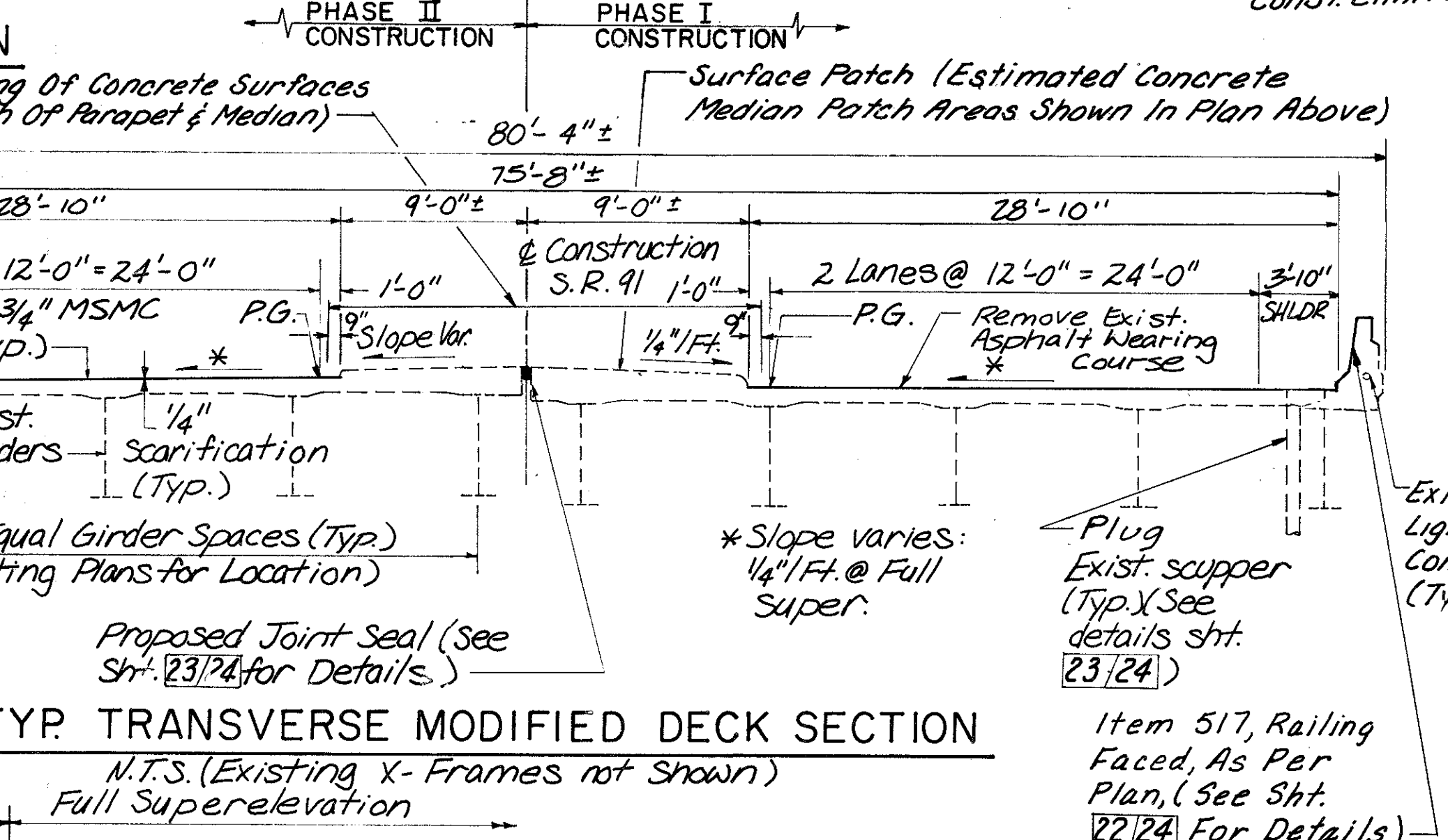


EXISTING STRUCTURE
 TYPE: Continuous Welded Steel Girders with Reinforced Concrete Deck and Substructure
 SPANS: 81'-0", 119'-6", 119'-6" And 81'-0" (c/c Bearings)
 ROADWAY: 2 @ 28'-0" F/F OF CURB WITH 18'-0" RAISED MEDIAN.
 SKEW: 49°-10'-53" Right Forward
 WEARING SURFACE: 1 1/2" ASPHALT CONCRETE
 APPROACH SLABS: AS-1-54 (25' LONG)
 ALIGNMENT: 1°-15'-00" CURVE LEFT
 SUPERELEVATION: 1/4" / FT. @ FULL SUPERELEVATION
 LOADING: CF 400(57)
 STRUCTURE FILE NO. 4305167

PROPOSED REHABILITATED STRUCTURE
 TYPE: Continuous Welded Steel Girders with Reinforced Concrete Deck and Substructures
 SPANS: 81'-0", 119'-6", 119'-6" And 81'-0" (c/c Bearings)
 ROADWAY: 2 @ 28'-10" F/F OF SAFETY SHAPED PARAPETS WITH 18'-0" RAISED MEDIAN.
 SKEW: 49°-10'-53" Right Forward
 WEARING SURFACE: Micro-Silica Modified Concrete.
 APPROACH SLABS: AS-1-81 (25'-0" LONG)
 ALIGNMENT: 1°-15'-00" Right Forward
 SUPERELEVATION: 1/4" / FT. @ FULL SUPERELEVATION

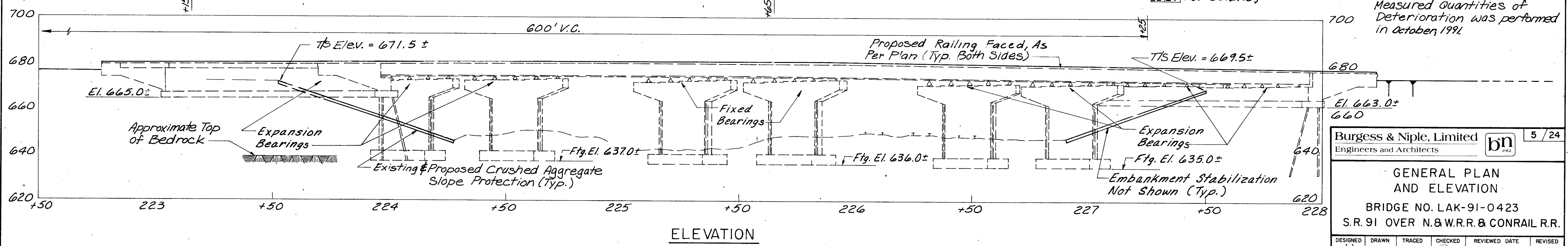
- PROPOSED WORK**
1. Installation Of Safety Shaped Parapets And Transitions.
 2. Replace Exist. Asphalt Conc. With MSMC Overlay On Deck
 3. Vertically Extend & Seal Exist. Steel Deck Expansion Joints.
 4. Patching And Sealing Of Concrete Surfaces.
 5. Replace Abutment Drainage System And Plug Deck Scuppers.
 6. Remove And Replace Concrete Approach Slabs.
 7. Stabilize Abutment Foreslopes By Installation Of Retaining Wall System.
 8. Reset Abutment Bearings.
 9. Seal Longitudinal Deck Joint.
 10. Clean And Paint Steel
 11. Repair Slope Protection

GENERAL PLAN
 Limits For Epoxy Sealing Of Concrete Surfaces (Typ. Co. Side Full Length Of Parapet & Median)
 28'-10" 9'-0"± 9'-0"± 28'-10"
 3'-10" SHDR 2 Lanes @ 12'-0" = 24'-0" Proposed 1 3/4" MSMC Overlay (Typ.) P.G. 1'-0" Slope Var. 1/4" / FT. * Slope varies: 1/4" / FT. @ Full Super.
 4 Equal Girder Spaces (Typ.) (See Existing Plans For Location)
 Exist. Girders Scarification (Typ.)
 Proposed Joint Seal (See Sht. 23/24 For Details.)
 N.T.S. (Existing X-Frames Not Shown)
 Full Superelevation



NOTES

- Soil Boring
- P.G. Profile Grade
- S.B. South Bound
- N.B. North Bound
- Exp. Expansion Bearings
- Fix. Fixed Bearings
- Denotes Pavement Feather Area For Approach Slab Details Not Shown In N.B. Lanes Forward Abutment Area, See Sheet 15/24 And STD DWG AS-1-81.
- M.S.M.C. Micro-Silica Modified Concrete
- Note: For Phase Construction Details See Maintenance Of Traffic Plan, Sht. 13 Of 55 And Sht. 14 Cf 55
- Indicates approximate area to be patched per Item 519-patching concrete structure, as per plan.
- Physical Inventory of Measured Quantities of Deterioration was performed in October, 1991.



Burgess & Niple, Limited
 Engineers and Architects

GENERAL PLAN
 AND ELEVATION
 BRIDGE NO. LAK-91-0423
 S.R. 91 OVER N.&W.R.R. & CONRAIL R.R.

| | | | | | |
|----------|-------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| RLH | RLH | | RLH | WAC 4/10/91 | |

ESTIMATED QUANTITIES

CALC BY ML
 DATE 1-19-92
 CHKD BY [Signature]
 DATE 1-19-92

LAKE COUNTY
 LAK-91-(4.23)(4.49)

OHIO
 FHWA REGION 5

37
56

| ITEM | ITEM EXT. | TOTAL | UNIT | DESCRIPTION | ABUT-MENTS | PIERS | SUPER-STRUCT. | GENERAL |
|---------|-----------|--------|-------|--|------------|-------|---------------|---------|
| 202 | 11200 | LUMP | | PORTIONS OF STRUCTURE REMOVED | | | | LUMP |
| 202 | 23500 | 2539 | S.Y. | WEARING COURSE REMOVED | | | 2539 | |
| 503 | 11100 | LUMP | | COFFERDAMS, CRIBS AND SHEETING | | | | LUMP |
| SPECIAL | 50341200 | 52 | C.Y. | LOW STRENGTH MORTAR BACKFILL, CLASS LSM-50 * | 52 | | | |
| SPECIAL | 50794704 | 560 | L.F. | DRILLED SHAFTS, 36" DIAMETER, INTO BEDROCK | | | | 560 |
| SPECIAL | 50794902 | 1400 | L.F. | DRILLED SHAFTS, 48" DIAMETER, ABOVE BEDROCK | | | | 1400 |
| SPECIAL | 50795100 | 2 | EACH | DRILLED SHAFT LATERAL LOAD TEST | | | | 2 |
| 509 | 15801 | 200 | POUND | EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN | | | | 200 |
| 510 | 11100 | 115 | EACH | DOWEL HOLE | 115 | | | |
| SPECIAL | 51267502 | 2117 | S.Y. | SEALING OF CONCRETE SURFACES (EPOXY) * | 367 | | 1750 | |
| 513 | 15901 | 200 | POUND | STRUCTURAL STEEL REPLACEMENT OF DETERIORATED END CROSS FRAMES, AS PER PLAN | | | 200 | |
| SPECIAL | 51400050 | 71,134 | S.F. | SURFACE PREPARATION OF EXISTING STEEL, SYSTEM OZEU * | | | 71,134 | |
| SPECIAL | 51400056 | 71,134 | S.F. | FIELD PAINTING OF EXISTING STEEL, PRIME COAT, SYSTEM OZEU * | | | 71,134 | |
| SPECIAL | 51400060 | 71,134 | S.F. | FIELD PAINTING OF EXISTING STEEL, INTERMEDIATE COAT, SYSTEM OZEU * | | | 71,134 | |
| SPECIAL | 51400066 | 71,134 | S.F. | FIELD PAINTING OF EXISTING STEEL, FINISH COAT, SYSTEM OZEU * | | | 71,134 | |
| 516 | 11801 | 238 | L.F. | VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINT, INCLUDING ELASTOMERIC STRIP SEALS, AS PER PLAN | | | 238 | |
| SPECIAL | 53000400 | 4 | EACH | PARAPET MODIFICATIONS AT EXPANSION JOINTS | | | 4 | |
| 516 | 14600 | 405 | L.F. | STRUCT. JOINT OR JOINT SEALER, MISC: RAISED CONCRETE MEDIAN SEAL | | | 405 | |
| SPECIAL | 51646800 | 9 | EACH | REFURBISH AND RESET BEARING | | | 9 | |
| 517 | 76201 | 893 | L.F. | RAILING FACED, AS PER PLAN | | | 893 | |
| 518 | 21200 | 130 | C.Y. | POROUS BACKFILL WITH FILTER FABRIC | 130 | | | |
| 518 | 62100 | 245 | L.F. | STRUCTURE DRAINAGE, MISC.: 6" CONDUIT, TYPE F, 707.17 NON-PERFORATED, INCLUDING SPECIALS, ASTM 3034 SDR 35 OR SS-931 | 245 | | | |
| 518 | 62100 | 239 | L.F. | STRUCTURE DRAINAGE, MISC.: 6" CONDUIT, TYPE F, 707.17 OR ASTM 3034 SDR 35 OR SS 931, PERFORATED AS PER 707.15 | 239 | | | |
| 519 | 11101 | 2544 | S.F. | PATCHING CONCRETE STRUCTURE, AS PER PLAN | 262 | | 2282 | |
| SPECIAL | 51911502 | 50 | S.F. | PATCHING CONCRETE STRUCTURE WITH TROWELABLE MORTAR * | 50 | | | |
| SPECIAL | 51922006 | 2539 | S.Y. | MICRO-SILICA MODIFIED CONCRETE OVERLAY (1 3/4" THICK) * | | | 2539 | |
| SPECIAL | 51922100 | 201 | C.Y. | MICRO-SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS) * | | | 201 | |
| SPECIAL | 51922300 | LUMP | | TEST SLAB * | | | LUMP | |

* SEE PROPOSAL NOTE

Burgess & Niple, Limited bn 6/24
 Engineers and Architects

ESTIMATED QUANTITIES
 BRIDGE NO. LAK-91-0423
 S.R.91 OVER N. & W. R.R.
 & CONRAIL R.R.

| | | | | | |
|-------------|--------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| [Signature] | D.M.B. | | WAC | 2/5/92 | |

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LEGEND

- ⊙ Existing Girder & Reset Abutment Expansion Bearing.
- Existing Girder & No Bearing Work Required.
- ⊙ Location of Available Shafts For Lateral Load Testing (Test Requirement: 1 Shaft Per Abutment, See Sht. 10/24 For Procedures)

Regrade Embankments Within Limits Shown.
See Abutment Slope Cross Sections Sht. 29 & 30 of 56.
(Respective Pay Items for This Work Shall be Included With Roadway Quantities for Payment.) (Typ. Both Abutments)

Remove Debris From Abutment Seat. This Work Shall Be Included In The Unit Price Bid For Item 202 - Portions of Structure Removed [Typ. Entire Length Both Abutments]. See Abutment Elevation, Sht. 15/24 For Seat Limits.

No Apparent Concrete Deterioration on Existing Piers #1, #2, #3

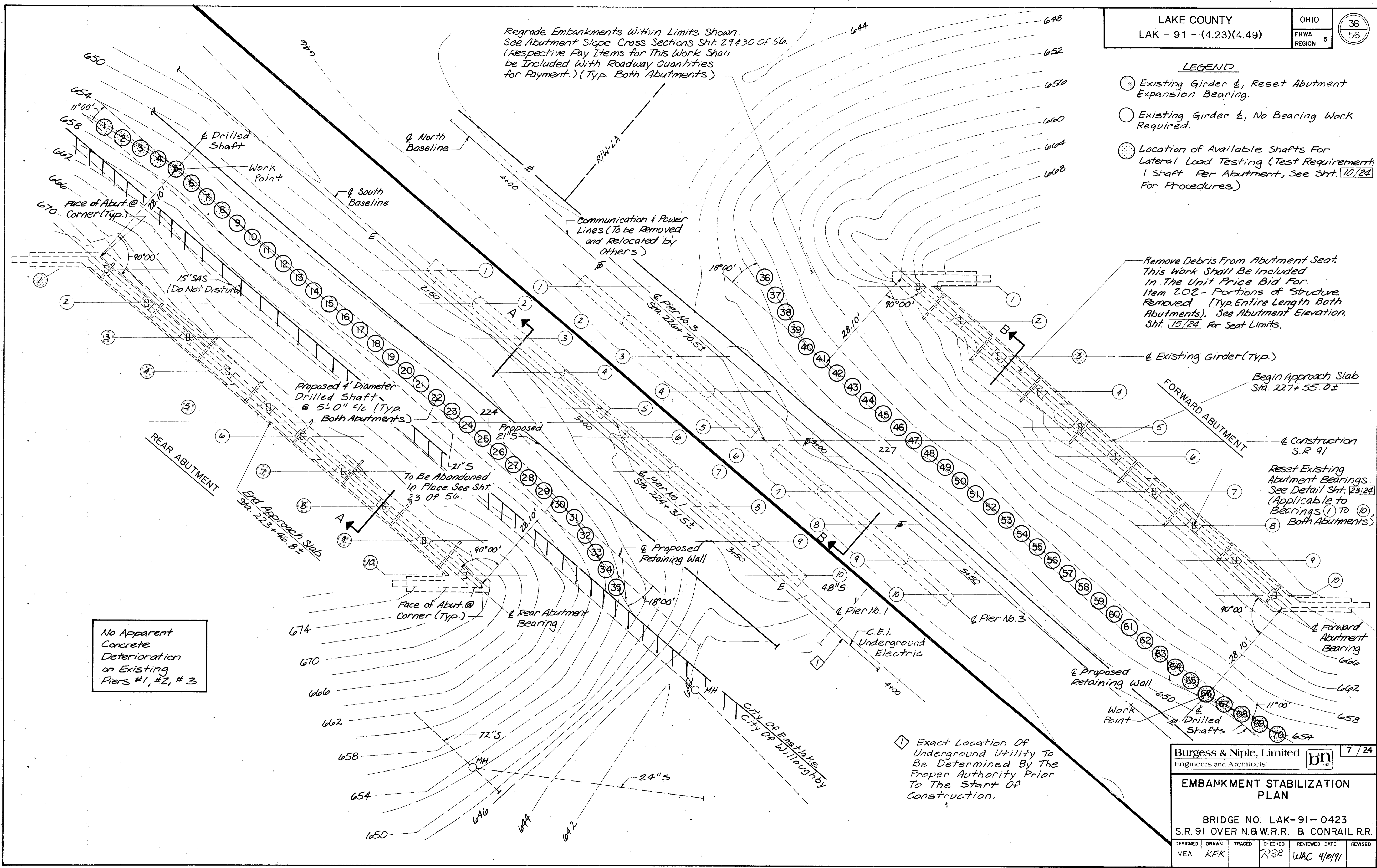
Exact Location Of Underground Utility To Be Determined By The Proper Authority Prior To The Start Of Construction.

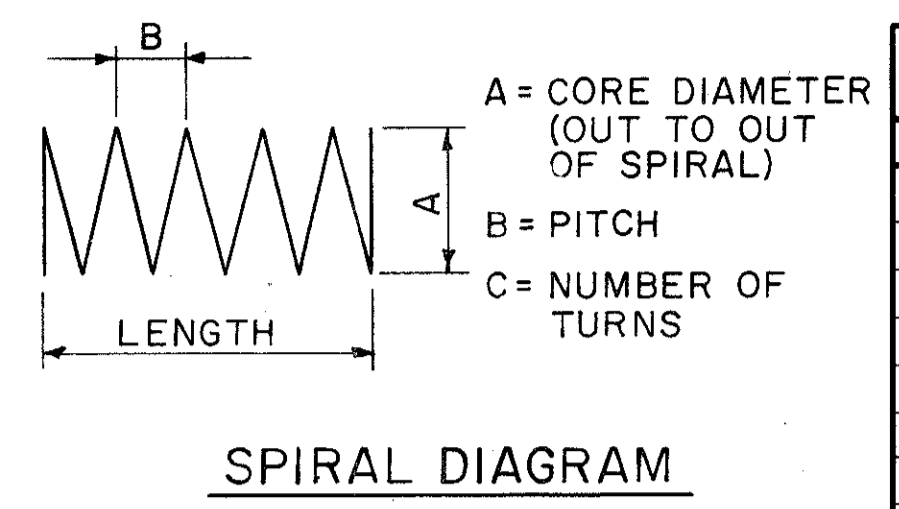
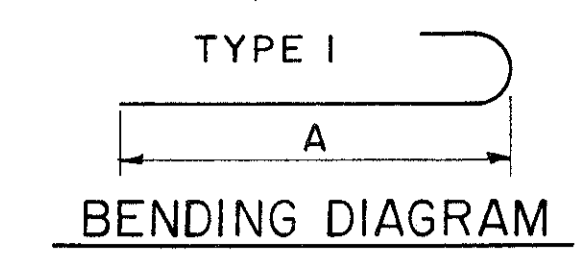
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Engineers and Architects

EMBANKMENT STABILIZATION PLAN

BRIDGE NO. LAK-91-0423
S.R. 91 OVER N.&W.R.R. & CONRAIL R.R.

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| VEA | KFK | | R38 | WAC 4/10/91 | |

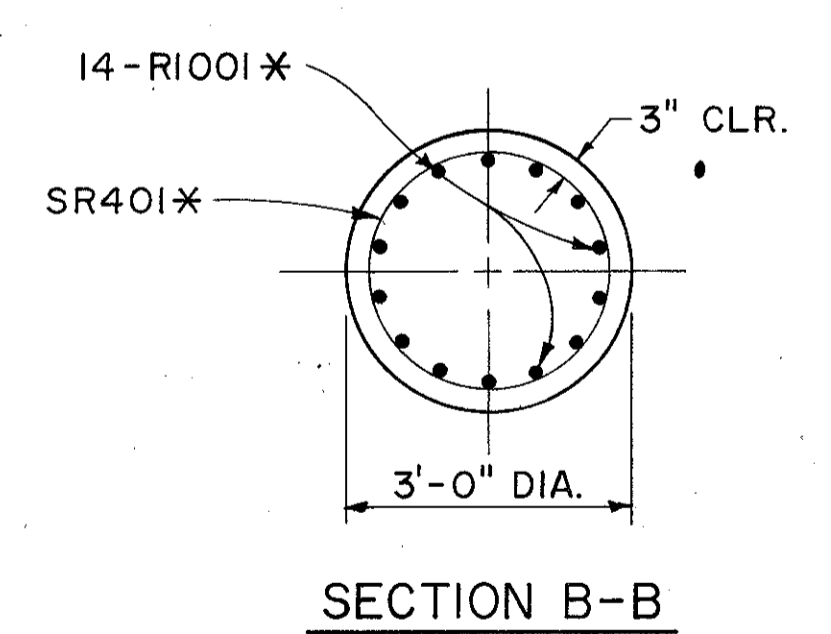
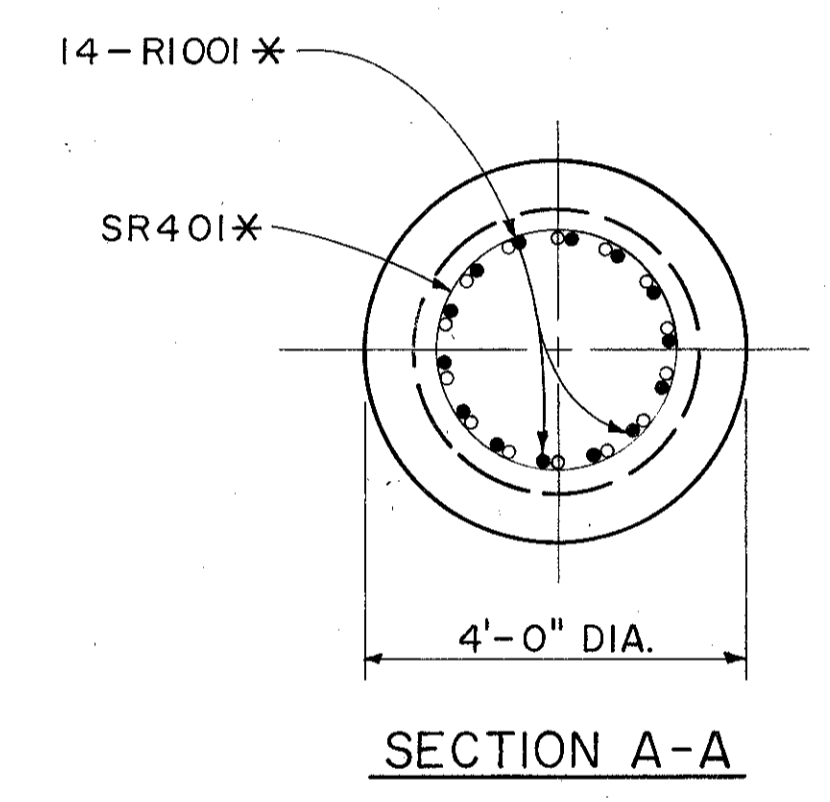
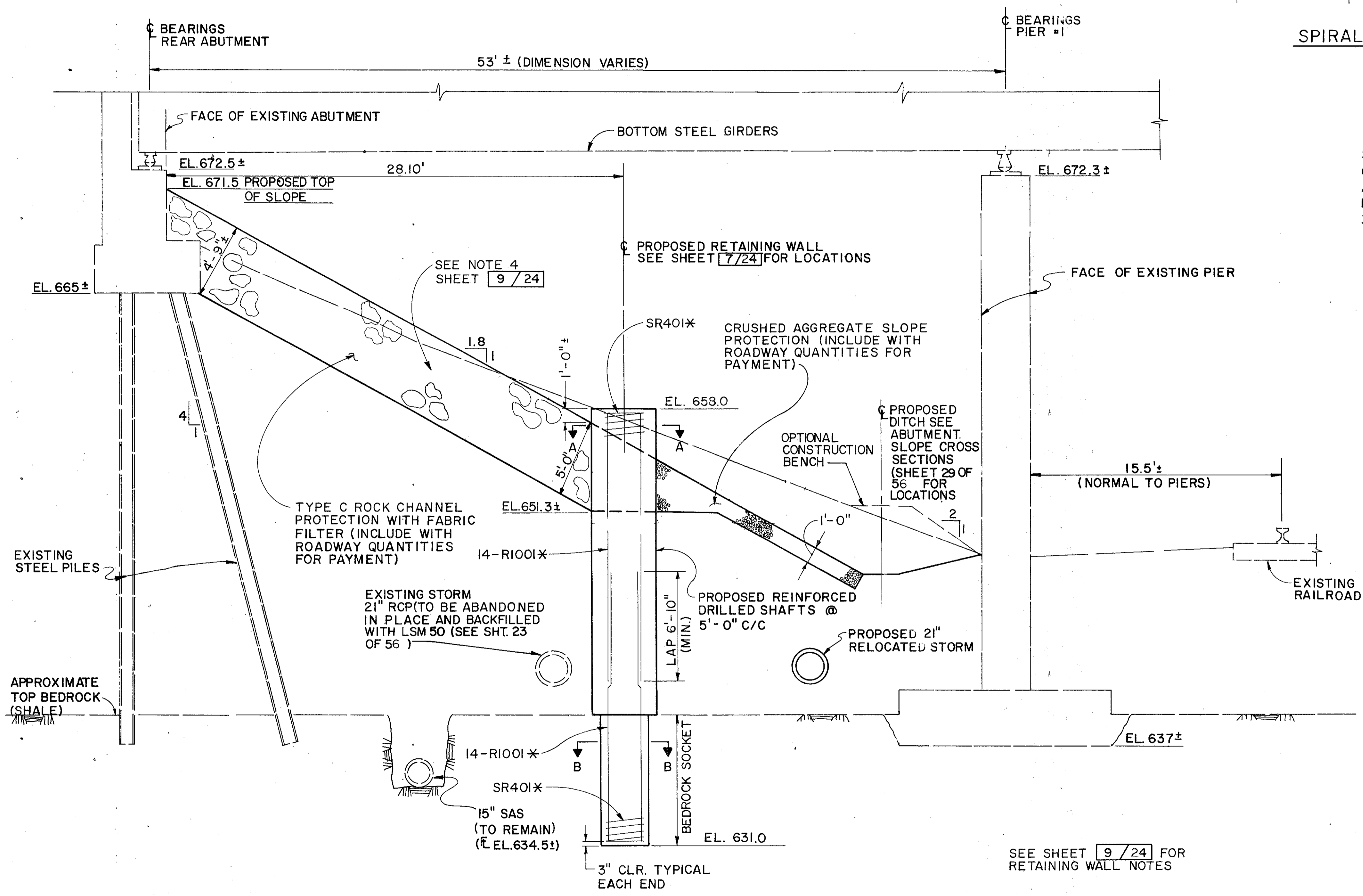




| DRILLED SHAFT EPOXY STEEL LIST | | | | | | | |
|--------------------------------|-----|--------|---------|----------|--------|--------|------|
| MARK | NO. | LENGTH | WEIGHT | TYPE | A | B | C |
| SR401 | 70 | 13'-3" | 17,759 | SPIRAL | 2'-6" | 4 1/2" | 38.3 |
| SR402 | 70 | 14'-3" | 19,012 | SPIRAL | 2'-6" | 4 1/2" | 41.0 |
| R1001 | 964 | 16'-8" | 69,135 | STRAIGHT | | | |
| R1002 | 964 | 17'-8" | 73,283 | STRAIGHT | | | |
| T1801 | 8 | 29'-5" | 3201 | I | 26'-6" | | |
| T1802 | 8 | 31'-5" | 3418 | I | 28'-6" | | |
| EPOXY COATED TOTAL = | | | 185,808 | | | | |

THESE LENGTHS AND WEIGHTS ARE ESTIMATED T18 BARS FOR TEST SHAFTS AND SHALL NOT BE SPLICED SEE SHEET 10/24

SPIRAL REINFORCEMENT BARS: THE "LENGTH" SHOWN IN THE STEEL LIST FOR THE SPIRAL BARS IS THE LENGTH OF THE SPIRAL ALONG THE AXIS OF THE SPIRAL. FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 LB. PER LIN. FT. OF SPACER, SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF THE COILS. THE NUMBER OF POUNDS OF THESE SPACERS, BASED ON 3.20 PER LIN. FT. IS INCLUDED IN THE TABULATED WEIGHT OF SPIRAL BARS.



* FOR PAYMENT, THESE BARS ARE INCLUDED IN ITEM SPECIAL - DRILLED SHAFTS

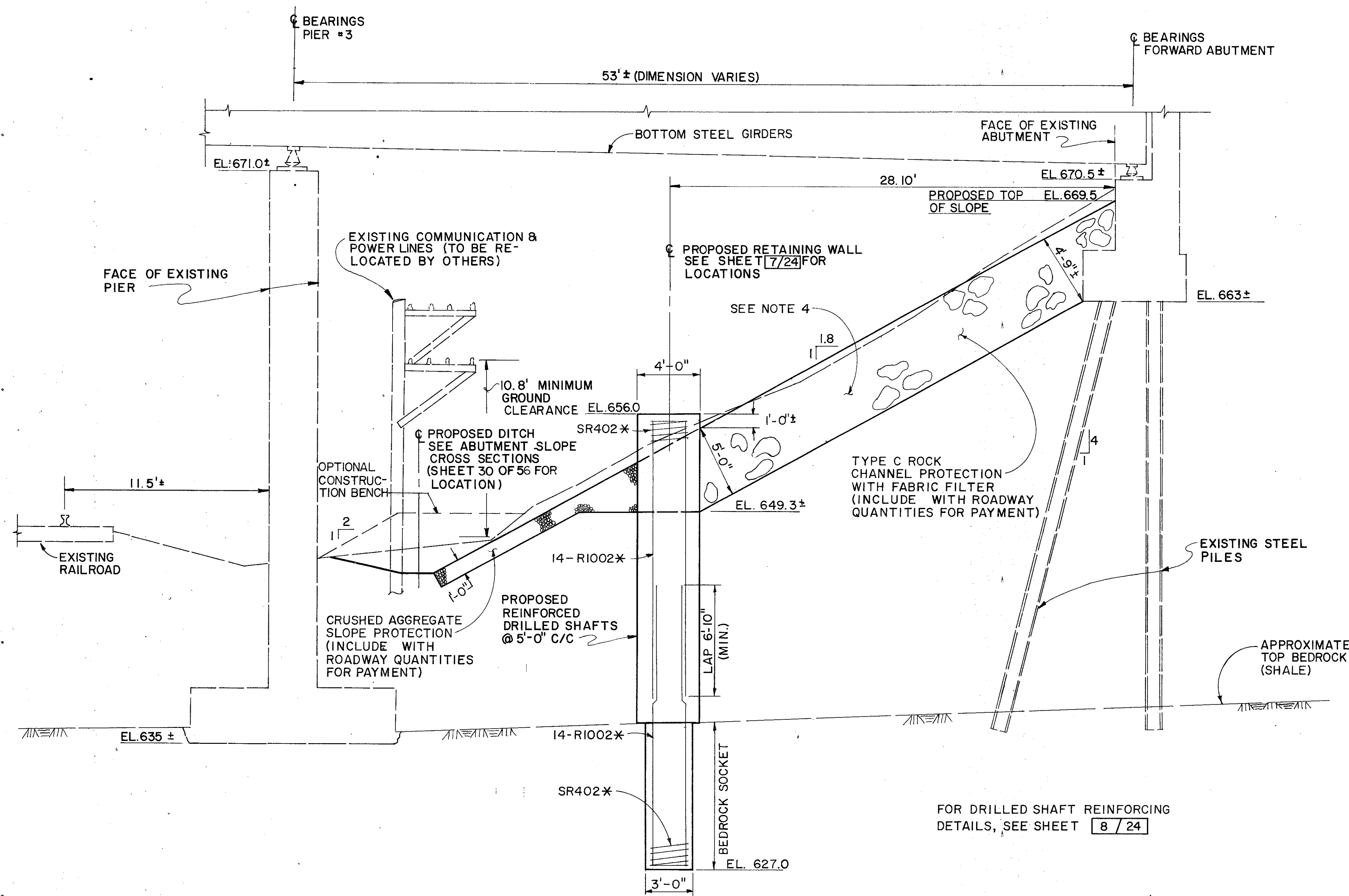
SEE SHEET 9/24 FOR RETAINING WALL NOTES

PROPOSED EMBANKMENT SECTION A-A
(NORMAL TO SUBSTRUCTURE UNITS)

| | | | | | | | |
|--|-------|--------------------------|---------|---------------|---------|--------|--|
| Burgess & Niple, Limited | | Engineers and Architects | | bn | | 8 / 24 | |
| EMBANKMENT STABILIZATION DETAILS REAR ABUTMENT BRIDGE NO. LAK-91- 0423 S.R. 91 OVER N.&W.R.R. & CONRAIL R.R. | | | | | | | |
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED | | |
| VEA | CL | | R.G. | 2-24-12 | | | |

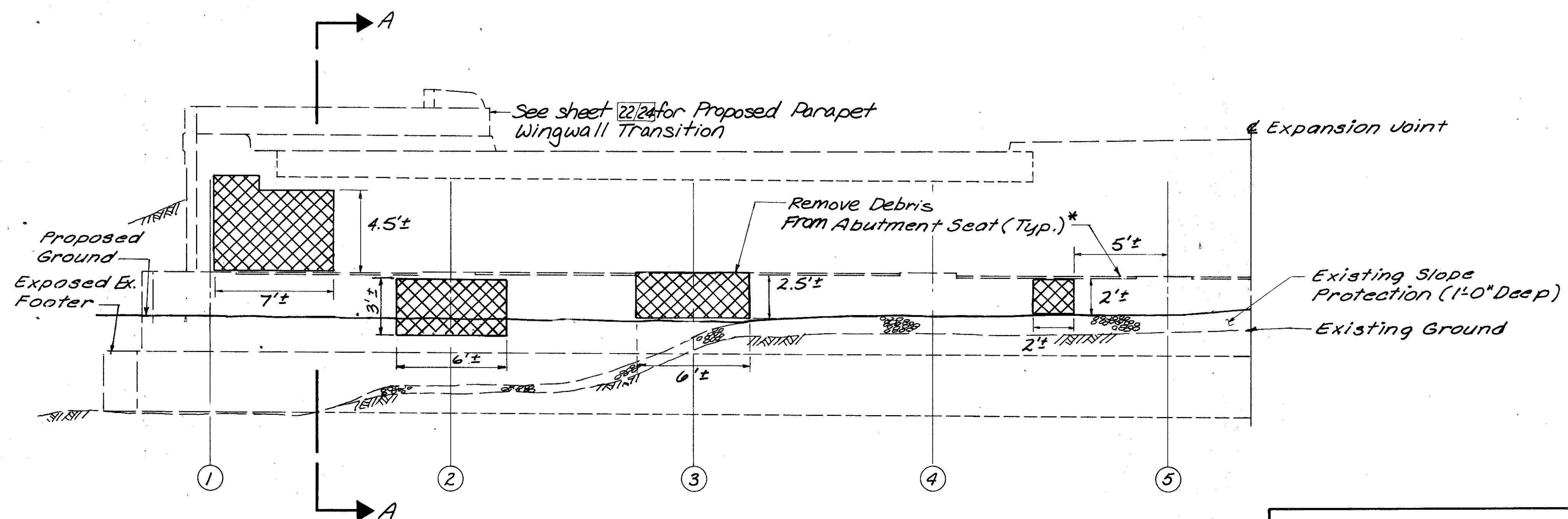
RETAINING WALL NOTES

- SEQUENCE OF INSTALLATION.** THE DRILLED SHAFTS SHALL BE CONSTRUCTED IN A MANNER THAT MAINTAINS EMBANKMENT STABILITY AT ALL TIMES. THE LATERAL LOAD TEST SHALL BE COMPLETED AT EACH ABUTMENT PRIOR TO CONSTRUCTING THE REMAINING PRODUCTION SHAFTS FOR EACH ABUTMENT. THE DRILLED SHAFTS SHALL BE INSTALLED IN AN ALTERNATING SEQUENCE SUCH THAT NO DRILLED SHAFT IS INSTALLED WITHIN 15 FEET OF EITHER AN OPEN DRILLED SHAFT EXCAVATION OR A DRILLED SHAFT IN WHICH THE CONCRETE HAS LESS THAN A 7-DAY STRENGTH (HIGH EARLY STRENGTH CONCRETE MAY BE USED). THE CONTRACTOR SHALL SUBMIT HIS PROPOSED CONSTRUCTION PROCEDURES AND CONSTRUCTION SEQUENCES TO THE ENGINEER FOR APPROVAL.
- OPTIONAL CONSTRUCTION BENCH.** A TEMPORARY OPTIONAL BENCH MAY BE CONSTRUCTED IN FRONT OF THE DRILLED SHAFT RETAINING WALL AT ELEVATION 651.3 AT THE REAR ABUTMENT AND ELEVATION 649.3 AT THE FORWARD ABUTMENT AS SHOWN. ALL COSTS ASSOCIATED WITH CONSTRUCTION, BACKFILL, AND REMOVAL OF OPTIONAL BENCH SHALL BE AT THE CONTRACTOR'S EXPENSE.
- CRUSHED AGGREGATE SLOPE PROTECTION.** CRUSHED AGGREGATE SLOPE PROTECTION SHALL BE PLACED AS BACKFILL BETWEEN DRILLED SHAFTS AND TO THE LIMITS AS SHOWN. PAYMENT FOR THE WORK SHALL BE INCLUDED WITH ITEM 601, CRUSHED AGGREGATE SLOPE PROTECTION.
- EXCAVATION SEQUENCE.** EXCAVATION FOR TYPE C ROCK CHANNEL PROTECTION AND CRUSHED AGGREGATE SLOPE PROTECTION ABOVE ELEVATION 651.3 AT THE REAR ABUTMENT AND ELEVATION 649.3 AT THE FORWARD ABUTMENT SHALL BE MADE PRIOR TO CONSTRUCTION OF THE DRILLED SHAFTS. PLACEMENT OF TYPE C ROCK CHANNEL PROTECTION SHALL NOT BEGIN UNTIL THE DRILLED SHAFTS HAVE ATTAINED 28-DAY STRENGTH.



PROPOSED EMBANKMENT SECTION B-B
(NORMAL TO SUBSTRUCTURE UNITS)

| | | | | | |
|---|-------|--------------------------|---------|---------------|----------|
| Burgess & Niple, Limited | | Engineers and Architects | | 9 / 24 | |
| EMBANKMENT STABILIZATION DETAILS FORWARD ABUTMENT BRIDGE NO. LAK-91- 0423 S.R. 91 OVER N.&W. R.R. & CONRAIL R.R. | | | | | |
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVIEWED |
| VEA | CL | | R.G. | 2-24-92 | |



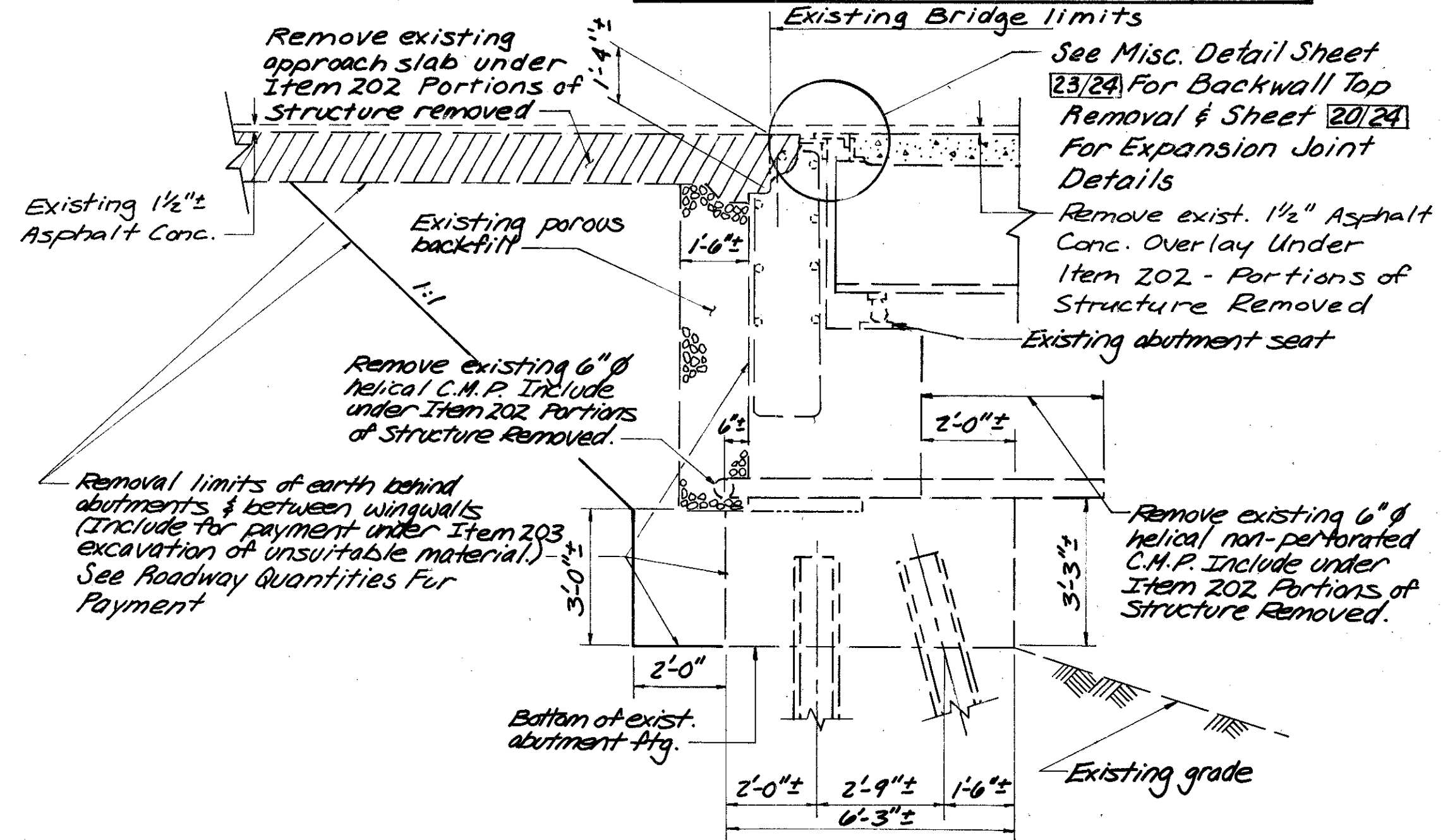
SOUTHBOUND

Summary of Repair Quantities

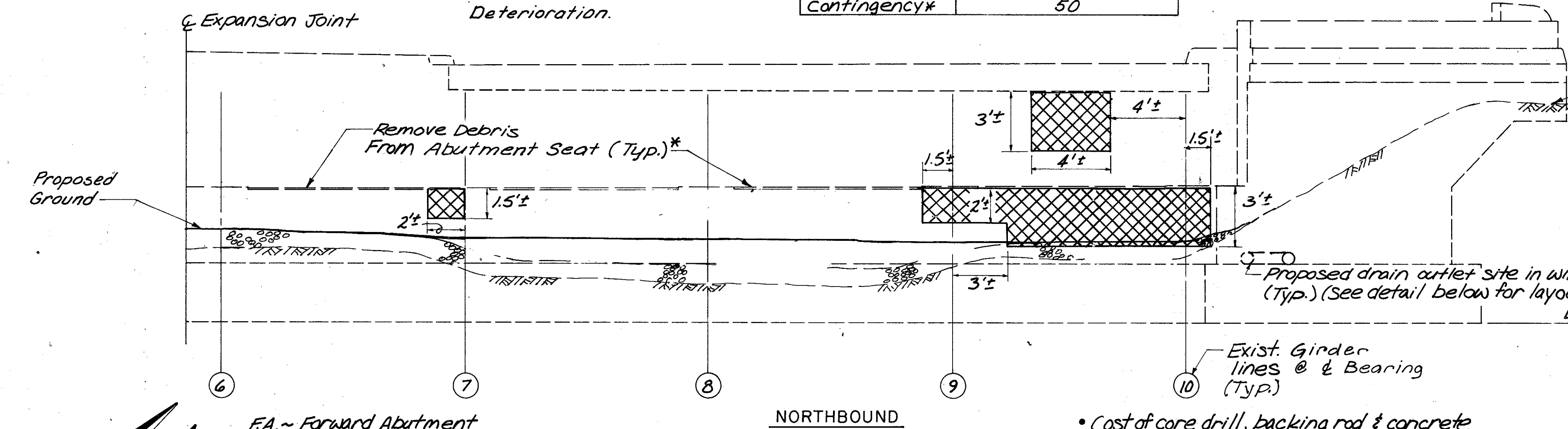
| Location | Estimated Quantities (S.F.) |
|------------------|-----------------------------|
| Rear Abutment | - |
| Forward Abutment | 212 |
| Contingency* | 50 |

No Deterioration Apparent on Rear Abutment.

Estimated Quantity Has Been Increased By 50 S.F. Over Measured Quantities To Allow For Additional Deterioration.

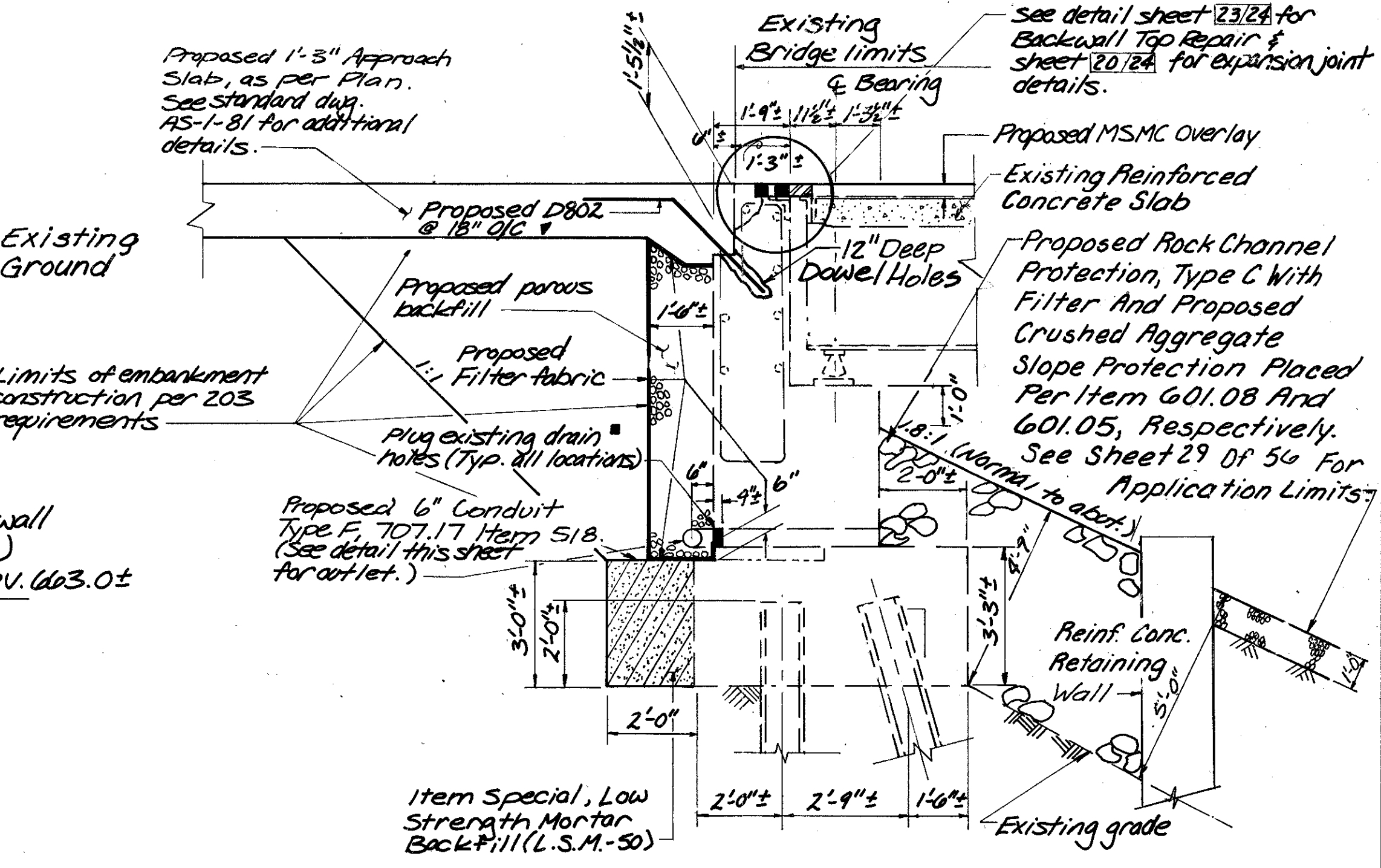


EXISTING SECTION A-A
(TYP. BOTH ABUTMENTS)

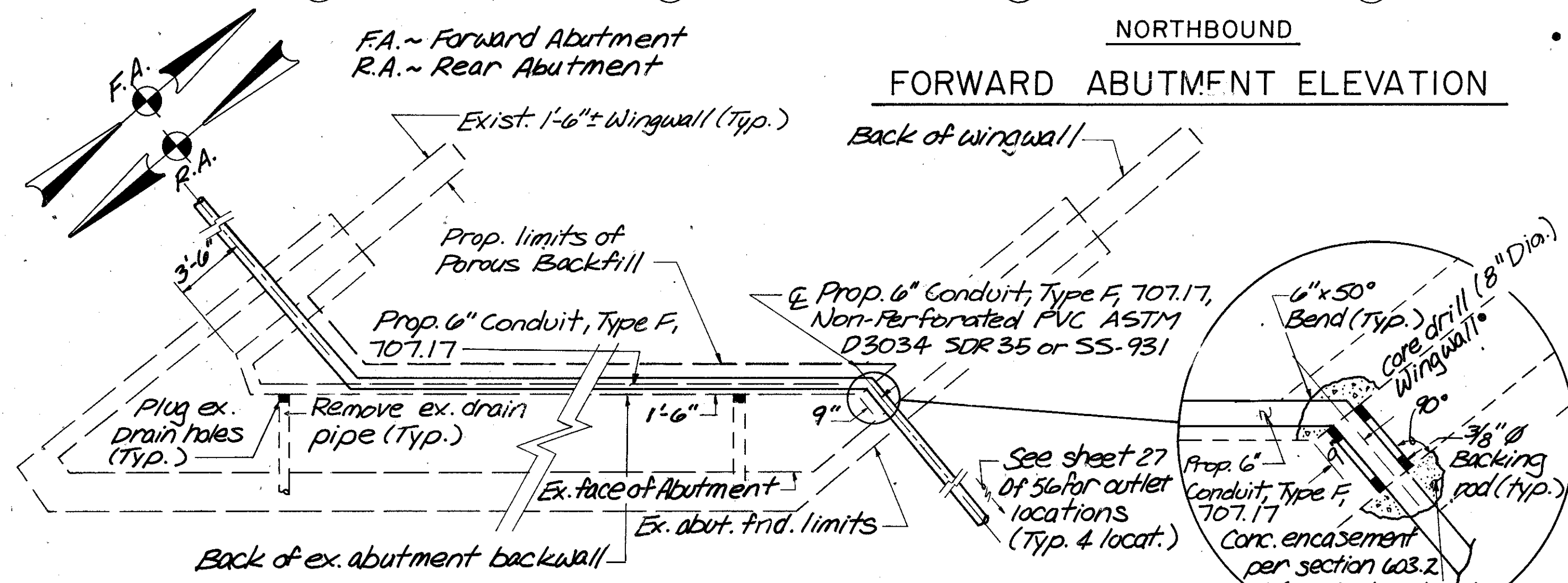


NORTHBOUND

FORWARD ABUTMENT ELEVATION



PROPOSED SECTION A-A
(TYP. BOTH ABUTMENTS)



PROPOSED ABUTMENT DRAIN OUTLET DETAIL
(See prop. section A-A above for further information.)

* Cost of core drill, backing rod & concrete encasement to be included in cost per lineal foot of Item 518 - Structure Drainage, Misc.: 6" Conduit, Type F, 707.17, Non-perforated PVC, ASTM D3034 SDR 35 or SS 931.

Physical inventory of measured quantities of deterioration was performed in January 1991.

* Engineer shall sound abutment seats after debris is removed. Any unsound or delaminated concrete shall be patched per item 519 - Patching Concrete Structures, as per plan, or Item Special - Trowelable Mortar, Where Appropriate. A Contingency Quantity Of 50 S.F. For Each Pay Item Has Been Included For Both Abutments To Be Used As Directed By The Engineer.

- LEGEND
- ▣ Indicates area to be patched per Item 519 - Patching Concrete Structures as per plan.
 - ▨ Indicates area to be removed per item 202 - Portions of Structure Removed.
 - ▩ Indicates area to be backfilled with Item - Special - Low Strength Mortar Backfill Material, Class LSM - 50.
 - ▼ Include D802 Bars With Approach Slab, As Per Plan For Payment.

Burgess & Niple, Limited **bn** 15 / 24
Engineers and Architects

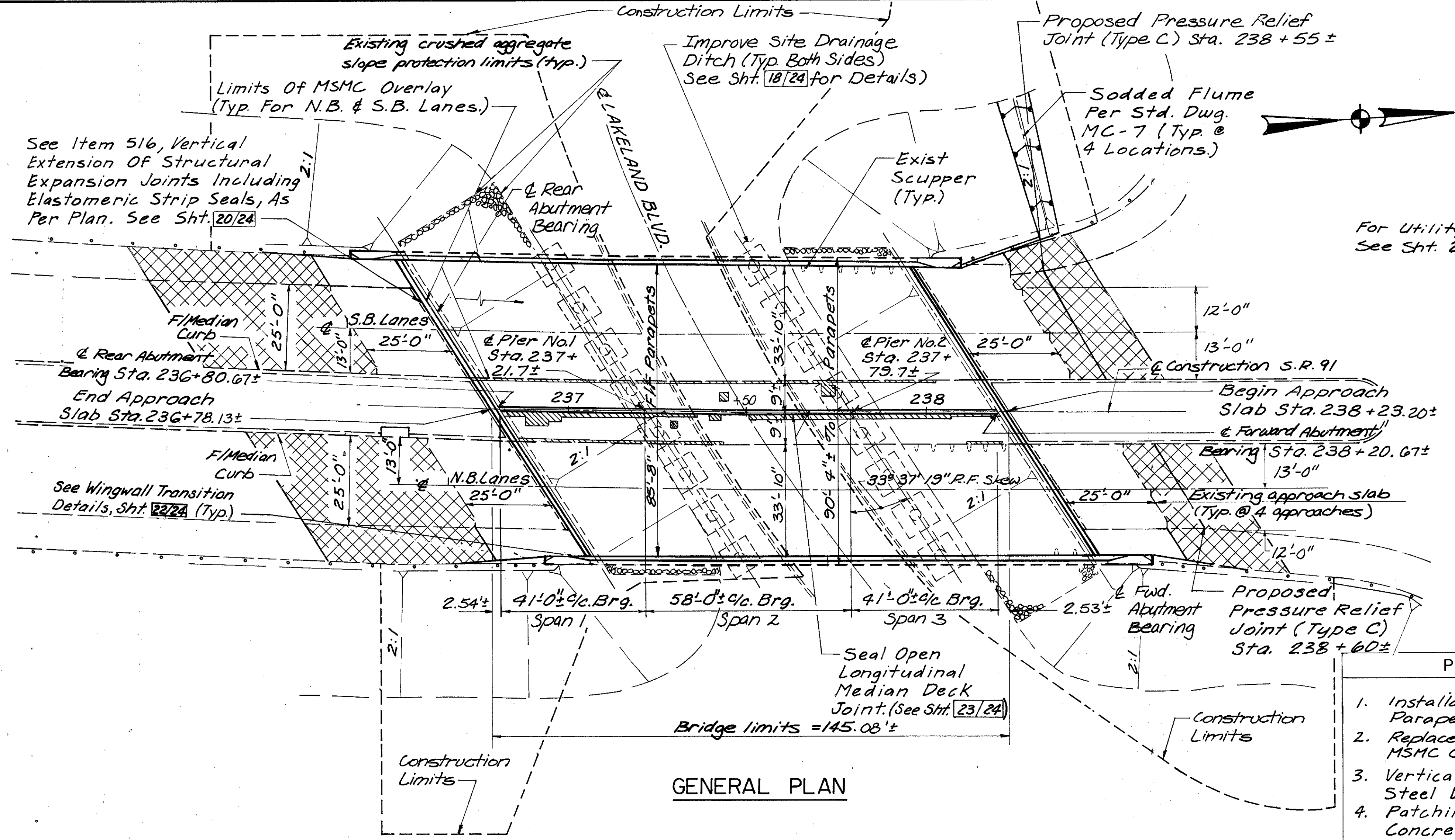
ABUTMENT REPAIRS & DETAILS
BRIDGE NO. LAK-91-0423
S.R. 91 OVER N & W R.R. & CONRAIL R.R.

| | | | | | |
|----------|-------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| RJB | KFK | | RBB | WAC 4/19/91 | |

Physical Inventory of measured quantities of deterioration was performed in October, 1991.

Denotes Pavement Feather Area
Indicates Approximate Area to be Surface Patched per Item 519 - Patching Concrete Structure, As Per Plan

P.G. Profile Grade
RND Rounding
MSMC Micro-Silica Modified Concrete
N.B. Northbound
S.B. Southbound



GENERAL PLAN

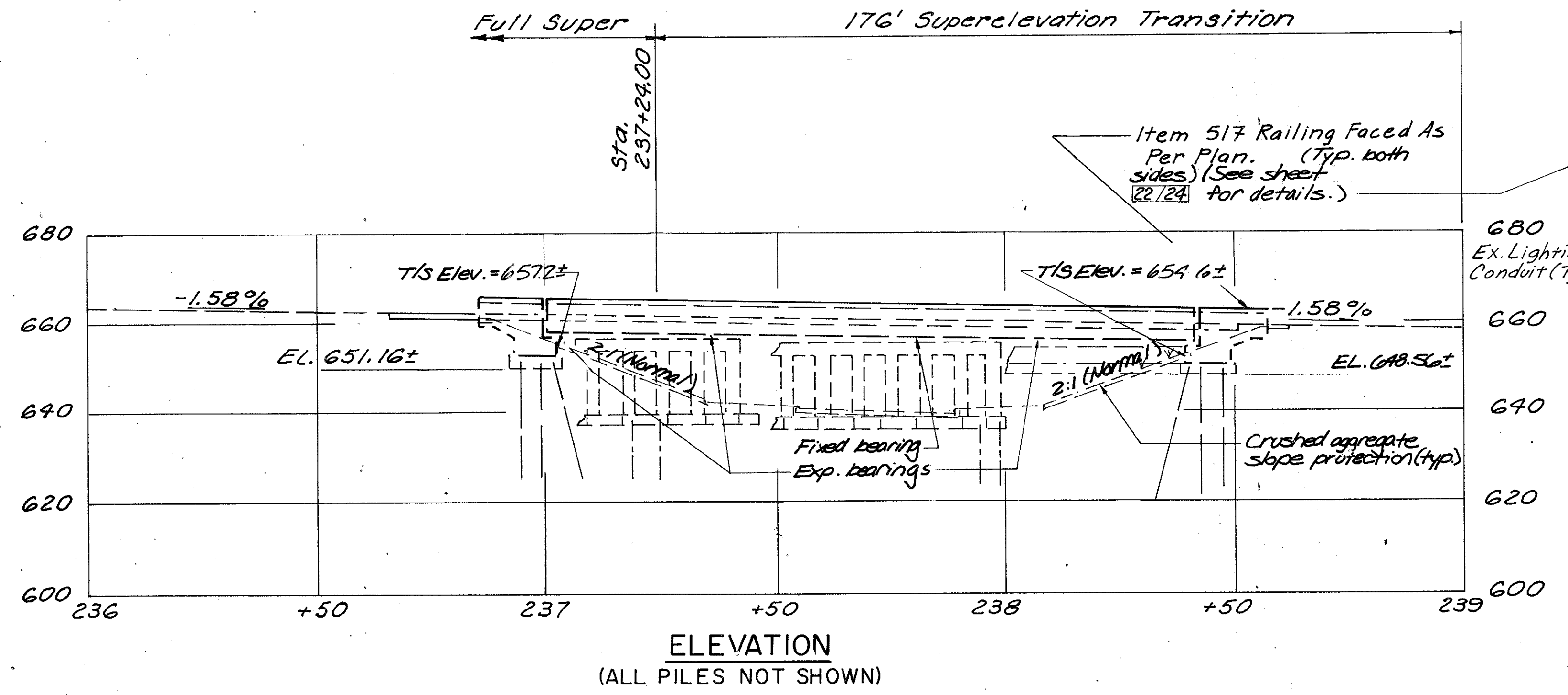
- PROPOSED WORK
1. Installation of Safety-shaped Parapets and Transitions
 2. Replace Exist. Asphalt Conc. With MSMC Overlay on Deck
 3. Vertically Extend Existing Steel Deck Expansion Joints.
 4. Patching And Sealing Of Concrete Surfaces.
 5. Repair Abutment Drainage System And Plug Deck Scuppers.
 6. Reset Abutment Bearings.
 7. Seal Longitudinal Deck Joint.
 8. Clean And Paint Steel

EXISTING STRUCTURE

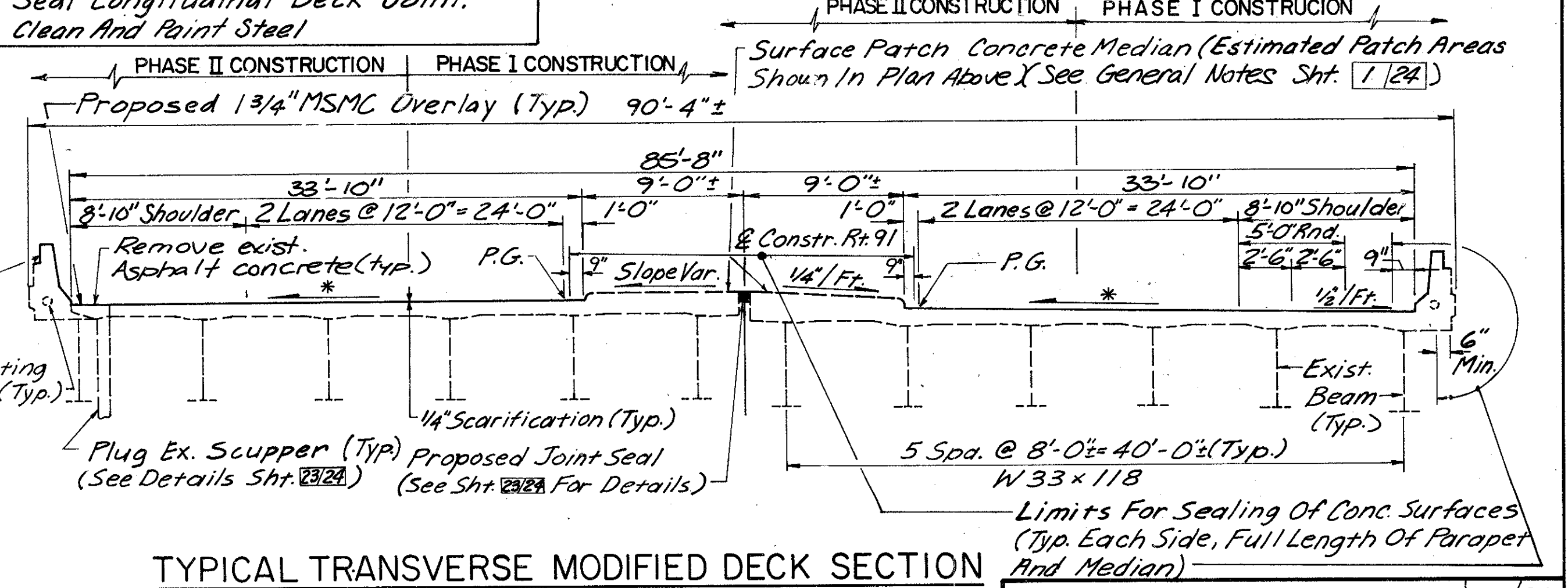
TYPE: Continuous Rolled Steel Beams With Reinforced Concrete Deck & Substructure
SPANS: 41'-0", 58'-0", 41'-0" (c/c Bearings)
ROADWAY: 2 @ 34'-0" F/F Of Curb With 18'-0" Barrier Median
SKEW: 33°-37'-19" Right Forward
WEARING SURFACE: 1 3/4" Asphalt Concrete
APPROACH SLABS: AS-1-54 (25' Long)
ALIGNMENT: 1°-15'-00" Curve Left
SUPERELEVATION: 1/4" / Ft. @ Full Superelevation
LOADING: CF=400 (57)
STRUCTURE FILE NO. 4305191

PROPOSED REHABILITATED STRUCTURE

TYPE: Continuous Rolled Steel Beams With Reinforced Concrete Deck & Superstructure
SPANS: 41'-0", 58'-0", 41'-0" (c/c Bearings)
ROADWAY: 2 @ 33'-10" F/F Of Safety Shaped Parapets With 18'-0" Barrier Median
SKEW: 33°-37'-19" Right Forward
WEARING SURFACE: 1 3/4" Micro-Silica Modified Concrete
APPROACH SLABS: AS-1-54 (25' Long)
ALIGNMENT: 1°-15'-00" Curve Left
SUPERELEVATION: 1/4" / Ft. @ Full Superelevation



ELEVATION
(ALL PILES NOT SHOWN)



TYPICAL TRANSVERSE MODIFIED DECK SECTION
N.T.S. (EXIST. X-FRAMES NOT SHOWN)

* Slope Varies 1/4" / Ft. @ Full Super Elevation.

Note: For Phase Construction Details See Maintenance Of Traffic Plan Sheet 14 Of 56 And Sheet 16 Of 56.

Burgess & Niple, Limited
Engineers and Architects

GENERAL PLAN AND ELEVATION

BRIDGE NO. LAK-91-0449
S.R. 91 OVER LAKELAND BLVD.

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| RKD | JNV | | RBB | WAC 4/10/91 | |

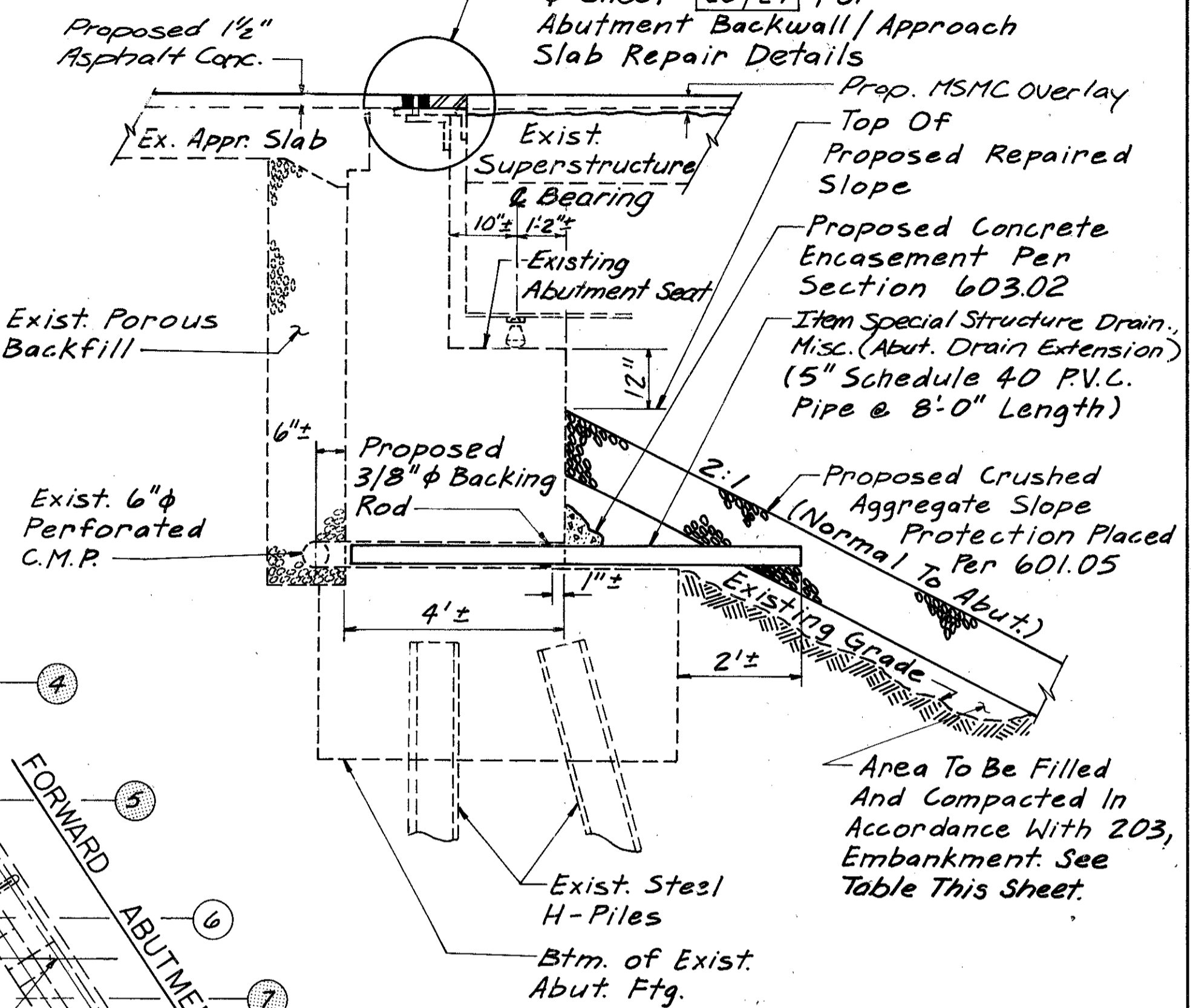
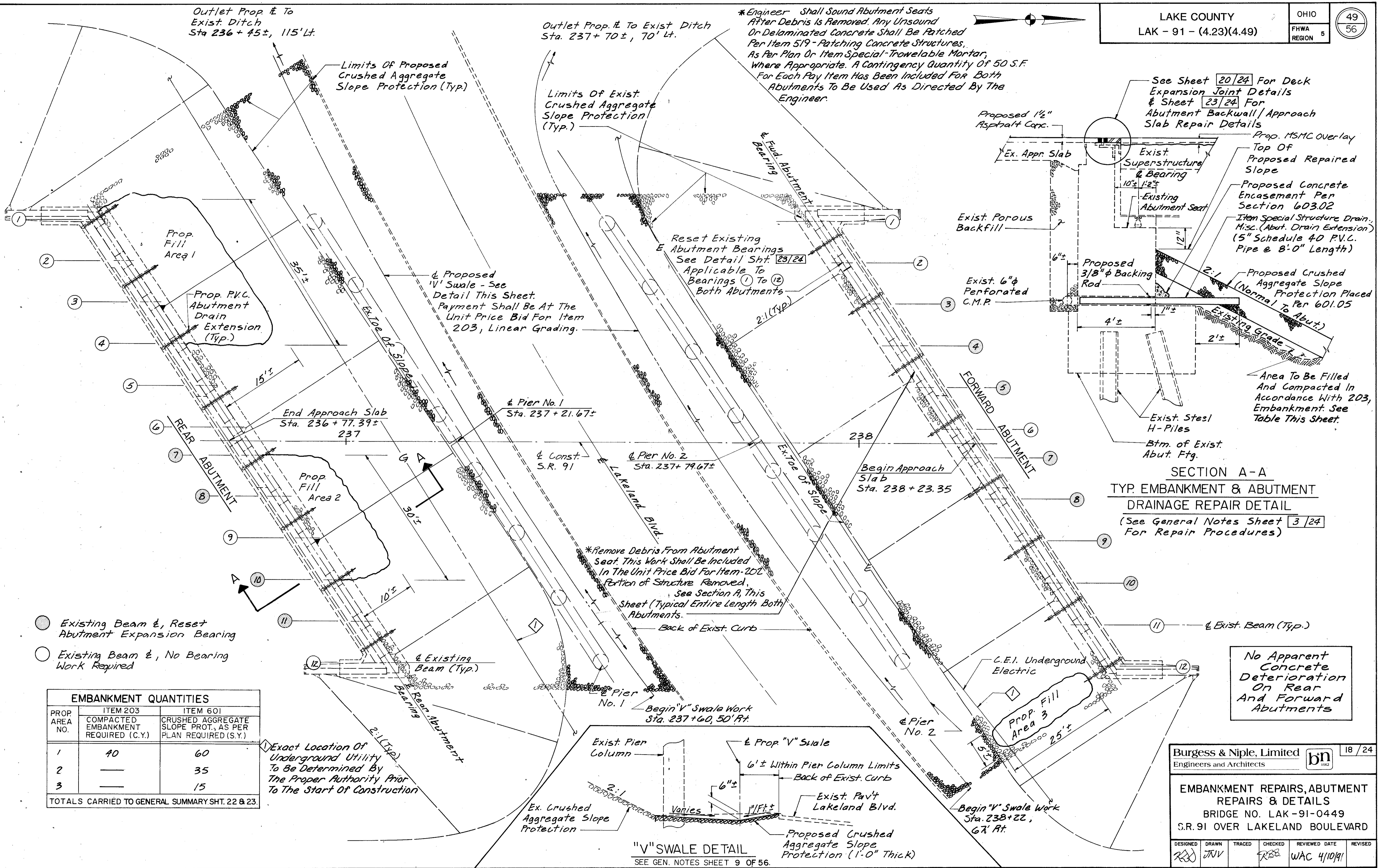
ESTIMATED QUANTITIES

| ITEM | ITEM EXT. | TOTAL | UNIT | DESCRIPTION | ABUTMENTS | PIERS | SUPER-STRUCT. | GENERAL |
|---------|-----------|--------|-------|--|-----------|-------|---------------|---------|
| 202 | 11200 | LUMP | | PORTIONS OF STRUCTURE REMOVED | | | | LUMP |
| 202 | 23500 | 1096 | S.Y. | WEARING COURSE REMOVED | | | 1096 | |
| 503 | 21101 | 12 | C.Y. | UNCLASSIFIED EXCAVATION, AS PER PLAN | | 12 | | |
| 509 | 15801 | 200 | POUND | EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN | | | | 200 |
| SPECIAL | 51267502 | 1356 | S.Y. | SEALING OF CONCRETE SURFACES (EPOXY) * | 620 | 488 | 248 | |
| 513 | 15901 | 200 | POUND | STRUCTURAL STEEL REPLACEMENT OF DETERIORATED END CROSS FRAMES, AS PER PLAN | | | 200 | |
| SPECIAL | 51400050 | 16,012 | S.F. | SURFACE PREPARATION OF EXISTING STEEL, SYSTEM OZEU * | | | 16,012 | |
| SPECIAL | 51400056 | 16,012 | S.F. | FIELD PAINTING OF EXISTING STEEL, PRIME COAT, SYSTEM OZEU * | | | 16,012 | |
| SPECIAL | 51400060 | 16,012 | S.F. | FIELD PAINTING OF EXISTING STEEL, INTERMEDIATE COAT, SYSTEM OZEU * | | | 16,012 | |
| SPECIAL | 51400066 | 16,012 | S.F. | FIELD PAINTING OF EXISTING STEEL, FINISH COAT, SYSTEM OZEU * | | | 16,012 | |
| 516 | 11801 | 211 | L.F. | VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINT, INCLUDING ELASTOMERIC STRIP SEALS, AS PER PLAN | | | 211 | |
| SPECIAL | 53000400 | 4 | EACH | PARAPET MODIFICATIONS AT EXPANSION JOINTS | | | 4 | |
| 516 | 14600 | 143 | L.F. | STRUCT. JOINT OR JOINT SEALER, MISC: RAISED CONCRETE MEDIAN SEAL | | | 143 | |
| SPECIAL | 51646800 | 11 | EACH | REFURBISH AND RESET BEARING | | | 11 | |
| 517 | 76201 | 350 | L.F. | RAILING FACED, AS PER PLAN | | | 350 | |
| SPECIAL | 51862200 | 16 | EACH | STRUCTURE DRAINAGE, MISC. ABUTMENT DRAIN EXTENSIONS | 16 | | | |
| 519 | 11101 | 401 | S.F. | PATCHING CONCRETE STRUCTURE, AS PER PLAN | 50 | | 351 | |
| SPECIAL | 51911502 | 250 | S.F. | PATCHING CONCRETE STRUCTURE WITH TROWELABLE MORTAR * | 50 | 200 | | |
| SPECIAL | 51922006 | 1096 | S.Y. | MICRO-SILICA MODIFIED CONCRETE OVERLAY (1 3/4" THICK) * | | | 1096 | |
| SPECIAL | 51922100 | 68 | C.Y. | MICRO-SILICA MODIFIED CONCRETE OVERLAY (VARIABLE THICKNESS) * | | | 68 | |
| SPECIAL | 51922300 | LUMP | | TEST SLAB * | | | LUMP | |

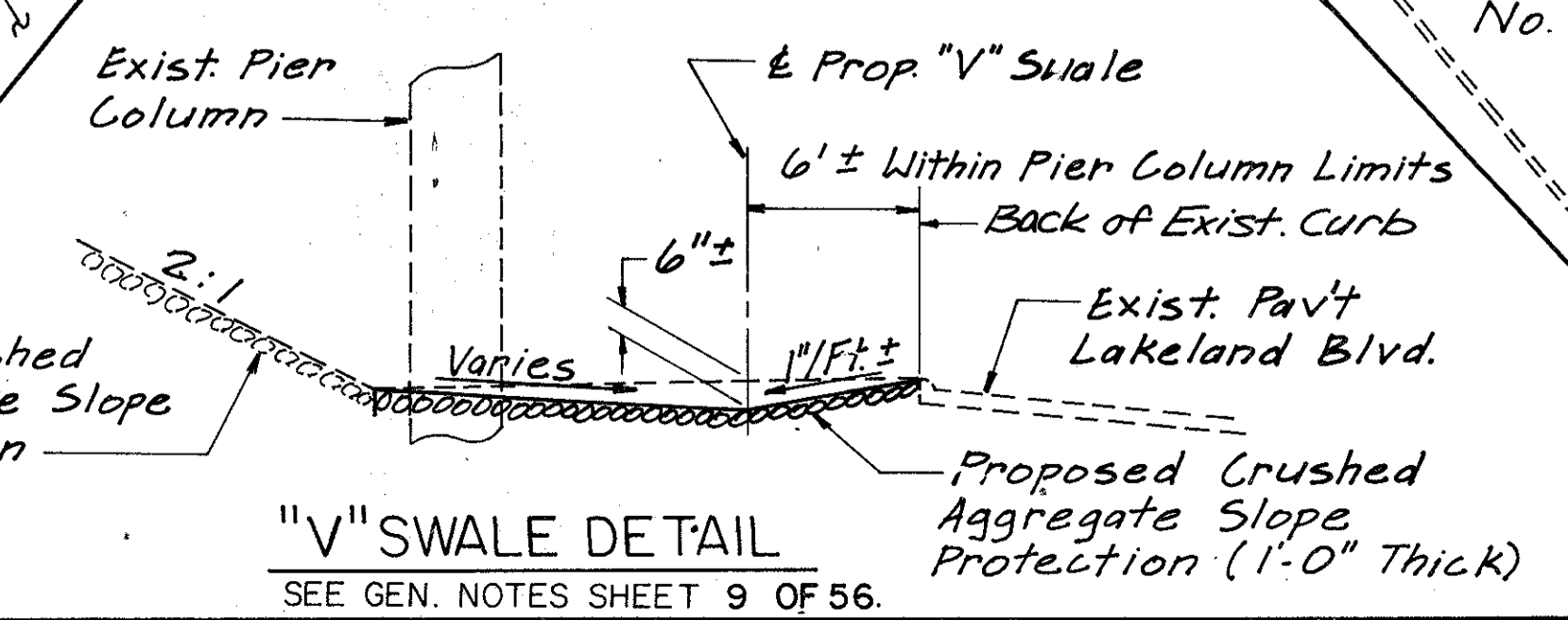
* SEE PROPOSAL NOTE

| | | | |
|--|--------|---------|---------|
| Burgess & Niple, Limited Engineers and Architects | | | 17/24 |
| ESTIMATED QUANTITIES BRIDGE NO. LAK-91-0449 S.R.91 OVER LAKELAND BLVD. | | | |
| DESIGNED | DRAWN | TRACED | CHECKED |
| RJS | D.M.B. | WAC | 2/28/92 |
| REVIEWED DATE | | REVISED | |

09-JAN-92 10:00AM P:\PROJECTS\CAD\ESTIMATE.DWG 1 06-15-92



SECTION A-A
TYP. EMBANKMENT & ABUTMENT
DRAINAGE REPAIR DETAIL
(See General Notes Sheet 3/24
For Repair Procedures)



- Existing Beam & Reset Abutment Expansion Bearing
- Existing Beam & No Bearing Work Required

| EMBANKMENT QUANTITIES | | |
|---|--------------------------------------|--|
| PROP. AREA NO. | ITEM 203 | ITEM 601 |
| | COMPACTED EMBANKMENT REQUIRED (C.Y.) | CRUSHED AGGREGATE SLOPE PROT., AS PER PLAN REQUIRED (S.Y.) |
| 1 | 40 | 60 |
| 2 | — | 35 |
| 3 | — | 15 |
| TOTALS CARRIED TO GENERAL SUMMARY SHT. 22 & 23. | | |

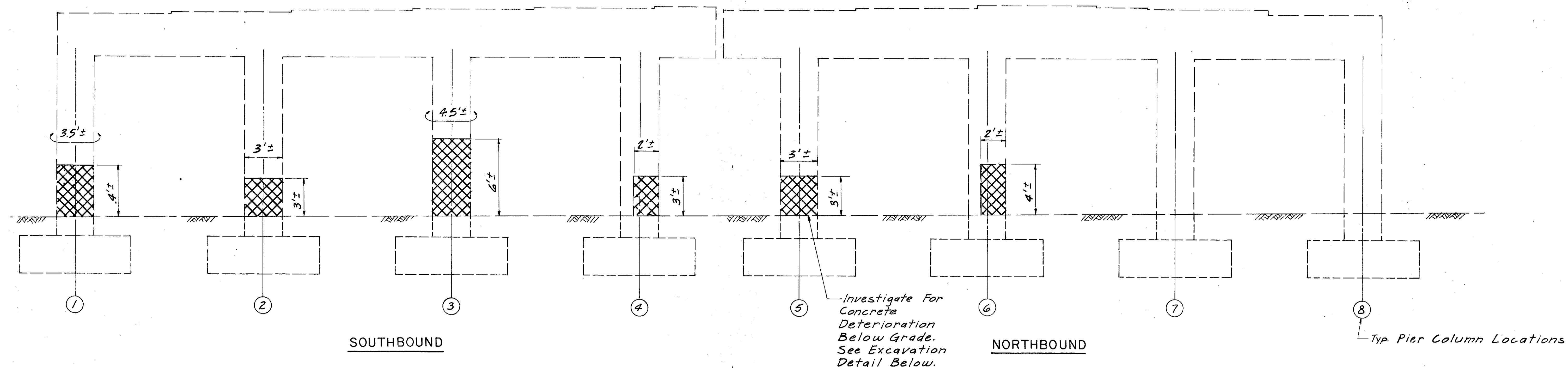
Exact Location Of Underground Utility To Be Determined By The Proper Authority Prior To The Start Of Construction

No Apparent Concrete Deterioration On Rear And Forward Abutments

Burgess & Niple, Limited **bn** 18/24
Engineers and Architects

EMBANKMENT REPAIRS, ABUTMENT REPAIRS & DETAILS
BRIDGE NO. LAK-91-0449
S.R. 91 OVER LAKELAND BOULEVARD

| | | | | | |
|----------|-------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| RJD | JRV | | FRB | WAC 4/10/91 | |



PIER NO. 2
(SOUTH ELEVATION)

LEGEND

▨ Indicates Area To Be Patched Per Item Special-Patching Concrete Structures With Trowelable Mortar.

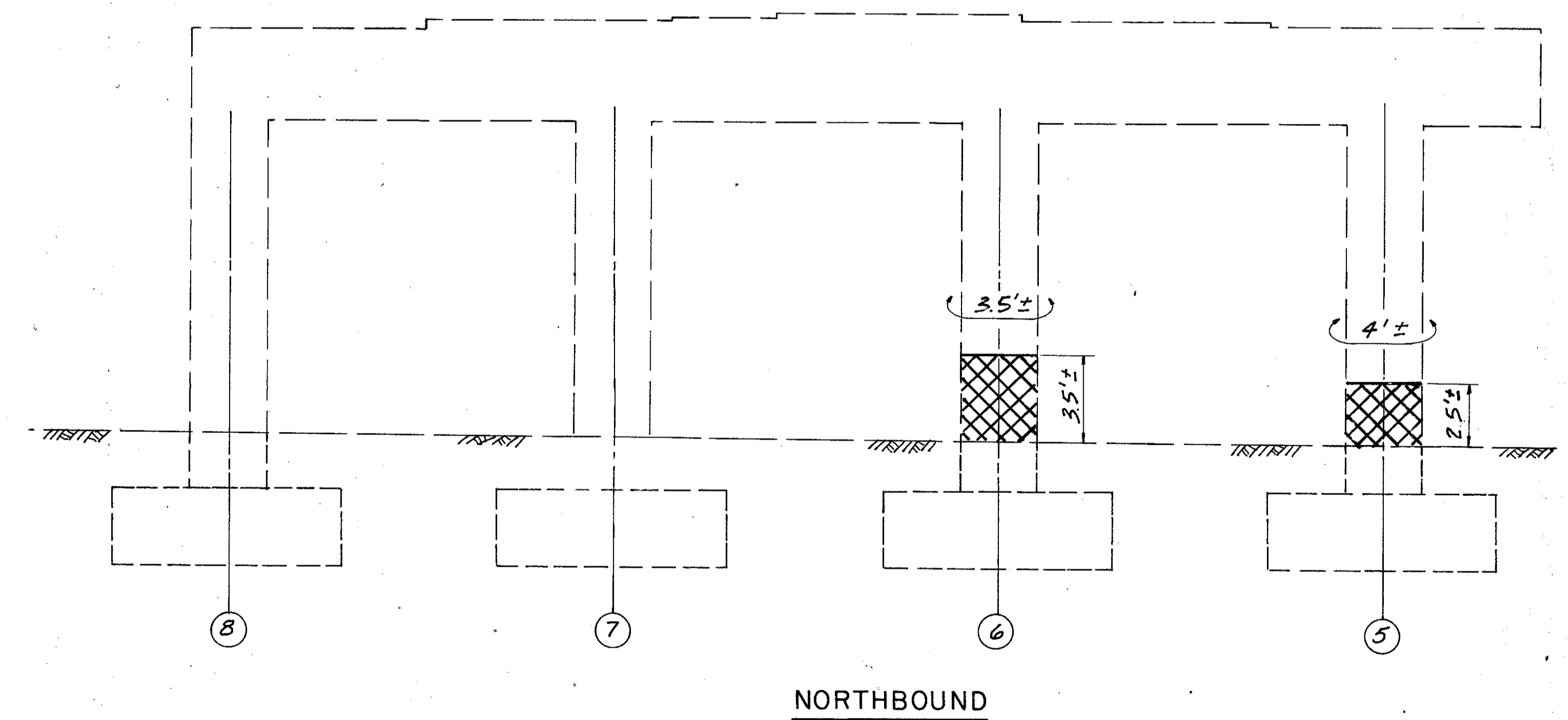
| Summary Of Repair Quantities | | |
|------------------------------|-----|------------------------------|
| Pier Column No. | No. | Estimated Quantities (S.F.)* |
| 1 | 5 | 20 |
| 1 | 6 | 24 |
| 2 | 1 | 28 |
| 2 | 2 | 18 |
| 2 | 3 | 54 |
| 2 | 4 | 12 |
| 2 | 5 | 18 |
| 2 | 6 | 24 |
| Total | | 198 S.F. |

* Estimated Quantity Has Been Increased 100% Over Measured Quantity To Allow For Additional Deterioration And Extension Of Deterioration Below Ground Level. Exact Dimensions Of Patches Shall Be Determined By The Engineer In The Field For Final Pay Quantity.

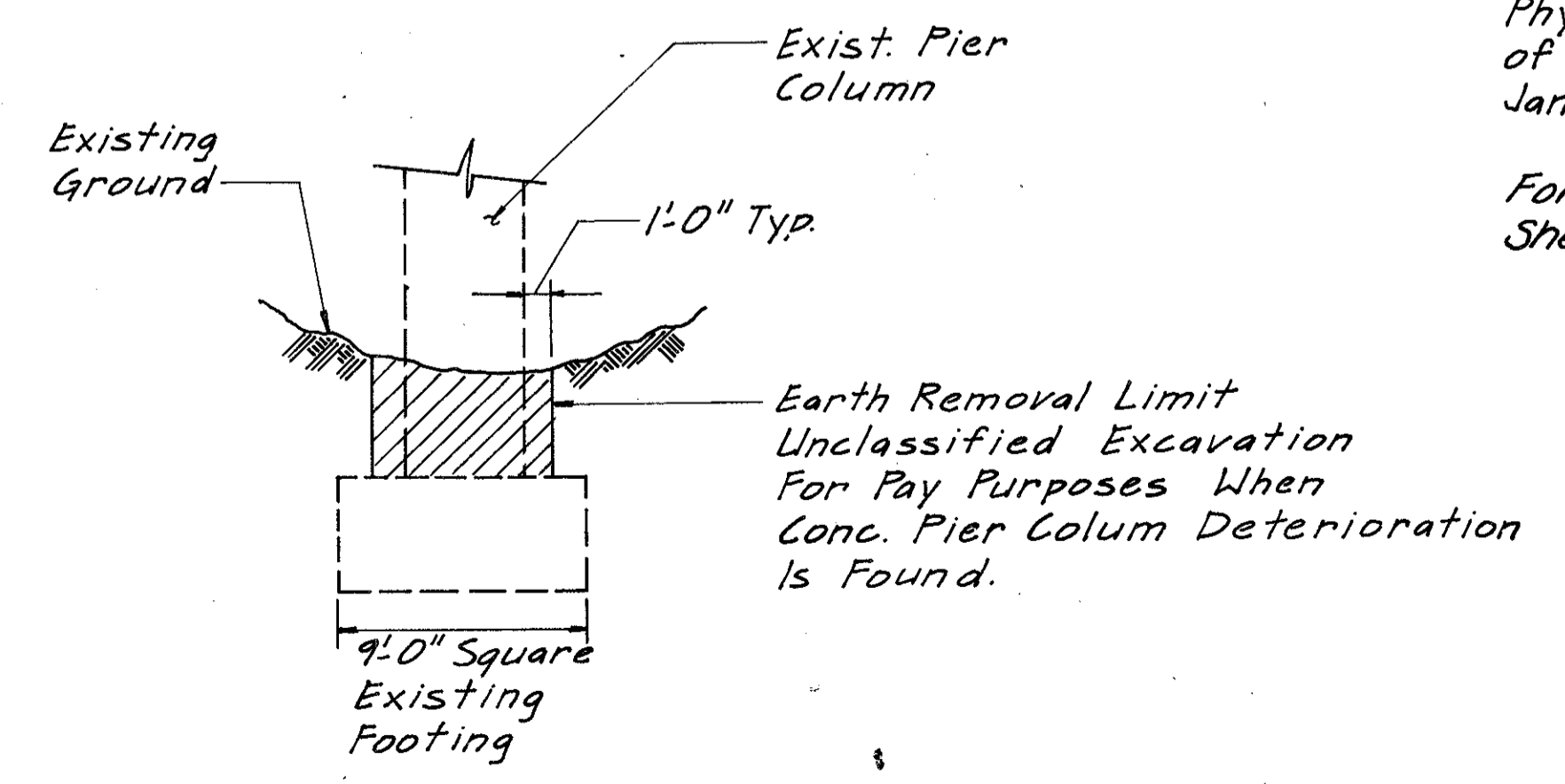
Physical Inventory of Measured Quantities of Deterioration Was Performed In January 1991.

For Sealing Of Concrete Surface Limits See Sheet 23/24

No Deterioration Apparent On Southbound Pier No. 1



PIER NO. 1
(NORTH ELEVATION)



EXCAVATION LIMITS FOR 503 UNCLASSIFIED EXCAVATION
AS PER PLAN
SEE GENERAL NOTES SHT. 27/24

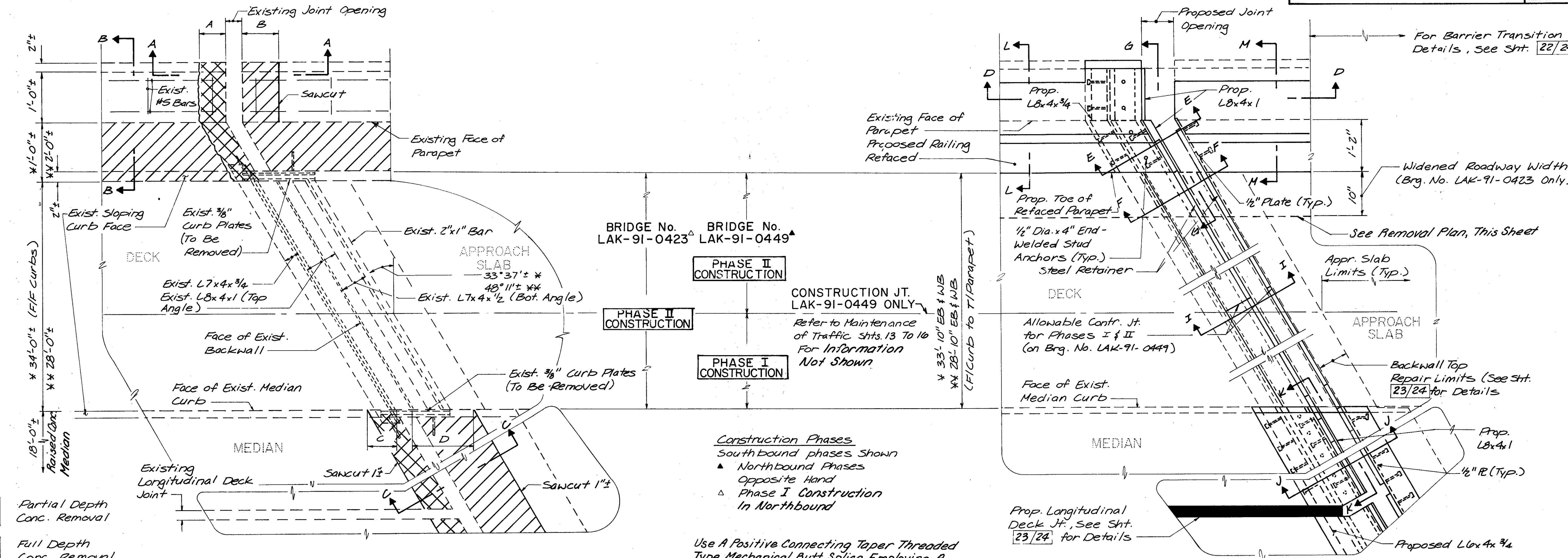
Burgess & Niple, Limited **bn** 19/24
Engineers and Architects

PIER REPAIRS

BRIDGE NO. LAK-91-0449
S.R. 91 OVER LAKELAND BOULEVARD

| | | | | | |
|----------|-------|--------|---------|---------------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
| RJB | JNV | | RBB | WAC 4/19/91 | |

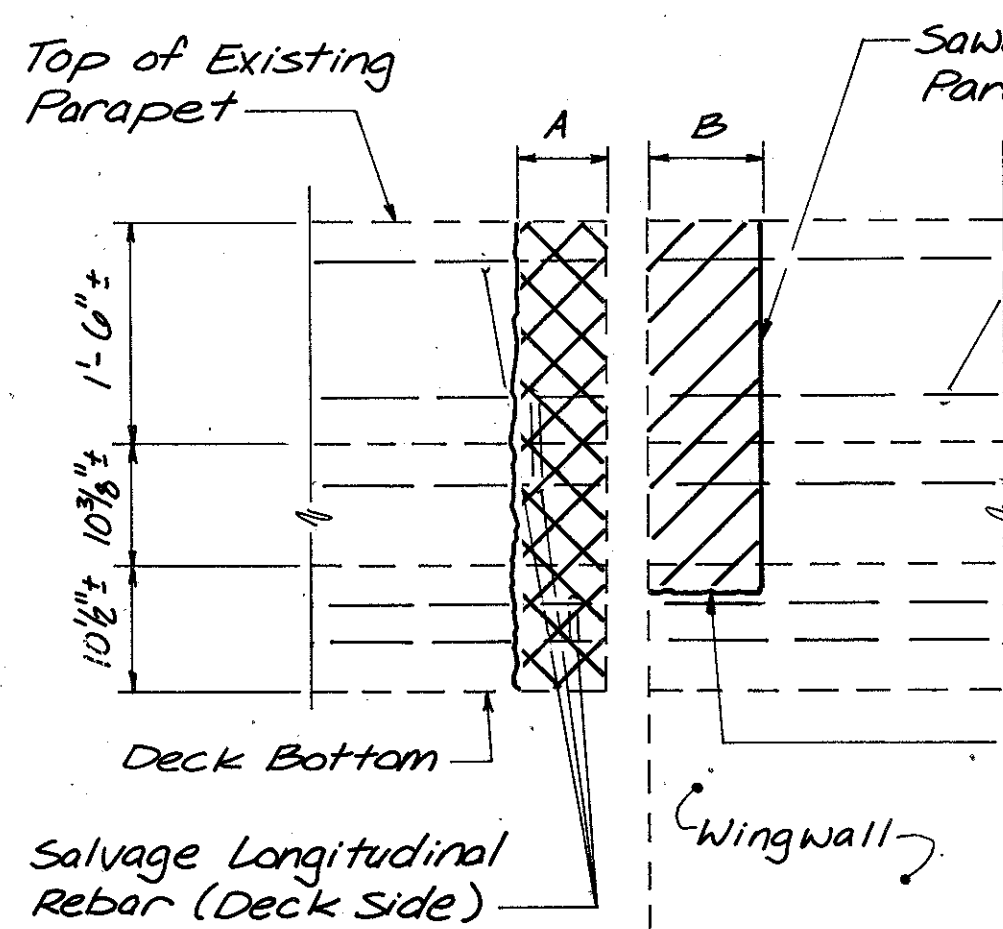
ITEM 516 - VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL, AS PER PLAN



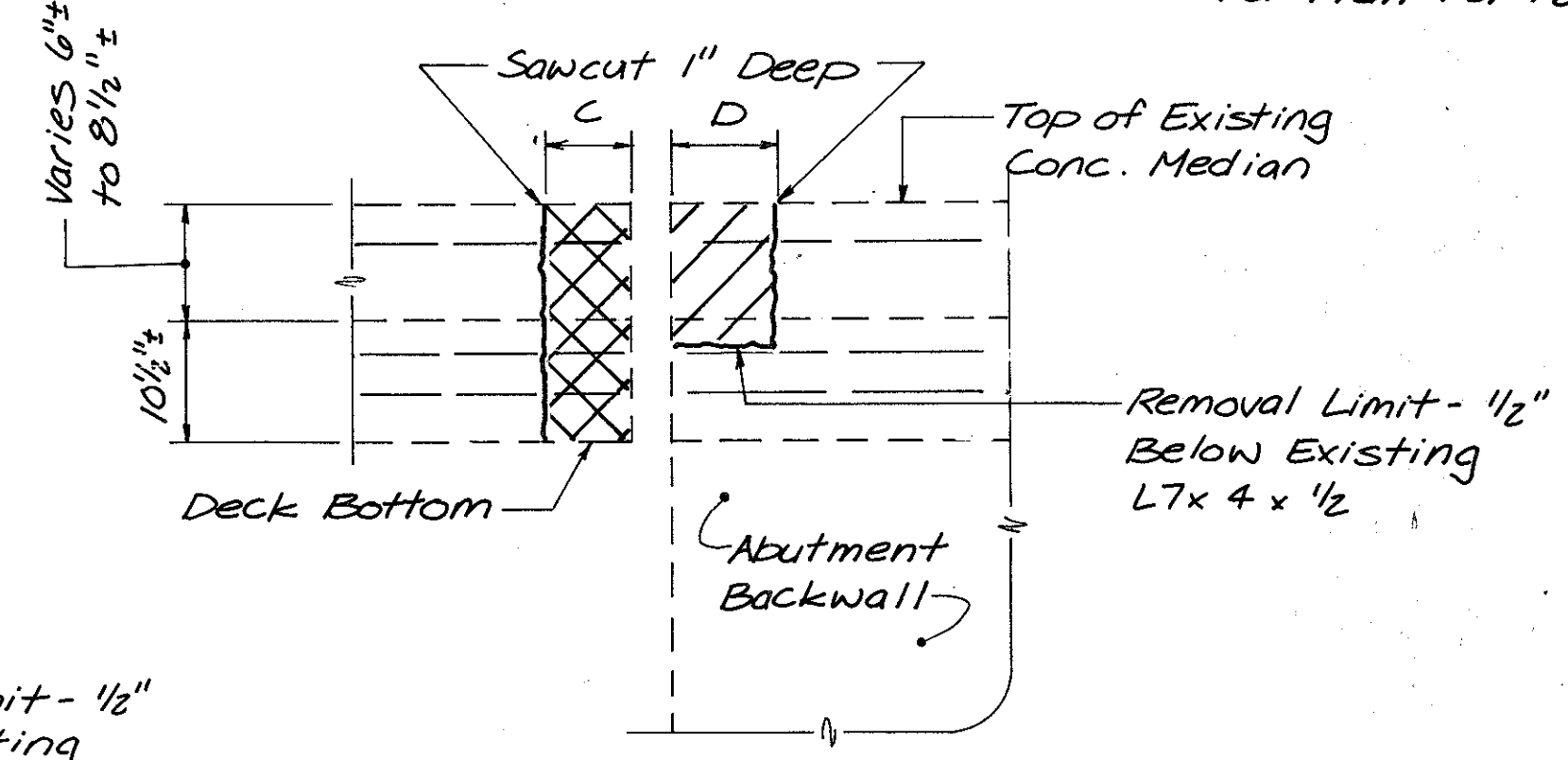
REMOVAL PLAN OF EXISTING END DAM

PLAN VIEW OF END DAM EXTENSION

Notes:
All Remaining Work Shown, Other Than Lateral and Vertical Expansion Joint Extensions, Shall Be Included Under Item 517, Railing Faced, As Per Plan, or Item Special - Parapet Modification at Expansion Joints, as Per Plan.



SECTION A-A

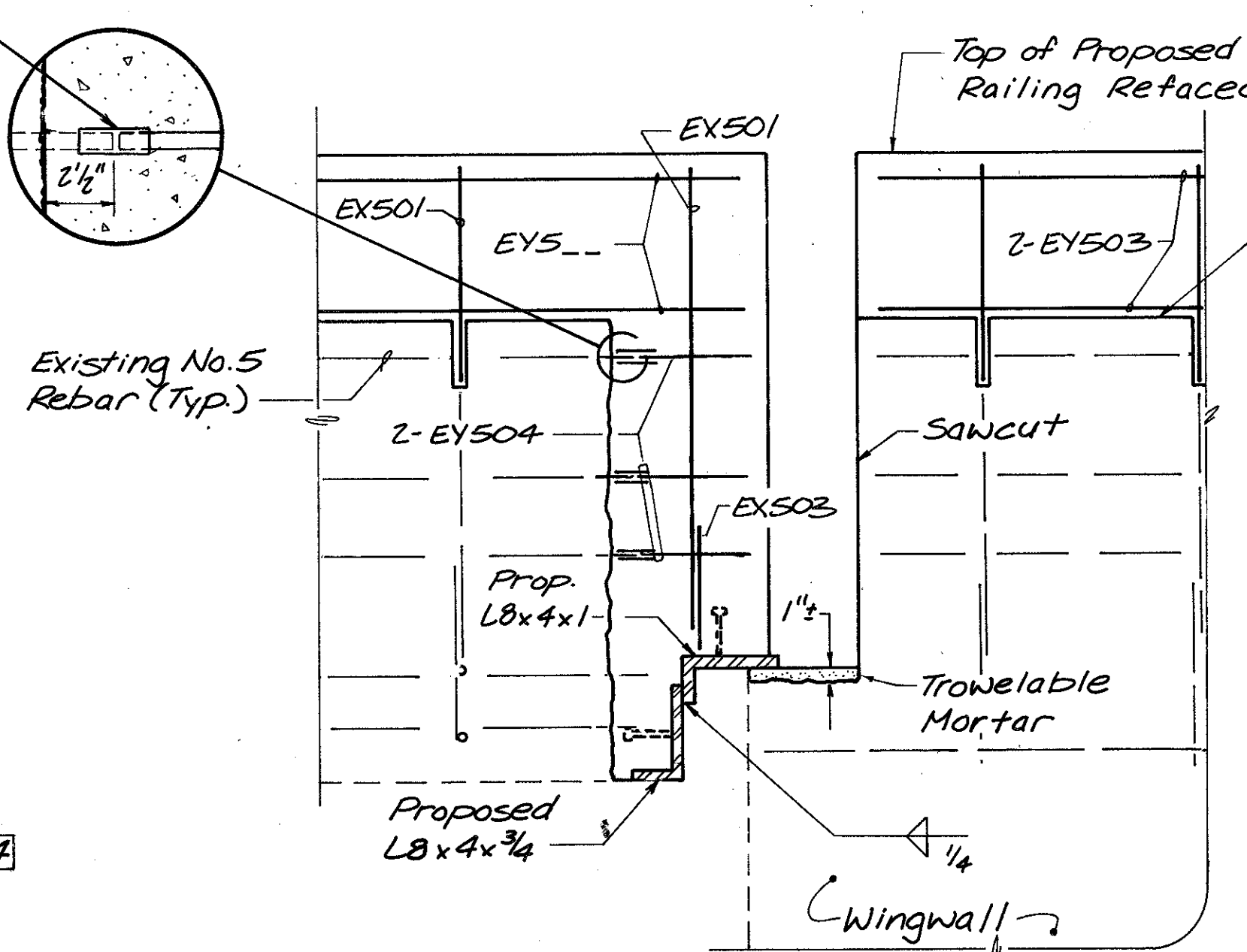


SECTION C-C

| Removal Dimensions (Measured Along Parapet or Curb) | Bridge No. | |
|---|-------------|-------------|
| | LAK-91-0423 | LAK-91-0449 |
| A | 12 1/2" | 8 3/4" |
| B | 11 3/4" | 9" |
| C | 9 1/2" | 7 1/2" |
| D | 18 3/4" | 15" |

SECTIONS NOT SHOWN

FOR SECTIONS E-E, F-F, G-G, H-H, J-J, & K-K SEE SHEET 21/24
FOR SECTIONS B-B, L-L, & M-M, SEE SHEET 22/24



SECTION D-D

FOR REINFORCING BAR INFO., SEE SHEET 21/24

Note: Existing End Dam Joint Detail Info. Based On Outdated O.D.O.T. Bridge Std. Dwg. SD-1-65.

* - LAK-91-0449 Bridge
** - LAK-91-0423 Bridge

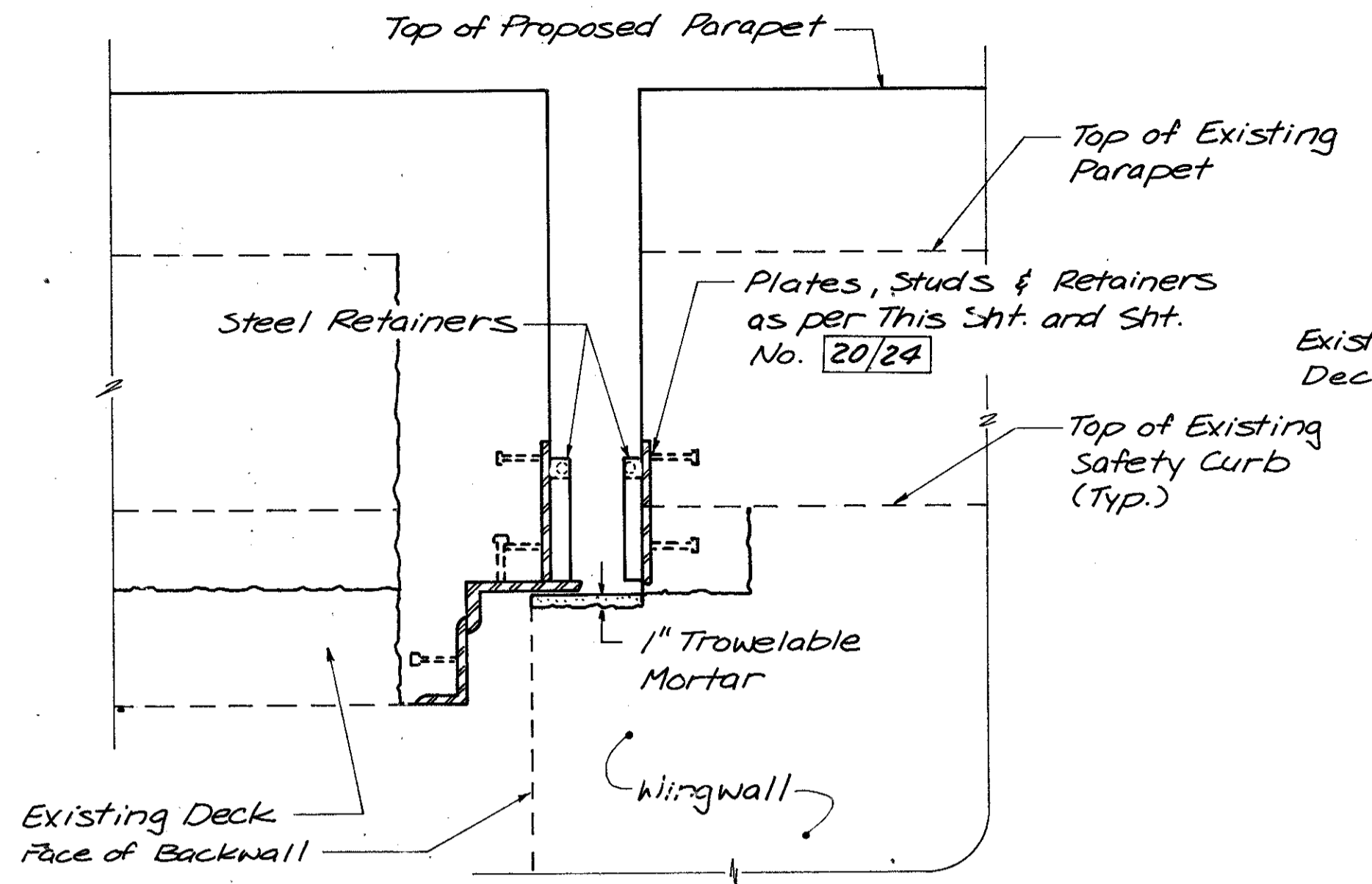
Work This Sheet With Shts. 21/24 22/24

Burgess & Niple, Limited
Engineers and Architects

SEALING OF STRUCTURAL STEEL EXPANSION JOINTS

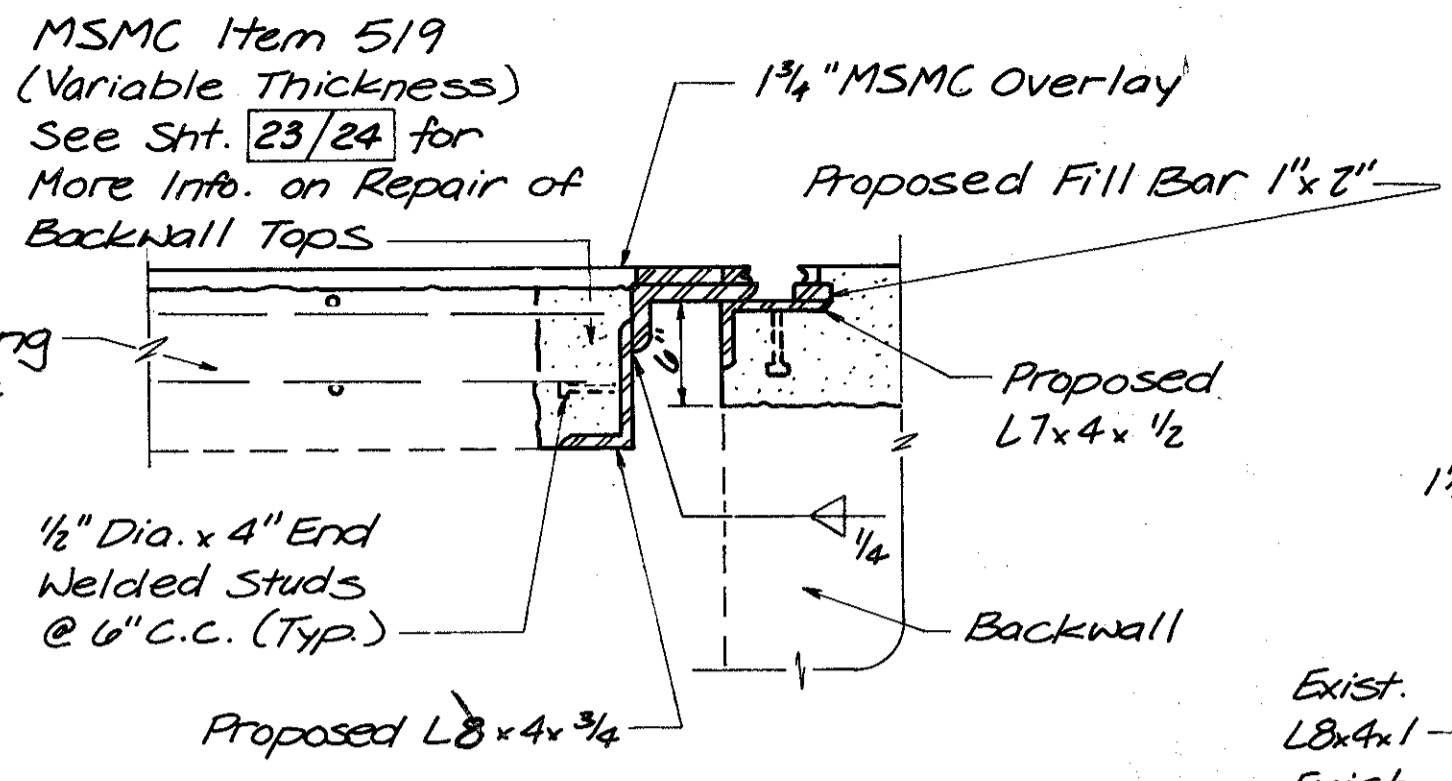
BRIDGE NO. LAK-91-0423
BRIDGE NO. LAK-91-0449

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| WAC | KK | - | WAC | 2/28/24 | |

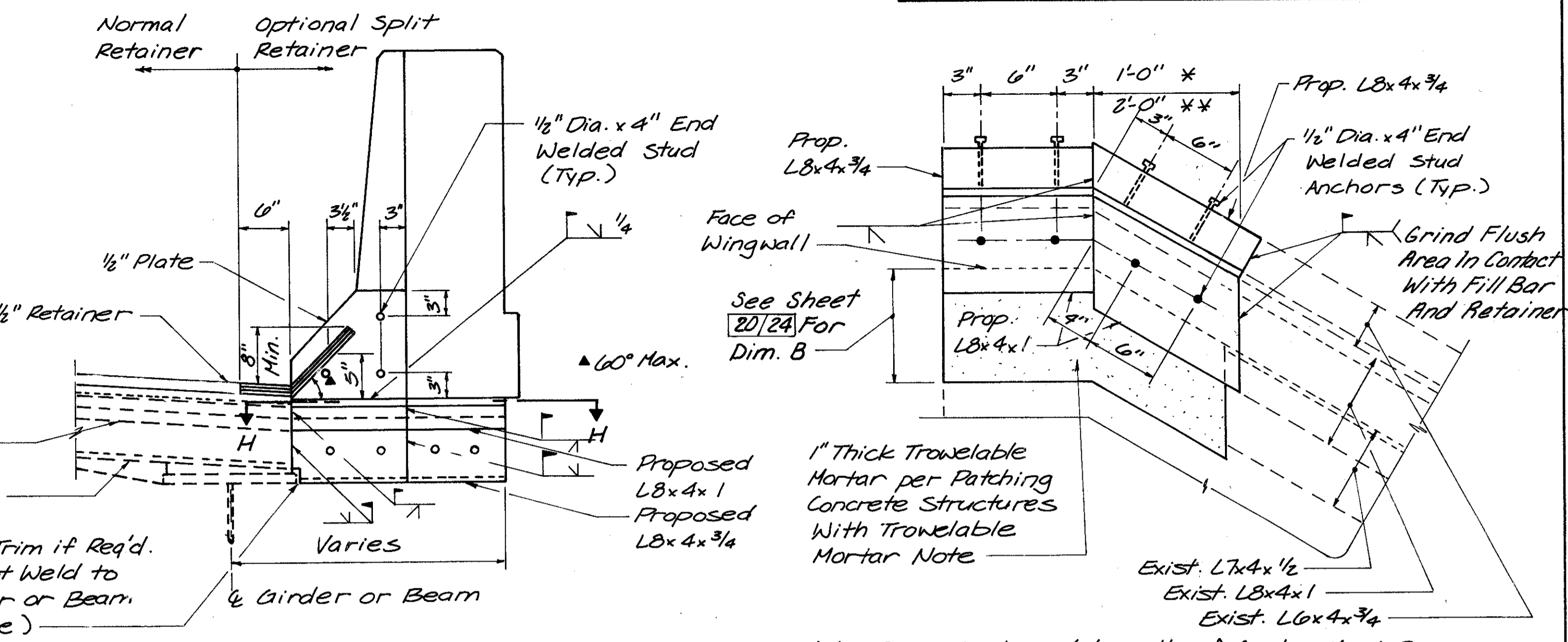


For Details Not Shown, See Section D-D, Sht. 20/24

SECTION E-E

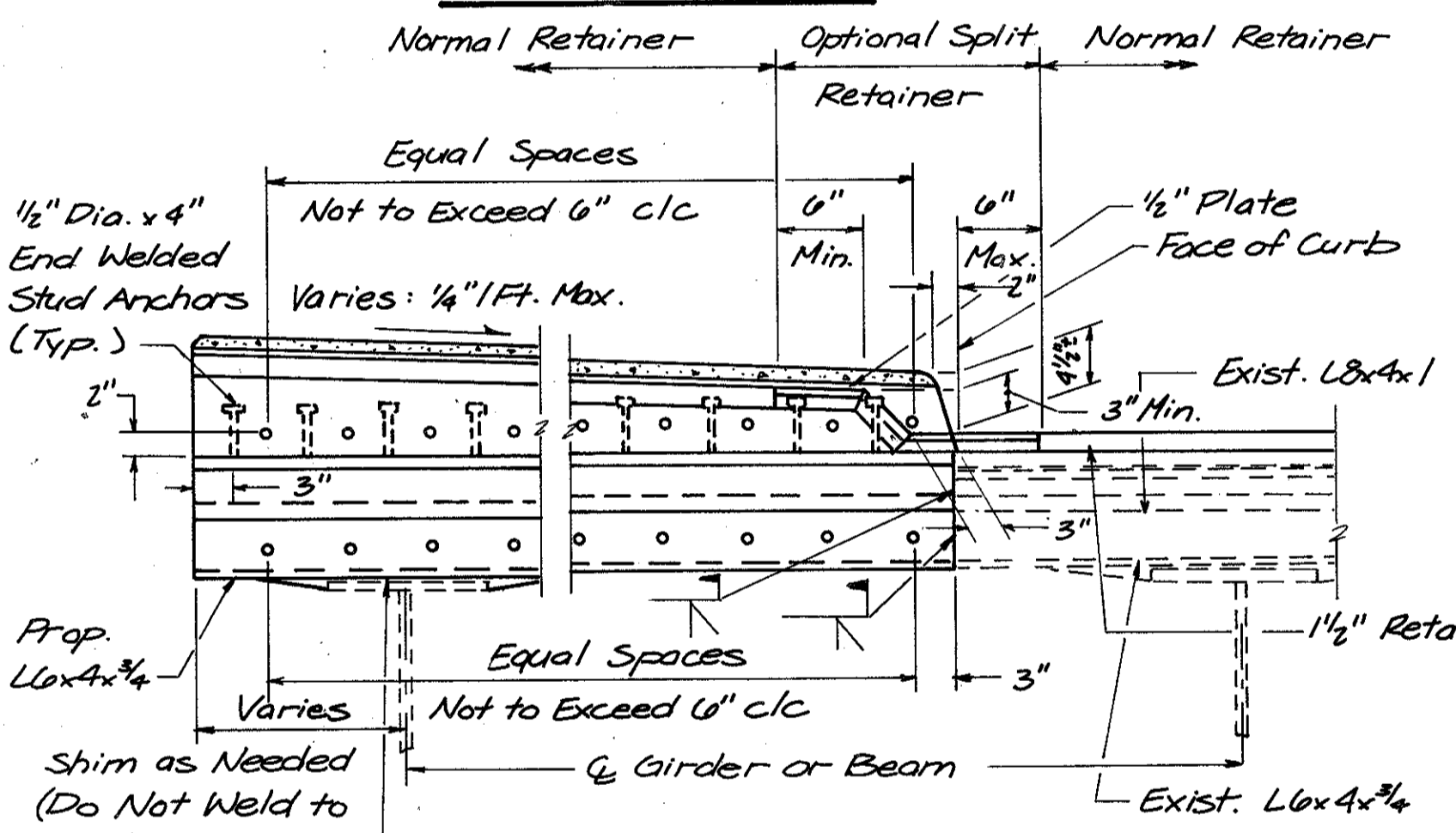


SECTION F-F
(BRIDGE No. LAK-91-0423 ONLY)
For Details Not Shown, See Section I-I This Sht.

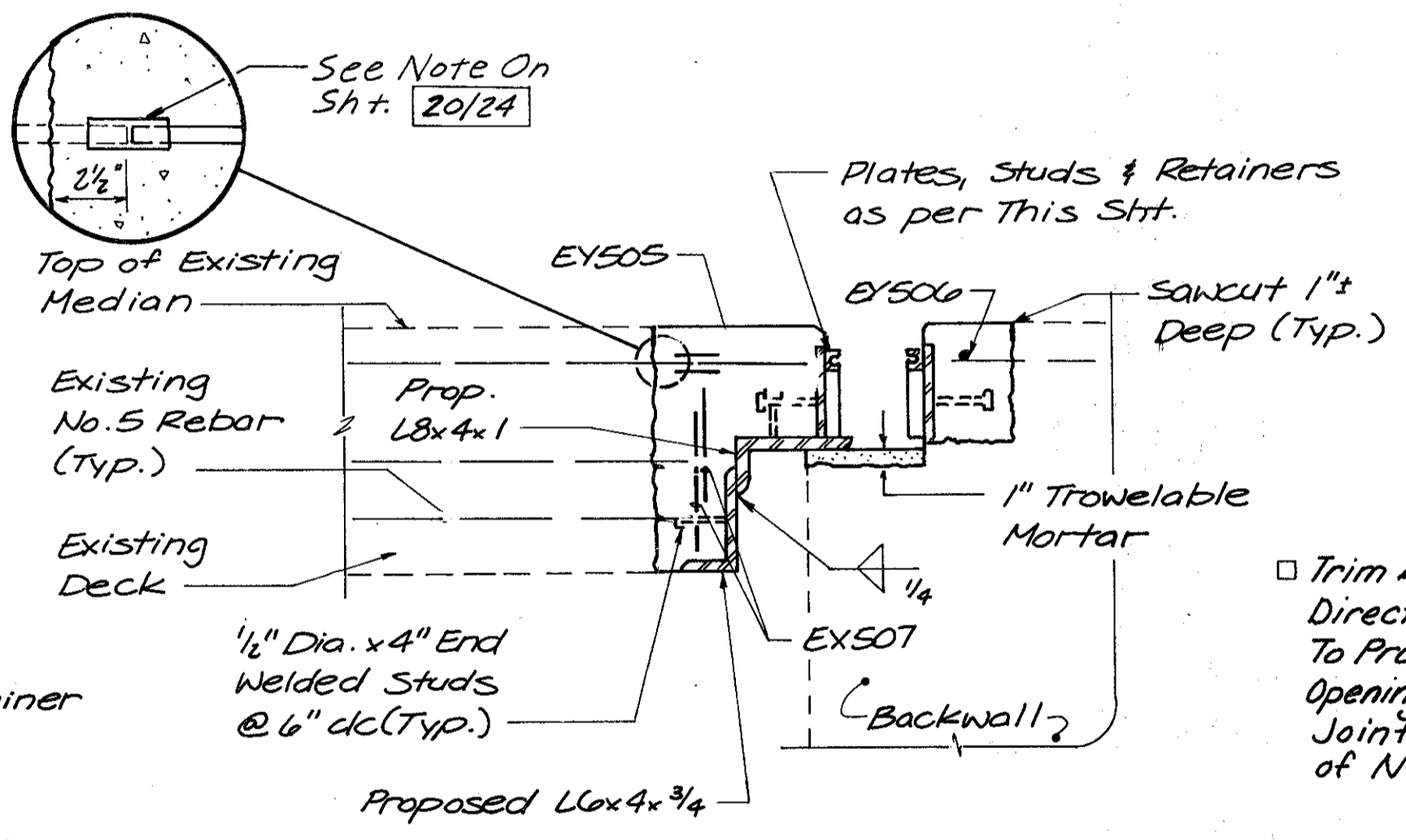


Note: Skew Angle and Length of Angle Must Be Field Verified Prior to Fabrication

SECTION H-H

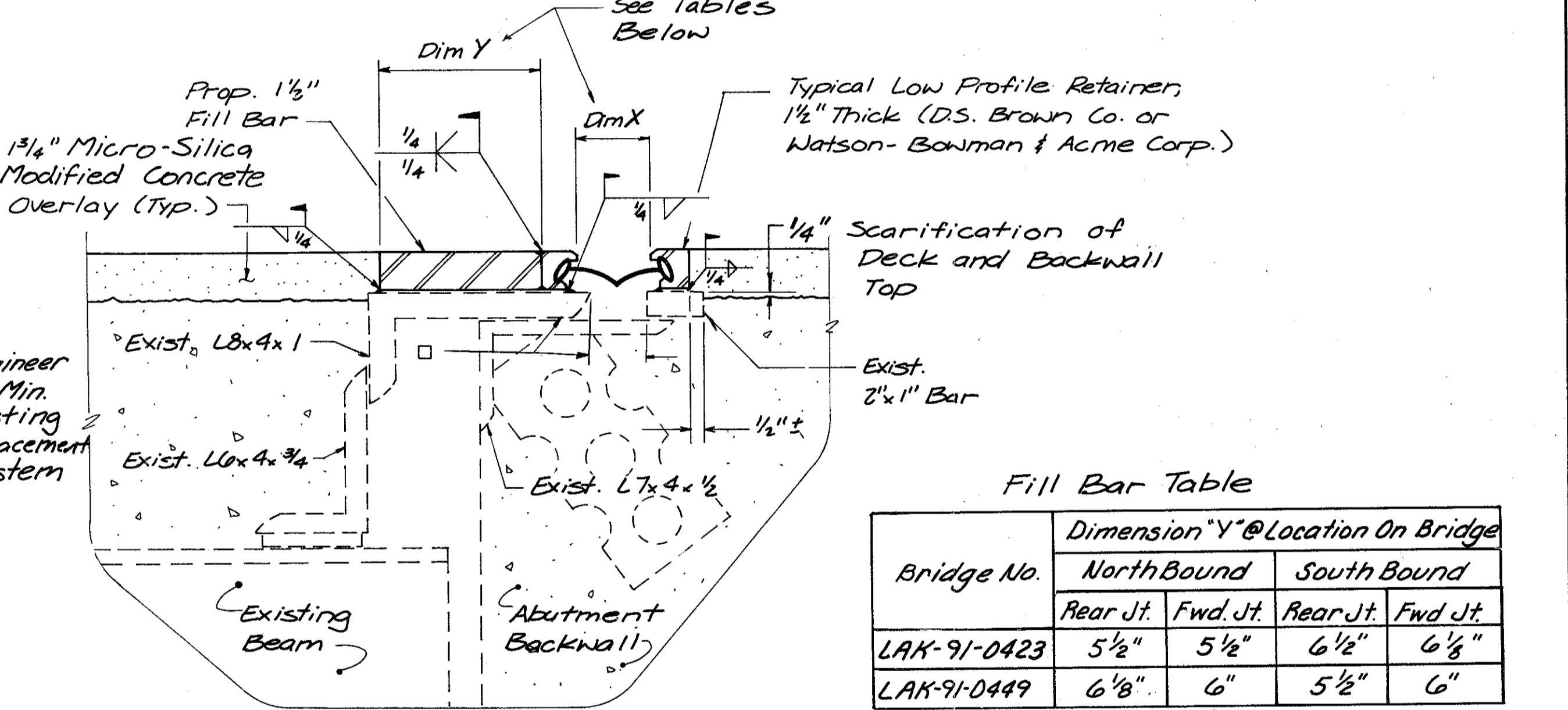


SECTION K-K



SECTION J-J

SECTION G-G

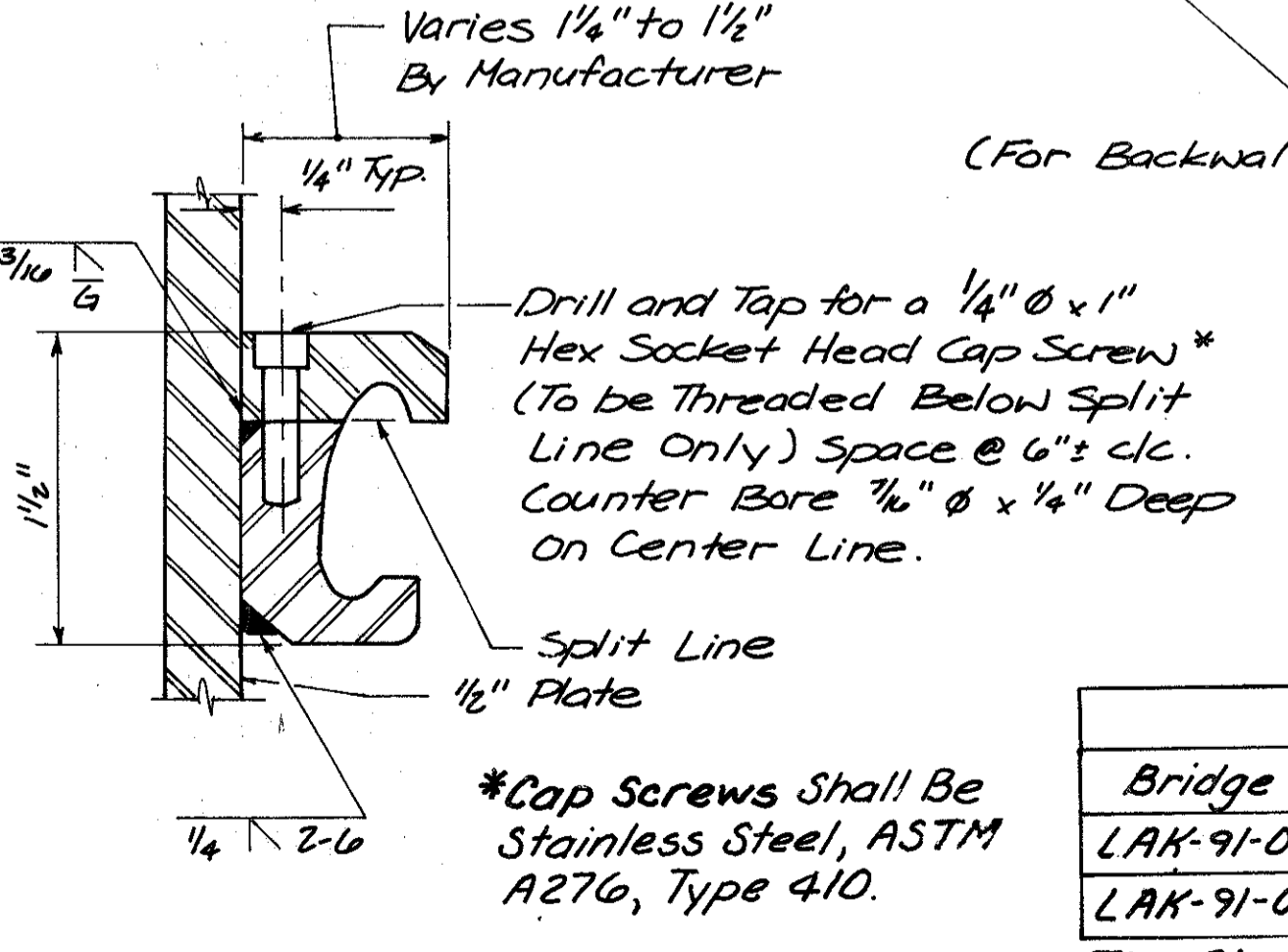
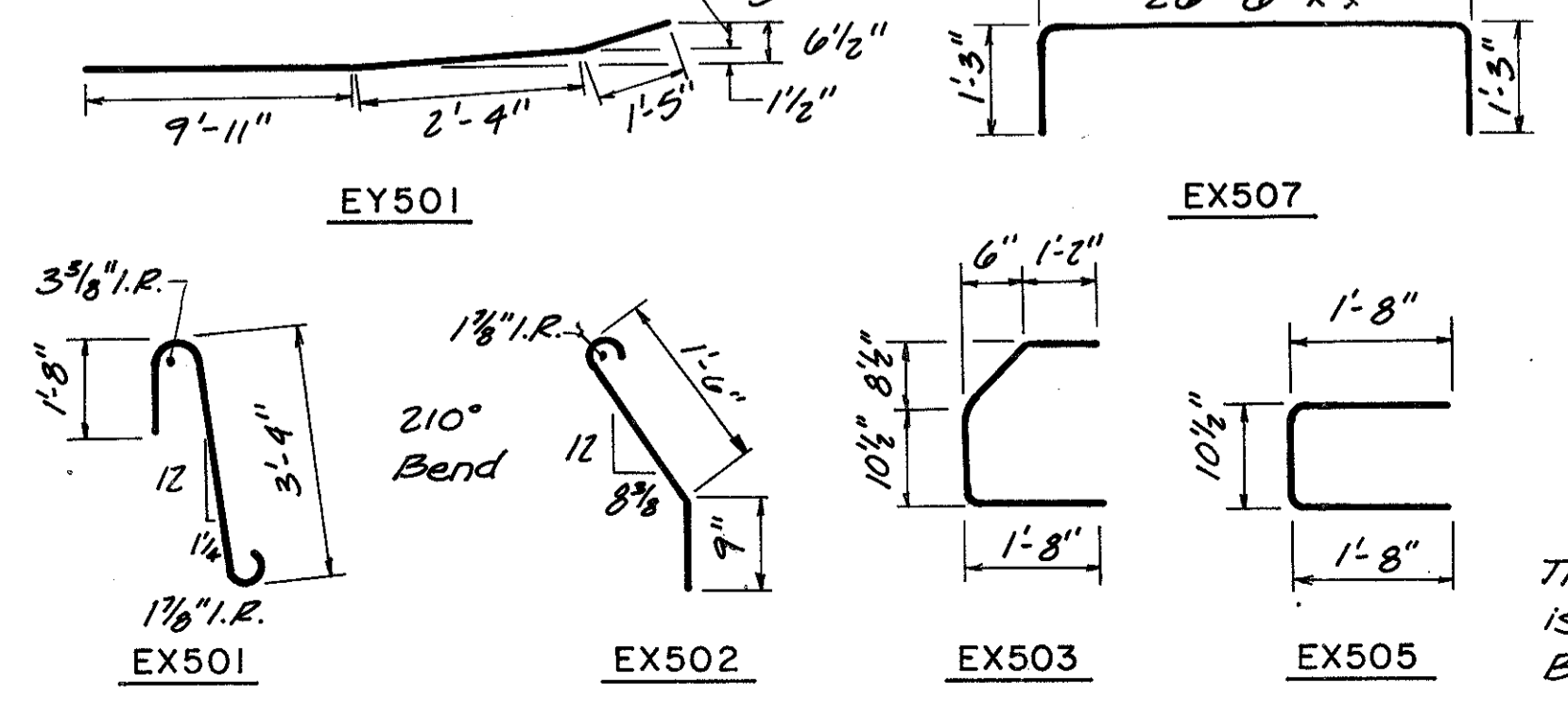


SECTION I-I

| Bar List | | |
|----------|---------------------|-------|
| Mark | Length | Shape |
| EX501 | 5'-10 1/2" | Bent |
| EX502 | 2'-8" | Bent |
| EX503 | 4'-4" | Bent |
| EX504 | 4'-0" to 4'-10" | Str. |
| EX505 | 4'-0" | Bent |
| EX506 | 4'-0" | Str. |
| EX507 | 23'-3" x 28'-9" x x | Bent |
| EY501 | 13'-8" | Bent |
| EY502 | 13'-8" | Str. |
| EY503 | 2'-6" x 9'-3" x x | Str. |
| EY504 | 0'-9" | Str. |
| EY505 | 0'-9" | Str. |
| EY506 | 21'-0" x 26'-6" x x | Str. |
| EY5... | | Str. |

REINFORCING STEEL

1/2" Increment ■ EY5... Bars Shown Denote Continuous Longitudinal Bars Within the Proposed Retaced Parapets Inside the Bridge Limits



SPLIT RETAINER DETAIL
NORMAL RETAINER SIMILAR

The Split Retainer Shown Above is a Normal Retainer Which Has Been Modified as Indicated.

(For Backwall/Approach Slab Repair, See Sht. 23/24)

Joint Opening Table

| Bridge No. | Dimension "X" | | | | | | |
|-------------|---------------|--------|---------|-----|---------|--------|---------|
| | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| LAK-91-0423 | 2 3/8" | 2 1/4" | 2 1/8" | 2" | 1 7/8" | 1 3/4" | 1 5/8" |
| LAK-91-0449 | 2 3/16" | 2 1/8" | 2 1/16" | 2" | 1 5/16" | 1 7/8" | 1 3/16" |

The Above Settings Are The Minimum Joint Opening Distances (Dim. "X") At The Time Of Installation Of Req'd 3" Strip Seal Glands.

For Additional Information, Refer To Standard Drawing EXJ-4-87, Sheet 5 Of 5.

Fill Bar Table

| Bridge No. | Dimension "Y" @ Location On Bridge | | | |
|-------------|------------------------------------|---------|-------------|---------|
| | North Bound | | South Bound | |
| | Rear Jt. | Fwd Jt. | Rear Jt. | Fwd Jt. |
| LAK-91-0423 | 5 1/2" | 5 1/2" | 6 1/2" | 6 1/8" |
| LAK-91-0449 | 6 1/8" | 6" | 5 1/2" | 6" |

Fill Bar Shall Be Beveled 1/4" x 45° At Top & Bottom @ Extrusion Interface.

* LAK-91-0449 Bridge
** LAK-91-0423 Bridge

Burgess & Niple, Limited
Engineers and Architects

SEALING OF STRUCTURAL STEEL EXPANSION JOINTS

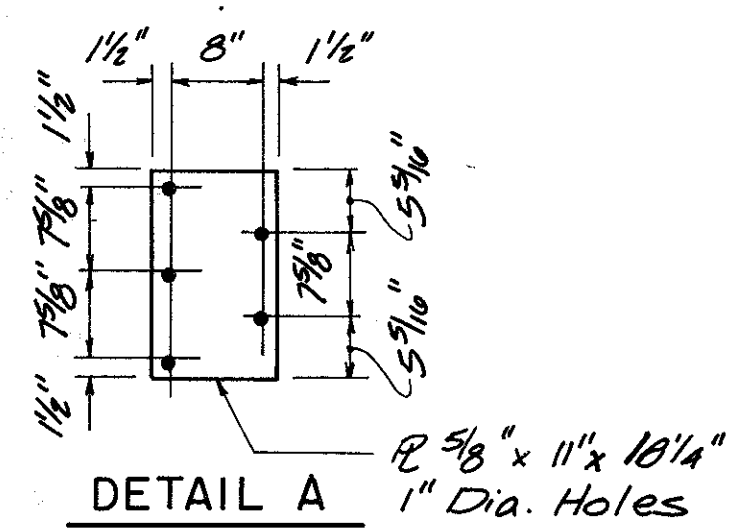
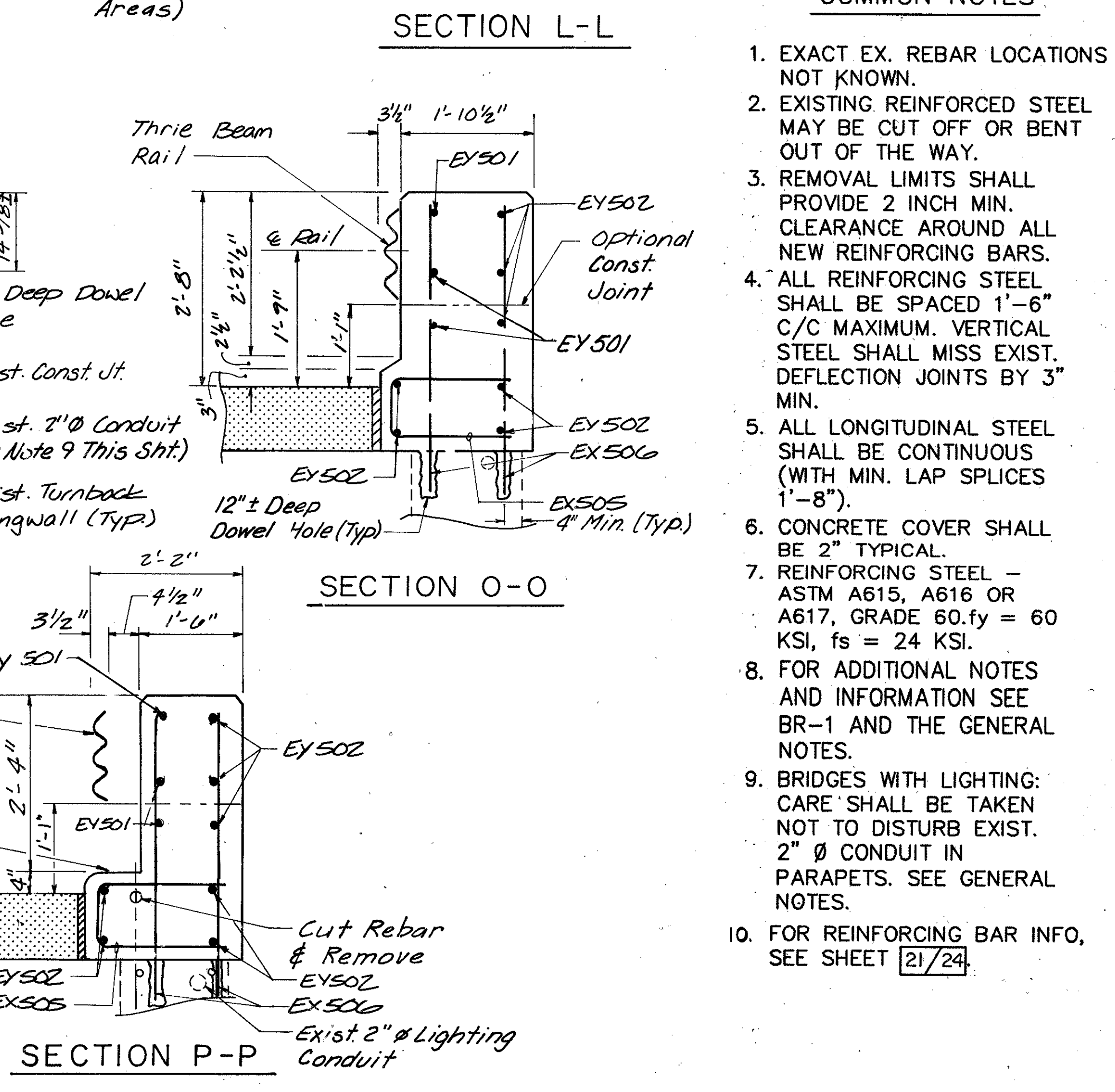
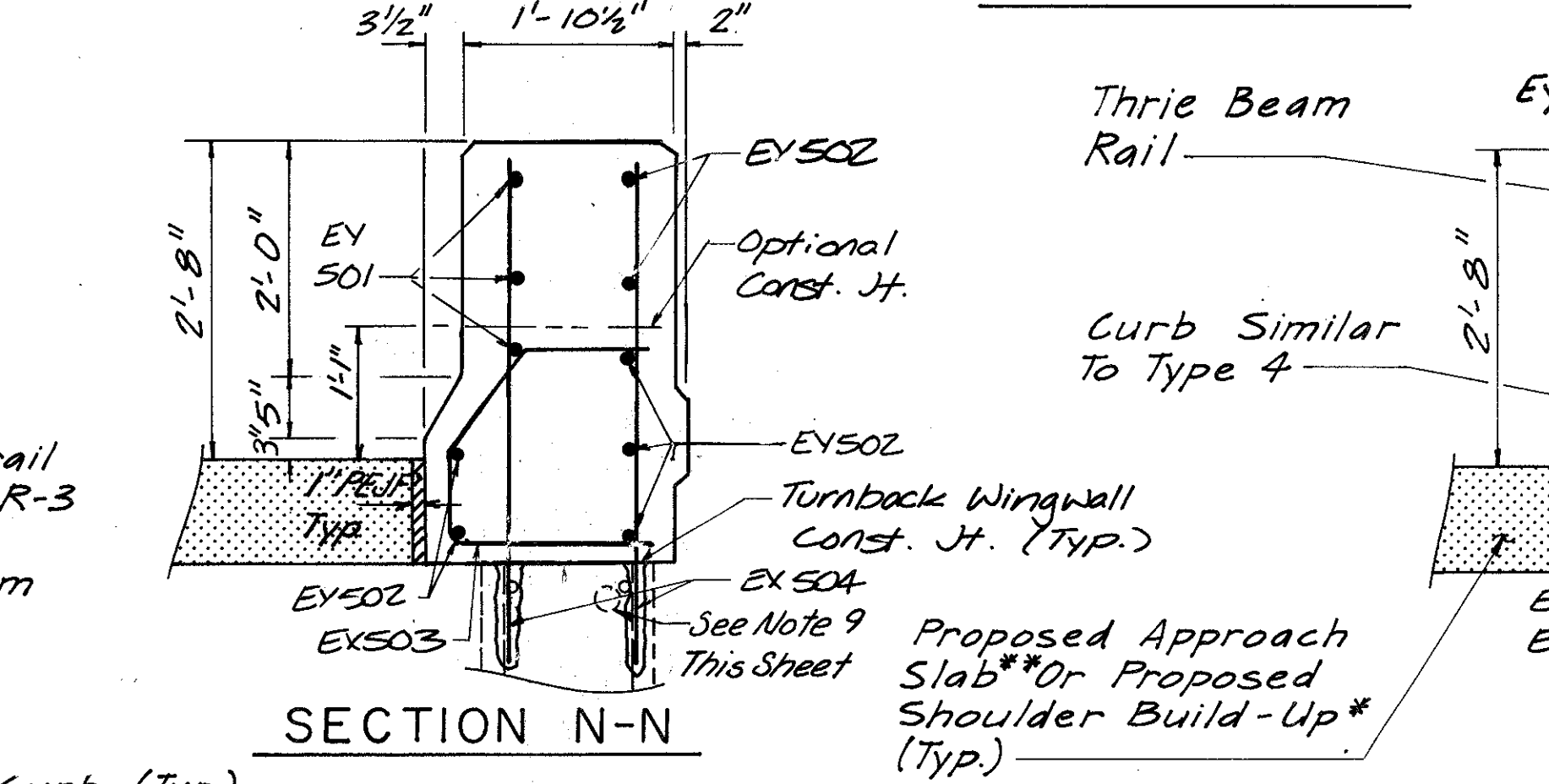
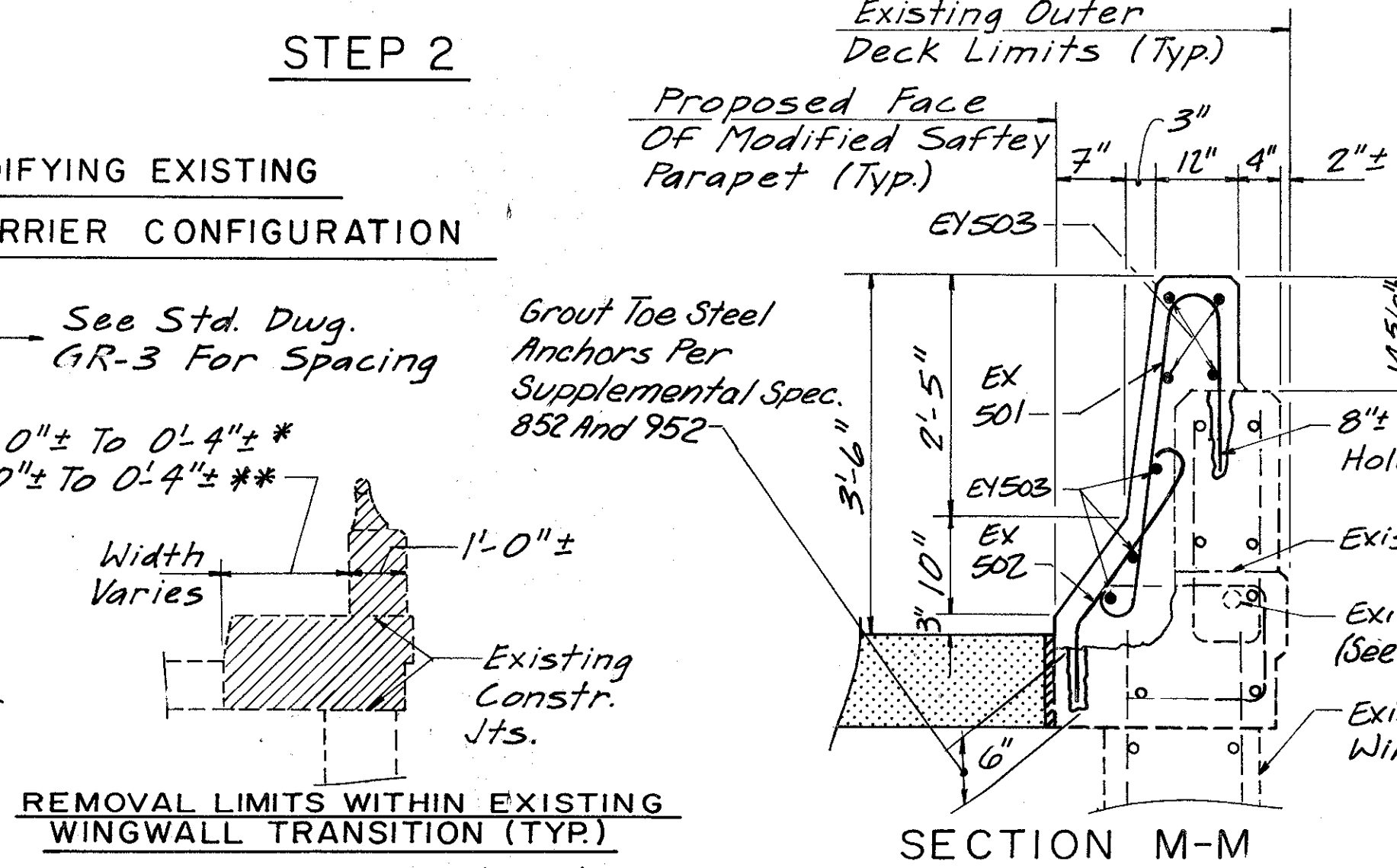
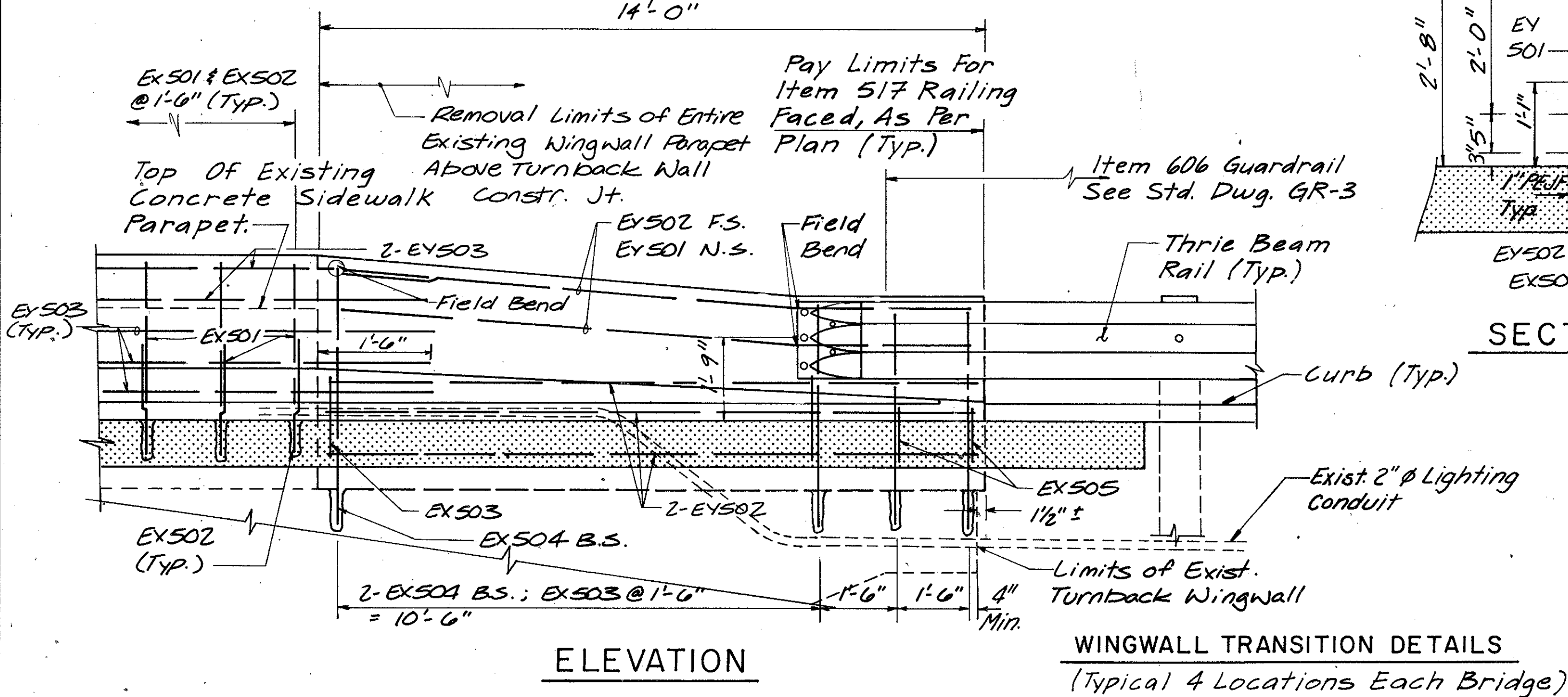
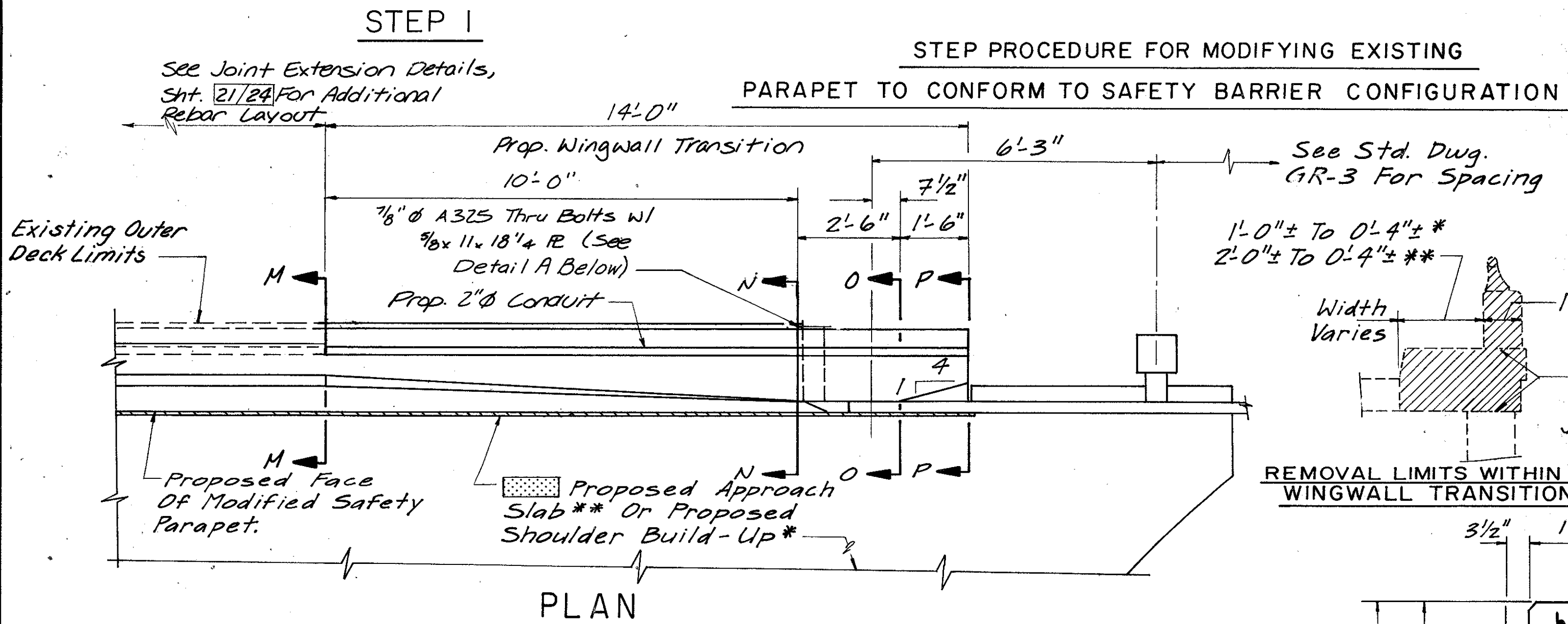
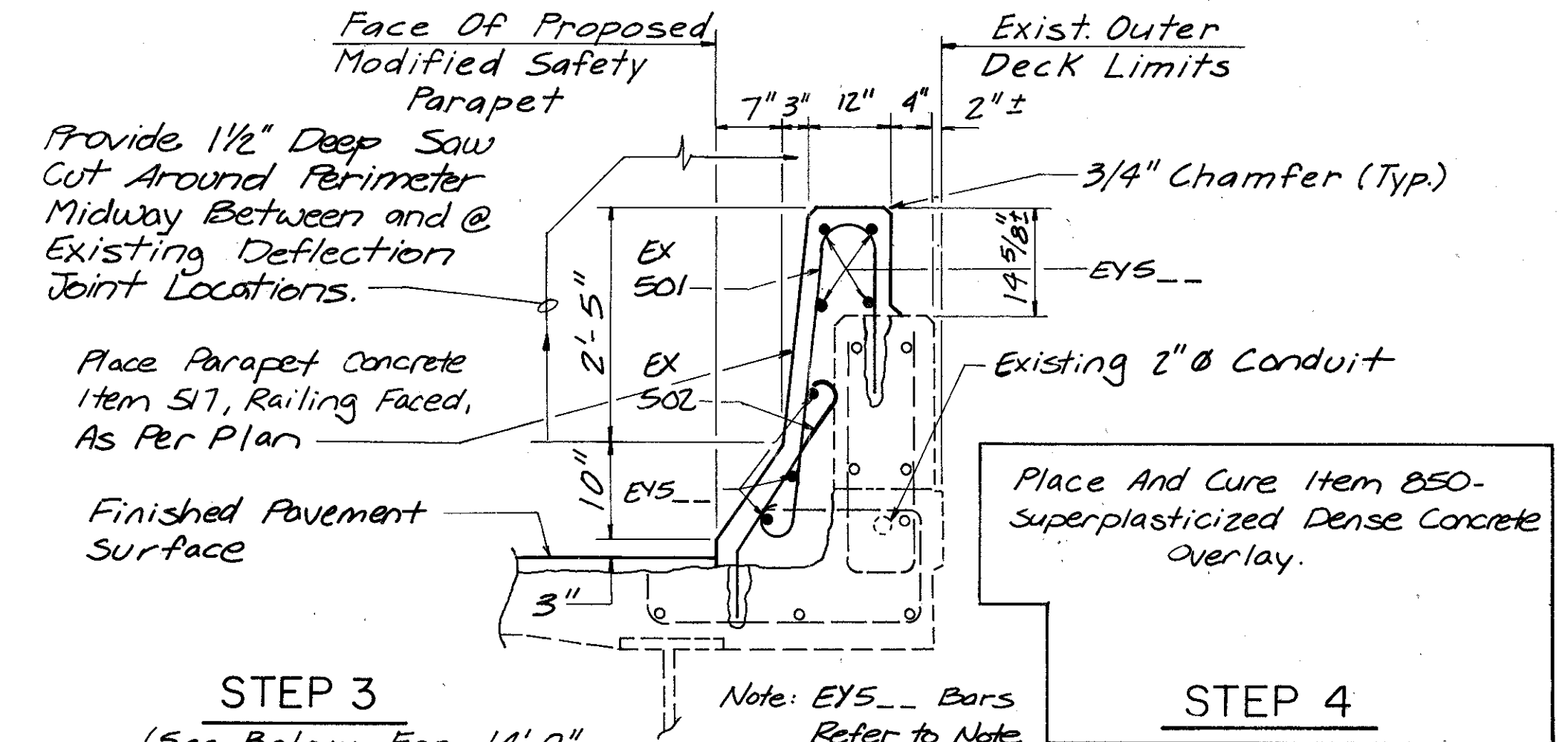
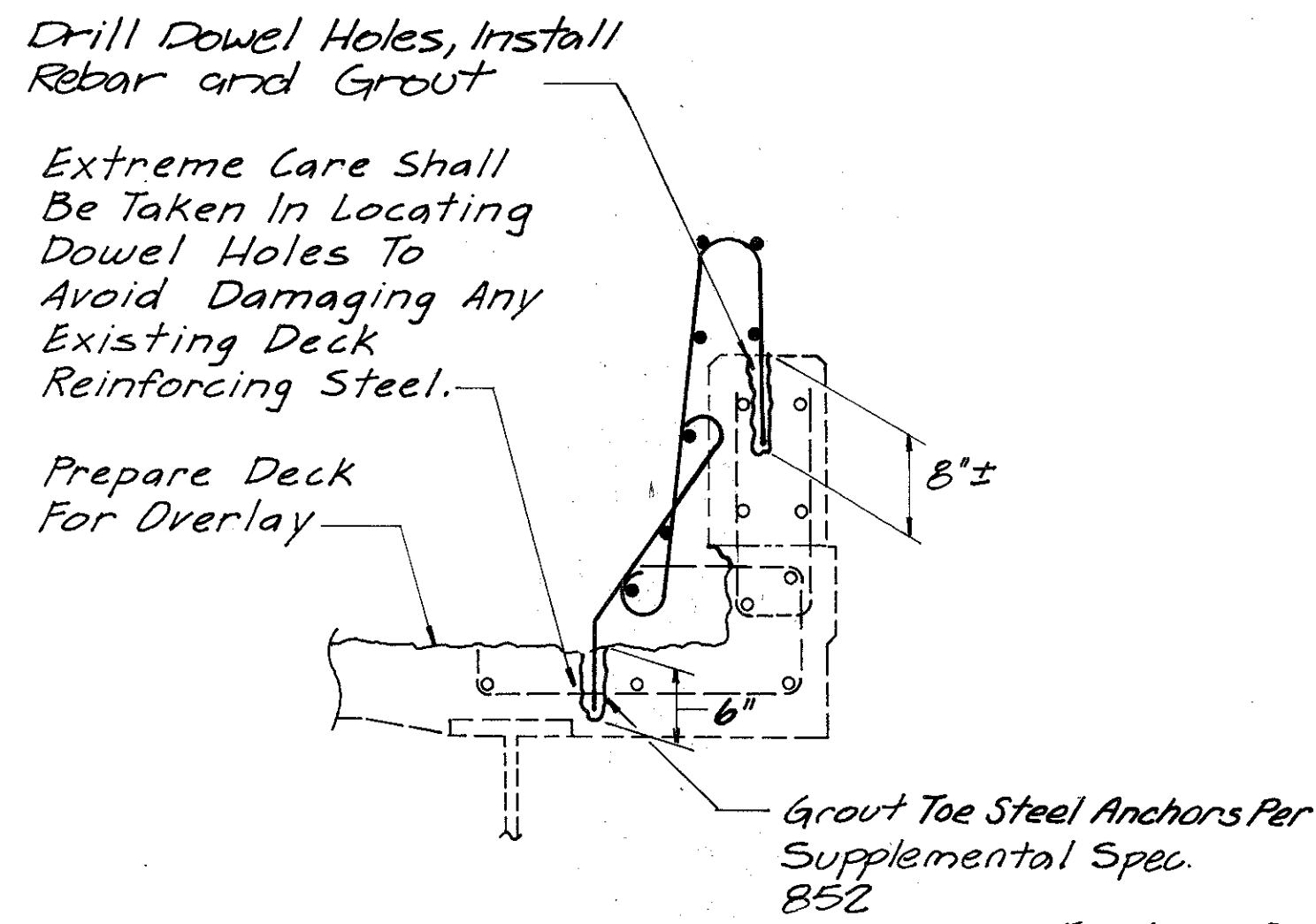
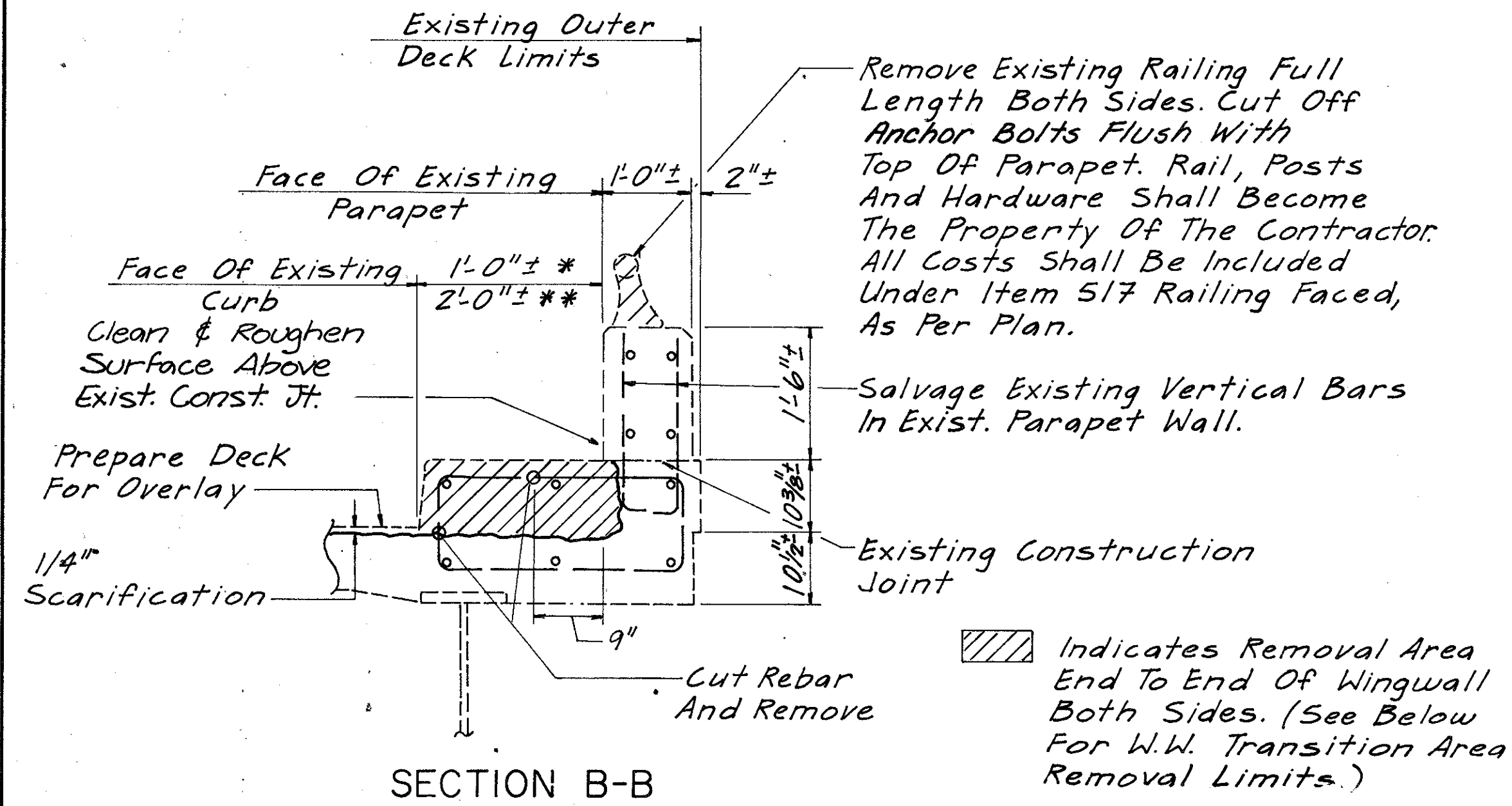
BRIDGE NO. LAK-91-0423
BRIDGE NO. LAK-91-0449

| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
|----------|-------|--------|---------|---------------|---------|
| RJ | KK | - | WAC | 2/28/14 | |

ITEM 517 - RAILING FACED, AS PER PLAN

LAKE COUNTY
LAK - 91 - (4.23)(4.49)

OHIO
FHWA REGION 5
53
56



Estimating Information For Parapet Refacing Procedures

| | |
|-------------------|------------------|
| Reinforcing Steel | 13# / L.F. |
| Concrete | 0.10 C.Y. / L.F. |
| Dowel Holes | 1.33 / L.F. |

All Items Included Under Item 517

- COMMON NOTES
1. EXACT EX. REBAR LOCATIONS NOT KNOWN.
 2. EXISTING REINFORCED STEEL MAY BE CUT OFF OR BENT OUT OF THE WAY.
 3. REMOVAL LIMITS SHALL PROVIDE 2 INCH MIN. CLEARANCE AROUND ALL NEW REINFORCING BARS.
 4. ALL REINFORCING STEEL SHALL BE SPACED 1'-6" C/C MAXIMUM. VERTICAL STEEL SHALL MISS EXIST. DEFLECTION JOINTS BY 3" MIN.
 5. ALL LONGITUDINAL STEEL SHALL BE CONTINUOUS (WITH MIN. LAP SPLICES 1'-8").
 6. CONCRETE COVER SHALL BE 2" TYPICAL.
 7. REINFORCING STEEL - ASTM A615, A616 OR A617, GRADE 60, fy = 60 KSI, fs = 24 KSI.
 8. FOR ADDITIONAL NOTES AND INFORMATION SEE BR-1 AND THE GENERAL NOTES.
 9. BRIDGES WITH LIGHTING: CARE SHALL BE TAKEN NOT TO DISTURB EXIST. 2" Ø CONDUIT IN PARAPETS. SEE GENERAL NOTES.
 10. FOR REINFORCING BAR INFO, SEE SHEET 21/24.

* LAK-91-0449 Bridge
** LAK-91-0423 Bridge

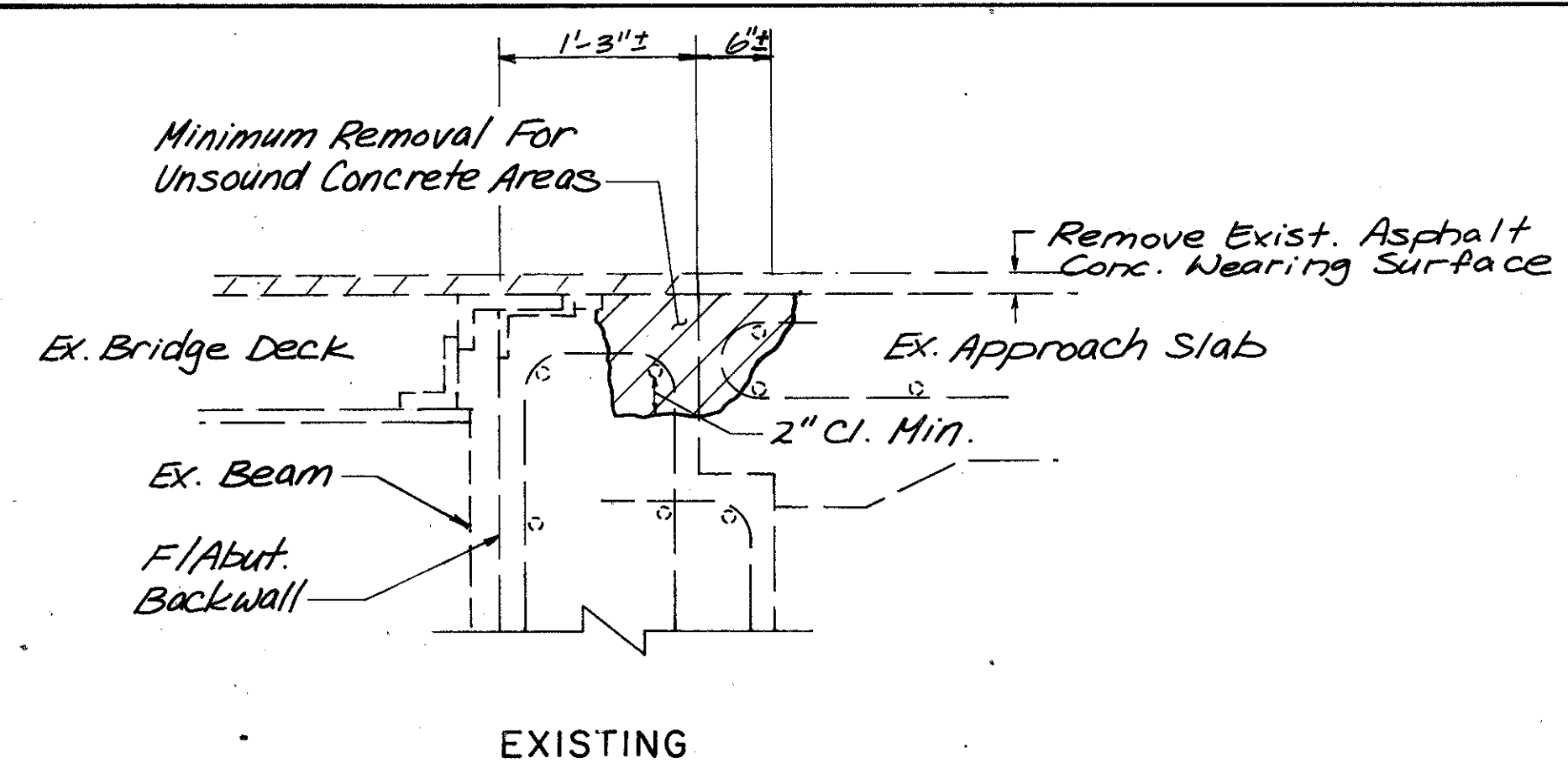
Burgess & Niple, Limited
Engineers and Architects

TYPICAL RAILING FACING & BARRIER TRANSITION DETAILS

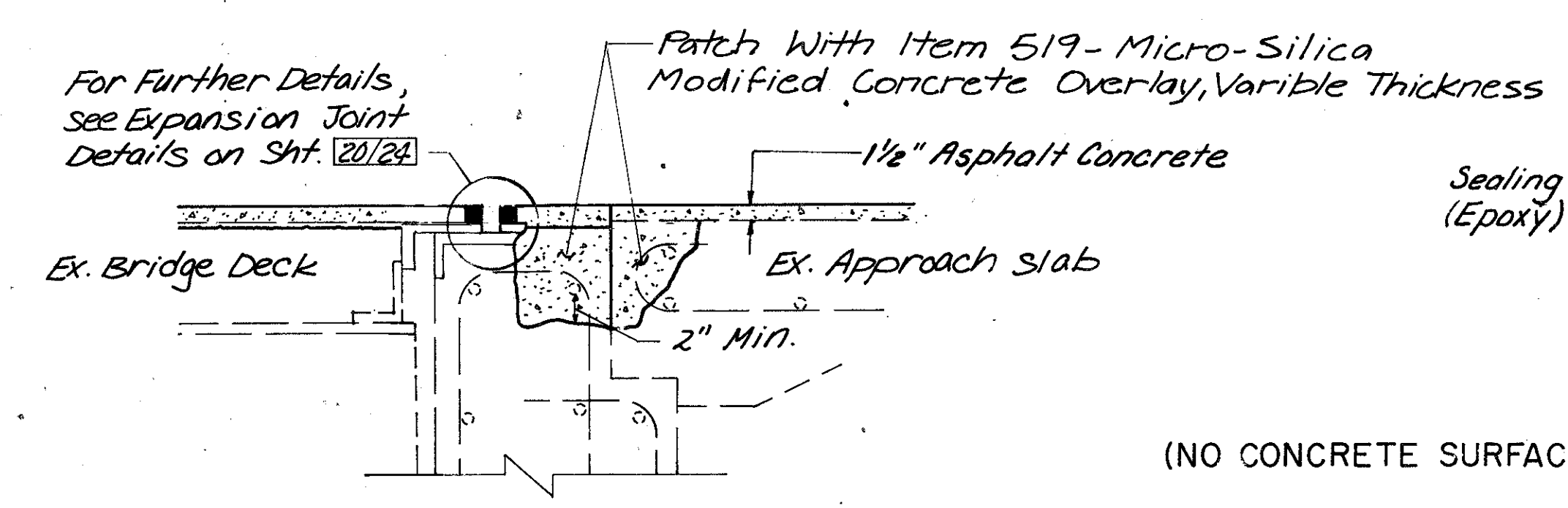
BRIDGE NO. LAK-91-0423
BRIDGE NO. LAK-91-0449

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| RKJ | JNV | | RKB | WAC 4/10/91 | |

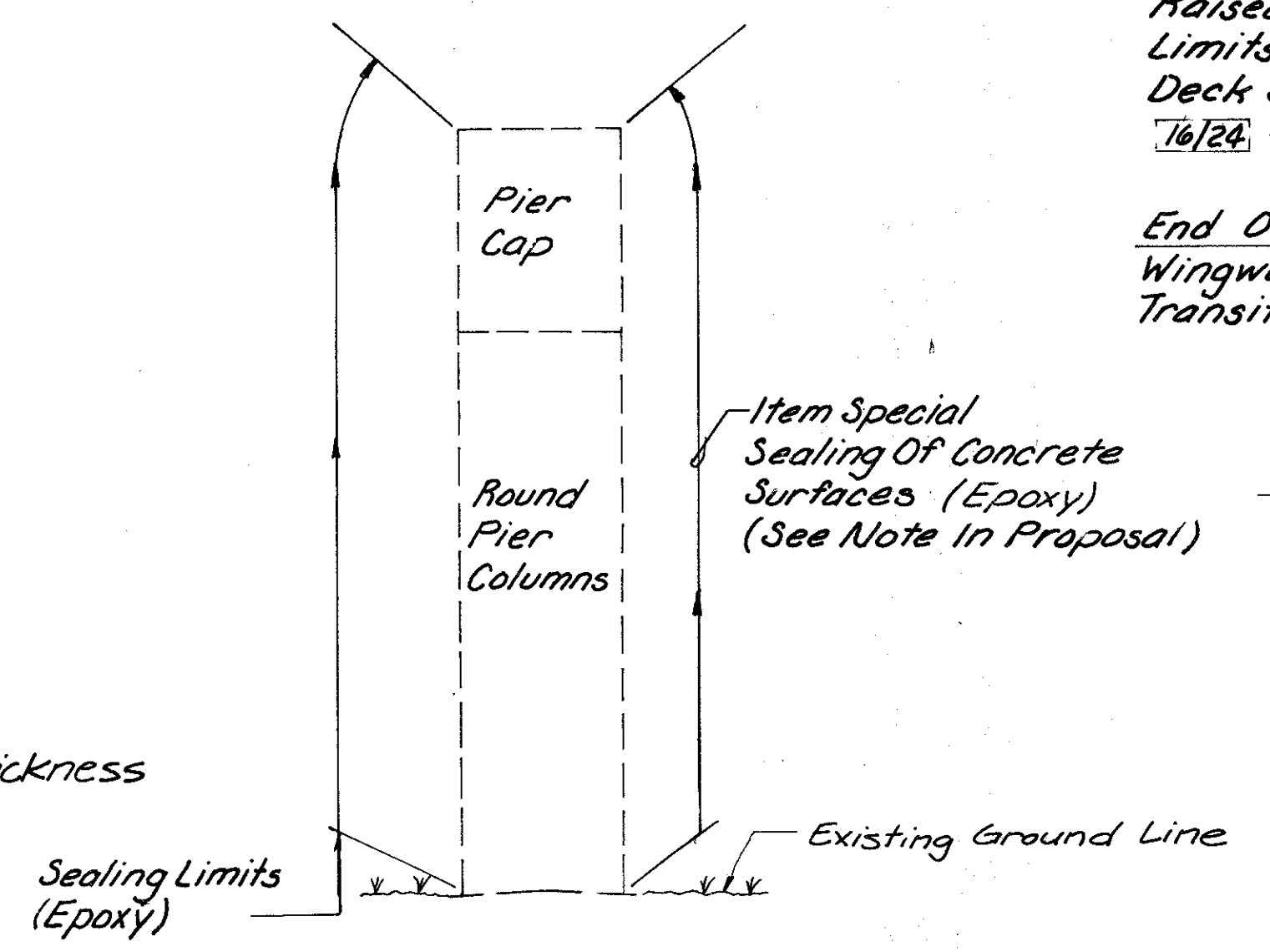
BRUNING 44-231 7/3/96



EXISTING

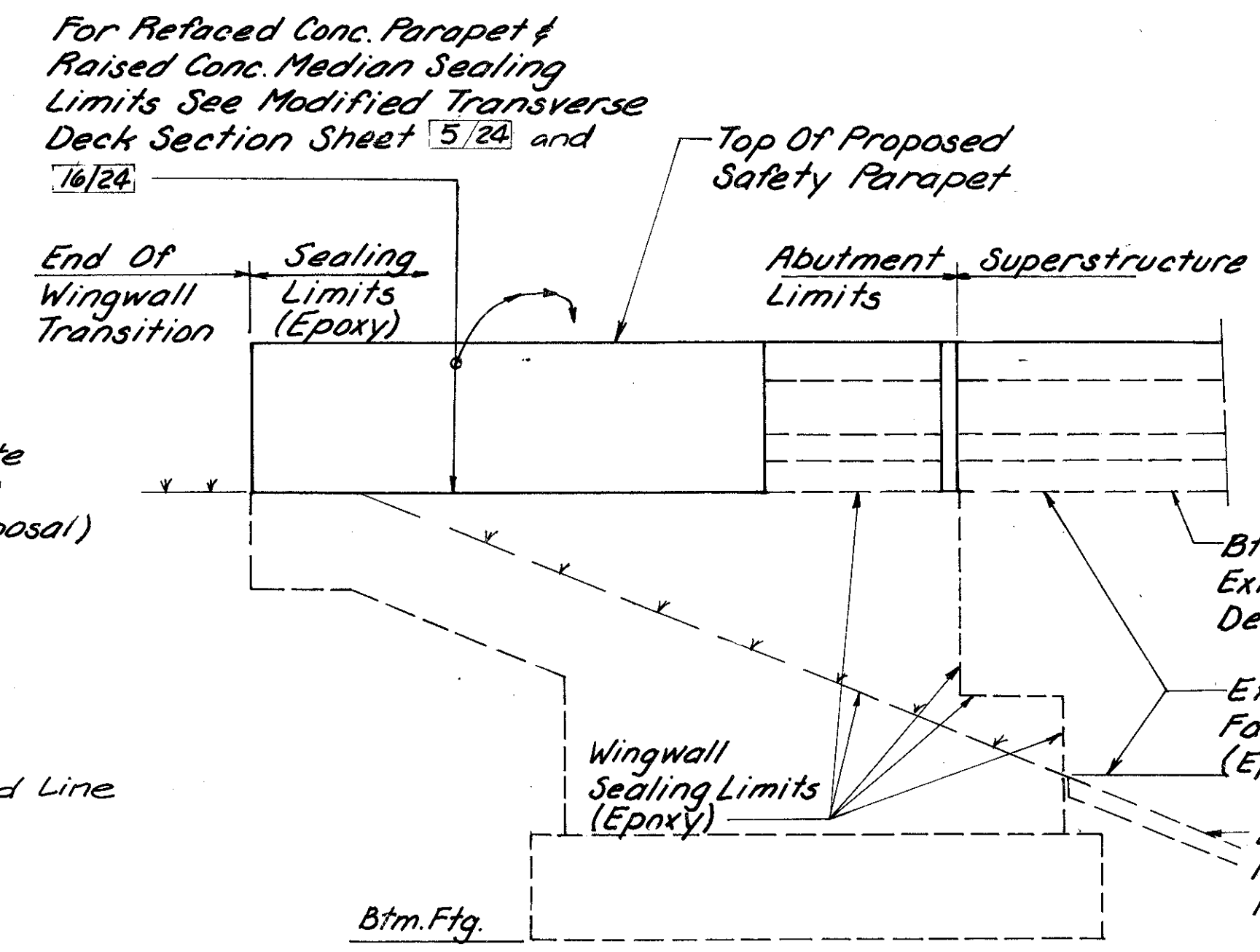


PROPOSED



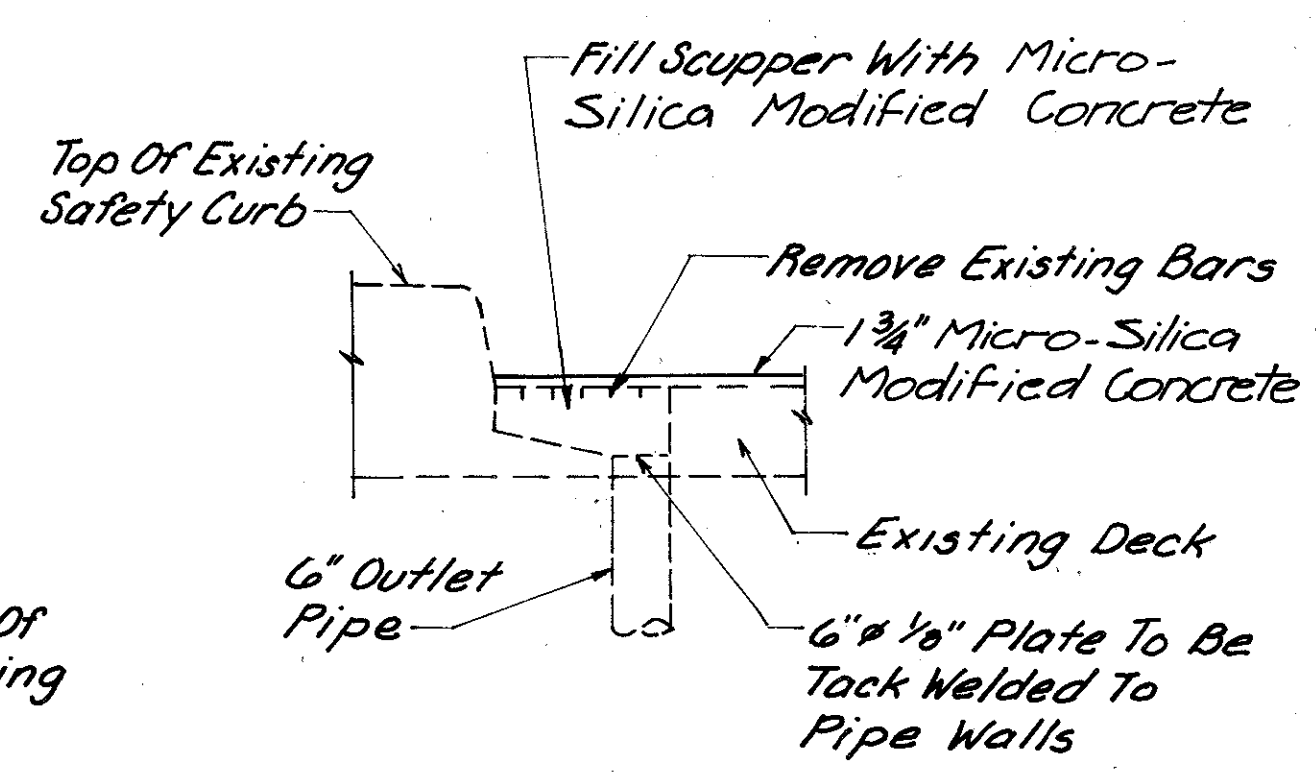
EXISTING PIER SECTION

BRIDGE NO. LAK-91-0449 ONLY
(NO CONCRETE SURFACE SEALING OF PIERS @ BRG. No. LAK - 91 - 0423)



TYPICAL ABUTMENT WINGWALL ELEVATION

BRIDGE NO. LAK-91-0423
BRIDGE NO. LAK-91-0449

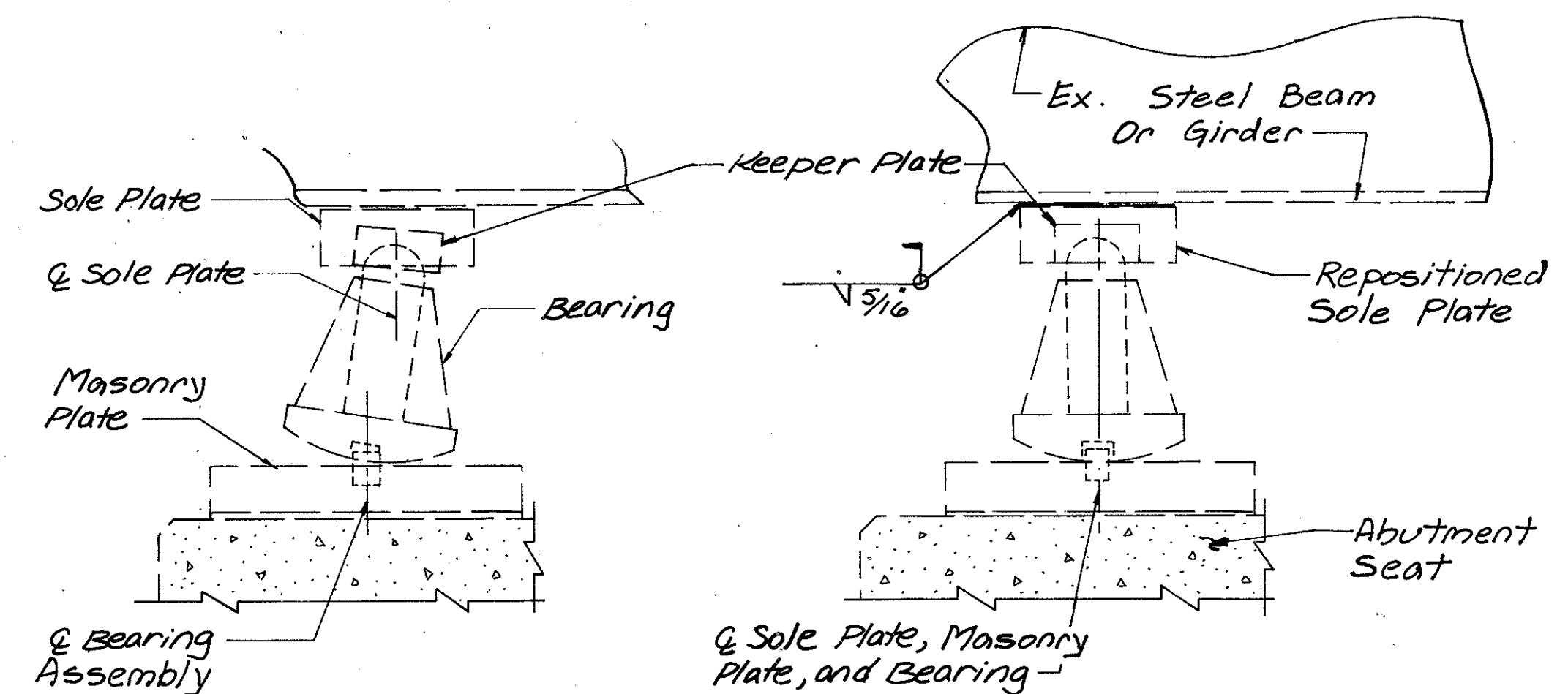


SCUPPER PLUGGING DETAIL

Note: Payment Shall Be Made Under Item 517 - Micro-Silica Modified Concrete overlay (Variable Thickness)

REPAIR OF UNSOUND BACKWALL TOPS

(APPROACH SLAB REPAIR SHOWN APPLIES TO LAK-91-0449 BRG. ONLY)

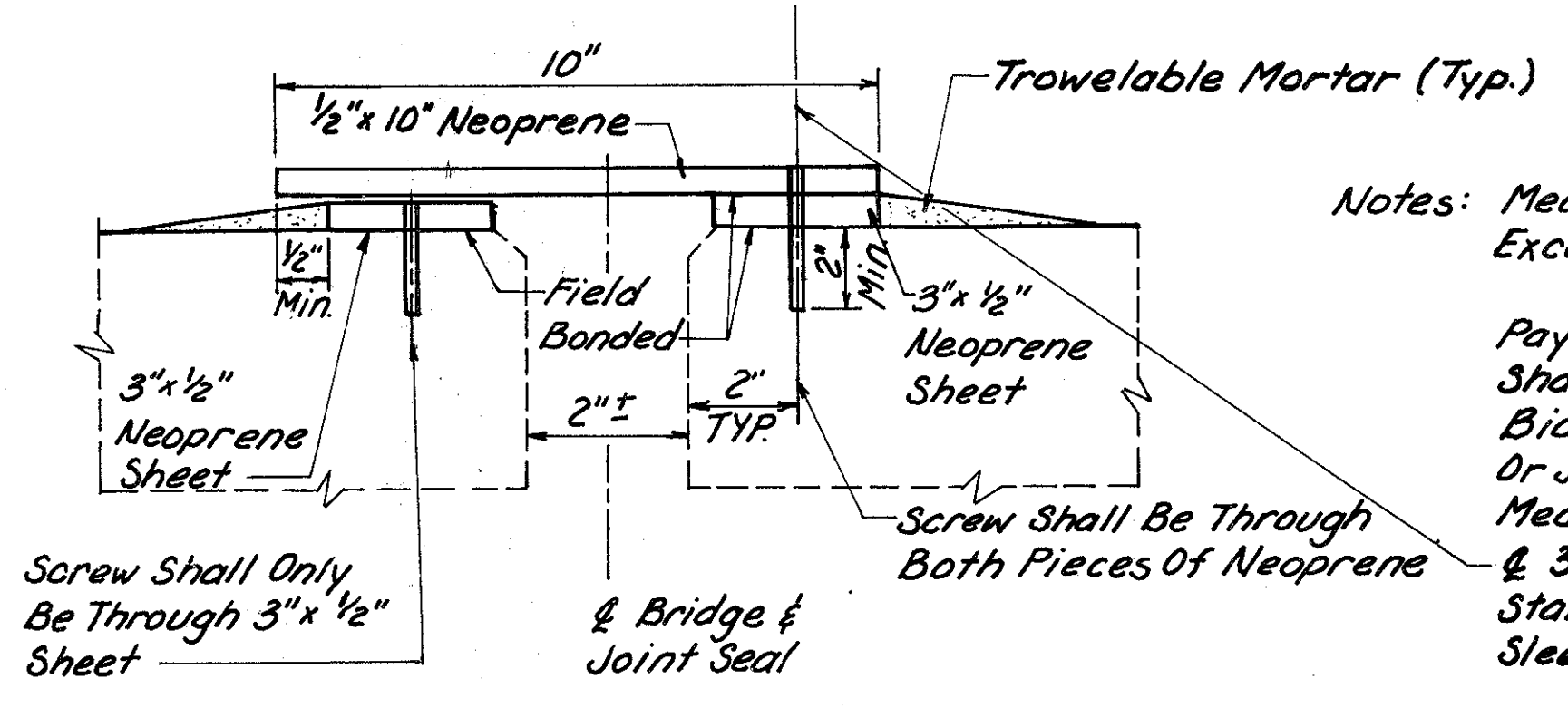


EXISTING SIDE ELEVATION

RESET SIDE ELEVATION

EXISTING ROCKER RESET DETAILS AT ABUTMENTS

(For Reset Procedures, See General Notes Sheet 2/24)



RAISED CONCRETE MEDIAN SEAL

Notes: Median Seal Shall Be Continuous Except At Expansion Joints.
Payment For Stainless Steel Screws Shall Be Included In The Unit Price Bid For Item 516, Structural Joint Or Joint Sealer Misc. Raised Concrete Median Seal.
& 3" x 1/2" Sheet & & 1/4" Flat Head Stainless Steel Machine Screw With Sleeve Anchor @ 24" Centers (Typical)

LEGEND

Indicates Area to be Removed Per Item 202 - Portions of Structures Removed.
MSMC Micro-Silica Modified Concrete.

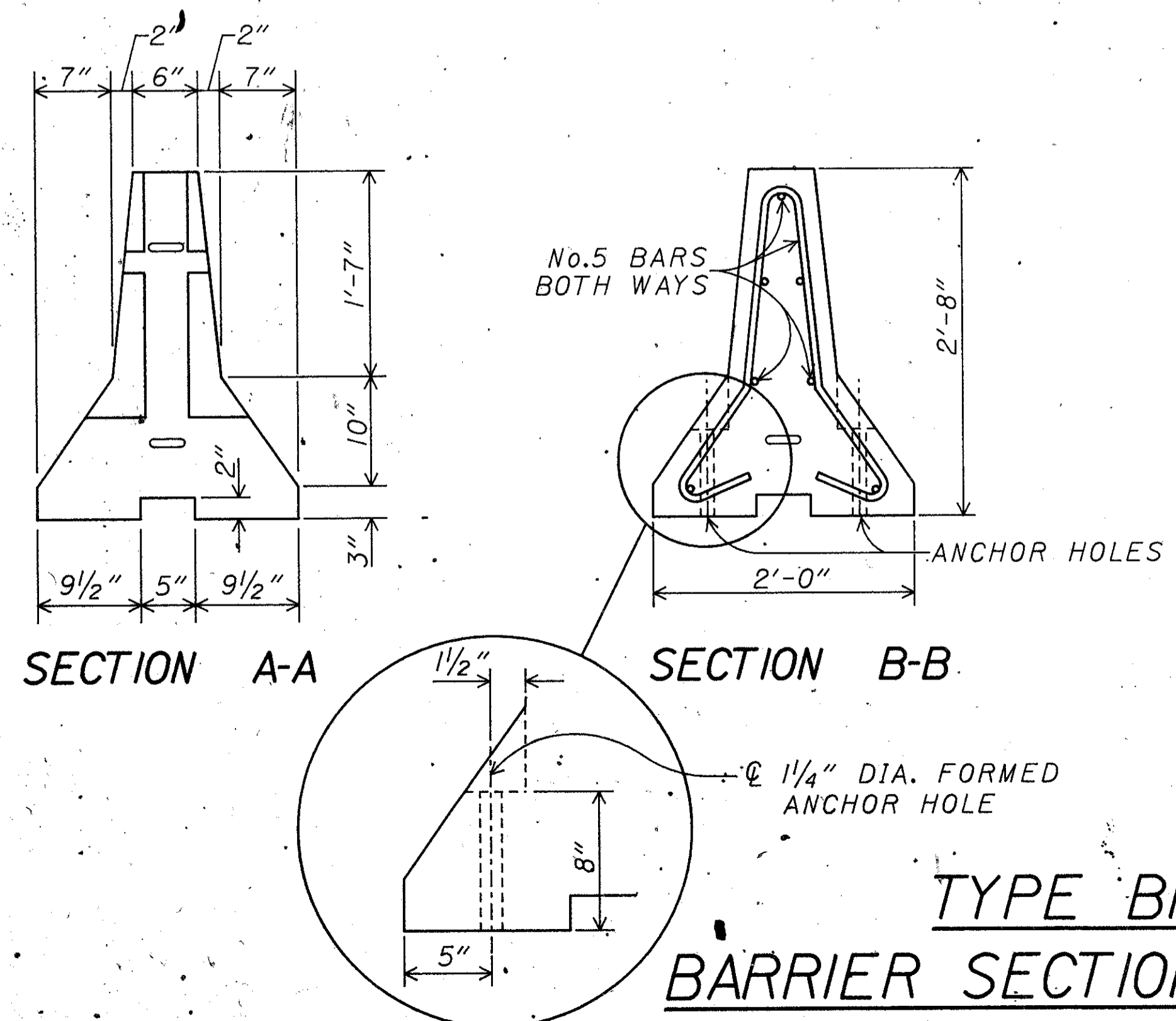
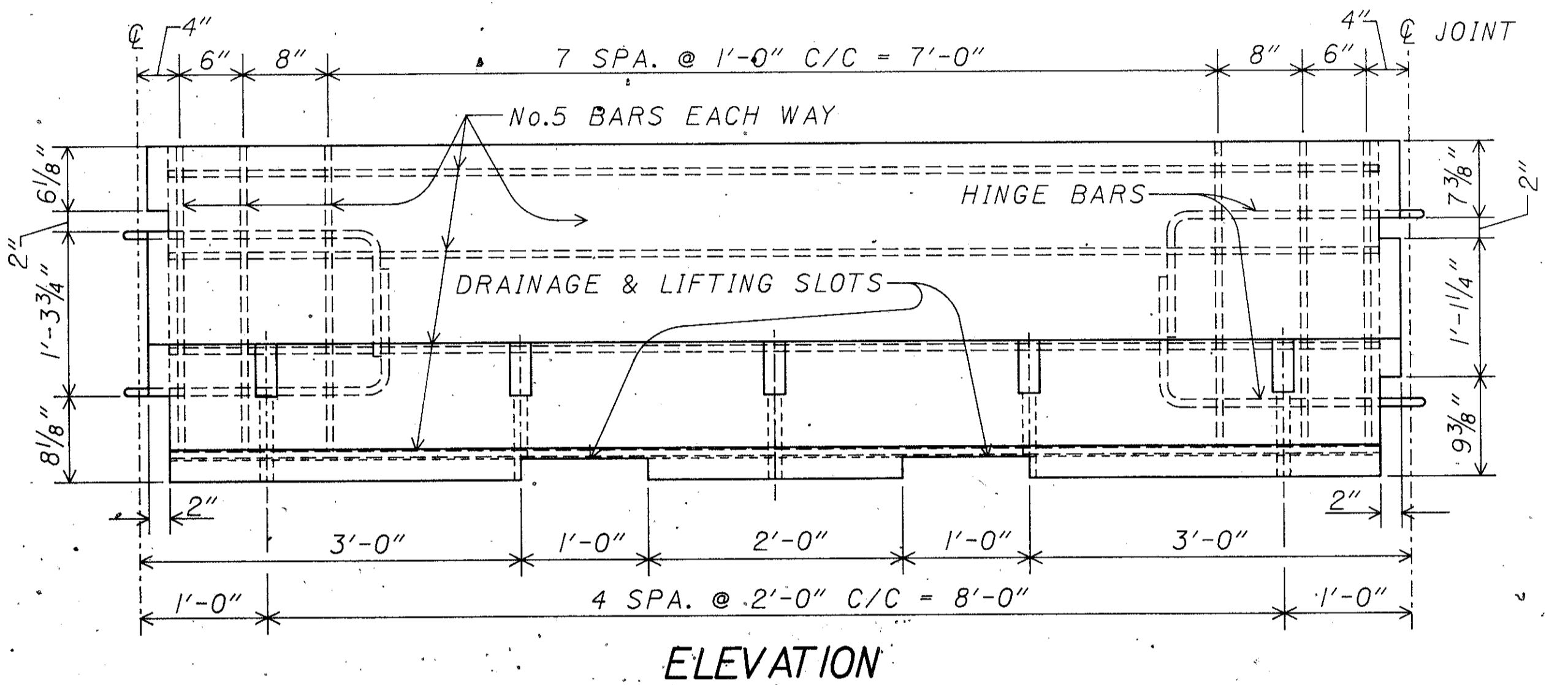
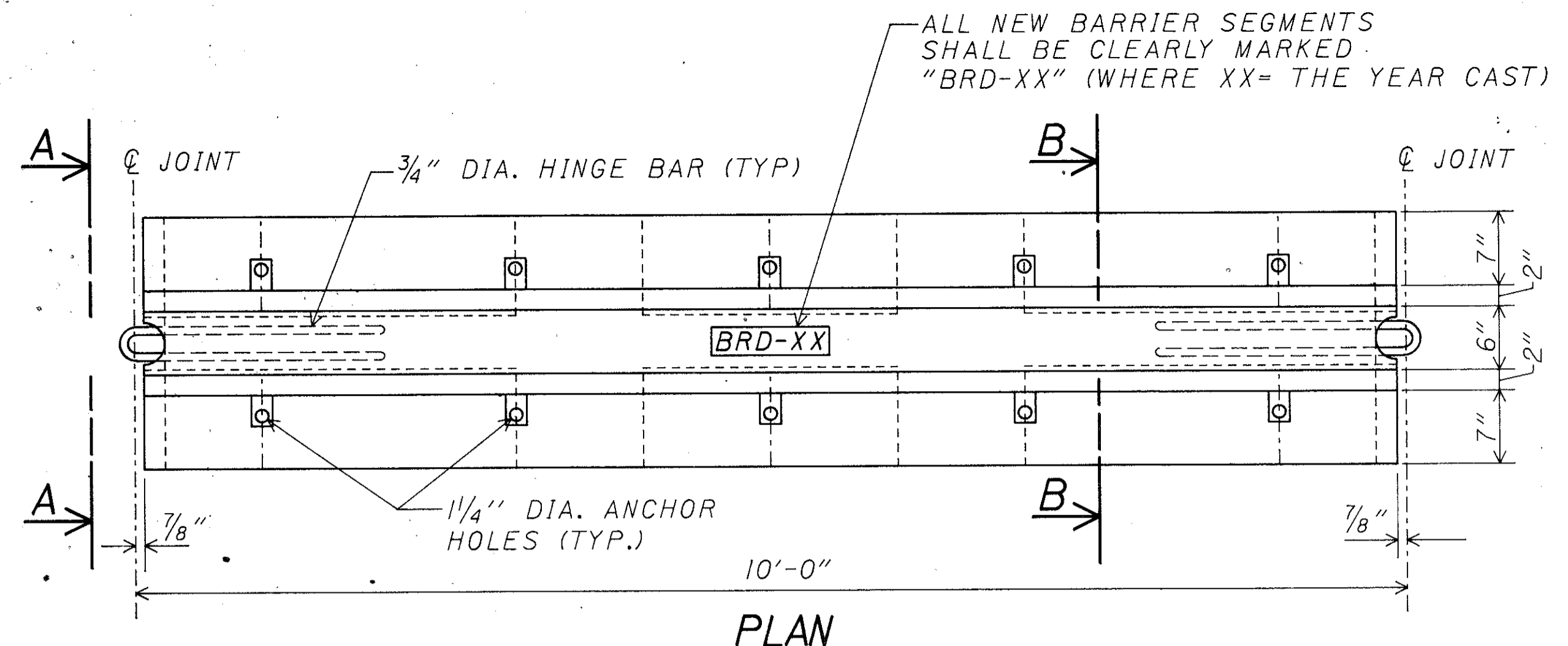
Burgess & Niple, Limited
Engineers and Architects

MISCELLANEOUS DETAILS

BRIDGE NO. LAK-91-0423
BRIDGE NO. LAK-91-0449

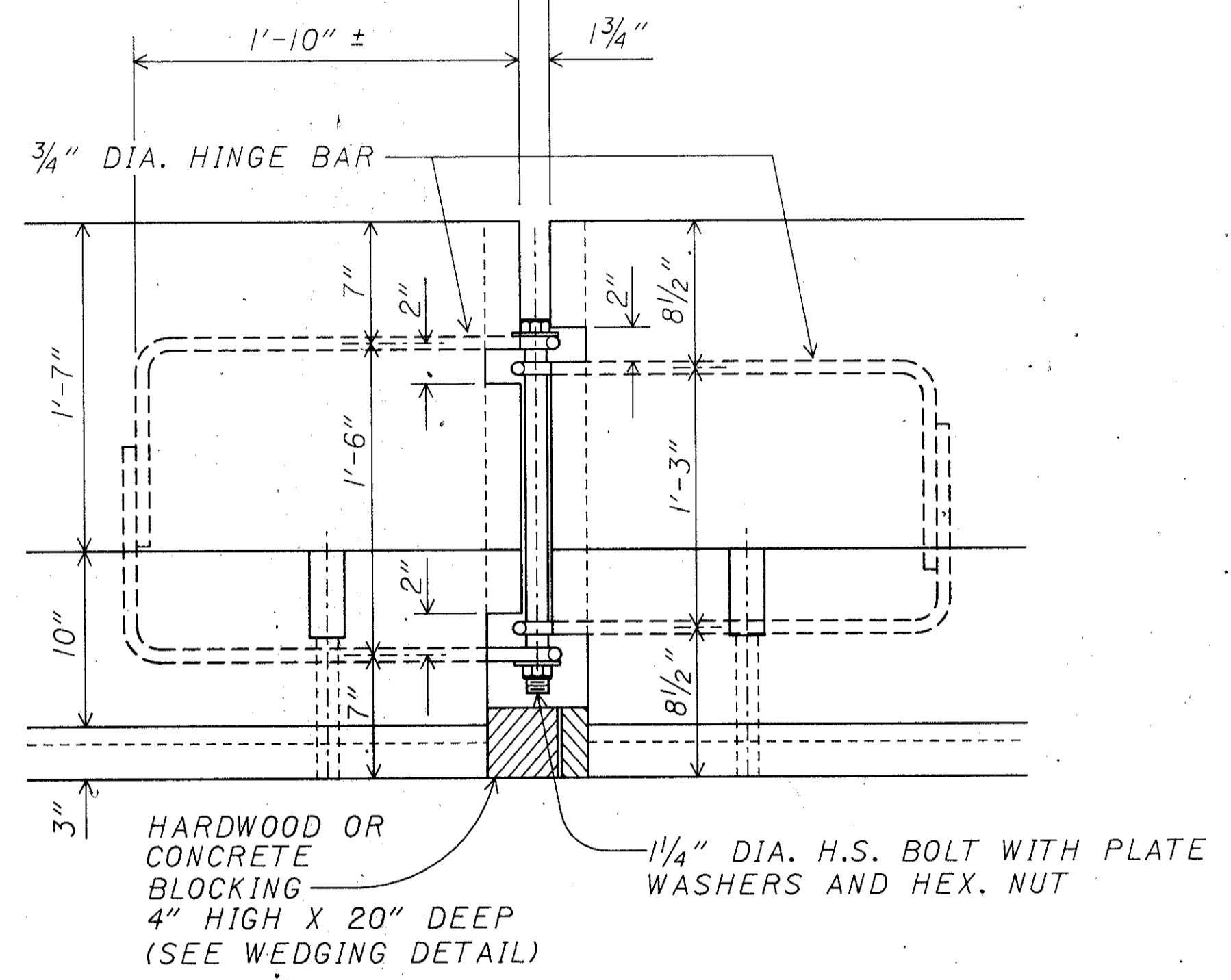
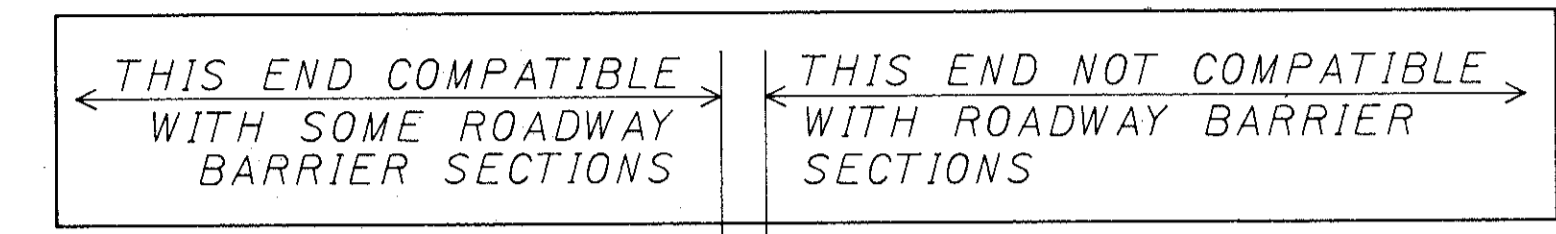
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED DATE | REVISED |
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| RJB | KFK | | RJB | WAC 4/10/91 | |

PLOT SUBMITTED BY: GRMOVSEK
 ZFI: [200005]BRD BAR.DGN:2
 PLOT SUBMITTED: 25-JAN-1992 07:33

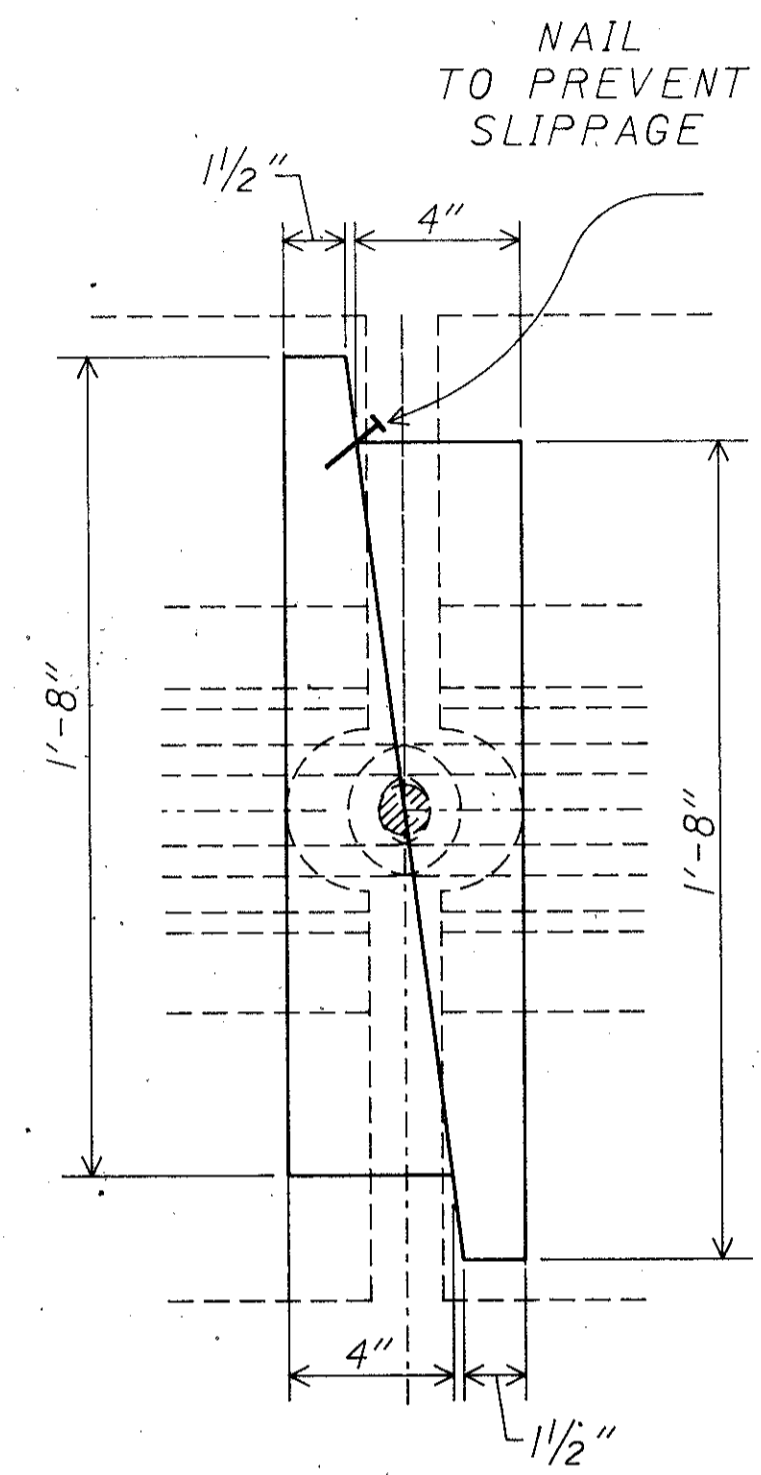


MATERIAL REQUIREMENTS:

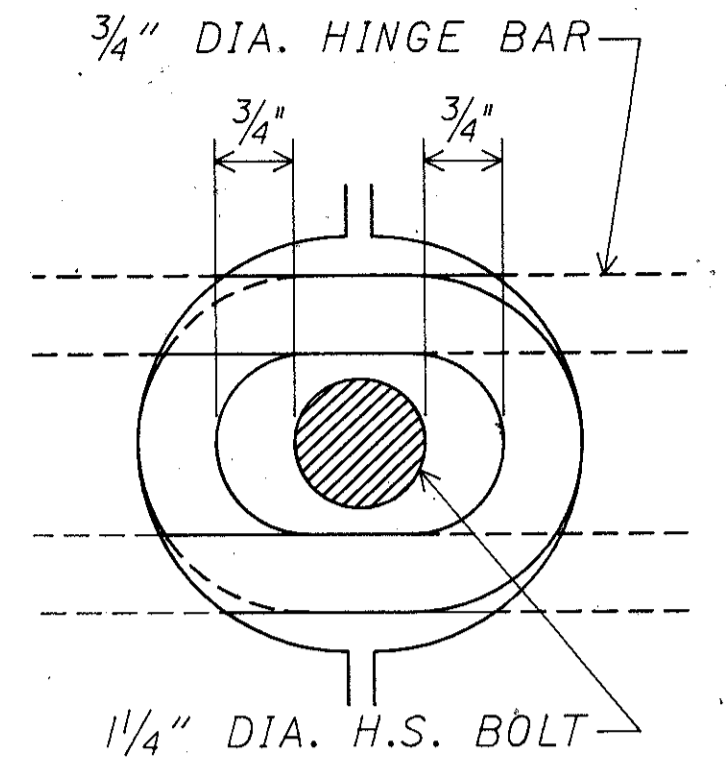
1. THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. AND SHALL CONTAIN A CALCIUM NITRITE CORROSION INHIBITING ADMIXTURE. THE ADMIXTURE SHALL BE ADDED TO THE CONCRETE AT THE RATE OF 4.0 GALLONS PER CUBIC YARD OF CONCRETE AND SHALL BE ADDED AS AN AQUEOUS SOLUTION, SUCH AS W.R. GRACE'S DCI CORROSION INHIBITOR (30% SOLIDS) OR APPROVED EQUAL. THE WATER IN SUCH SOLUTION SHALL BE COUNTED AS MIXING WATER FOR THE PURPOSE OF DETERMINING THE WATER TO CEMENT RATIO OF THE CONCRETE. THE CALCIUM NITRITE MUST BE ADDED TO THE MIX IMMEDIATELY AFTER THE AIR-ENTRAINING AND RETARDING ADMIXTURES HAVE BEEN INTRODUCED TO THE BATCH.
2. ALL REINFORCING STEEL AND STEEL ROD CONNECTING LOOPS SHALL BE GRADE 60 REINFORCING STEEL WITH A MINIMUM YIELD STRENGTH OF 60,000 PSI.



DETAIL AT HINGED CONNECTION

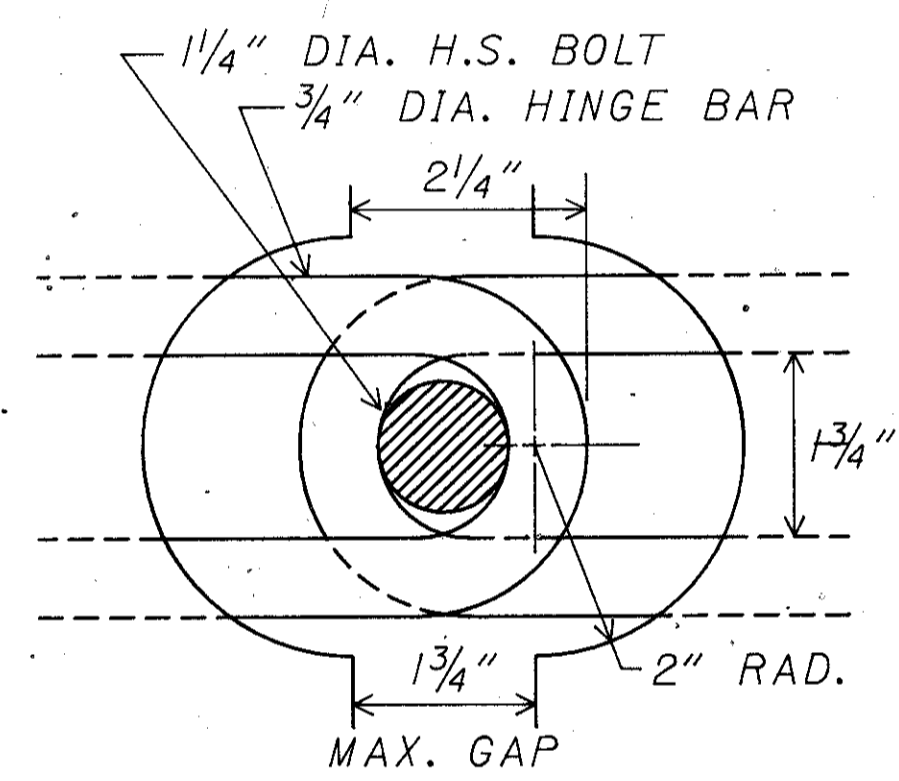


BARRIER WEDGING DETAIL (HARDWOOD)



INITIAL JOINT

BARRIER SEGMENTS SHOULD INITIALLY BE PLACED CLOSER TOGETHER SO THAT BOLTS CAN BE EASILY INSERTED THROUGH HINGE BAR LOOPS.



FINAL JOINT

BARRIER JOINTS MUST BE FULLY OPEN BEFORE OPENING IS BLOCKED WITH CONCRETE OR HARDWOOD.

COMMON NOTES:

ALL PORTABLE CONCRETE BARRIERS ON STRUCTURES

BRIDGE DECK SURFACE PREPARATION

1. THE BRIDGE DECK SURFACE AREA ON WHICH THE PRECAST CONCRETE BARRIER SEGMENTS WILL REST SHALL BE CLEARED OF ALL LOOSE SAND, GRAVEL, DIRT AND DEBRIS.
2. ANY IRREGULARITIES IN THE BRIDGE DECK AREA, UNLESS JUDGED BY THE ENGINEER TO BE INCONSEQUENTIAL, SHALL BE LEVELED WITH GROUT AND/OR ASPHALT.
3. ASPHALT ROLL ROOFING SHALL BE PLACED ON THOSE BRIDGE DECK AREAS, AS JUDGED BY THE ENGINEER, TO HAVE A SURFACE ROUGHNESS WHICH WOULD INHIBIT FRICTION CONTACT BETWEEN BARRIER SEGMENTS AND DECK.

BOLTED JOINT CONNECTIONS

4. WHEN STANDARD MC-9.2 BARRIER SECTIONS OR TYPE BRD BARRIER SECTIONS ARE USED ON STRUCTURES, THEY SHALL BE BOLTED TOGETHER AND BLOCKED AS SHOWN ABOVE (BOLTING AND BLOCKING DIMENSIONS FOR MC-9.2 BARRIER MAY VARY FROM THOSE SHOWN).

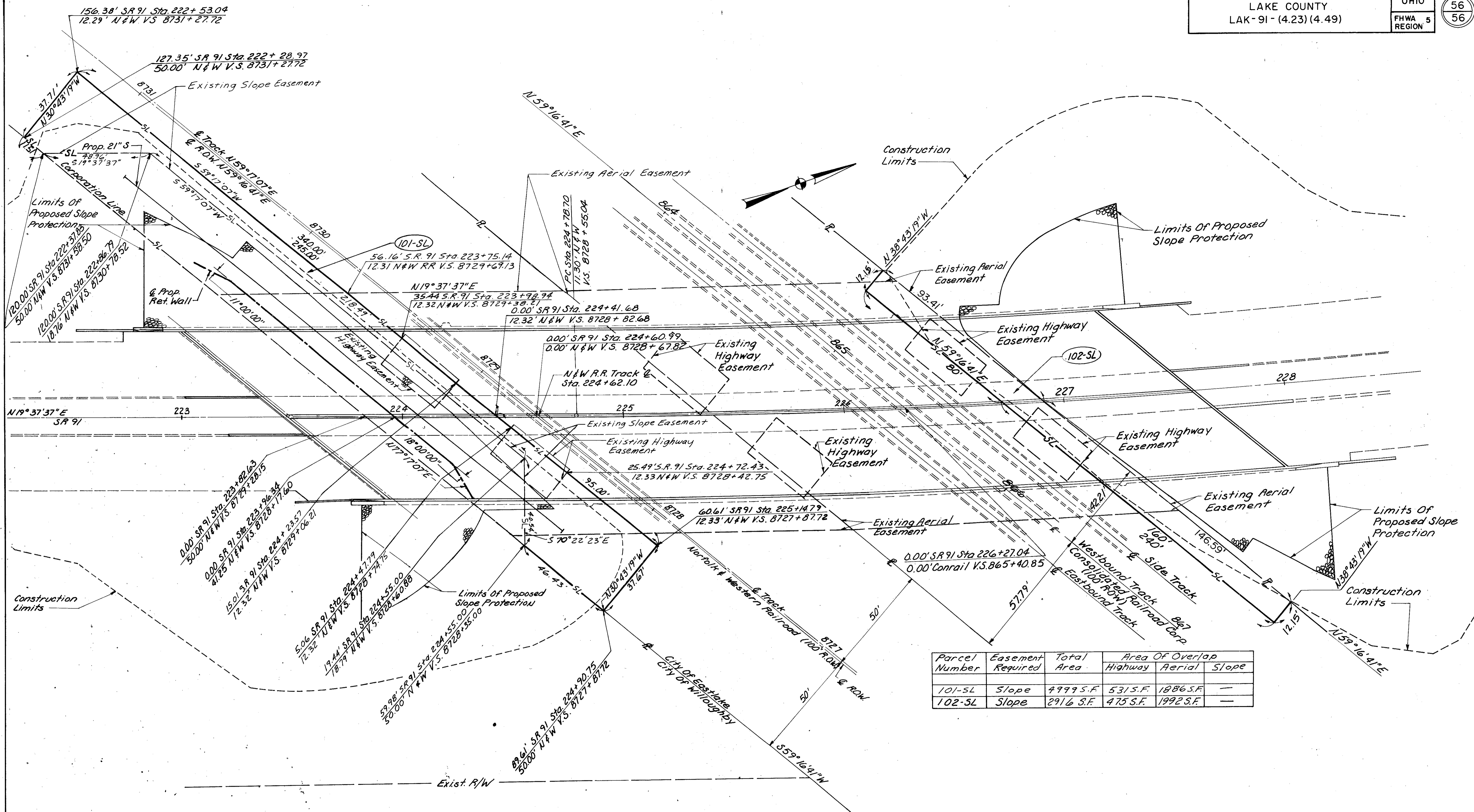
PORTABLE BARRIER, TYPE BRD, ANCHORED*

ALL ANCHORS SHALL BE 1" DIAMETER, HIGH STRENGTH, THRU BOLTS OR APPROVED RESIN ANCHORS. WHEN RESIN ANCHORS ARE USED, THEY MUST BE EMBEDDED A MINIMUM OF 6" INTO FIRM CONCRETE. THE NUMBER OF ANCHORS SHALL BE AS SHOWN BELOW AND SHALL BE PLACED SYMMETRICALLY ABOUT THE TRANSVERSE C/O OF BARRIER SECTION ON THE ROADWAY SIDE OF THE BARRIER.

| BRIDGE NO. | TRAFFIC CONTROL PHASE | NO. ANCHORS / 10' SECTION |
|------------|-----------------------|---------------------------|
| | | |
| | | |

* REQUIREMENTS OF ANCHORING THE BARRIER SECTIONS TO THE BRIDGE DECK ARE WAIVED. SEE MAINTENANCE OF TRAFFIC NOTES, SHEET 11.

| | | |
|--|--|-------------------|
| REVISIONS | STATE OF OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF BRIDGES AND STRUCTURAL DESIGN | STANDARD 24/24 |
| PORTABLE CONCRETE BARRIER DETAILS | | |
| APPROVED: | ENGINEER OF BRIDGES | DRAWING NO. |
| DATE: | PREPARED | DRAWN |
| | CHECKED | REVIEWED |



| Parcel Number | Easement Required | Total Area | Area Of Overlap | | |
|---------------|-------------------|------------|-----------------|-----------|-------|
| | | | Highway | Aerial | Slope |
| 101-SL | Slope | 4999 S.F. | 531 S.F. | 1886 S.F. | — |
| 102-SL | Slope | 2916 S.F. | 475 S.F. | 1992 S.F. | — |

| Parcel | Owner | Sheet Number | Owners Record | | Record Area (Ac.) | Total P.R.O. (Ac.) | Gross Take (Ac.) | P.R.O. In Take (Ac.) | Net Take (Ac.) | Structure | Net Residue | | Type Fund | Remarks And Personality | As Acquired | |
|--------|-----------------------------------|--------------|---------------|------|-------------------|--------------------|------------------|----------------------|----------------|-----------|-------------|-------|-----------|-------------------------|-------------|------|
| | | | Book | Page | | | | | | | Left | Right | | | Book | Page |
| 101-SL | Norfolk & Western Railroad | | N/A | N/A | N/A | — | 0.115 | — | 0.115 | | | | | Slope Easement | | |
| 102-SL | Consolidated Railroad Corporation | | N/A | N/A | N/A | — | 0.067 | — | 0.067 | | | | | Slope Easement | | |

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON THE FLAT GLACIATED LAKE PLAIN, WHERE SHALLOW LACUSTRINE DEPOSITS OVERLIE CLAYSHALE BEDROCK OF DEVONIAN AGE. IN 1964 AN AREA OF POOR DRAINAGE WAS OBSERVED TO OCCUR IN THE REAR PORTION OF THE STRUCTURE SITE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE AND PRESS SAMPLE-CORE BORINGS MADE BY MEANS OF A MECHANICALLY POWERED HOLLOW STEM ROTARY AUGER MOUNTED ON A MOBILE PLATFORM, PERFORMED ON NOVEMBER 6, 7, 13 AND 14, 1991.

INVESTIGATIONAL FINDINGS AND OBSERVATIONS

THE TEST BORINGS DISCLOSED THAT INTERVALS OF LOOSE TO EXTREMELY DENSE UNSATURATED BASIC CLAY, ELASTIC CLAY, AND SILT MODIFIED WITH SAND, GRAVEL, AND VARYING AMOUNTS OF EACH OTHER THAT IN BORING B-1 GRADUALLY INCREASE IN DENSITY WITH INCREASE IN DEPTH, AND IN BORING B-2 FLUCTUATE ERRATICALLY IN DENSITY WITH INCREASE IN DEPTH, OVERLIE GENTLY SLOPING BEDROCK SURFACE. TEST BORING B-1 (MADE IN THE VICINITY OF THE REAR ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 37.5 FOOT DEPTH, ELEVATION 641.7 FEET AND CONTINUED TO ADVANCE TO A TOTAL DEPTH OF 65.0 FEET, ELEVATION 614.2 FEET WHERE THE BORING WAS TERMINATED AFTER HAVING PENETRATED 27.5 FEET BELOW BEDROCK SURFACE. SHELBY TUBE SAMPLES FOR TESTING UNDISTURBED MATERIALS WERE TAKEN AT 25.0 AND 30.0 FOOT DEPTHS, ELEVATIONS 654.2 AND 649.2 FEET, RESPECTIVELY. TEST BORING B-2 (LOCATED IN THE VICINITY OF THE FORWARD ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 18.5 FOOT DEPTH, ELEVATION 637.5 FEET AND CONTINUED TO ADVANCE TO A TOTAL DEPTH OF 42.5 FEET, ELEVATION 612.5 FEET WHERE THE BORING WAS TERMINATED AFTER HAVING PENETRATED 25.0 FEET BELOW BEDROCK SURFACE. SHELBY TUBE SAMPLES WERE TAKEN FOR TESTING OF UNDISTURBED MATERIALS AT 5.0 AND 10.0 FOOT DEPTHS, ELEVATIONS 652.5 AND 647.5 FEET, RESPECTIVELY.








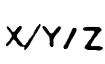






IF IT IS THE INTENTION TO FOUND PIER SUBSTRUCTURE UNITS ON BEDROCK, IT IS CONSIDERED ADVISABLE THAT THE EXCAVATIONS BE INSPECTED IN THE FIELD IN ORDER TO INSURE THAT THE EXCAVATIONS HAVE BEEN EXTENDED TO ROCK THROUGHOUT THE ENTIRE FOUNDING AREA. IT IS FURTHER SUGGESTED THAT THE AREA OF THE FOOTING CONTACT NOT BE SUBJECTED TO PROLONGED ATMOSPHERIC EXPOSURE, AND THAT THE EXCAVATION BE WELL DRAINED AT ALL TIMES, DUE TO THE FACT THAT WHILE THIS CLAYSHALE BEDROCK IS GENERALLY FIRM IN PLACE, IT IS SUSCEPTIBLE TO DISINTEGRATION UPON EXPOSURE TO THE ATMOSPHERE AND WATER.

NO FREE WATER OBSERVATIONS WERE MADE IN EITHER OF THE TEST BORINGS PERFORMED DURING, OR AT THE CONCLUSION OF DRILLING OPERATIONS.















UNCONFINED COMPRESSION TESTS ON CORE SAMPLES INDICATE COMPRESSION STRENGTHS ON THE ORDER OF 450 TONS PER SQUARE FOOT FOR THE CLAYSHALE OCCURRING AT OR BELOW ELEVATION 622.7 FEET FOR TEST BORING B-1 AND ON THE ORDER OF 225 TONS PER SQUARE FOOT FOR THE CLAYSHALE OCCURRING AT OR BELOW ELEVATION 621.5 FEET FOR TEST BORING B-2.

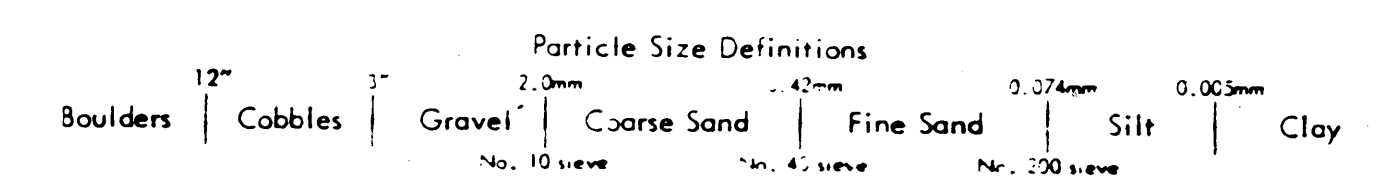
LEGEND

NOTE: FOR LEGEND BY CONSULTANT, SEE SHEET TWO

| | | | |
|--|---|--|--|
|       | <p>Auger Boring Location - Plan View.</p> <p>Press and / or Drive Sample and / or Core Boring Location - Plan View.</p> <p>Capped Pile</p> <p>Footing</p> <p>Footing on Pile</p> <p>Top of Rock</p> |         | <p>Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.</p> <p>Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test. X = Number of Blows for First 6 inches. Y = Number of Blows for Second 6 inches. Z = Number of Blows for Third 6 inches.</p> <p>Drive Rod Penetration Resistance Sounding Log - Profile</p> <p>Resistance "R" < 10,000 lbs.</p> <p>Resistance "R" > 10,000 lbs.</p> <p>Z Indicates Final Measurement of Penetration, in Inches.</p> <p>W Indicates Free Water Elevation.</p> <p>Indicates Static Water Elevation.</p> |
|--|---|--|--|

SYMBOLS OF ROCK TYPES

| | | | |
|--|---|--|--|
|        | <p>Coal</p> <p>Weathered Mudstone or Claystone</p> <p>Mudstone or Claystone</p> <p>Weathered Shale</p> <p>Shale</p> <p>Weathered Siltstone</p> <p>Siltstone</p> |        | <p>Weathered Sandstone</p> <p>Sandstone</p> <p>Leached Dolomite</p> <p>Dolomite</p> <p>Leached Limestone</p> <p>Limestone</p> <p>Boulders or Cobbles</p> |
|--|---|--|--|



GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 18 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in three 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

NOTE - ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.

NOTE - Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS — TESTING LABORATORY
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

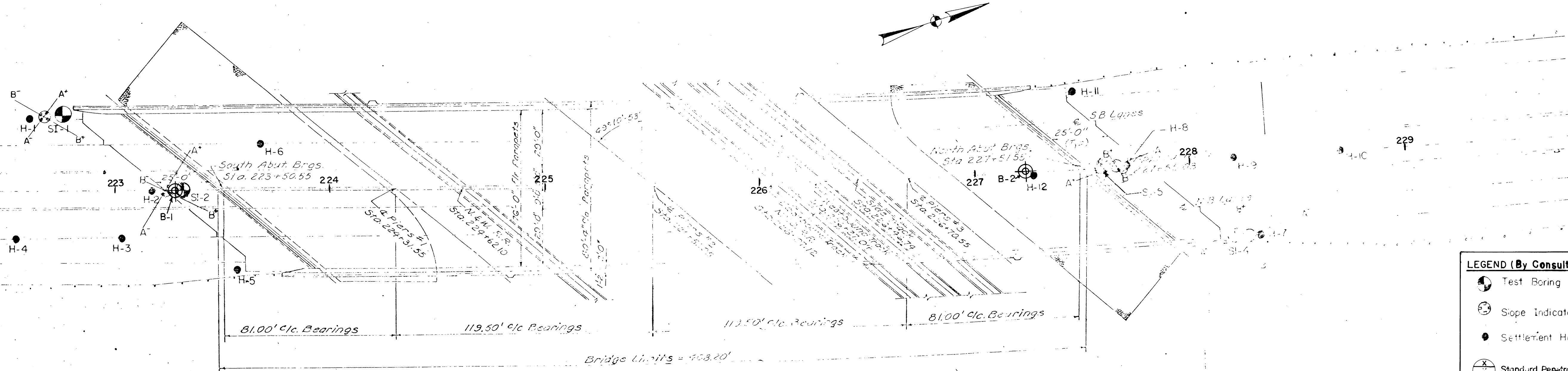
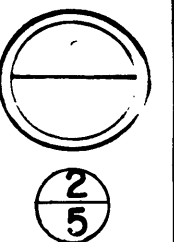
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. LAK-91-0423
OVER CONRAIL, AND N & W RR

SEC. LAK-91-4.23

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| CHECKED BY A.F. | REVIEWED BY M.R.S. | DATE 12/30/91 |
|--------------------|-----------------------|------------------|

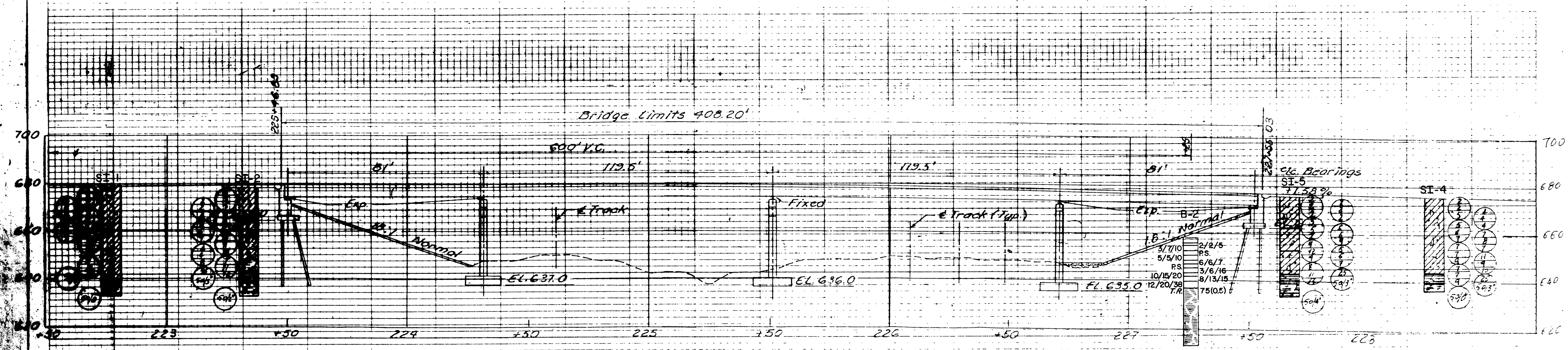
CALC. BY: _____ DATE: _____
 CHK. BY: _____ DATE: _____

| FHWA REGION | STATE | PROJECT |
|-------------|-------|----------------------|
| 5 | OHIO | LAK-91-0423 (449) |



LEGEND (By Consultant)

- Test Boring
- Slope Indicator
- Settlement Hub
- Standard Penetration Test



LOG OF BORING
Sta. 223+29.4

| | |
|-----|--------|
| 620 | SI-1 |
| 620 | SI-2 |
| 620 | SI-3 |
| 620 | SI-4 |
| 620 | SI-5 |
| 620 | SI-6 |
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| 620 | SI-100 |

OHIO DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS-TESTING LABORATORY
 600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. LAK-91-0423
 OVER CONRAIL, AND N & W RR
 SEC. LAK-91-4.23

PLAN AND PROFILE

| | | | |
|--------------------|--------------------|-----------------------|------------------|
| DRAWN BY J.B.H. | CHECKED BY A.F. | REVIEWED BY M.R.S. | DATE 12/30/91 |
|--------------------|--------------------|-----------------------|------------------|

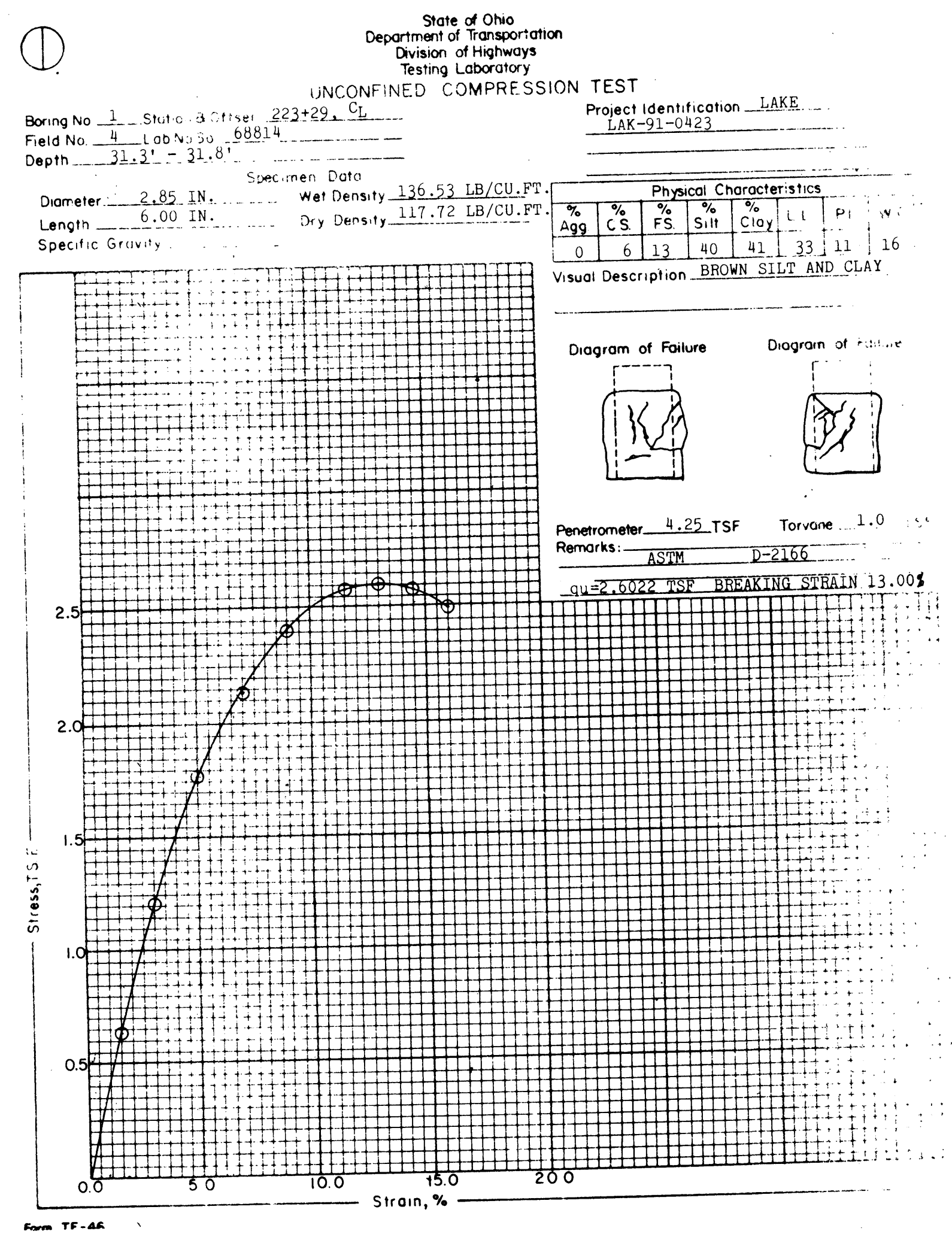
SCALE 3/8"=10.0'

LOG OF BORING

Date Started 11/13/91 Sampler Type SS Dia. 1 3/8" Water Elev. _____
 Date Completed 11/14/91 Casing Length _____ Dig. _____
 Boring No. B-1 Station & Offset 223+29.01 (REAR ABUTMENT) Surface Elev. 679.2'

| Elev. | Depth | Std. Pen. (N) | Rec. H. ft. | Loss ft. | Description | Sample No. | Physical Characteristics | | | | | | | SHTL Class. | |
|-------|-------|---------------|-------------|----------|---|------------|--------------------------|--------|--------|--------|--------|------|------|-------------|--------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | | W.C. |
| 679.2 | 0 | | | | SOD AND TOPSOIL | | | | | | | | | | VISUAL |
| 678.9 | 2 | AUGERED | | | BROWN SANDY CLAY (DRILLER'S DESCRIPTION) | | | | | | | | | | VISUAL |
| | 4 | AUGERED | | | | | | | | | | | | | |
| 674.2 | 6 | | | | | | | | | | | | | | VISUAL |
| | 8 | AUGERED | | | BROWN SANDY SILT AND CLAY (DRILLER'S DESCRIPTION) | | | | | | | | | | VISUAL |
| 669.2 | 10 | | | | | | | | | | | | | | VISUAL |
| | 12 | AUGERED | | | BROWN SANDY SILT AND CLAY (DRILLER'S DESCRIPTION) | | | | | | | | | | VISUAL |
| 664.2 | 14 | | | | | | | | | | | | | | VISUAL |
| | 16 | AUGERED | | | BROWN AND GRAY CLAY (DRILLER'S DESCRIPTION) | | | | | | | | | | VISUAL |
| 659.2 | 18 | | | | | | | | | | | | | | VISUAL |
| 656.7 | 22 | | | | BROWN CLAYEY SILT | 1 | 0 | 6 | 11 | 41 | 42 | 31 | 9 | 16 | A-4A |
| 654.2 | 24 | 11/16/17 | | | BROWN AND GRAY GRAVELLY CLAY (DRADING ONLY) | 2 | 37 | 5 | 8 | 21 | 29 | 31 | 11 | 14 | A-6A |
| 651.7 | 28 | PRESS | | | | | | | | | | | | | |
| 649.2 | 30 | 15/15/23 | | | BROWN AND GRAY SANDY SILT | 3 | 14 | 8 | 9 | 37 | 32 | 32 | 10 | 15 | A-4A |
| 646.7 | 32 | PRESS | | | BROWN SILT AND CLAY | 4 | 0 | 6 | 13 | 40 | 41 | 33 | 11 | 16 | A-6A |
| 644.2 | 34 | 14/18/19 | | | BROWN SILT AND CLAY | 5 | 0 | 4 | 11 | 38 | 47 | 36 | 11 | 17 | A-6A |
| 641.7 | 36 | 10/14/18 | | | BROWN SANDY SILT | 6 | 11 | 5 | 11 | 35 | 38 | 31 | 9 | 13 | A-4A |
| 639.2 | 40 | 17/29/50 | | | BROWN AND GRAY CLAY SHALE | 7 | - | - | - | - | - | - | - | 17 | VISUAL |
| 638.7 | 42 | 75(0.5) | | | CLAY SHALE, BROWN WEATHERED, SOFT, BROKEN. NO CORE LOSS | 8 | - | - | - | - | - | - | - | 11 | VISUAL |
| 637.7 | 44 | | 4.5 | 0.0 | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | | | |
| | 48 | | 5.0 | 0.0 | | | | | | | | | | | |
| | 50 | | | | | | | | | | | | | | |
| | 52 | | 5.0 | 0.0 | CLAY SHALE, GRAY, FIRM, BROKEN AND JOINTED WITH THIN CLAY SEAMS IN UPPER PORTION. CORE LOSS 18. | | | | | | | | | | |
| | 54 | | | | | | | | | | | | | | |
| | 56 | | | | | | | | | | | | | | |
| | 58 | | 4.8 | 0.2 | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | | | |
| | 64 | | 4.9 | 0.1 | | | | | | | | | | | |
| 614.2 | 66 | | | | | | | | | | | | | | |

BOTTOM OF BORING



OHIO DEPARTMENT OF TRANSPORTATION
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OVER CONRAIL, AND N&W RR

SEC. LAK-91-4.23

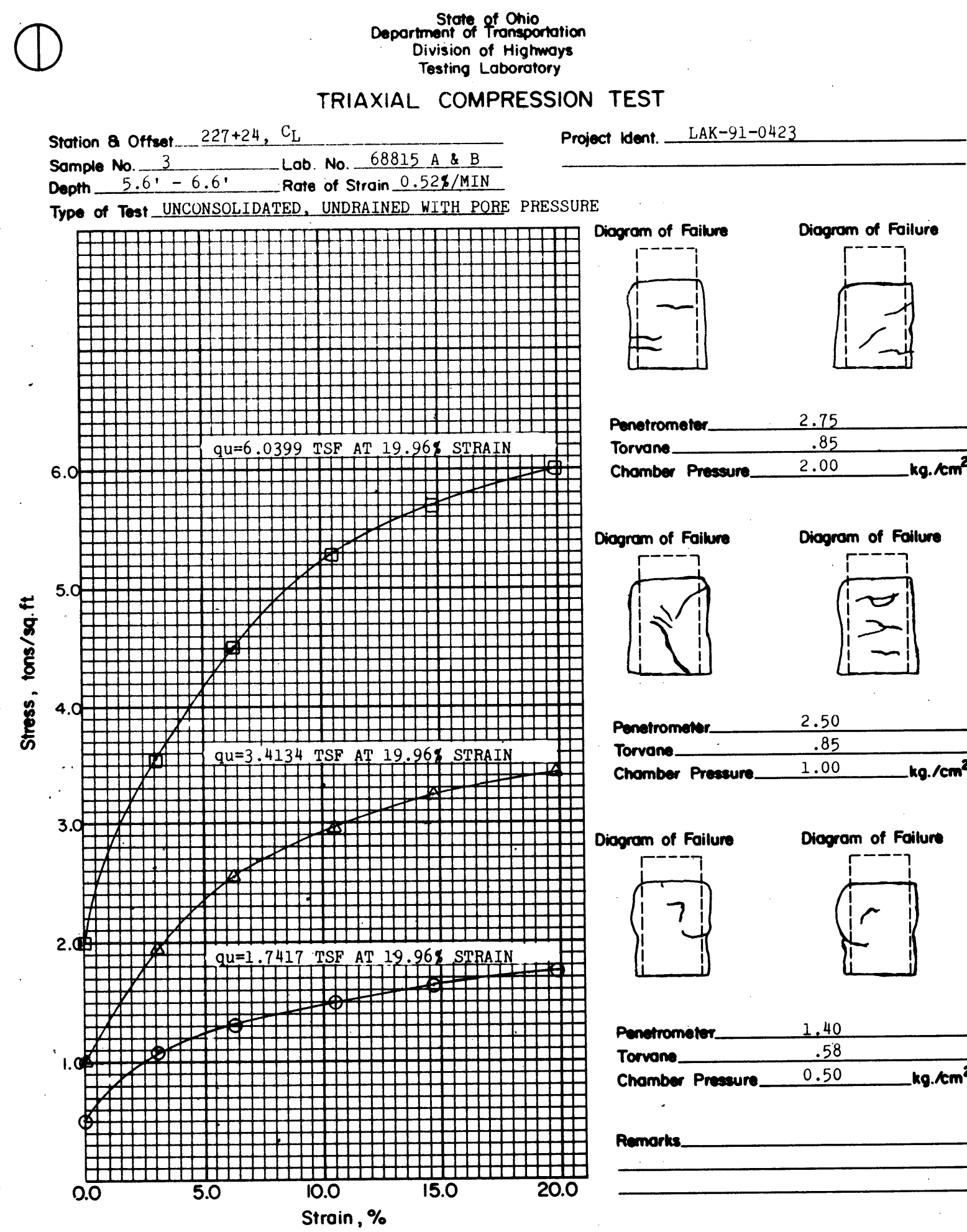
| BORING DATA | | | |
|--------------------|--------------------|-----------------------|------------------|
| TYPED BY L.A.O. | CHECKED BY A.F. | REVIEWED BY M.R.S. | DATE 12/30/91 |

LAK-D-4.53

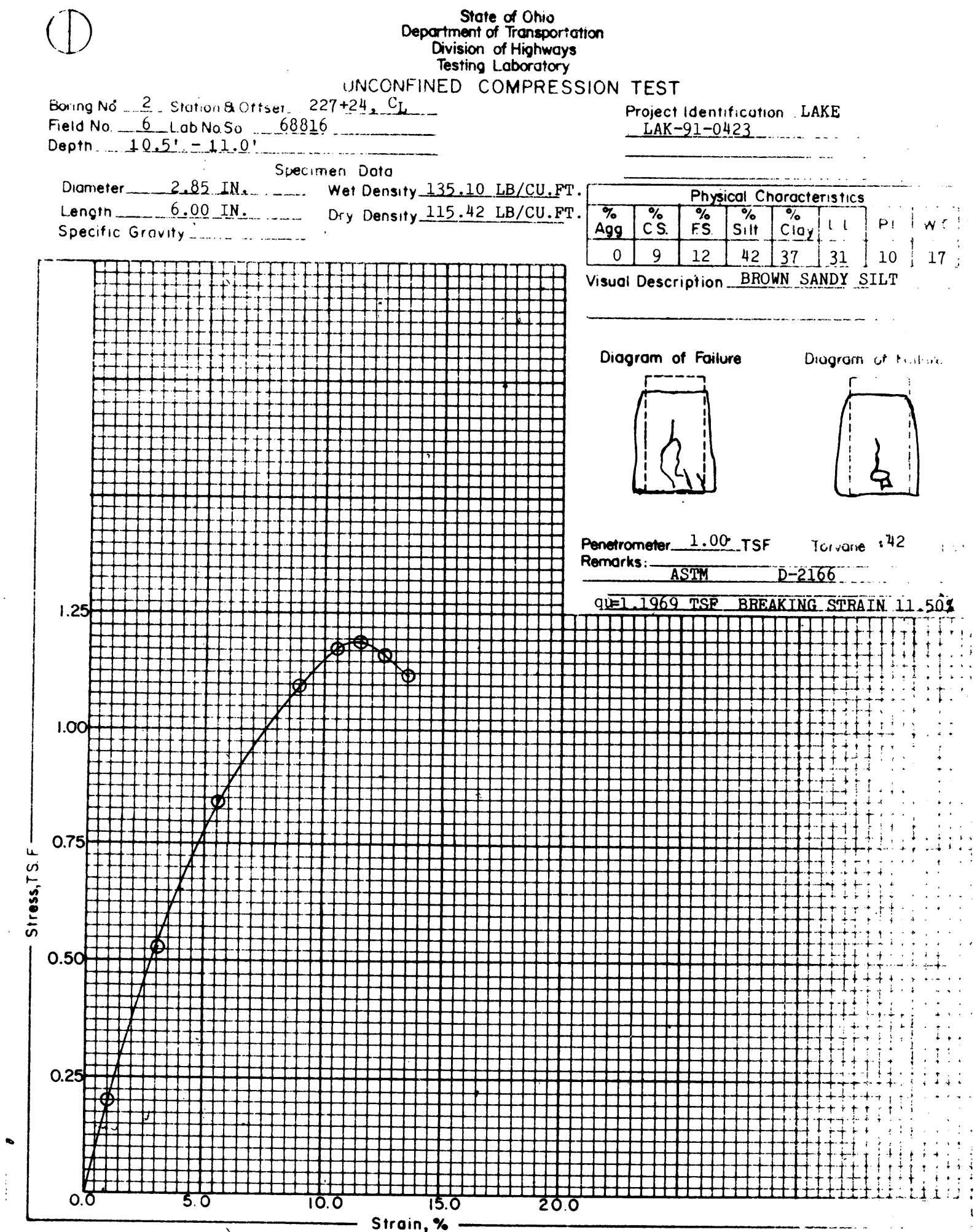
20 Sec

1883

D-19



Form TE-194



Form TE-46

Rock core unconfined compression test results
(for both holes)

Due to the highly fissile nature of this rock, it was difficult to find many samples to perform unconfined compression tests on. The results below represent the only tests which we were able to perform, and are not of the highest caliber of accuracy. The specimens were approximately 2.1 inches in diameter and 4.0 inches in length, except sample 2 - 40.5 which was 4.9 inches long.

| Test hole No. | Depth (ft) | Strength (PSI) |
|-----------------|-----------------|----------------|
| Test hole No. 1 | 42.5 foot depth | 95 PSI |
| | 56.5 foot depth | 6330 PSI |
| Test hole No. 2 | 40.5 foot depth | 90 PSI |
| | 50.0 foot depth | 430 PSI |
| | 56.0 foot depth | 3100 PSI |

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|---|--------------------|-----------------------|------------------|
| OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS - TESTING LABORATORY 1600 WEST BROAD STREET COLUMBUS, OHIO 43223 | | | |
| STRUCTURAL FOUNDATION INVESTIGATION | | | |
| BRIDGE NO. LAK-91-0423 | | | |
| OVER: CONRAIL, AND N & W RR | | | |
| SEC. LAK-91-4.23 | | | |
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