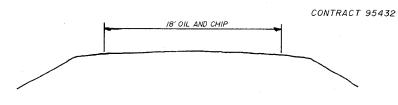
ROUTE SECTION COUNTY TOT. SHTS. SHT. C.H. 27 03-00180-00-BR JEFFERSON B I IEFFERSON CO. ROAD DISTRICT

INDEX OF SHEETS

- 1. COVER SHEET- INDEX OF SHEETS, TYPICAL EXISTING AND PROPOSED CROSS-SECTIONS, SUMMARY OF QUANTITIES, LOCATION MAP, GENERAL NOTES
- 2. PLAN AND PROFILE
- 3. GENERAL PLAN AND ELEVATION
- 4. FOUNDATION PLAN AND DETAILS
- 5. END ELEVATION AND DETAILS
- 6. BRIDGE PLAN AND DETAILS 7. MANUFACTURE AND INSTALLATION DETAILS
- 8. CROSS-SECTIONS

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED BRIDGE REPLACEMENT AND REHABILITATION PROGRAM



TYPICAL EXISTING CROSS SECTION

GENERAL NOTES

THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUC-TION ADOPTED JANUARY 1, 2001 BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION, ALL APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS, AND THE SPECIAL PROVISIONS FOR THIS PROJECT

PLAN ELEVATIONS ARE U.S.G.S. DATUM AND ARE THE ELEVATIONS OF THE FINISHED SURFACE

ANY EXCAVATION DEEMED SUITABLE FOR USE BY THE ENGINEER SHALL BE USED IN THE EMBANKMENT.

THE CONTRACTOR SHALL SALVAGE FROM THE EXISTING STRUCTURE ANY MATERIALS DEEMED SALVAGEABLE BY THE ENGINDER AND SHALL STORE SAME ON THE RIGHT-OF-WAY FOR LATER REMOVAL BY THE JEFFERSON COUNTY HIGHWAY DEPARTMENT.

THE WORK IN THIS SECTION SHALL CONSIST OF THE CONSTRUCTION OF A THREE SIDED PRECAST CONCRETE STRUCTURE AND ANY AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE SECTION.

J.U.L.I.E. 1-800-892-0123 CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION

SUMMARY OF QUANTITIES

| Countily | Unit | Rem | Rem | Countily | Street Terminal | Countily | Street Terminal | Countily | Countily | Street Terminal | Countily | Co

STANDARDS

1.	0000001-04
2.	515001-02
3.	630001-05
4.	631011-02
5.	635006-02
6.	701006-02
7.	702001-05
٥	RI D 21 6

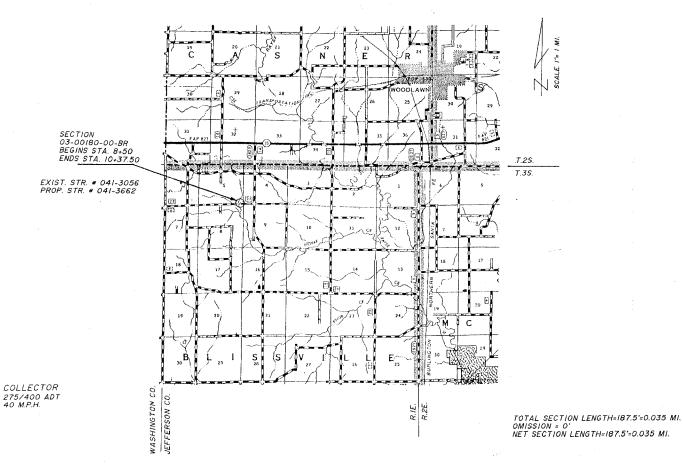
9. BLR 23-1

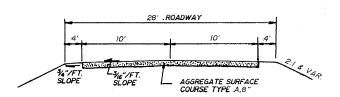
SECTION 03-00180-00-BR

C.H. 27 JEFFERSON CO.

PROJECT NO. BROS-081(45)

JOB NO. C-97-035-05





TYPICAL PROPOSED CROSS SECTION

THE ACCEPTANCE OF THIS PROJECT IS BASED ON THE MINIMUM DESIGN CRITERIA FOR A FEDERAL AID SCONDARY IMPROVEMENT ON THE COUNTY HIGHWAY SYSTEM

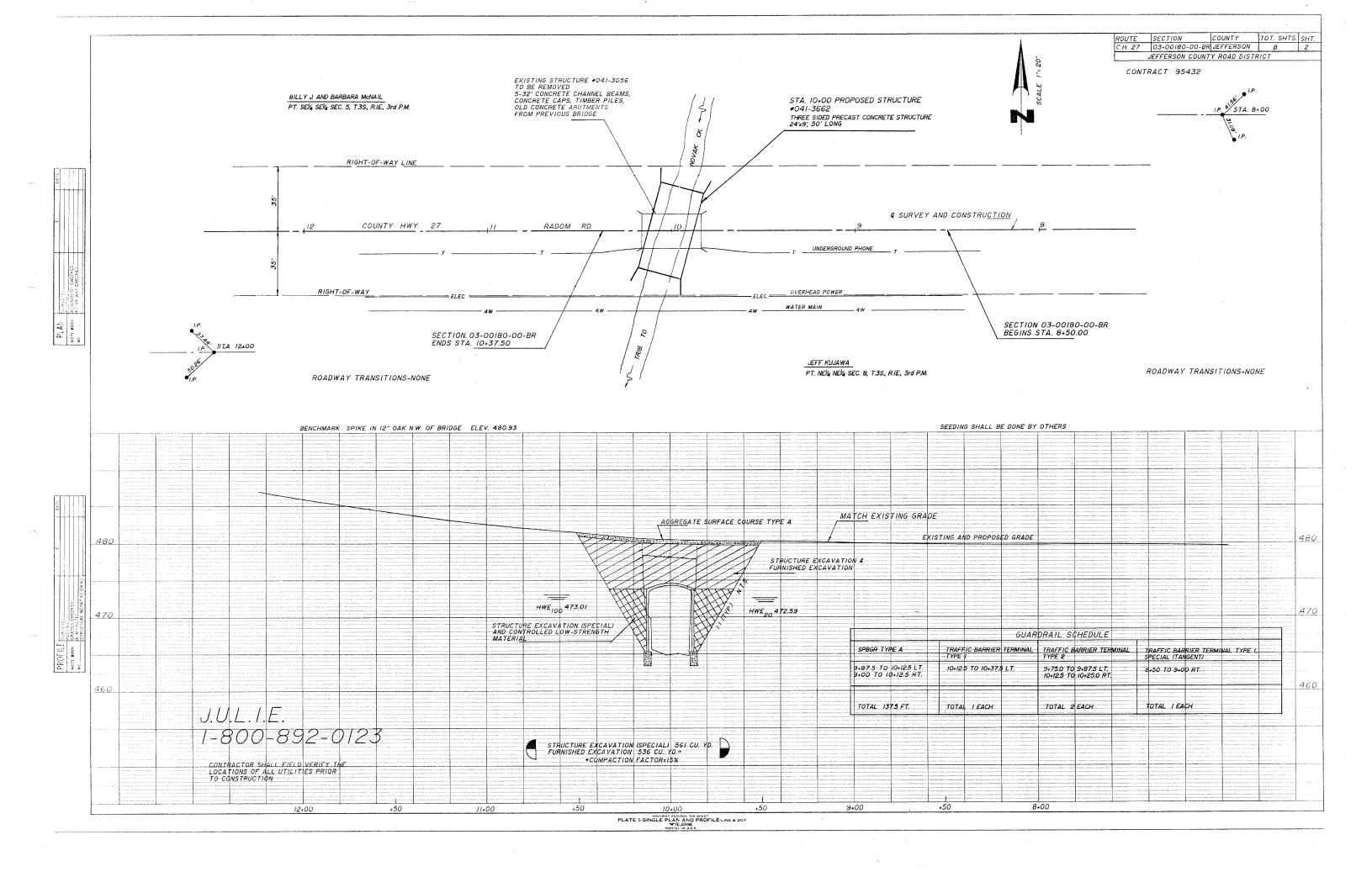
Maureen Kast)
DIST. ENGR. LOCAL RDS. & STS.

THESE PLANS WERE PREPARED BY ME OR A FULL TIME MEMBER OF MY STAFF WORKING UNDER MY PER-SONAL SUPERVISION.

COUNTY ENGINEER

MT. VERNON, IL. 618-244-8031 LIC. EXP. 11-30-05 62-33619
REGISTERED TO PROFESSIONAL ENGINEER
OF

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
PASSED 4/12 ZOOS
DISTRICT ENGR., LOCAL ROADS & STREETS
APPROVED Christian of Read u. A
CHRISTINE M. REED, P.E. DEPUTY DIRECTOR OF HIGHWAYS REGION FOUR ENGINEER



SALVAGE:
THE CONTRACTOR SHALL SALVAGE FROM
THE EXISTING BRIDGE ANY MATERIALS SO
DEEMED BY THE ENGINEER AND STORE
THEM ON THE ADJACENT R.O.W. FOR
LATER REMOVAL BY THE JEFFERSON

COUNTY HIGHWAY DEPARTMENT

TOTAL BILL OF MATERIAL

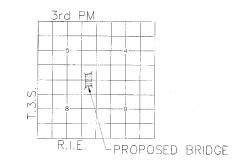
ITEM	UNIT	TOTAL
REMOVAL OF EXISTING STRUCTURES	EACH	1
NAME PLATES	EACH	1
THREE SIDED PRECAST CONCRETE STRUCTURES 24' x 9'	FOOT	50
CONTROLLED LOW STRENGTH MATERIAL	CU. YD.	68
STRUCTURE EXCAVATION <i>ISPECIALI</i>	CU. YD.	561
FURNISHED EXCAVATION	CU. YD.	536
AGGREGATE SURFACE COURSE TYPE "A"	TON	62
STONE DUMPED RIPRAP CLASS A4	TON	80

ROUTE SECTION COUNTY TOT. SHTS. SHT.

C.H. 27 | 03-00180-00-BR JEFFERSON | B | 3

JEFFERSON COUNTY ROAD DISTRICT

CONTRACT 95432



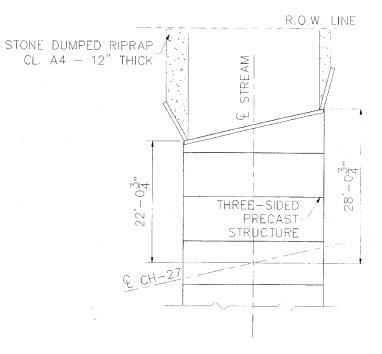
GENERAL NOTES

REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31, M-42, OR M-53, GRADE 60.

SEE SPECIAL PROVISIONS FOR BORING LOGS.

CLASS S1 CONCRETE SHALL BE USED THROUGHOUT.

THE PRECAST CONCRETE BRIDGE SYSTEM SHALL MATCH THE STYLE, DIMENSIONS, AND HYDRAULIC OPENING AS SHOWN HEREIN. THE PRECAST ALTERNATE SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.



RIPRAP DETAIL (TYP. BOTH ENDS)

CH-27 OVER NOVAK CREEK SECTION 03-00180-00-BR JEFFERSON COUNTY STATION 10+00

STATION 10+00
NOVAK CREEK
SEC 03-00180-00-BR
PROJECT BROS-081(45)
JEFFERSON COUNTY
LOADING HS-20
STRUCTURE NO. 041-3662

ETTERING FOR NAME PLATE

LOCATE NAME PLATE ON OUTSIDE FACE OF SOUTHWEST WINGWALL SEE STD. 515001

DESIGN SPECIFICATIONS

1996 AASHTO & 1997 INTERIMS HS20-44 LOADING LOAD FACTOR DESIGN

WATERWAY INFORMATION

	, , L G.	Q	OPENING	_SQ. FT.	_ NAT [HEA[)—FT.	HEADWA	ATER EL.
/ \	YR.	C.F.S.	EXIST.	PROP.	H.W.E.	EXIST.	PROP.	EXIST.	PROP.
DESIGN	20	1082	143	159	472.59				
BASE	100	1544	154	163	473.01	0.28	0.28	1	
OVERTOPPING									

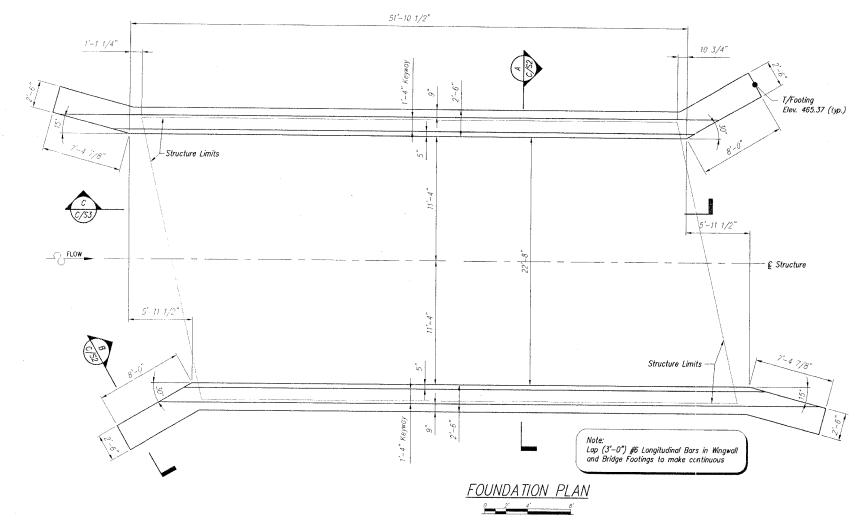
13.2° 7'-77" 10,-0. £ - € STRUCTURE -STA. 10+00 CR_ELEV_474.20 LIMITS OF CONTROLLED LOW-STRENGTH MATERIAL

GENERAL PLAN & ELEVATION

ROUTE SECTION COUNTY TOT. SHTS. SHT.
C.H. 27 03-00180-00-BR JEFFERSON B 4

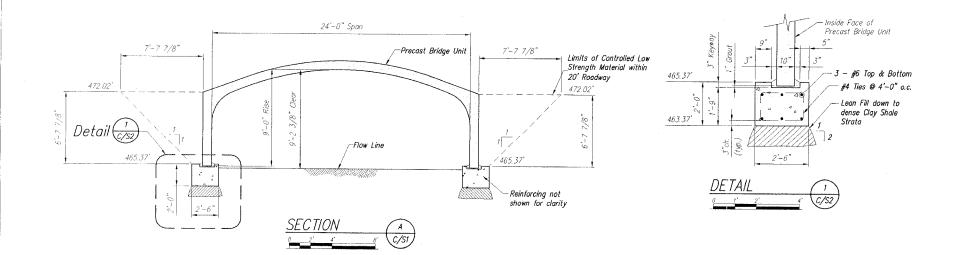
JEFFERSON COUNTY ROAD DISTRICT

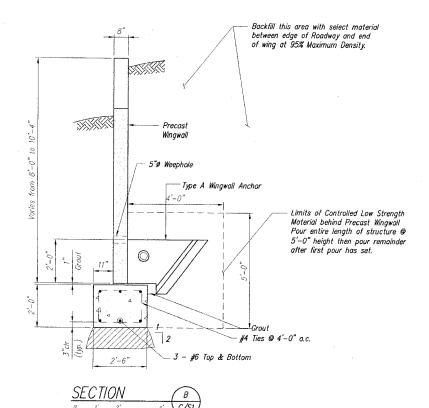
CONTRACT 95432

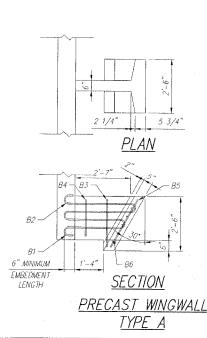


<u>MATERIALS</u>

Precast units shall be constructed and installed in occordance with Manufacturer's Specifications. Concrete for Footings and Wingwalls shall have a minimum compressive strength of 4,000psi. Reinforcing steel for Footings and Wingwalls shall conform to ASTM A615, A616, or A617-Grade 60

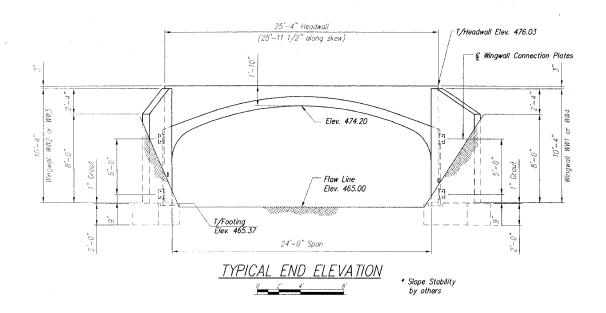


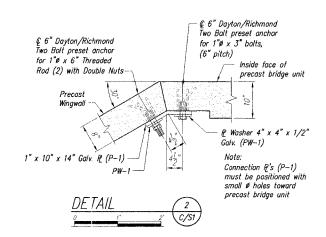


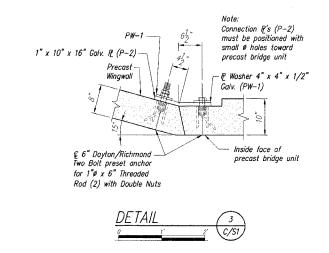


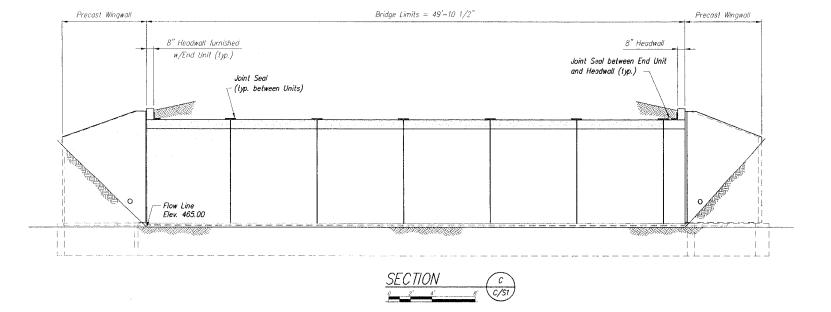
ROUTE	SECTION	COUNTY	TOT. SHTS.	SHT.
C.H. 27	03-00180-00-BR	JEFFERSON	8	5
	JEFFERSON COUNTY	ROAD DISTRI	CT	***************************************

CONTRACT 95432









-017011	COUNTY	[101. SHIS.	SHT.
3-00180-00-BR	JEFFERSON	8	6

CONTRACT 95432

NOTES GENERAL NOTES.

- This bridge has been designed for general site conditions. The project engineer shall be responsible for the structure's suitability to the existing site conditions and for the hydraulic evaluation including scour and confirmation of soil conditions.
- 2. Prior to construction, contractor must verify all elevations shown through the engineer.

DESIGN DATA

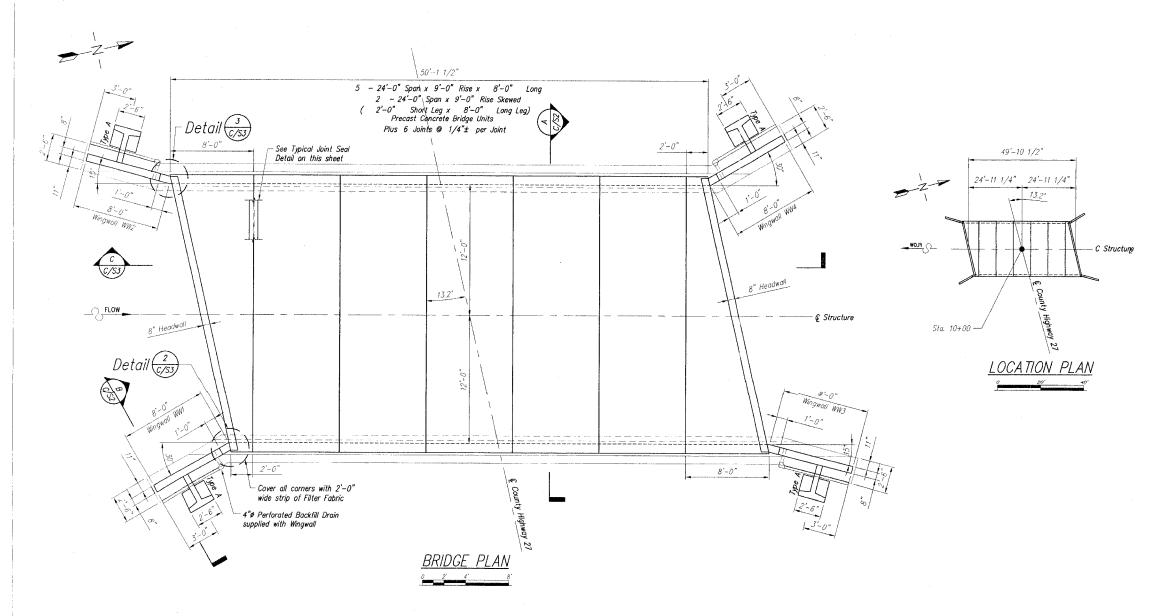
Design Loading: Bridge Units: **HS20-44**

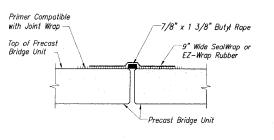
Bridge Units: HSZU-44
Headwalls: Earth Pressure Only
Wingwolls: Earth Pressure Only
Design Fill Height: Varies from 1'-0" min. to 5'-6" max.
from top of crown to top of povement.
Design Method: Load factor per AASHTO Specification
Assumed net allowable soil bearing pressure: 8000 PSF *
Assumed gross allowable soil bearing pressure: 8000 PSF *

*Bearing capacity is based upon soils borings provided by the Jefferson County Highway Department. If actual site conditions vary from the borings and a shale strata is not encountered, then **the** engineers must be notified for a revised foundation design.

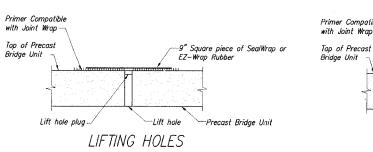
MATERIALS

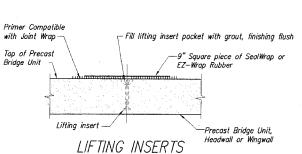
Concrete for Footings shall have a minimum compressive strength of 4000 psi. Reinforcing steel for footings shall conform to ASTM A615, A616 or A617–Grade 60.





TYPICAL JOINT SEAL DETAIL not to scale





TYPICAL LIFT POINT SEALING DETAIL

1. DESCRIPTION

This work shall consist of constructing a CON/SPAN @ bridge in accordance with these specifications and in reasonably close conformity with the lines, grades, design and dimensions shown on the plans or as established by the Engineer. In situations where two or more specifications apply to this work, the most stringent requirements shall govern.

2. TYPES

2. The Conference of the Control of shall be designated by length, height, and deflection angle.

3. MATERIALS - CONCRETE

The concrete for the culverts shall be air-entrained when installed in areas subject to freeze-thaw conditions, composed of portland cement, fine and coarse aggregates, admixtures and water. Air-entrained courcete shall contain 6 ± 2 percent air. The air entraining admixture shall conform to AASHTO M154.

- 3.1 Portland Cement Shall conform to the requirements of ASTM Specifications C150-Type I, Type II, or Type III cement.
- 3.2 Coarse Aggregate Shall consist of stone having a maximum size of 1 inch. Aggregate shall meet requirements for ASTM C33.
- 3.3 Water Reducing Admixture The manufacturer may submit for approval by the Engineer, a water-reducing admixture for the purpose of increasing workability and reducing the water requirement for the concrete.
- 3.4 Calcium Chloride The addition to the mix of calcium chloride or admixtures

4. MATERIALS - STEEL REINFORCEMENT AND HARDWARE

All reinforcing steel for the culverts shall be fabricated and placed in accordance with the

4.1 Steel Reinforcement - Reinforcement shall consist of welded wire fabric conforming to ASTM Specification A 185 or A 497, or deformed billet ste bars conforming to ASTM Specification A 615, Grade 60. Longitudinal distribution reinforcement may consists of welded wire fathric or deformer.

Bolts and threaded rods for wingwall connections shall conform to ASTM A 307. Nuts shall conform to AASHTO M 292 (ASTM A 194) Grade 2H. All bolts, threaded rads and nuts used in wingwall connections shall be mechanically zinc coated in accordance with ASTM B 695 Class 50.

Structural Steel for wingwall connection plates and plate washers shall conform to AASHTO M 270 (ASTM A 709) Grade 36 and shall be hot dip galvanized as per AASHTO M 111 (ASTM A 123).

Inserts for wingwalls shall be 1" diameter Two-Bolt Preset Wingwall Anchors

Ferrule Loop Inserts shall be F-64 Ferrule Loop Inserts as manufactured by

Hook Bolts used in attached headwall connections shall be ASTM A 307.

Inserts for detached headwall connections shall be AISI Type 304 stainless steel, F-58 Expanded Coil inserts as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio, (800) 745-3700. Coil rods and nuts used in headwall connections shall be AISI Type 304 stainless steel. Washers used in headwait contections shall be either AISI Type 304 stainless steel. Washers used in headwait connections shall be either AISI Type 304 stainless steel plate washers or AASHTO M 270 (ASTM A 709) Grade 36 plate washers hot dip galvanized as per AASHTO M 111 (ASTM A 153).

Reinforcing bar splices shall be made using the Dowel Bar Splicer System as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio (800) 745-3700, and shall consist of the Dowel Bar Splicer (DB-SAE) and

5. MANUFACTURE

- Mixture The aggregates, cement and water shall be proportioned and mixed in a batch mixer to produce a homogeneous concrete meeting the strength requirements of this specification. The proportion of portland cement in the mixture shall not be less than 564 pounds (6 sacks) per cubic yard o
- 5.2 Curing The precast concrete culvert units shall be cured for a sufficient length of time so that the concrete will develop the specified compressive strength in 28 days or less. Any one of the following methods of curing or
 - 5.2.1 Steam Curing The culverts may be low pressure, steam cured by a system that will maintain a moist atmosphere.
 - 5.2.2 Water Curing The culverts may be water cured by any method that
 - 5.2.3 Membrane Curing A sealing membrane conforming to the requirements of ASTM Specification C 309 may be applied and shall be left intact until the required concrete compressive strength is attained. The concrete temperature at the time of application shall be within ± 10 degrees F of the atmospheric temperature. All surfaces shall be kept moist prior to the application of the compounds and shall
- 5.3 Forms the forms used in manufacture shall be sufficiently rigid and accurate to maintain the culvert dimensions within the permissible variations given in Section 7 of these specifications. All casting surfaces shall be of a smooth
- 5.4 Handling Handling devices or holes shall be permitted in each culvert for the purpose of handling and setting.
- 5.5 Storage The precast elements shall be stored in such a manner to prevent cracking of damage. The units shall not be moved until the concrete congressive strength has reached a minimum of 2500 psi, and they shall not be stored in an upright position until the concrete compressive strength is a minimum of 4,000 psi.

- The precast element dimension and reinforcement details shall be as Into precast element ulmension and reinforcement details shall be prescribed in the plan and the shop drawings provided by the manufacturer, subject to the provisions of Section 7, below. The milnimum concrete compressive strength shall be as shown on the shop drawings. The minimum steel yield strength shall be 60,000 psi, unless otherwise noted on the shop drawings.
- 6.2 The precast elements are designed in accordance with the "Stand Specifications for Highway Bridges" 17th Edition, adopted by the American Association of State Highway and Transportation Officials, 2002. A minimum of one foot of cover above the crown of the bridge units is required in the installed condition. (Unless noted other on the shop drawings and designed accordingly.)
- 6.3 Placement of Reinforcement in Precast Bridge Units The cover of concrete over the outside circumferential reinforcement shall be 2 inches minimum. The cover of concrete over the inside circumferent. ment shall be 1 1/2 inches minimum, unless otherwise noted on the shop drawings. The clear distance of the end circumferential wires shall not be less than one inch nor more than two inches from the ends of each section. Reinforcement shall be assembled utilizing single or multiple layers of welded wire fabric (not to exceed 3 ayers), supplemented with a single layer of deformed billetwhen necessary. Welded wire fabric shall be composed of circumferential and longitudinal wires meeting the spacing requirements of 6.6, below, and shall contain sufficient longituding requirements of 6.6, boww, and shall contain sufficient longitudinal wires extending through the bridge unit to maintain the shape and position of the reinforcement. Longitudinal distribution reinforcement may be welded wire faithir or deformed billet-steel bars and shall meet the spacing requirements of 6, below. The ends of the longitudinal distribution reinforcement shall be not more than 3 inches and not less than 1 1/2 inches from the ends of the bridge uni
- Placement of Reinforcement for Precast Wingwalls and Headwalls -The cover of concrete over the longitudinal and transverse reinforcement shall be 2 inches minimum. The clear distance from the end of each precast element to the end transverse reinforcing steel shall not be less than one inch nor more than two inches Reinforcement shall be assembled utilizing a single layer of welded wire fabric, or a single layer of deformed billet-steel bars. Welded wire fabric, or a single layer of deformed billet-steel bars. Welded wire fabric shall be composed of transverse and longitudinal wires meeting the spacing requirements of 67, below, and shall contain sufficient longitudinal wires extending through the element to maintain the shape and position of the reinforcement. Longitudinal reinforcement may be welded wire fabric or deformed billet-steel bars and shall meet the spacing requirements of 6.7, below. The ends of the longitudinal reinforcement shall be not more than 3 inches and not less than 1 1/2 inches from the ends of the walls.
- Bending of Reinforcement for Precast Bridge Units The outside and inside circumferential reinforcing steel for the corners of the bridge shall be bent to such an angle that is approximately equal to the
- Laps, Welds, and Spacing for Precast Bridge Units Tension splices Lays, veries, and specially to receast arrige units - tension spices in the circumferential reinforcement shall be made by lapping. Laps may be tack welded together for assembly purposes. For smooth welded wire fabric, the overlap shall meet the requirements of AASHTO 8.30,2 and 8.32,6. For deformed welded wire fabric, the AASHI U.8.302 and 8.326. For detormed welded wire fashic, the overlag shall meet the requirements of AASHO 8.301 and 8.32.5. The overlag of welded wire fabric shall be measured between the outer most foriglidulial wires of each fabric sheet. For deformed billed-steel bars, the overlag shall meet the requirements of AASHTO 8.25. For spices other than tension spices, the overlag shall be a minimum of 12° for welded wire fabric or deformed billed-steel bars. The spacing center to center of the circumferential wires in a wire fabric sheet shall be not less than 2 inches nor more than 4 inches The spacing center to center of the longitudinal wires shall not be more than 8 inches. The spacing center to center of the longitudinal distribution steel for either line of reinforcing in the top slab shall be
- Laps, Walds, and Spacing for Precast Wingwalls and Headwalls -Splices in the reinforcement shall be made by lapping. Laps may be tack welded together for assembly purposes. For smooth valided wire fabric, the overlap shall meet the requirements of AASHTO 8.30.2 tabric, the overlap shall meet the requirements of AASHTO 8.30.2 and 8.32.6. For deformed welfect wire fabric, the overlap shall meet the requirements of AASHTO 8.30.1 and 8.32.5. For deformed billet-steel bars, the overlap shall meet the requirements of AASHTO 8.25. The spacing center-to-center of the wires in a wire fabric sheet shall be not less than 2 inches nor more than 8 inches.

7. PERMISSIBLE VARIATIONS

- 7.1.1 Internal Dimensions The internal dimension shall vary not more than 1% from the design dimensions nor more than 1-1/2 inches whichever is less. The haunch dimensions shall vary not more than 3/4 inch from the design dimension.
- 7.1.2 Slab and Wall Thickness The slab and wall thickness shall not be less than that shown in the design by more than 1/4 inch. A thickness more than that required in the design shall
- 7.1.3 Length of Opposite Surfaces Variations in laying lengths of two opposite surfaces of the bridge unit shall not be more than 1/2 inch in any section, except where beveled ends for laying of curves are specified by the purchaser.
- 7.1.4 Length of Section The underrun in length of a section shall not be more than 1/2 inch in any bridge unit
- 7.1.5 Position of Reinforcement The maximum variation in position of the reinforcement shall be ± 1/2 inch. In no case shall the cover over the reinforcement be less than 1 1/2 inches for the outside circumferential steel or be less than 1 inch for the inside circumferential steel as measured to the external or
- 7.1.6 Area of Reinforcement The areas of steel reinforcement shall be the design steel areas as shown in the manufacturer's shown drawings. Steel areas greater than those required shall not be cause for rejection. The permissible variation in diameter of any reinforcement shall conform to the tolerances prescribed in

7.2 Wingwalls and Headwalls

- 7.2.1 Wall Thickness The wall thickness shall not vary from that shown in the design by more than 1/2 inch
- 7.2.2 Length/ Height of Wall sections The length and height of the wall shall not vary from that shown in the design by more than
- 7.2.3 Position of Reinforcement The maximum variation in the position of the reinforcement shall be ± 1/2 inch. In no case shall the cover over the reinforcement be less than 1 1/2
- 7.2.4 Size of Reinforcement The permissible variation in diameter of any reinforcing shall conform to the tolerances prescribed in the ASTM Specification for that type of reinforcing. Steel area greater than that required shall not be cause for rejection.

8. TESTING AND INSPECTION

- Type of Test Specimen Concrete compressive strength shall be determined from compression tests made on cylinders or cores. For cylinder testing, a minimum of 4 cylinders shall be taken during each production run. For core testing, one core shall be cut from each of 3 precast elements selected at random from each production group. I precast elements selected at fandom from each production group. A production group shall be defined as 15 or fewer bridge units (of a particular size), wingwells or headwalls in a continuous production nun. For each continuous production run, each production group or fraction thereof shall be considered separately for the purpose of testing and acceptance. A production run shall be considered continuous if not
- 8.2 Compression Testing Cylinders shall be made and tested as prescribed by the ASTM C 39 Specification. Cores shall be obtained and tested for compressive strength in accordance with the provisions of the ASTM C497 Specification.
- 8.3 Acceptability of Cylinder Tests When the average compressive strength of all cylinders tested is equal to or greater than the design compressive strength, and not more than 10% of the cylinders tested have a compressive strength less than the design concrete strength, and no cylinder tested has a compressive strength less than 80% of and the Symitom resident has a compressive strength less than only of the design compressive strength, then the lot shall be accepted. When the compressive strength of the cylinders tested does not conform to this acceptance criteria, the acceptability of the lot may be determined as described in section 8.4, below.
- 8.4 Acceptability of Core Tests The compressive strength of the concrete in each production group as defined in 8.1 is acceptable when the average core test strength is equal to or greater than the design concrete strength. When the compressive strength of the core tested is less than the design concrete strength, the procast element. from which that core was taken may be re-cored. When the mpressive strength of the re-core is equal to or greater than the sign concrete strength, the compressive strength of the concrete in
 - 8.4.1 When the compressive strength of any recore is less than the design concrete strength, the precast element from which that core was taken shall be rejected. Two precast elements from the remainder of the group shall be selected at random and one core shall be taken from each of the compression strength. each. If the compressive strength of both cores is equa-to or greater than the design concrete strength, the sive strength of the remainder of that gro acceptable. If the compressive strength of either of the two cores tested is less than the design concrete strength, the remainder of the group shall be rejected or, at the option of the manufacturer, each precast element of the remainder of the group shall be cored and accepted individually, and any of these elements that have cores with less than the design concrete strength
 - 8.4.2 Plugging Core Holes The core holes shall be plugged and sealed by the manufacturer in a manner such that the elements will meet all of the test requirements of this specification. Precast elements so sealed shall be considered satisfactory for use.
 - 8.4.3 Test Equipment Every manufacturer furnishing cuiverts under this specification shall furnish all facilities and personnel necessary to carryout the test required

9. JOINTS
The bridge units shall be produced with flat butt ends. The ends of the bridge units shall be such that when the sections are laid together they will make a continuous line of with a smooth interior free of appreciable irregularities, all compatible with the permissible variations in Section 7, above. The joint width shall

10. WORKMANSHIP AND FINISH

The bridge units, wingwalls, and headwalls shall be substantially free of fractures. The ends of the bridge units shall be normal to the walls and centerine of the bridge section, within the limits of the variations given in section 7, above, except where beveled ends are specified. The faces of the wingwalls and headwalls shall be parallel to each other, within the limits of variations given in section 7, above. The surface of the precast elements shall be a smooth steel form or troweled surface. Targod air pockets causing surface defects shall be considered as part of a smooth, steel form finish.

11. REPAIRS

Precast elements may be repaired, if necessary, because of imperfections in manufacture or handling damage and will be acceptable if, in the opinion of the purchaser, the repairs are sound, properly finished and cured, and the repaired section conforms to the requirements of this specification.

12. INSPECTION

The quality of materials, the process of manufacture, and the finished culverts shall be subject

13. REJECTION

The precast elements shall be subject to rejection on account of any of the specification requirements. Individual precast elements may be rejected because of any of the following:

- 13.1 Fractures or cracks passing through the wall, except for a single end crack that does not exceed one half the thickness of the wall
- 13.2 Defects that indicate proportioning, mixing, and molding not in compliance with Section 5 of these specifications.
- 13.3 Honeycombed or open texture.
- 13.4 Damaged ends, where such damage would prevent making a satisfactory joint.

14. MARKING

17. IVITATION CE

Each bridge unit shall be clearly marked by waterproof paint. The following shall be shown on the inside of the vertical leg of the bridge section:

Bridge Span X Bridge Rise

Date of Manufacture

Name or trademark of the manufacturer

15. CONSTRUCTION REQUIREMENTS

- NOTING THO PRECONEURING TO Foolings The bridge units and wingwalls shall be installed on either precast or cast-in-place concrete footings. The design size and elevation of the footings shall be as determined by the Engineer. A three linch deep keyway shall be formed in the top surface of the bridge footing three inches clear of the inside and outside faces of the bridge units, unless specified otherwise on the plans. No keyway is uces of the Unique unia, unives specified orienties operating in the plans. The required in the imparal footings, unless otherwise specified on the plans. The footings shall be given a smooth float finish and shall reach a compressive strength of 2,000 pai before placement of the bridge and wingwall elements. The completed footing surface shall be constructed in accordance with grades shown on the plans. When lested with a 10 foot straight edge, the surface shall not vary more than 114 Inch in 10 feet. If a precast concrete fooling is used, the contractor shall prepare a 4 inch thick base layer of compacted granular material the full width of the footing prior to placing the precast footing.
- 15.2 Placement of the Bridge Units, Wingwalls and Headwalls The bridge units, wingwalls and headwalls shall be placed as shown on the Engineer's plan drawings. Special care shall be taken in setting the elements to the true line and grade. The bridge units and wingwalls shall be set on 6* x 6* masonile or steel shims. A minimum gap of 1/2 inch shall be provided between the fooling and the bottom of the bridge's vertical legs or the wingwall. The gap shall be filled with cement grout (Portland cement and water or cement mortar composed of Portland cement, sand and water) with a minimum 28-day compressive strength of 3000 psi. If units have been set with temporary lies (cables, bars, etc.) grout must attain a minimum compressive strength of 1500 psi before ties may be removed.
- 15.3 External Protection of Joints The butt joint made by two adjoining bridge units shall be covered with a 7/6" x 1 3/8" preformed bituminous joint sealant and a minimum of a 9 inch wide joint wrap. The surface shall be free of dirt before applying the joint material. A primer compatible with the joint wrap to be used shall be applied for a minimum width of nine inches on each side of the joint. The external wrap shall be either EZ-WRAP RUBBER by PRESS-SEAL GASKET CORPORATION, SEAL WRAP by MAR MAC MANUFACTURING CO. INC. of approved equal. The joint shall be covered continuously from the bottom of one bridge section leg, across the top of the arch and to the opposite bridge section Any laps that result in the joint wrap shall be a minimum of six inches long
- In addition to the joints between bridge units, the joint between the end bridge unit and the headwall shall also be sealed as described above. If precast wingwalls are used, the joint between the end bridge unit and the wingwall shall be sealed with a 2-0° strip of filter fabric. Also, if lift holes are formed in the arch units, they shall be primed and covered with a 9" x 9" square of joint wran-
- During the backfilling operation, care shall be taken to keep the joint wrap in its proper location over the joint.
- Backfill Backfill shall be considered as all replaced excavation and new embankment adjacent to the CON/SPAN® bridge units, wingwalls, and headwalls. The project construction and material specifications which include the specifications for excavation for structures and roadway excavation and embankment construction, shall apply except as modified in this section.
 - No backfill shall be placed against any structural elements until they have been
 - Backfill against a waterproofed surface shall be placed carefully to avoid damage

Mechanical tampers or approved compacting equipment shall be used to compact all backfill and embankment immediately adjacent to each side and over the top of each bridge unit until it is covered to a minimum depth of one foot, unless the design fill height is less than 1'-0". The backfill within the Critical Backfill Zone (shown in the diagrams below) shall be placed in lifts of eight inches or less

Lightweight dozens and gradens may be operated over bridge units having one foot of compacted cover, but heavy earth moving equipment (larger than a D-4 Dozer weighing in excess of 12 tons and having track pressures of eight psi or greater) shall require two feet of cover unless the design cover is less than two lest. In no case shall equipment operating in excess of the design load (HS2O or HS25) be permitted over the bridge units unless approved by CON/SPAN®.

Any additional fill and subsequent excavation required to provide this minimum cover shall be made at no additional cost to the project

As a precaution against introducing unbalanced stresses in the bridge, wher placing backfill at no time shall the difference between the heights of fill on opposite sides of the bridge exceed 24".

Backfill in front of wingwalls shall be carried to ground lines shown in the plans.

For fill heights over 12 feet, no backfilling may begin until a backfill compaction testing plan has been coordinated with and approved by CON/SPAN® Bridge Systems. Cost of the backfill compaction testing shall be included in the cost of the precast units. This included cost applies only to projects with fill heights over

16. QUALITY ASSURANCE

The Precaster shall demonstrate adherence to the standards set forth in the NPCA Quality Control Manual. The Precaster shall meet either Section 16.1 or 16.2.

16.1 Certification: The Precaster shall be certified by the PrecastPrestressed Concrete Institute Plant Certification Program or the National Precast Concrete Association's Plant Certification Program prior to and during production of the products covered by this specification.

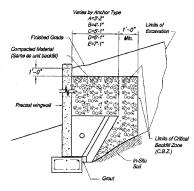
16.2 Qualifications, Testing and Inspection

- 16.2.1 The Precaster shall have been in the business of producing precast concrete products similar to those specified for a minimum of three years. He shall maintain a permanent quality control department or retain an independent festing agency on a continuing basis. The agency shall issue a report, certified by a licensed engineer, detailing the ability of the Precaster to produce quality products consistent with industry standards.
- 16.2.2 The Precaster shall show that the following tests are performed in accordance with the ASTM standards indicated. Tests shall be performed for each 150 cubic yards of concrete placed, but not less frequence per production run, as defined in §8 of these specifications.

16.2.2.1 Air Content: C231 or C173

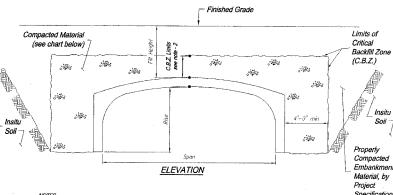
16.2.2.2 Compressive Strength: C39, C497

- 16.2.3 The Precaster shall provide documentation demonstrating compliance with this section to CON/SPAN® Bridge
- 16.2.4 The Owner may place an inspector in the plant when the products covered by this specification are being



WINGWALL BACKFILL REQUIREMENTS

ALLOWABLE BACKFILL MATE	RIALS
LLINOIS DOT AGGREGATE GRA	DATION
FA 1	
FA 2	
FA 6	
CA 6	
CA 9	
CA 10	
CA 12	



1. SEE CON/SPAN® SPECIFICATIONS SECTION 15.4 FOR BACKFILL SPECIFICATIONS. T. SEE CONSTRUCTS CREATER THAN 2°C CE Z LIMIT SHALL BE 2°C ABOVE ARCH CROWN. FOR FILL HEIGHTS LESS THAN 2°C, THE RIGHTS CREATER THAN 2°C CE Z LIMIT SHALL BE 2°C ABOVE ARCH CROWN. FOR FILL HEIGHTS LESS THAN 2°C, THE RIGHTS LESS THAN 2°C, THE MAXIMUM STANDERS THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE RIGHTS LESS THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE DESTRUCTS HE RIGHTS THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE CREATER THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE CREATER THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE CREATER THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE CREATER THAN 2°C, THE MAXIMUM SHALL BE COMPACTED IN LETTER DITH. THE DESTRUCTS HAVE THE MAXIMUM SHALL BE COMPACTED IN LETTER THAN 2°C.

SPAN	FILL HEIGHT	ACCEPTABLE MATERIAL INSIDE C.B.Z.	ACCEPTABLE MATERIAL OUTSIDE C.B.Z.
≤24'-0*	≥ 12'-0"	A1, A3	
≤24'-0"	< 12'-0"	A1, A2, A3, A4	
> 24'-0"	ALL	A1, A3	

** EMBANKMENT MATERIAL PER PROJECT SPECIFICATION BACKFILL REQUIREMENTS

CONTRACT 95432

