GENERAL SPECIFICATIONS:

PROJECT DESCRIPTION

This work shall consist of the construction of textured, raised, and colored relief images, integrally cast into the bridge panels using fiberglass or urethane rubber form liners. This work shall be in accordance with these specifications and in reasonably close conformance with the lines, grades, and dimensions specified in the Plans. The Contractor shall take field measurements from the form liners provided by the Manufacturer, for the raised relief images. As required by the Engineer, the work shall be in accordance with the American Concrete Institute ACI 303R-91, "GUIDE TO CAST-IN-PLACE ARCHITECTURAL CONCRETE" and other appropriate ACI guidelines.

This work shall include furnishing all materials, hardware, personnel, test samples, patterns, and equipment to develop, furnish and place form liners in close conformity with the lines, textures, grades, and dimensions shown in the plans. This includes the development and furnishing of shop drawings, the development of full size patterns, the development and submittal of samples, the final construction and manufacturing of custom form liners, and the installation and use of said custom form liners to result in the custom design elements in accordance with the details shown in the plans and the requirements of these Specifications.

The Manufacturer shall supply the Contractor with a concrete color stain system to affect all visible top surfaces of the following bridge components:

Slope Walls
Pier Caps and Columns
Abutment Cap and Diaphragm
Wing Walls
Deck and Parapet
Shield
Exterior Beam Face

The Manufacturer shall supply the Contractor with form liners to affect the following bridge components:

Wing Walls
Parapet

See component detail sheets for specific areas and dimensions.

CAST-IN-PLACE CONCRETE

The construction of the full-size patterns, the application of the form liners, the release agents, the water base cure, and all other elements of construction and installation shall be coordinated between the Form Liner Fabricator and the Contractor.

During placement of the concrete for structures, forms shall be kept in place for curing requirements to ensure proper molding and structural integrity. Refer to details for specific dimensions and surface texture of form liners to be used for the concrete structures.

PARAPET AND TERMINI OF PARAPET:

Full-size patterns with a three-dimensional simulated stone pattern resembling Arkansas Ledge Stone ("Simulated Stone") for use on the Parapet and Termini of the Parapet shall be fabricated based on the dimensions specified in the Plans. Upon approval of full-size patterns form liners shall be fabricated. The form liners shall be used to pour the cast-in-place Parapets and Termini of the Parapet. The Contractor's forms shall conform to the form liners so that the form liners fit snuggly within the forms. The depth of relief for the Simulated Stone pattern shall be 1½" maximum.

Once the Contractor has cast, stripped the forms, and uprighted the Parapet and Termini of the Parapet the Contractor will prepare the surface and stain it a uniform color as specified in these Plans. After this stain has been applied, the Contractor will apply Accent Colors to the Wing Walls.

WING WALLS:

Full-size patterns with a three-dimensional simulated stone pattern resembling Arkansas Ledge Stone ("Simulated Stone") for uses on the Wing Walls shall be fabricated based on the dimensions specified in the Plans. Upon approval of full-size patterns the form liners shall be fabricated. The form liners will have edges that will conform to the overall surface area of one left and one right side of the wing walls. The Contarctor's forms, which shall include the outside borders of the wing walls, will conform to the form liners so that the form liners fit snuggly within the forms. The depth of relief for the Simulated Stone pattern shall be 1½" maximum. These form liners should be used by the Contractor to pour two cast-in-place Wing Walls and then reused for the other two Wing Walls.

Once the Contractor has cast, stripped the forms, and uprighted the Wing Walls the Contractor will prepare the surface and stain it a uniform color as specified in these Plans. After this stain has been applied, the Contractor will apply Accent Colors to the Wing Walls.

RELEASE AGENT:

The release agent shall be formulated as specified by the manufacturer or as determined by the Form Liner Fabricator and shall prevent bonding of the form liners to the concrete surface. Prior to initial use, each form liner shall be primed with two (2) coats of the form-release agent.

PLACING CONCRETE:

The Contractor shall give special attention to providing continuous and uninterrupted vibrating of the concrete in order to thoroughly consolidate concrete in the pattern details of the form liners.

PRECAST CONCRETE

SHIELDS:

The Shield Form liners with a three-dimensional bas-relief of the emblem on the Oklahoma state flag ("Emblem") have been created and are in ODOT's possession. The Contractor shall use these contacts for information on the form liners:

Eric Dawley	Charles Sims
Superintendent II	Project Manager, Asset Preservation West
Turner Turnpike	Project Management Division
P.O. Box 337	Oklahoma Department of Transportation
Stroud, OK 74079	200 NE 21st. St.
(405)-820-1895	Oklahoma City, OK 73105
	(405)-522-7608

The Contractor's form, which shall include the outside border of the shield, will conform to the form liner so that the form liner fits snugly within the form. The depth of relief for the Emblem will be approximately ±2" as determined by the Engineer. This form liner should be used by the Contractor to pour one pre-cast Shield and then reused to cast the other five Shields.

Once the Contractor has cast, stripped the forms and uprighted the pre-cast Shields, the Contractor will prepare the surface and stain it a uniform color as specified in the Plans. After this stain has been applied by the Contractor, Pigmentation Detail can be applied to the Shield based on the recommendations supplied in the Plans. After this Pigmentation Detailing has been completed, the Contractor will install the Shield atop the Pier Cap.

CONSTRUCTION REQUIREMENTS:

FORM LINER PREPARATION:

At least one week prior to use of Fiberglass form liners, the form liners should be laid flat to minimize any warpage resulting from vertical storage. Rubber form liners may be spliced, cut and joined, or glued, as necessary. Fiberglass form liners should not be spliced, cut and joined, or glued. Care should be taken to minimize any joints. Wash and clean multi-use form liners after each use. Replace damaged or worn form liners at Contractor's own expense. Damaged form liners whose continued use or repair would negatively impact the aesthetics of the concrete finish shall be replaced. An approved compatible form liner release agent shall be applied at the rate recommended by the manufacturer. The concrete shall be cast soon after application of the release agent to avoid accumulation of precipitation, dust, and debris. Reinforcing steel shall be protected from exposure to the release agent.

FORM LINER INSTALLATION:

Installers shall have a minimum of five years experience with textured and raised relief images. The installer shall be trained in the Manufacturer's special techniques in order to achieve realistic resultes. The Contractor shall submit the resume of the qualified installer to the Engineer for written approval.

The form liner joints shall be sealed to prevent cement paste from bleeding. Form liner shall be installed in accordance with the Plans. Liner butt joints shall be carefully blended into the approved pattern and finished off the final concrete surface. No visible vertical or horizontal seams or conspicuous form marks created by butt joining form liners will be allowed. All patching material shall exactly match the color and appearance of the poured concrete wall surface.

QUALITY ASSURANCE:

Concrete shall be placed in a manner that prevents the formation of cold joints. Cracked form liners or form liners determined by the Engineer not to be repairable or not in conformance with the following tolerances shall be rejected and replaced with acceptable form liners at the Contractor's expense with no additional payment.

The dimensions of form liners shall conform to plan dimensions within ¼ inch per 10 feet of length in either direction.

The squareness of any rectangular form liner panel shall be within ¼ inch as determined by the difference between the two diagonals.

Panel surface differences from plan dimensions shall not exceed ¼ inch.

MATERIALS

REINFORCED FIBERGLASS OR URETHANE RUBBER LINER:

Reinforced fiberglass or urethane rubber form liners shall be fabricated upon approval of the full-sized patterns. The number of sets of form liners fabricated from the full-sized patterns shall be sufficient to construct the Parapets, Termini (approaches) of the Parapet, and Wing Walls. No additional payment under this item, above the contract price bid, will be made by the Project Agency for additional sets of form liners.

For Simulated Stone form liners, the stone pattern shall be of a random nature. The patterns and subsequent form liners shall be patterned so that minimal unnecessary horizontal or vertical lines occur on the finished exposed surface. If requested, the Division and/or Project Agency may inspect the full-sized patterns prior to fabrication of the form liners. The full-sized patterns must be approved by the Division and/or Project Agency prior to commencing form liner fabrication.

The fiberglass or urethane rubber form liners shall be fabricated with shapes that allow removal of the forms without damage or visual impairment of the concrete, shall use ⅛ inch minimum radii and no sharp edges, and shall have a maximum relief of ±1½ inches, or as otherwise specified, for the Parapets, Termini (approach of the parapet), and Wing Walls. The form liners shall fit snugly and square within the Contractor's forms, resulting in minimal voids or misalignments. The form liners shall be capable of withstanding applied concrete pour pressures without leakage, physical, or visual defect.

SPECIFICATION AND RELATED INFORMATION FOR FIBERGLASS OR URETHANE RUBBER FORM LINERS:

Form liners shall be a high quality re-usable product manufactured of high impact reinforced fiberglass or high strength urethane, which attaches easily to the forming system.

The form liners shall not compress more than 0.05' when poured at a rate of 10 vertical feet per hour.

The date of the manufacture and the piece mark shall be clearly and permanently recorded on the back and sides of the form liners.

Each form liner perimeter size and shape shall match the dimensions of the full-sized pattern, within a reasonable tolerance.

The form liners to be used shall have a maximum relief of ±1½ inches, unless otherwise specified.

The form liners shall fit snugly and square within the forms, resulting in minimal voids or misalignments.

The form liners for the cast-in-place Parapet, Termini of the Parapet, and Wing Walls shall be capable of withstanding applied concrete pour pressures of at least 1100 PSF without leakage, physical, or visual defect.

SPECIFICATION AND RELATED INFORMATION FOR FIBERGLASS FORM LINER:

Form liners will be manufactured out of fiberglass, with an gray alkaline-resistant gel coat surface and reinforcing ribs.

The release agent that should be used is Unitex Steel Guard SP, Nox-Crete, or equivalent, as approved by Engineer.

The fiberglass form liners shall be reinforced with wood or other suitable material on approximately 12" centers, or as otherwise specified to allow adequate attachment of the form liners to the forms.

Joints between any installed liners should be filled in and blended smooth to minimize visible seams if necessary.

SPECIFICATION AND RELATED INFORMATION FOR URETHANE RUBBER FORM LINER:

Form liners can be factory mounted to HDO plywood or field laminated by Contractor.

The release agent that should be used is Polytek Pol-Ease 2650, Armcon CRA 3, Cresset Crete-Lease 20, or equivalent as approved by Engineer.

The release agent should be worked into all areas especially pattern recesses to adequately coat the liner, but less release is better.

Absolutely no release agents containing mineral spirits or kerosene should be used.

OKLAHOMA DEPARTMENT OF TRANSPORTATION

FED. ROAD DIST. NO.	STATE	JOB PIECE NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	21899(04)			

REVISIONS

DESCRIPTION	DATE
1 Added Sheet	08/22/2016

145TH OVER I-44 TULSA & ROGERS COUNTIES
BRIDGE "A"

1 AESTHETIC NOTES (BRIDGE)
(SHEET 1 OF 2)

DESIGN	MJY	7/16
DETAIL	JMO	8/16
CHECK	MJY	8/16

GARVER

STATE OF OKLAHOMA | DEPARTMENT OF TRANSPORTATION
JOB PIECE NO. 21899(04) SHEET NO. 15A