



June 19, 2024

To: Plan Holders for Improvements to the
Washington County Airport
Mineral Point, Missouri
MoDOT Project No. 24-060A-1 & 24-060A-2

Transmitted herewith is **Addendum No. 4** to the Issued for Bid Contract Documents, Specifications and Plans dated May 28, 2024, for Improvements to the Washington County Airport.

Schedule I: Runway 2/20 Reconstruction
Schedule II: Runway 2/20 Widening and Taxiway Reconstruction
Schedule III: Apron Reconstruction
Schedule IV: Runway Lighting Rehabilitation
Schedule V: Runway Guidance Signs
Bid Alternate No. 1: Full Depth Reclamation



Sincerely,

Woolpert, Inc.

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**ADDENDUM NO. 4
TO
CONTRACT DOCUMENTS, SPECIFICATIONS AND PLANS
FOR IMPROVEMENTS TO THE
WASHINGTON COUNTY AIRPORT
MINERAL POINT, MISSOURI
MODOT PROJECT NO. 24-060A-1 & 24-060A-2**

To All Bidders: You are requested to make all changes and/or additions contained in this addendum to the Bidding Documents. Failure to acknowledge this Addendum in Proposal shall result in rejection of bid. Bidders are informed that the above referenced Contract Documents, Specifications and Plans are modified as follows as of June 19, 2024:

1. CONTRACT DOCUMENTS/SPECIFICATIONS

Contract Documents. Section 1, Notice to Bidders

Revision: Contract Work Items table on Section 1-10 has been updated

Justification: The quantities associated with the changes in this addendum have been updated and reflected in the contract document quantity table.

Contract Documents. Proposal sheets

Revision: The proposal sheets for Schedules I - III and Bid Alternate No. 1 have been reissued

Justification: The proposal sheets for Schedules I - III and Bid Alternate No. 1 have been updated to reflect the quantity changes associated with the items in this addendum.

Specifications. P-152 Excavation, Subgrade, and Embankment

Revision: Information within the P-152 specification has been updated

Justification: The information specified within the P-152 technical specification has been updated to reflect the recommendations provided by the Geotechnical Report and to provide clarification on the density testing.

Specifications. P-156 Cement Treated Subgrade

Revision: Information within the P-156 specification has been updated

Justification: The information specified within the P-156 technical specification has been updated to reflect the recommendations provided by the Geotechnical Report and to provide clarification on the mix design to be done by the Contractor.

2. PLANS

G003B - (5 of 150) General Notes

Revision: Quantities Note No. 7.2 has been updated

Justification: Cement Treated Subgrade and for Full Depth Reclamation were estimated at 8% application rate of cement at 95 LBS per Cubic Foot.

G005A - (7 of 150) Summary of Approximate Quantities

Revision: The Summary of Approximate Quantities table has been updated

Justification: The summary of approximate quantities table has been updated for the quantity changes associated with this addendum.

C220 - (59 of 150) Pavement Typical Sections

Revision: Full Depth Reclamation (Bid Alternate No. 1) typical section has been updated

Justification: The Full Depth Reclamation (FDR) typical pavement section has been updated to show 12 inches of FDR (P-207a) to reflect the recommendations provided by the Geotechnical Report.

Revision: Note has been added to the Full Depth Reclamation (Bid Alternate No. 1) typical section

Justification: A note has been added to the FDR typical section to clarify that the Contractor is to provide a mix design prior to production that shall meet a minimum CBR value of 30, as approved by the RPR.

Revision: The Typical Pavement Sections have been updated

Justification: The typical pavement sections have been updated to provide a clearer visualization of the underdrain location in relation to the pavement section overbuild and to reflect the line items shown in the summary of approximate quantities table.

C221 - (60 of 150) Pavement Typical Sections

Revision: The Typical Pavement Sections have been updated

Justification: The typical pavement sections have been updated to provide a clearer visualization of the underdrain location in relation to the pavement section overbuild and to reflect the line items shown in the summary of approximate quantities table.

C551 - (100 of 150) Underdrain Details

Revision: The Underdrain Trench Section (Adjacent to Pavement) Detail has been updated

Justification: The underdrain detail was updated to provide a clearer visualization of the underdrain location in relation to the pavement section overbuild.

Revision: The Underdrain Trench Section (Across Pavement) Detail has been updated

Justification: The underdrain detail was updated to reflect the line items shown in the summary of approximate quantities table.

The final questions will be accepted until 4:00 p.m. (CT) Thursday, June 20, 2024.

**** END OF ADDENDUM NO. 4 ***

P-101e	Remove Existing 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	1	0	0	0	0	1
P-101f	Remove Existing Barbed Wire Fence, Complete	LF	210	0	0	0	0	210
P-101g	Remove Aircraft Tie-Down Anchors, Complete	EA	0	0	27	0	0	0
P-151a	Tree Removal	AC	2	0	0	0	0	2
P-152a	Unclassified Excavation	CY	9,200	16,400	5,500	0	0	9,200
P-154a	Subbase Course	CY	4,540	1,460	2,420	0	0	0
P-154b	Separation Geotextile	SY	27,200	8,740	14,470	0	0	0
P-156a	Cement Treated Subgrade	SY	27,200	8,740	14,470	0	0	0
P-156b	Cement	TON	960	320	520	0	0	0
P-207a	Asphalt Pavement Full Depth Reclamation (FDR), Trimming, & Grading	SY	0	0	0	0	0	27,210
P-207b	Cement	TON	0	0	0	0	0	960
P-207c	Emulsified Asphalt	TON	0	0	0	0	0	330
P-208a	Aggregate Base Course	CY	4,670	1,500	2,490	0	0	0
P-401a	Asphalt Paving Course	TON	6,820	1,960	3,590	0	0	6,820
P-602a	Emulsified Asphalt Prime Coat	GAL	0	0	0	0	0	8,160
P-603a	Emulsified Asphalt Tack Coat	GAL	4,200	1,210	2,220	0	0	4,200
P-620a	Temporary Pavement Marking	SF	19,560	3,970	1,170	0	0	19,560
P-620b	Permanent Pavement Marking, White	SF	19,130	3,630	0	0	0	19,130
P-620c	Permanent Pavement Marking, Yellow	SF	440	340	1,170	0	0	440
P-620d	Permanent Pavement Marking, Black	SF	0	700	0	0	0	0
P-640a	Install Aircraft Tie-Down Anchor	EA	0	0	27	0	0	0
F-160a	Install Class B Fence (3-Strand Barb Wire, Wood Posts with Metal Line Posts)	LF	220	0	0	0	0	220
D-701a	Install 12-Inch Reinforced Concrete Pipe, Class V	LF	80	0	0	0	0	80
D-701b	Install 24-Inch Reinforced Concrete Pipe, Class V	LF	0	0	129	0	0	0
D-701c	Install 36-Inch Reinforced Concrete Pipe, Class V	LF	33	0	0	0	0	33
D-701d	Install 12-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	2	0	0	0	0	2
D-701e	Install 24-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	0	0	2	0	0	0
D-701f	Install 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	1	0	0	0	0	1
D-705a	Install 6-Inch Perforated Polyethylene Pipe	LF	0	8,610	1,520	0	0	0
D-705b	Install 6-Inch Non-Perforated Polyethylene Pipe	LF	0	970	270	0	0	0
D-751a	Install 6-Inch Underdrain Cleanout	EA	0	27	13	0	0	0
D-751b	Install Inspection Pit	EA	0	18	9	0	0	0
D-751c	Install Aircraft Rated Inlet	EA	0	2	0	0	0	0
D-754a	Construct 4-Foot Concrete Drain Pan, Complete	LF	290	0	0	0	0	290
T-901a	Seeding with Hydromulch	AC	17	0	2	0	0	17

SCHEDULE I

Item No.	Description		Units	Estimated Quantity	Unit Price	Total
C-100a	Contractor Quality Control Program (CQCP)	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-102a	Erosion Control	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-105a	Mobilization	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
P-101a	Asphalt Pavement Removal, Full Depth	at the unit price of: _____ dollars and _____ cents.	SY	27,370	\$	\$
P-101e	Remove Existing 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	1	\$	\$
P-101f	Remove Existing Barbed Wire Fence, Complete	at the unit price of: _____ dollars and _____ cents.	LF	210	\$	\$
P-151a	Tree Removal	at the unit price of: _____ dollars and _____ cents.	AC	2	\$	\$
P-152a	Unclassified Excavation	at the unit price of: _____ dollars and _____ cents.	CY	9,200	\$	\$
P-154a	Subbase Course	at the unit price of: _____ dollars and _____ cents.	CY	4,540	\$	\$
P-154b	Separation Geotextile	at the unit price of: _____ dollars and _____ cents.	SY	27,200	\$	\$
P-156a	Cement Treated Subgrade	at the unit price of: _____ dollars and _____ cents.	SY	27,200	\$	\$
P-156b	Cement	at the unit price of: _____ dollars and _____ cents.	TON	960	\$	\$
P-208a	Aggregate Base Course	at the unit price of: _____ dollars and _____ cents.	CY	4,670	\$	\$
P-401a	Asphalt Paving Course	at the unit price of: _____ dollars and _____ cents.	TON	6,820	\$	\$
P-603a	Emulsified Asphalt Tack Coat	at the unit price of: _____ dollars and _____ cents.	GAL	4,200	\$	\$
P-620a	Temporary Pavement Marking	at the unit price of: _____ dollars and _____ cents.	SF	19,560	\$	\$
P-620b	Permanent Pavement Marking, White	at the unit price of: _____ dollars and _____ cents.	SF	19,130	\$	\$
P-620c	Permanent Pavement Marking, Yellow	at the unit price of: _____ dollars and _____ cents.	SF	440	\$	\$
F-160a	Install Class B Fence (3-Strand Barb Wire, Wood Posts with Metal Line Posts)	at the unit price of: _____ dollars and _____ cents.	LF	220	\$	\$
D-701a	Install 12-Inch Reinforced Concrete Pipe, Class V	at the unit price of: _____ dollars and _____ cents.	LF	80	\$	\$
D-701c	Install 36-Inch Reinforced Concrete Pipe, Class V	at the unit price of: _____ dollars and _____ cents.	LF	33	\$	\$

SCHEDULE I						
Item No.	Description		Units	Estimated Quantity	Unit Price	Total
D-701d	Install 12-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	2	\$	\$
D-701f	Install 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	1	\$	\$
D-754a	Construct 4-Foot Concrete Drain Pan, Complete	at the unit price of: _____ dollars and _____ cents.	LF	290	\$	\$
T-901a	Seeding with Hydromulch	at the unit price of: _____ dollars and _____ cents.	AC	17	\$	\$
T-901b	Seeding Under Erosion Control Blanket	at the unit price of: _____ dollars and _____ cents.	AC	4	\$	\$
T-901c	Erosion Control Blanket	at the unit price of: _____ dollars and _____ cents.	SY	17,870	\$	\$

SCHEDULE I TOTAL \$ _____

SCHEDULE II						
Item No.	Description		Units	Estimated Quantity	Unit Price	Total
C-100a	Contractor Quality Control Program (CQCP)	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-102a	Erosion Control	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-105a	Mobilization	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
P-101a	Asphalt Pavement Removal, Full Depth	at the unit price of: _____ dollars and _____ cents.	SY	1,630	\$	\$
P-152a	Unclassified Excavation	at the unit price of: _____ dollars and _____ cents.	CY	16,400	\$	\$
P-154a	Subbase Course	at the unit price of: _____ dollars and _____ cents.	CY	1,460	\$	\$
P-154b	Separation Geotextile	at the unit price of: _____ dollars and _____ cents.	SY	8,740	\$	\$
P-156a	Cement Treated Subgrade	at the unit price of: _____ dollars and _____ cents.	SY	8,740	\$	\$
P-156b	Cement	at the unit price of: _____ dollars and _____ cents.	TON	320	\$	\$
P-208a	Aggregate Base Course	at the unit price of: _____ dollars and _____ cents.	CY	1,500	\$	\$
P-401a	Asphalt Paving Course	at the unit price of: _____ dollars and _____ cents.	TON	1,960	\$	\$
P-603a	Emulsified Asphalt Tack Coat	at the unit price of: _____ dollars and _____ cents.	GAL	1,210	\$	\$
P-620a	Temporary Pavement Marking	at the unit price of: _____ dollars and _____ cents.	SF	3,970	\$	\$
P-620b	Permanent Pavement Marking, White	at the unit price of: _____ dollars and _____ cents.	SF	3,630	\$	\$
P-620c	Permanent Pavement Marking, Yellow	at the unit price of: _____ dollars and _____ cents.	SF	340	\$	\$
P-620d	Permanent Pavement Marking, Black	at the unit price of: _____ dollars and _____ cents.	SF	700	\$	\$
D-705a	Install 6-Inch Perforated Polyethylene Pipe	at the unit price of: _____ dollars and _____ cents.	LF	8,610	\$	\$
D-705b	Install 6-Inch Non-Perforated Polyethylene Pipe	at the unit price of: _____ dollars and _____ cents.	LF	970	\$	\$
D-751a	Install 6-Inch Underdrain Cleanout	at the unit price of: _____ dollars and _____ cents.	EA	27	\$	\$
D-751b	Install Inspection Pit	at the unit price of: _____ dollars and _____ cents.	EA	18	\$	\$
D-751c	Install Aircraft Rated Inlet	at the unit price of: _____ dollars and _____ cents.	EA	2	\$	\$

SCHEDULE II						
Item No.	Description		Units	Estimated Quantity	Unit Price	Total
L-125a	Remove Runway Edge Light and Base, Complete	at the unit price of: _____ dollars and _____ cents.	EA	42	\$	\$
L-125b	Remove Runway Threshold Light and Base, Complete	at the unit price of: _____ dollars and _____ cents.	EA	16	\$	\$
L-125c	Remove Taxiway Edge Light and Base, Complete	at the unit price of: _____ dollars and _____ cents.	EA	4	\$	\$

SCHEDULE II TOTAL \$ _____

SCHEDULE III

Item No.	Description		Units	Estimated Quantity	Unit Price	Total
C-100a	Contractor Quality Control Program (CQCP)	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-102a	Erosion Control	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-105a	Mobilization	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
P-101a	Asphalt Pavement Removal, Full Depth	at the unit price of: _____ dollars and _____ cents.	SY	11,550	\$	\$
P-101b	Asphalt Pavement Removal, Partial Depth	at the unit price of: _____ dollars and _____ cents.	SY	60	\$	\$
P-101c	Concrete Pavement & Building Foundation Removal, Full Depth	at the unit price of: _____ dollars and _____ cents.	SY	500	\$	\$
P-101d	Remove Existing 24-Inch Reinforced Concrete Pipe and Flared End Sections	at the unit price of: _____ dollars and _____ cents.	LF	132	\$	\$
P-101g	Remove Aircraft Tie-Down Anchors, Complete	at the unit price of: _____ dollars and _____ cents.	EA	27	\$	\$
P-152a	Unclassified Excavation	at the unit price of: _____ dollars and _____ cents.	CY	5,500	\$	\$
P-154a	Subbase Course	at the unit price of: _____ dollars and _____ cents.	CY	2,420	\$	\$
P-154b	Separation Geotextile	at the unit price of: _____ dollars and _____ cents.	SY	14,470	\$	\$
P-156a	Cement Treated Subgrade	at the unit price of: _____ dollars and _____ cents.	SY	14,470	\$	\$
P-156b	Cement	at the unit price of: _____ dollars and _____ cents.	TON	520	\$	\$
P-208a	Aggregate Base Course	at the unit price of: _____ dollars and _____ cents.	CY	2,490	\$	\$
P-401a	Asphalt Paving Course	at the unit price of: _____ dollars and _____ cents.	TON	3,590	\$	\$
P-603a	Emulsified Asphalt Tack Coat	at the unit price of: _____ dollars and _____ cents.	GAL	2,220	\$	\$
P-620a	Temporary Pavement Marking	at the unit price of: _____ dollars and _____ cents.	SF	1,170	\$	\$
P-620c	Permanent Pavement Marking, Yellow	at the unit price of: _____ dollars and _____ cents.	SF	1,170	\$	\$
P-640a	Install Aircraft Tie-Down Anchor	at the unit price of: _____ dollars and _____ cents.	EA	27	\$	\$
D-701b	Install 24-Inch Reinforced Concrete Pipe, Class V	at the unit price of: _____ dollars and _____ cents.	LF	129	\$	\$

SCHEDULE III

Item No.	Description	Units	Estimated Quantity	Unit Price	Total	
D-701e	Install 24-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	2	\$	\$
D-705a	Install 6-Inch Perforated Polyethylene Pipe	at the unit price of: _____ dollars and _____ cents.	LF	1,520	\$	\$
D-705b	Install 6-Inch Non-Perforated Polyethylene Pipe	at the unit price of: _____ dollars and _____ cents.	LF	270	\$	\$
D-751a	Install 6-Inch Underdrain Cleanout	at the unit price of: _____ dollars and _____ cents.	EA	13	\$	\$
D-751b	Install Inspection Pit	at the unit price of: _____ dollars and _____ cents.	EA	9	\$	\$
T-901a	Seeding with Hydromulch	at the unit price of: _____ dollars and _____ cents.	AC	2	\$	\$
L-125c	Remove Taxiway Edge Light and Base, Complete	at the unit price of: _____ dollars and _____ cents.	EA	21	\$	\$

SCHEDULE III TOTAL \$ _____

BID ALTERNATE NO. 1

Item No.	Description	Units	Estimated Quantity	Unit Price	Total	
C-100a	Contractor Quality Control Program (CQCP)	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-102a	Erosion Control	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
C-105a	Mobilization	at the unit price of: _____ dollars and _____ cents.	LS	1	\$	\$
P-101a	Asphalt Pavement Removal, Full Depth	at the unit price of: _____ dollars and _____ cents.	SY	27,370	\$	\$
P-101e	Remove Existing 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	1	\$	\$
P-101f	Remove Existing Barbed Wire Fence, Complete	at the unit price of: _____ dollars and _____ cents.	LF	210	\$	\$
P-151a	Tree Removal	at the unit price of: _____ dollars and _____ cents.	AC	2	\$	\$
P-152a	Unclassified Excavation	at the unit price of: _____ dollars and _____ cents.	CY	9,200	\$	\$
P-207a	Asphalt Pavement Full Depth Reclamation (FDR), Trimming, & Grading	at the unit price of: _____ dollars and _____ cents.	SY	27,210	\$	\$
P-207b	Cement	at the unit price of: _____ dollars and _____ cents.	TON	960	\$	\$
P-207c	Emulsified Asphalt	at the unit price of: _____ dollars and _____ cents.	TON	330	\$	\$
P-401a	Asphalt Paving Course	at the unit price of: _____ dollars and _____ cents.	TON	6,820	\$	\$
P-602a	Emulsified Asphalt Prime Coat	at the unit price of: _____ dollars and _____ cents.	GAL	8,160	\$	\$
P-603a	Emulsified Asphalt Tack Coat	at the unit price of: _____ dollars and _____ cents.	GAL	4,200	\$	\$
P-620a	Temporary Pavement Marking	at the unit price of: _____ dollars and _____ cents.	SF	19,560	\$	\$
P-620b	Permanent Pavement Marking, White	at the unit price of: _____ dollars and _____ cents.	SF	19,130	\$	\$
P-620c	Permanent Pavement Marking, Yellow	at the unit price of: _____ dollars and _____ cents.	SF	440	\$	\$
F-160a	Install Class B Fence (3-Strand Barb Wire, Wood Posts with Metal Line Posts)	at the unit price of: _____ dollars and _____ cents.	LF	220	\$	\$
D-701a	Install 12-Inch Reinforced Concrete Pipe, Class V	at the unit price of: _____ dollars and _____ cents.	LF	80	\$	\$

BID ALTERNATE NO. 1

Item No.	Description	Units	Estimated Quantity	Unit Price	Total	
D-701c	Install 36-Inch Reinforced Concrete Pipe, Class V	at the unit price of: _____ dollars and _____ cents.	LF	33	\$	\$
D-701d	Install 12-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	2	\$	\$
D-701f	Install 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	at the unit price of: _____ dollars and _____ cents.	EA	1	\$	\$
D-754a	Construct 4-Foot Concrete Drain Pan, Complete	at the unit price of: _____ dollars and _____ cents.	LF	290	\$	\$
T-901a	Seeding with Hydromulch	at the unit price of: _____ dollars and _____ cents.	AC	17	\$	\$
T-901b	Seeding Under Erosion Control Blanket	at the unit price of: _____ dollars and _____ cents.	AC	4	\$	\$
T-901c	Erosion Control Blanket	at the unit price of: _____ dollars and _____ cents.	SY	17,870	\$	\$

206 by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the
207 remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

208
209 **152-2.8 FORMATION OF EMBANKMENTS.** The material shall be constructed in lifts as established in
210 the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted
211 thickness.

212
213 When more than one lift is required to establish the layer thickness shown on the plans, the construction
214 procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify
215 that compaction requirements have been met. The Contractor shall rework, re-compact and retest any
216 material placed which does not meet the specifications.

217
218 The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the
219 RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated
220 or buried in the embankment.

221
222 Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain,
223 freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the
224 embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces
225 that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to
226 provide surface drainage at all times.

227
228 The material in each lift shall be within $\pm 3\%$ of optimum moisture content before rolling to obtain the
229 prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform
230 moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or
231 manipulation alone to increase the rate of evaporation.

232
233 The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture
234 content to achieve the specified embankment density.

235
236 The RPR will take samples of excavated materials which will be used in embankment for testing and develop
237 a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall
238 be developed for each soil type based on visual classification.

239
240 Density tests will be taken by the RPR for every 1,000 square yards of compacted embankment for each lift
241 which is required to be compacted, or other appropriate frequencies as determined by the RPR.

242
243 If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180
244 Annex Correction of maximum dry density and optimum moisture for oversized particles.

245
246 Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum
247 density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM
248 D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12-inches and to a
249 density of not less than 95% for cohesive soils and 100% for non-cohesive soils percent of the maximum
250 density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils
251 having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

252
253 On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm)
254 which shall be prepared for a seedbed in accordance with Item T-901.

255

308 The material to be compacted shall be within $\pm 3\%$ of optimum moisture content before being rolled to
309 obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent
310 retained on the $\frac{3}{4}$ inch (19.0 mm) sieve, follow the methods in ASTM D698 or procedures in AASHTO
311 T180 Annex for correction of maximum dry density and optimum moisture for oversized particles. Tests for
312 moisture content and compaction will be taken at a minimum of 1000 S.Y. of subgrade. All quality assurance
313 testing shall be done by the RPR..

314
315 The in-place field density shall be determined in accordance with ASTM D1556 or ASTM D6938 using
316 Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture
317 content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months
318 prior to its use on this contract. The gage shall be field standardized daily.

319
320 Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

321
322 If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional
323 random tests made. This procedure shall be followed until the specified density is reached.

324
325 All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the
326 plans or as directed by the RPR and the finished subgrade shall be maintained.

327
328 **152-2.11 FINISHING AND PROTECTION OF SUBGRADE.** Finishing and protection of the subgrade
329 is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain
330 readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading,
331 rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the
332 lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be
333 graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling
334 over the finished subgrade to only traffic essential for construction purposes.

335
336 The Contractor shall maintain the completed course in satisfactory condition throughout placement of
337 subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade
338 has been accepted by the RPR.

339
340 **152-2.12 HAUL.** All hauling will be considered a necessary and incidental part of the work. The Contractor
341 shall include the cost in the contract unit price for the pay of items of work involved. No payment will be
342 made separately or directly for hauling on any part of the work.

343
344 The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the
345 subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling
346 operations shall be repaired at the Contractor's expense.

347
348 The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within
349 or outside of the work area, and shall return the affected areas to their former condition, unless otherwise
350 authorized in writing by the Owner. No separate payment will be made for any work or materials associated
351 with providing, maintaining and removing haul roads or routes.

352
353 **152-2.13 SURFACE TOLERANCES.** In those areas on which a subbase or base course is to be placed, the
354 surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required
355 smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm),
356 reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved
357 by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR.
358 Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

359

1

ITEM P-156 CEMENT TREATED SUBGRADE**2 DESCRIPTION**

3 **156-1.1** This item shall consist of constructing one or more courses of a mixture of soil, stabilizer, and water in
 4 accordance with this specification, and in conformity with the lines, grades, thickness, and typical cross-sections
 5 shown on the plans.

6 MATERIALS

7 **156-2.1 CEMENT.** Cement shall conform to the requirements of ASTM C150, Type I, IA, II, or IIA or ASTM
 8 C595, Type IS, IL, IP, or IS(A).

9 **156-2.2 WATER.** Water used in mixing or curing shall be from potable water sources. Other sources shall be
 10 tested in accordance with ASTM C1602 prior to use.

11 **156-2.3 SOIL.** The soil for this work shall consist of on-site materials free of roots, sod, weeds, and stones
 12 larger than 2-1/2 inches and have a sulfate content of less than 0.3%.

13 COMPOSITION

14 **156-3.1 SOIL-CEMENT MIXTURE.** Cement shall be added at an application rate of 4-8 percent for soils.
 15 Contractor shall provide a mix design prior to production for RPR approval.

16 Prior to field production of the control strip the Contractor shall collect representative samples of the in-place
 17 subgrade material to be stabilized. These materials shall be mixed at 4-percent, 6-percent, and 8-percent of
 18 cement, in accordance with ASTM D558 Moisture-Density Relations of Soil-Cement Mixtures and molded in
 19 accordance with ASTM D1883 Standard Test Method for California Bearing Ratio. The compacted samples
 20 shall be allowed to cure for 7-days in a moist room or suitable covered container capable of maintaining 70 +/-
 21 3 °F and a relative humidity of 100%. Following the 7-day curing period Laboratory CBR testing shall be
 22 performed in accordance with ASTM D1883. The Engineer may adjust the required application rate based on
 23 these results, however an application rate of less than 4% will not be permitted.

24

25 **156-3.2 TOLERANCES.** At final compaction, the cement and water content for each course of subgrade
 26 treatment shall conform to the following tolerances:

27

Tolerances

Material/Properties	Target	Tolerance	Specifications
Cement	Based on Mix Design	0 to +1%	% Total Dry Materials
Moisture Content	Optimum +2%	0 to +1%	ASTM D558

28 WEATHER LIMITATIONS

29 **156-4.1 WEATHER LIMITATIONS.** Do not construct subgrade when weather conditions detrimentally
 30 affect the quality of the materials. Do not apply cement unless the air temperature is at least 40°F (4°C) and
 31 rising. Do not apply cement to soils that are frozen or contain frost. Do not apply cement when conditions are

32 too windy to allow even distribution of the cement to the subgrade. If the air temperature falls below 35°F
33 (2°C), protect completed treated areas against freezing. Remove and replace any damaged portion of the
34 completed treated area with new material in accordance with this specification.

35 **EQUIPMENT**

36 **156-5.1 EQUIPMENT.** All equipment necessary to grade, scarify, spread, mix and compact the material shall
37 be provided. The Resident Project Representative (RPR) must approve the Contractor's proposed equipment
38 prior to the start of the treatment.

39 **CONSTRUCTION METHODS**

40 **156-6.1 GENERAL.** This specification is to construct a subgrade consisting of a uniform cement mixture
41 which shall be free from loose or segregated areas. The subgrade shall be of uniform density and moisture
42 content, well mixed for its full depth and have a smooth surface suitable for placing subsequent courses. The
43 Contractor shall be responsible for meeting the above requirements.

44 Prior to any treatment, the subgrade shall be constructed as specified in Item P-152, Excavation, Subgrade and
45 Embankment, and shaped to conform to the typical sections, lines, and grades as shown on the plans.

46 The mixing machine must give visible indication at all times that it is cutting, pulverizing and mixing the material
47 uniformly to the proper depth over the full width of the cut.

48 **156-6.2 APPLICATION.** Cement shall be uniformly spread only over an area where the initial mixing
49 operations and compaction can be completed during the same workday. The cement shall not be applied when
50 wind conditions are detrimental to proper application. A motor grader shall not be used to spread the lime.
51 Adequate moisture shall be added to the cement/soil mixture to maintain the proper moisture content.
52 Materials shall be handled, stored, and applied in accordance with all federal, state, and local requirements.

53 **156-6.3 MIXING PROCEDURE.** The full depth of the treated subgrade shall be mixed with equipment as
54 approved by the RPR. Cement shall not be left exposed for more than one (1) hour after distribution. Mixing
55 and pulverization shall continue until the soil cement mixture contains no clods greater than 1-1/2 inches in
56 size. Final moisture content of the mix shall be determined by the Contractor immediately prior to compaction
57 in accordance with ASTM D2216 or ASTM D4959.

58 **156-6.4 CONTROL STRIP.** The first half-day of construction shall be considered the control strip. The
59 Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction
60 processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain
61 specified density requirements shall be determined. Control strips that do not meet specification requirements
62 shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall
63 not continue until the control strip has been accepted by the RPR. Upon acceptance of the control strip by the
64 RPR, the Contractor shall use the same equipment, materials, and construction methods for the remainder of
65 construction, unless adjustments made by the Contractor are approved in advance by the RPR.

66 **156-6.5 TREATMENT APPLICATION AND DEPTH CHECKS.** The amount of cement applied shall be
67 monitored by the Contractor to assure that no less than the amount of cement required by the mix design is
68 applied. The depth of stabilization shall be measured by the Contractor no less than 2 tests per day of material
69 placed; test shall be witnessed by the RPR. Measurements shall be made in test holes excavated to show the full
70 depth of mixing.

71 **156-6.6 COMPACTION.** The moisture content shall be within the tolerance as specified in paragraph 156-
72 3.2. The field density of the compacted mixture shall be at least 95% of the maximum density as specified in
73 paragraph 156-6.10. Compaction of the soil/cement mixture shall begin within 30 minutes after mixing the
74 cement into the subgrade. All compaction operations shall be completed within 2 hours from the start of
75 mixing.

76 Perform in-place density test immediately after completion of compaction to determine degree of compaction.
77 If the material fails to meet the density requirements, compaction shall continue or the material shall be
78 removed and replaced. Maximum density refers to maximum dry density at optimum moisture content unless
79 otherwise specified.

80 **156-6.7 FINISHING AND CURING.** After the final lift or course of treated subgrade has been compacted,
81 it shall be brought to the required lines and grades in accordance with the typical sections. Finished portions
82 of treated subgrade shall be protected to prevent equipment from marring, permanently deforming, or
83 damaging completed work.

84 Not later than 24 hours after completion of final finishing, the surface shall be cured by application of an curing
85 compound or other moisture retention methods as approved by the RPR.

86 Sufficient protection from freezing shall be provided for at least 7 days after its construction or as approved by
87 the RPR.

88 **156-6.8 MAINTENANCE.** The Contractor shall maintain the entire treated subgrade in good condition from
89 the start of work until all the work has been completed, cured, and accepted by the RPR. When material has
90 been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the
91 Contractor shall verify that materials still meets all specification requirements. The cost shall be incidental to
92 this item.

93 **156-6.9 SURFACE TOLERANCE.** In those areas on which a subbase or base course is to be placed, the
94 surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required
95 smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped
96 and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR.
97 The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation
98 in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

99 **a. Smoothness.** The finished surface shall not vary more than +/- 1/2 inch when tested with a 12-
100 foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall
101 be moved continuously forward at half the length of the 12-foot straightedge for the full length of
102 each line on a 50-foot grid.

103 **b. Grade.** The grade and crown shall be measured on a 50-foot grid and shall be within +/-0.05 feet
104 of the specified grade.

105 **156-6.10 ACCEPTANCE SAMPLING AND TESTING.** Cement treated subgrade shall be accepted for
106 density and thickness on an area basis. Testing frequency shall be a minimum of one (1) compaction and
107 thickness test per 1,000 square yards of stabilized subgrade, but not less than four (4) tests per day of
108 production. Sampling locations will be determined on a random basis per ASTM D3665.

109 **a. Density.** All testing shall be done by the RPR.

110 The field density of the compacted mixture shall be at least 95% of the maximum density as
111 determined by ASTM D558. The in-place field density shall be determined in accordance
112 with ASTM D1556 or ASTM D6938, Procedure A, direct transmission method. The in-place
113 moisture content shall be determined in accordance with ASTM D2216. If the material fails to
114 meet the density requirements, compaction shall continue, or the material shall be removed and
115 replaced. Maximum density refers to maximum dry density at optimum moisture content unless
116 otherwise specified.

117 **b. Thickness.** The thickness of the stabilized subgrade shall be within +0 and -1/2 inch of the
118 specified thickness as determined by depth tests taken by the Contractor in the presence of the
119 RPR for each subplot. Where the thickness is deficient by more than 1/2-inch, the material shall be
120 removed to full depth and replaced, at Contractor's expense.

121 **METHOD OF MEASUREMENT**

122 **156-7.1** The amount of cement treated subgrade shall be based on the number of square yards complete and
123 accepted.

124 The amount of cement used is based upon an application rate as specified in paragraph 156-3.1. The amount
125 of cement shall be paid by the number of tons of cement used in the completed and accepted work.

126 **BASIS OF PAYMENT**

127 **156-8.1** Payment for cement treated subgrade placement shall be made at the contract unit price per square yard
128 for the cement treated subgrade for the thickness specified. The price shall be full compensation for all
129 preparation, delivering, placing and mixing these materials, establishing surface tolerances as specified in P-156-
130 6.9 and all labor, equipment, tools and incidentals necessary to complete this item.

131 Payment for cement shall be made at the contract unit price per ton for the cement. The price shall be full
132 compensation for all preparation, delivering, placing and mixing these materials, and all labor, equipment, tools
133 and incidentals, including but not limited to materials for curing and their application, necessary to complete
134 this item.

135 Payment will be made under:

136	Item P 156A	Cement Treated Subgrade – per square yard
137	Item P-156B	Cement - per ton

138

139 **REFERENCES**

140 The publications listed below form a part of this specification to the extent referenced. The publications are
141 referred to within the text by the basic designation only.

142 ASTM International (ASTM)

143	ASTM C150	Standard Specification for Portland Cement
144	ASTM C595	Standard Specification for Blended Hydraulic Cements
145	ASTM C1602	Standard Specification for Mixing Water Used in the Production of
146		Hydraulic Cement Concrete
147	ASTM D558	Standard Test Methods for Moisture-Density (Unit Weight) Relations of
148		Soil-Cement Mixtures
149	ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the
150		Sand-Cone Method
151	ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil
152		Using Modified Effort (56,000 ft-lbf/ft ³ (2,700 kN-m/m ³))
153	ASTM D1663	Standard Test Methods for Compressive Strength of Molded Soil-Cement
154		Cylinders
155	ASTM D2216	Test Methods for Laboratory Determination of Water (Moisture) Soil and
156		Rock by Mass
157	ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes
158		(Unified Soil Classification System)
159	ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index
160		of Soils

161	ASTM D4959	Standard Test Method for Determination of Water Content of Soil by
162		Direct Heating
163	ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and
164		Soil-Aggregate by Nuclear Methods (Shallow Depth)

165 ****END OF ITEM P-156****

SAFETY

- DURING CONSTRUCTION, THE CONTRACTOR SHALL COMPLY WITH FAA ADVISORY CIRCULAR (AC) 150/5370-2 (CURRENT VERSION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- THE CONTRACTOR SHALL REVIEW THE CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) CONTAINED IN THE CONTRACT DOCUMENTS, AND PREPARE FOR APPROVAL BY THE ENGINEER, A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) PRIOR TO NOTICE TO PROCEED, AS REQUIRED PER ADVISORY CIRCULAR (AC) 150/5370-2 (CURRENT VERSION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- ALL VEHICLES AND EQUIPMENT WORKING REGULARLY ON THE PROJECT SITE SHALL BE REQUIRED TO BE EQUIPPED WITH STANDARD FAA MARKINGS PER FAA ADVISORY CIRCULAR 150/5210-5 (CURRENT VERSION) OR BE ESCORTED BY A PROPERLY MARKED VEHICLE. AN ORANGE AND WHITE 3 FOOT BY 3 FOOT FAA STANDARD VEHICLE FLAG MAY BE USED DURING DAYTIME OPERATIONS OR A FLASHING BEACON MAY BE USED AT ANY TIME. FAILURE TO PROVIDE SUCH MARKINGS OR ESCORT FOR ANY EQUIPMENT INSIDE THE AIRPORT PERIMETER FENCE WILL PRECLUDE THAT EQUIPMENT FROM OPERATING ON THE PROJECT. DELAYS CAUSED DUE TO LACK OF CONFORMANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. BACKUP ALARMS SHALL BE ADJUSTED FOR SURROUNDING NOISE LEVELS. TRITON HARK-ALARM OR APPROVED EQUAL.
- ALL VEHICLES AND EQUIPMENT WORKING ON THE SITE SHALL BE EQUIPPED WITH STANDARD FAA MARKINGS PER FAA ADVISORY CIRCULAR 150/5210-5 (CURRENT VERSION) OR BE ESCORTED BY A PROPERLY MARKED VEHICLE. ANY VEHICLE OR EQUIPMENT OPERATING WITHIN THE AIRPORT'S PERIMETER FENCE NOT PROPERLY MARKED OR ESCORTED MAY NOT OPERATE ON THE SITE AND MUST BE REMOVED IMMEDIATELY. ANY DELAY OR COST TO CONTRACTOR OPERATIONS FROM UNMARKED OR UNESCORTED VEHICLES OR EQUIPMENT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. STANDARD FAA VEHICLE FLAGS (3 FOOT BY 3 FOOT ORANGE AND WHITE) MAY BE USED DURING DAYTIME HOURS. FLASHING BEACONS MAY BE USED AT ANY TIME. BACKUP ALARMS ARE REQUIRED AND SHALL BE PROXIMITY BASED AND ADJUSTED FROM SURROUNDING NOISE LEVELS. SEE THE CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) FOR MORE DETAILS.
- CONTRACTOR SHALL MAINTAIN AIRPORT PERIMETER SECURITY FOR THE DURATION OF THE PROJECT. ANY REVISIONS TO FENCE ALIGNMENT SHALL BE COORDINATED WITH ENGINEER FOR APPROVAL AT LEAST ONE WEEK PRIOR TO CONSTRUCTION. ALL COSTS SHALL BE INCIDENTAL TO PROJECT BID ITEMS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.
- CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS THROUGH PROJECT SITE AT ALL TIMES. ALL ROADWAYS (TEMPORARY OR PERMANENT) SHALL BE MAINTAINED BY CONTRACTOR.

EROSION CONTROL

- THE CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF THE MISSOURI LAND DISTURBANCE STORMWATER GENERAL OPERATING PERMIT, THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), THE EROSION CONTROL PLAN, AND ALL REQUIREMENTS OF THE LOCAL DRAINAGE AUTHORITY.
- ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREA IS STABILIZED WITH HARD SURFACE OR LANDSCAPING.
- CONTRACTOR SHALL MAINTAIN POSITIVE DUST CONTROL DURING THE ENTIRE PROJECT DURATION. THE METHOD OF DUST CONTROL EMPLOYED DURING ALL PHASES SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. DUST CONTROL SHALL BE EMPLOYED DURING ANY PROJECT SHUTDOWN PERIODS, WINTER OR OTHERWISE. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS ITEMS OF WORK, AND NO SEPARATE PAYMENT WILL BE MADE.
- ANY EROSION CONTROL FACILITY DAMAGED OR DESTROYED PREMATURELY, BY ANY MEANS, SHALL BE IMMEDIATELY REPAIRED BY THE CONTRACTOR.
- A WATER TRUCK SHALL BE KEPT ON SITE AT ALL TIMES DURING EARTHWORK ACTIVITIES FOR DUST ABATEMENT.

- THE STORMWATER BMPs SHOWN IN THE ISSUED FOR CONSTRUCTION EROSION CONTROL SHEETS ARE TO BE USED AS A GUIDE FOR THE CONTRACTOR WHEN DEVELOPING HIS/HER STORMWATER MANAGEMENT PLAN. FIELD CONDITIONS MAY WARRANT MORE, LESS OR DIFFERENT BMP INSTALLATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP A STORMWATER AND EROSION CONTROL PLAN THAT MEETS ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS ASSOCIATED WITH THE STORMWATER PERMIT.
- SILT AND SEDIMENT SHALL BE REMOVED AFTER EACH SUBSTANTIAL RAINFALL.
- NEGATIVE IMPACTS TO DOWNSTREAM AREAS CAUSED BY GRADING ARE TO BE MONITORED AND CORRECTED BY THE CONTRACTOR. ANY OFF-SITE CLEAN-UP, DIRECTED BY THE PUBLIC WORKS INSPECTOR, (INCLUDING STREET CLEANING), SHALL BE COMPLETED WITHIN 24-HOURS OF WRITTEN INSTRUCTION, OR RISK CONSTRUCTION STOPPAGE.
- TEMPORARY EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL SUCH TIME AS ALL TRIBUTARY-DISTURBED AREAS ARE SUFFICIENTLY STABILIZED IN THE OPINION OF THE PUBLIC WORKS INSPECTOR OR RESIDENT ENGINEER, TO MINIMIZE EROSION POTENTIAL.
- WHEN TEMPORARY EROSION CONTROL MEASURES ARE REMOVED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP AND REMOVAL OF ALL SEDIMENT AND DEBRIS FROM ALL DRAINAGE AND OTHER PUBLIC FACILITIES.
- ALL AREAS FOR SEEDING SHALL BE TILLED TO BREAK UP ROOTING RESTRICTIVE LAYERS, HAVE A MINIMUM OF 4" OF TOPSOIL REAPPLIED, AND THEN BE HARROWED, AND ROLLED OR PACKED, TO PREPARE THE REQUIRED FIRM SEED BED.

QUANTITIES

- ALL STATED QUANTITIES ARE CONSIDERED APPROXIMATE. ACTUAL QUANTITIES WILL BE DETERMINED BY THE ENGINEER FROM WORK IN-PLACE.
- ACTUAL RATES OF APPLICATION WILL BE DETERMINED BY THE ENGINEER.
- THE PROJECT PAY ITEMS PROVIDED ARE TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THE CONTRACT DOCUMENTS. ALL WORK NOT IDENTIFIED WITH A SPECIFIC PAY ITEM IS TO BE CONSIDERED REQUIRED WORK TO COMPLETE THE PROJECT, AND IS TO BE INCIDENTAL TO THE COST OF PROJECT PAY ITEMS PROVIDED.
- ALL PAVEMENT REMOVAL SHALL BE MEASURED AND PAID TO NEAT LINE DIMENSIONS.
- IF THE CONTRACTOR CHOOSES TO OVERBUILD PAVEMENT LAYERS BEYOND THE DIMENSIONS SHOWN ON THE PLANS FOR CONSTRUCTABILITY, NO PAYMENT WILL BE MADE FOR THIS ADDITIONAL MATERIAL.
- PIPE LENGTHS SHOWN ON PLANS ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
- THE FOLLOWING RATES WERE USED TO CALCULATE ESTIMATED QUANTITIES:
 - BITUMINOUS PAVEMENT COURSE AT THE RATE OF 155 LBS PER CUBIC FOOT.
 - CEMENT TREATED SUBGRADE AND FOR FULL DEPTH RECLAMATION WERE ESTIMATED AT 8% APPLICATION RATE OF CEMENT AT 95 LBS PER CUBIC FOOT.**
 - ASPHALT ROTOMILLING IS BASED ON SQUARE YARD REGARDLESS OF ASPHALT DEPTH.
 - BITUMINOUS TACK COAT AT THE RATE OF 0.10 GAL. PER SQUARE YARD PER LIFT.

SURVEY

- TWO WEEKS PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A PRE-CONSTRUCTION SURVEY VERIFYING EXISTING ELEVATIONS OF ALL PAVEMENT AREAS AND OTHER CRITICAL AREAS DETERMINED BY THE ENGINEER. THE SURVEY SHALL BE PERFORMED USING SPECIFIED PROJECT CONTROL AND SHALL PROVIDE SUFFICIENT SHOTS TO ACCURATELY REPRESENT THE EXISTING SURFACE. SURVEY SHALL BE PROVIDED TO THE ENGINEER IN ELECTRONIC FORMAT THAT IS ACCEPTABLE TO THE ENGINEER. THIS SURVEY

- WILL BE USED TO DETERMINE IF ANY MODIFICATIONS TO DESIGN GRADES ARE REQUIRED. THIS SURVEY WILL BE INCIDENTAL TO C-105. PRE-CONSTRUCTION SURVEY SHALL BE PERFORMED BY A STATE LICENSED LAND SURVEYOR. SEE SECTION 50 OF THE CONTRACT DOCUMENTS AND THE "CONSTRUCTION STAKING AND LAYOUT" NOTES CONTAINED IN THESE GENERAL NOTES SHEETS FOR ADDITIONAL SURVEY INFORMATION.
- BEFORE AND DURING THE PROJECT, ANY DISCREPANCIES IN EXISTING CONDITIONS DISCOVERED BY THE CONTRACTOR SHALL BE IMMEDIATELY IDENTIFIED TO THE ENGINEER.
 - ALL SURVEY PROVIDED TO THE ENGINEER FOR PRE-CONSTRUCTION SURVEYS AND VERIFICATION SURVEYS SHALL BE PROVIDED ELECTRONICALLY AND SHALL INCLUDE POINT NUMBERS, NORTHING, EASTINGS, ELEVATIONS, AND DESCRIPTIONS (PNEZD, COMMA DELINEATED FORMAT).
 - DAILY FIELD SURVEY NOTES SHALL BE GIVEN TO THE ENGINEER SO THAT PERIODIC CHECKS FOR CONFORMANCE WITH PLAN GRADES, ALIGNMENTS, AND GRADE TOLERANCES CAN BE REVIEWED.
 - ALL REQUIRED SURVEY WILL BE INCIDENTAL TO OTHER BID ITEMS.
 - THE HORIZONTAL AND VERTICAL COORDINATES ARE BASED ON THE HORIZONTAL DATUM NAD 83 AND VERTICAL DATUM NAV 88.

CONSTRUCTION STAKING AND LAYOUT

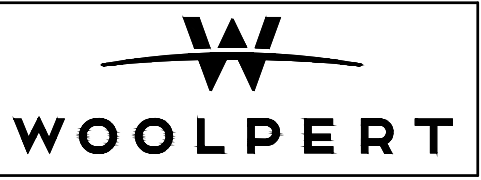
- DRAINAGE SWALES SLOPE STAKES AND FLOW LINE BLUE TOPS AT 50-FOOT (15-M) STATIONS.
- SUBGRADE BLUE TOPS AT 50-FOOT STATIONS WITH A 50-FOOT OFFSET DISTANCE (MAXIMUM) AND AT THE EDGE OF PAVEMENT.
- SUBBASE AND BASE COURSE BLUE TOPS AT 50-FOOT STATIONS WITH A 50-FOOT OFFSET DISTANCE (MAXIMUM) AND AT THE EDGE OF PAVEMENT.
- PAVEMENT AREAS:
 - EDGE OF PAVEMENT HUBS AND TACKS (FOR STRINGLINE BY CONTRACTOR) AT 100-FOOT STATIONS
 - BETWEEN LIFTS AT 25-FOOT STATIONS FOR RUNWAYS (EACH PAVING LANE WIDTH), TAXIWAYS (EACH PAVING LANE WIDTH), AND HOLDING AREAS (EACH PAVING LANE WIDTH)
 - AFTER FINISH PAVING OPERATIONS AT 50-FOOT STATIONS (FOR GRADE ACCEPTANCE VERIFICATION) AT ALL PAVED AREAS AT THE EDGE OF EACH PAVING LANE AND ALL GRADE BREAKS PRIOR TO NEXT PAVING LOT
 - SHOULDER AND SAFETY AREA BLUE TOPS AT 50-FOOT STATIONS AND AT ALL BREAK POINTS WITH MAXIMUM OF 50-FOOT OFFSETS
- REQUIRED VERIFICATION/AS-BUILT SURVEY SHALL BE PROVIDED ELECTRONICALLY IN AN ENGINEER APPROVED FORMAT AND SHALL INCLUDE POINT NUMBER, NORTHING, EASTING, ELEVATION, AND DESCRIPTION (PNEZD, COMMA DELIMITED FORMAT).
- THE CONTRACTOR SHALL PROVIDE VERIFICATION SURVEY TO THE ENGINEER FOR ALL LOCATIONS WHERE PROPOSED CONSTRUCTION WILL TIE INTO ANY EXISTING STRUCTURES AND PAVEMENTS. THIS SURVEY SHALL BE USED FOR VERIFICATION OF EXISTING CONDITIONS AND SHALL BE SUBMITTED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES IN THE AREAS OF THE EXISTING INFRASTRUCTURE. THIS SURVEY SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS AND SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE SPONSOR. WORK IN THESE AREAS SHALL NOT BE ALLOWED TO COMMENCE UNTIL THIS SURVEY VERIFICATION HAS BEEN SUPPLIED BY THE CONTRACTOR TO THE ENGINEER AND THE ENGINEER HAS PROVIDED ACCEPTANCE, BASED ON A TIMELY REVIEW OF THE VERIFICATION SURVEY.
- IN ADDITION TO ALL REQUIRED UTILITY LOCATES, THE CONTRACTOR SHALL BE REQUIRED TO VERIFY THE ELEVATIONS OF ALL UTILITY CROSSINGS BEFORE COMMENCING CONSTRUCTION OPERATIONS. FOR EXAMPLE, BEFORE THE CONTRACTOR BEGINS WORK ON A PROPOSED STORM DRAIN, THE ELEVATION, BOTH TOP AND BOTTOM, OF ALL UTILITIES THAT CROSS THE PROPOSED PIPE SHALL BE VERIFIED AND PROVIDED TO THE ENGINEER. THIS VERIFICATION SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS AND SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE SPONSOR. WORK IN THESE AREAS SHALL NOT BE ALLOWED TO COMMENCE UNTIL THESE UTILITY VERIFICATIONS HAVE BEEN SUPPLIED BY THE CONTRACTOR TO THE ENGINEER AND THE ENGINEER HAS PROVIDED ACCEPTANCE, BASED ON A TIMELY REVIEW OF THE

VERIFICATION SURVEY.

- AREAS WHERE EXCAVATIONS OR EMBANKMENTS ARE TO BE CONSTRUCTED, THE CONTRACTOR SHALL PROVIDE VERIFICATION SURVEY OF THE INITIAL AND FINAL CONDITIONS FOR USE IN THE DETERMINATION OF FINAL EARTHWORK QUANTITIES FOR PAYMENT. THE CONTRACTOR SHALL FURNISH THE INITIAL SURVEY BEFORE CONSTRUCTION OPERATIONS COMMENCE AND THE FINAL SURVEY AFTER CONSTRUCTION OPERATIONS HAVE CONCLUDED TO THE ENGINEER FOR QUANTITY DETERMINATION. IN PAVEMENT AREAS, THE FINAL SURFACE SHALL BE THE TOP OF APPROVED SUBGRADE. SURVEYS SHALL PROVIDE SUFFICIENT SHOTS TO ACCURATELY REPRESENT BOTH INITIAL AND FINAL SURFACES. IF ENGINEER DETERMINES THAT THE SUBMITTED SURVEY IS DEFICIENT IN ACCURATELY DETAILING SURVEYED SURFACES, THE CONTRACTOR SHALL PERFORM ADDITIONAL SURVEY TO THE SATISFACTION OF THE ENGINEER. ALL SURVEY SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS AND SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE SPONSOR. SHOULD THE CONTRACTOR FAIL TO PROVIDE THESE INITIAL AND FINAL SURVEYS TO THE ENGINEER, THE EXISTING AND PROPOSED DESIGN SURFACES THAT ARE SHOWN IN THE PLANS SHALL BE USED FOR QUANTITY DETERMINATION.
- ADDITIONAL STAKES OR MARKINGS SHALL BE REQUIRED AT AN INTERVAL TO CLEARLY DEFINE GRADES FOR SUB-GRADE AND ALL MATERIAL LIFTS REQUIRED FOR THE PAVEMENT STRUCTURE INCLUDING ALL SUBBASES, BASES, AND PAVEMENTS. ADDITIONAL STAKING AND CONTROLS SHALL BE PLACED AS NEEDED FOR CONSTRUCTION TO MEET THE DESIGN AS REQUIRED BY THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS. IN ADDITION TO LOCATIONS STATED ABOVE, STAKING FOR LAYOUT AND SURVEY FOR GRADE VERIFICATIONS SHALL BE PROVIDED AT LOCATIONS OF ALL SPOT ELEVATIONS WHEN PROVIDED FOR IN THE PLANS.
- ON ALL PAVEMENT LIFTS AND MILLED SURFACES, CONTRACTOR SHALL SPRAY PAINT ON THE PAVEMENT SURFACES FILL DEPTHS TO FINAL SURFACE GRADES SO THE ENGINEER CAN VISUALLY VERIFY PAVEMENT GRADES AND THICKNESSES. FILL LOCATIONS SHALL MATCH ALL SPOT ELEVATIONS AND STAKING AND LAYOUT LOCATIONS DISCUSSED IN THIS SECTION.
- THE ESTABLISHMENT OF SURVEY CONTROL AND/OR REESTABLISHMENT OF SURVEY CONTROL SHALL BE BY A STATE LICENSED LAND SURVEYOR.
- CONTROLS AND STAKES DISTURBED OR SUSPECT OF HAVING BEEN DISTURBED SHALL BE CHECKED AND/OR RESET AS DIRECTED BY THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.

ISSUED FOR BID		
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LAURA K. KOONCE	2022012014	05/28/24
NAME	REG. NO.	DATE
FOR AND ON BEHALF OF WOOLPERT		

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DES: N.B.B.	ISSUE RECORD			
	NO.	BY	DATE	DESCRIPTION
DR: V.S.B.	1	L.K.K.	05/28/24	ISSUED FOR BID
CH: C.L.G.	2	L.K.K.	06/06/2024	ADDENDUM NO. 1
APP: L.K.K.	3	L.K.K.	06/19/2024	ADDENDUM NO. 4

RUNWAY 2/20 RECONSTRUCTION & WIDENING AND APRON RECONSTRUCTION

GENERAL NOTES

MoDOT PROJ. NO. 24-060A-1 & 24-060A-2
WOOLPERT PROJ. NO. 1015274

SHEET NAME
G003B

SHEET NO.
5 of 150

SUMMARY OF APPROXIMATE QUANTITIES

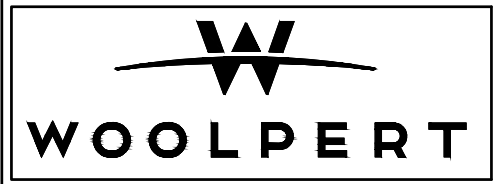
ITEM NO.	ITEM DESCRIPTION	UNITS	SCHEDULE I		SCHEDULE II		SCHEDULE III		SCHEDULE IV		SCHEDULE V		SCHEDULE ALT	
			ESTIMATE	AS BUILT	ESTIMATE	AS BUILT	ESTIMATE	AS BUILT	ESTIMATE	AS BUILT	ESTIMATE	AS BUILT	ESTIMATE	AS BUILT
C-100a	Contractor Quality Control Program (CQCP)	LS	1		1		1		1		0		1	
C-102a	Erosion Control	LS	1		1		1		0		0		1	
C-105a	Mobilization	LS	1		1		1		1		1		1	
P-101a	Asphalt Pavement Removal, Full Depth	SY	27,370		1,630		11,550		0		0		27,370	
P-101b	Asphalt Pavement Removal, Partial Depth	SY	0		0		60		0		0		0	
P-101c	Concrete Pavement & Building Foundation Removal, Full Depth	SY	0		0		500		0		0		0	
P-101d	Remove Existing 24-Inch Reinforced Concrete Pipe and Flared End Sections	LF	0		0		132		0		0		0	
P-101e	Remove Existing 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	1		0		0		0		0		1	
P-101f	Remove Existing Barbed Wire Fence, Complete	LF	210		0		0		0		0		210	
P-101g	Remove Aircraft Tie-Down Anchors, Complete	EA	0		0		27		0		0		0	
P-151a	Tree Removal	AC	2		0		0		0		0		2	
P-152a	Unclassified Excavation	CY	9,200		16,400		5,500		0		0		9,200	
P-154a	Subbase Course	CY	4,540		1,460		2,420		0		0		0	
P-154b	Separation Geotextile	SY	27,200		8,740		14,470		0		0		0	
P-156a	Cement Treated Subgrade	SY	27,200		8,740		14,470		0		0		0	
P-156b	Cement	TON	960		320		520		0		0		0	
P-207a	Asphalt Pavement Full Depth Reclamation (FDR), Trimming, & Grading	SY	0		0		0		0		0		27,210	
P-207b	Cement	TON	0		0		0		0		0		960	
P-207c	Emulsified Asphalt	TON	0		0		0		0		0		330	
P-208a	Aggregate Base Course	CY	4,670		1,500		2,490		0		0		0	
P-401a	Asphalt Paving Course	TON	6,820		1,960		3,590		0		0		6,820	
P-602a	Emulsified Asphalt Prime Coat	GAL	0		0		0		0		0		8,160	
P-603a	Emulsified Asphalt Tack Coat	GAL	4,200		1,210		2,220		0		0		4,200	
P-620a	Temporary Pavement Marking	SF	19,560		3,970		1,170		0		0		19,560	
P-620b	Permanent Pavement Marking, White	SF	19,130		3,630		0		0		0		19,130	
P-620c	Permanent Pavement Marking, Yellow	SF	440		340		1,170		0		0		440	
P-620d	Permanent Pavement Marking, Black	SF	0		700		0		0		0		0	
P-640a	Install Aircraft Tie-Down Anchor	EA	0		0		27		0		0		0	
F-160a	Install Class B Fence (3-Strand Barb Wire, Wood Posts with Metal Line Posts)	LF	220		0		0		0		0		220	
D-701a	Install 12-Inch Reinforced Concrete Pipe, Class V	LF	80		0		0		0		0		80	
D-701b	Install 24-Inch Reinforced Concrete Pipe, Class V	LF	0		0		129		0		0		0	
D-701c	Install 36-Inch Reinforced Concrete Pipe, Class V	LF	33		0		0		0		0		33	
D-701d	Install 12-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	2		0		0		0		0		2	
D-701e	Install 24-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	0		0		2		0		0		0	
D-701f	Install 36-Inch Reinforced Concrete Pipe, Flared End Section (FES)	EA	1		0		0		0		0		1	
D-705a	Install 6-Inch Perforated Polyethylene Pipe	LF	0		8,610		1,520		0		0		0	
D-705b	Install 6-Inch Non-Perforated Polyethylene Pipe	LF	0		970		270		0		0		0	
D-751a	Install 6-Inch Underdrain Cleanout	EA	0		27		13		0		0		0	
D-751b	Install Inspection Pit	EA	0		18		9		0		0		0	
D-751c	Install Aircraft Rated Inlet	EA	0		2		0		0		0		0	
D-754a	Construct 4-Foot Concrete Drain Pan, Complete	LF	290		0		0		0		0		290	
T-901a	Seeding with Hydromulch	AC	17		0		2		0		0		17	
T-901b	Seeding Under Erosion Control Blanket	AC	4		0		0		0		0		4	
T-901c	Erosion Control Blanket	SY	17,870		0		0		0		0		17,870	
L-108a	Install #8 AWG, L-824C, 5000V, Wire	LF	0		0		0		24,500		0		0	
L-108b	Install #6 AWG, Bare Copper Counterpoise Including Ground Rods and Terminations	LF	0		0		0		11,500		0		0	

ISSUED FOR BID

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LAURA K. KOONCE 2022012014 05/28/24
 NAME REG. NO. DATE
 FOR AND ON BEHALF OF WOOLPERT

Printed June 19, 2024 @ 2:34 PM by: Bernell, Violet
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ISSUE RECORD				
DES: N.B.B.	NO.	BY	DATE	DESCRIPTION
DR: V.S.B.	1	L.K.K.	05/28/24	ISSUED FOR BID
CH: C.L.G.	2	L.K.K.	06/11/2024	ADDENDUM NO. 1
	3	L.K.K.	06/17/2024	ADDENDUM NO. 2
APP: L.K.K.	4	L.K.K.	06/19/2024	ADDENDUM NO. 4

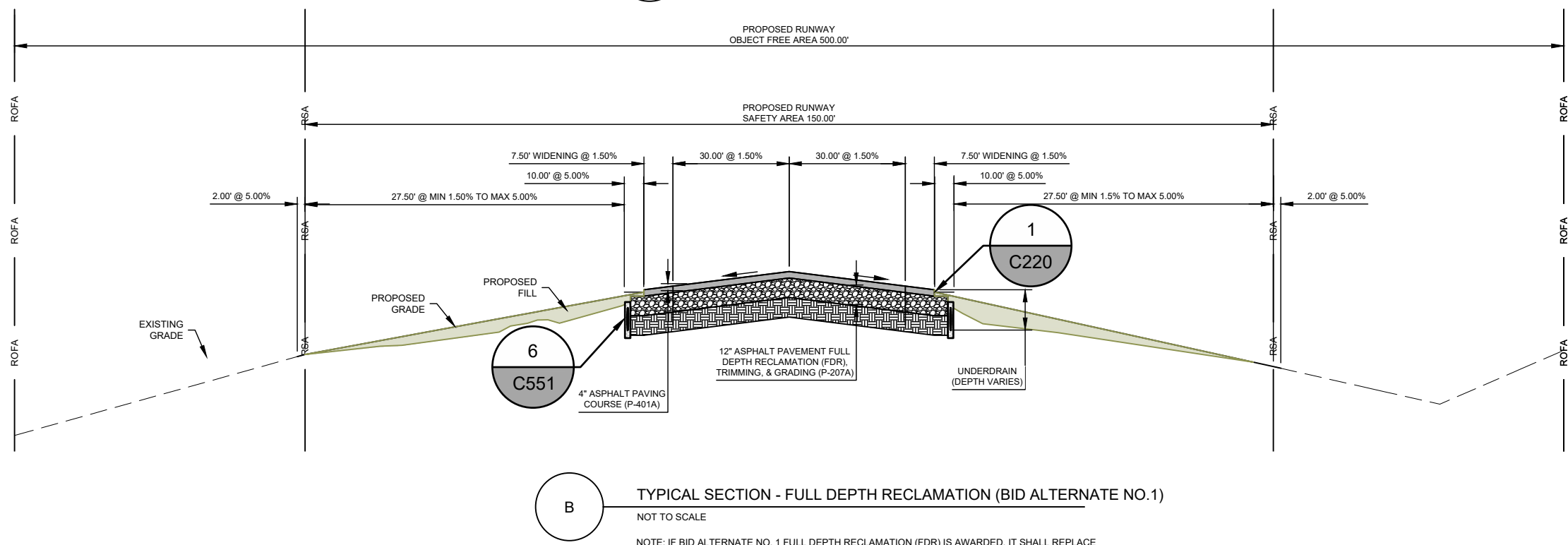
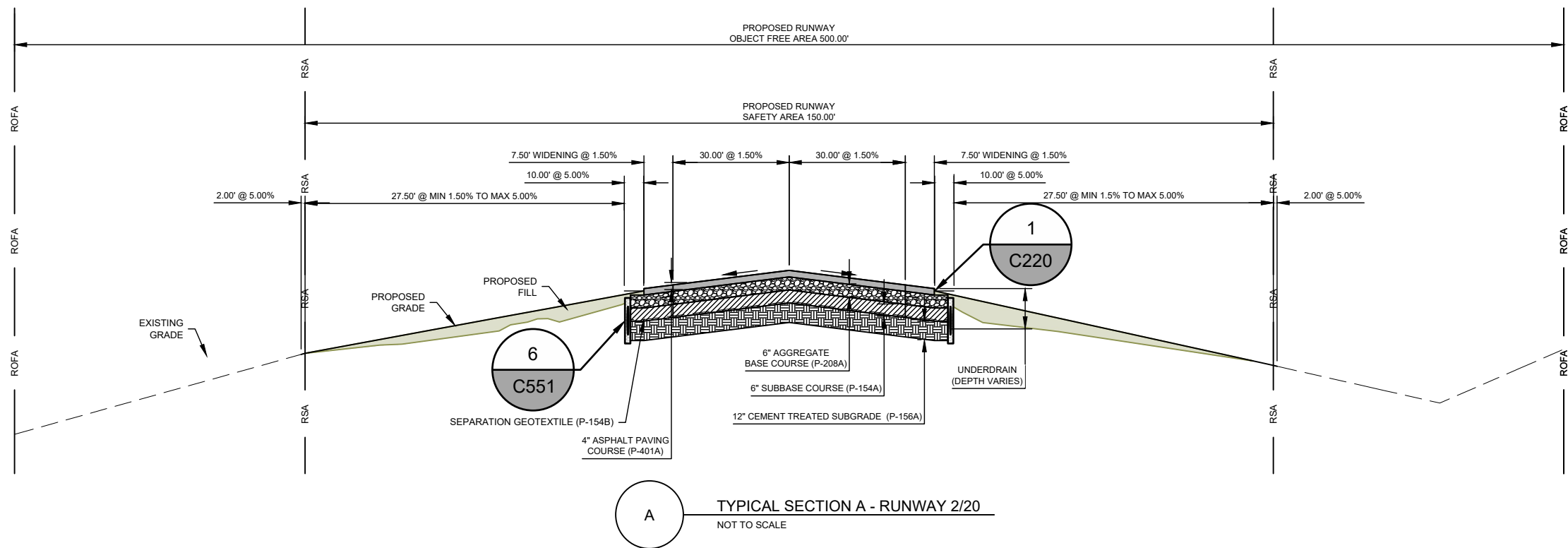
RUNWAY 2/20 RECONSTRUCTION & WIDENING AND APRON RECONSTRUCTION

SUMMARY OF APPROXIMATE QUANTITIES

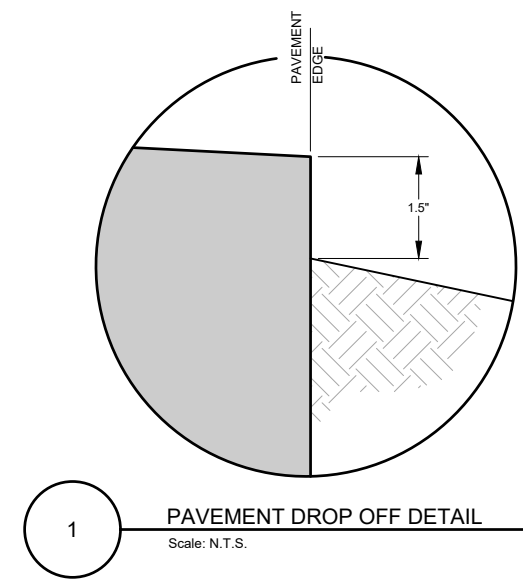
MoDOT PROJ. NO. 24-060A-1 & 24-060A-2 WOOLPERT PROJ. NO. 1015274

SHEET NAME
G005A

SHEET NO.
7 of 150



NOTE: IF BID ALTERNATE NO. 1 FULL DEPTH RECLAMATION (FDR) IS AWARDED, IT SHALL REPLACE SCHEDULE I RUNWAY 2/20 RECONSTRUCTION. THE CONTRACTOR IS TO PROVIDE A MIX DESIGN PRIOR TO PRODUCTION THAT SHOULD MEET A MINIMUM VALUE OF 30 CBR AS APPROVED BY THE RPR



ISSUED FOR BID

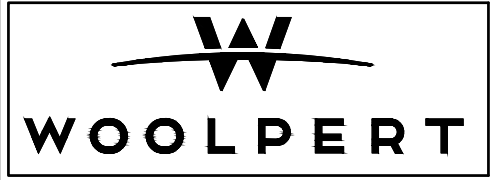
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NAME	REG. NO.	DATE

FOR AND ON BEHALF OF WOOLPERT

NOTE: ENTIRE SHEET HAS BEEN REVISED

Printed June 18, 2024 @ 3:25 PM by: Bernell, Violet
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DES: N.B.B.		ISSUE RECORD			
DR: V.S.B.	CH: C.L.G.	NO.	BY	DATE	DESCRIPTION
		1	L.K.K.	05/28/24	ISSUED FOR BID
		2	L.K.K.	06/17/2024	ADDENDUM NO. 2
		3	L.K.K.	06/19/2024	ADDENDUM NO. 4

RUNWAY 2/20 RECONSTRUCTION & WIDENING AND APRON RECONSTRUCTION

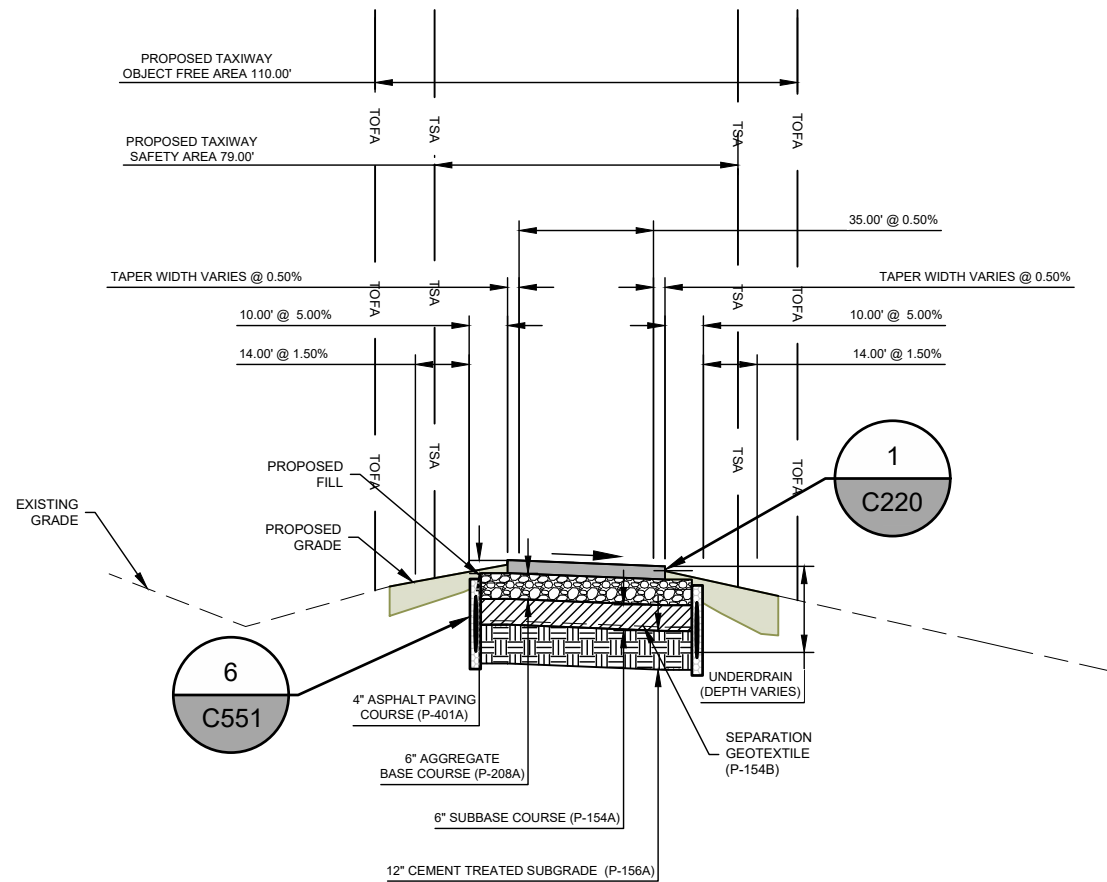
PAVEMENT TYPICAL SECTIONS

MoDOT PROJ. NO. 24-060A-1 & 24-060A-2

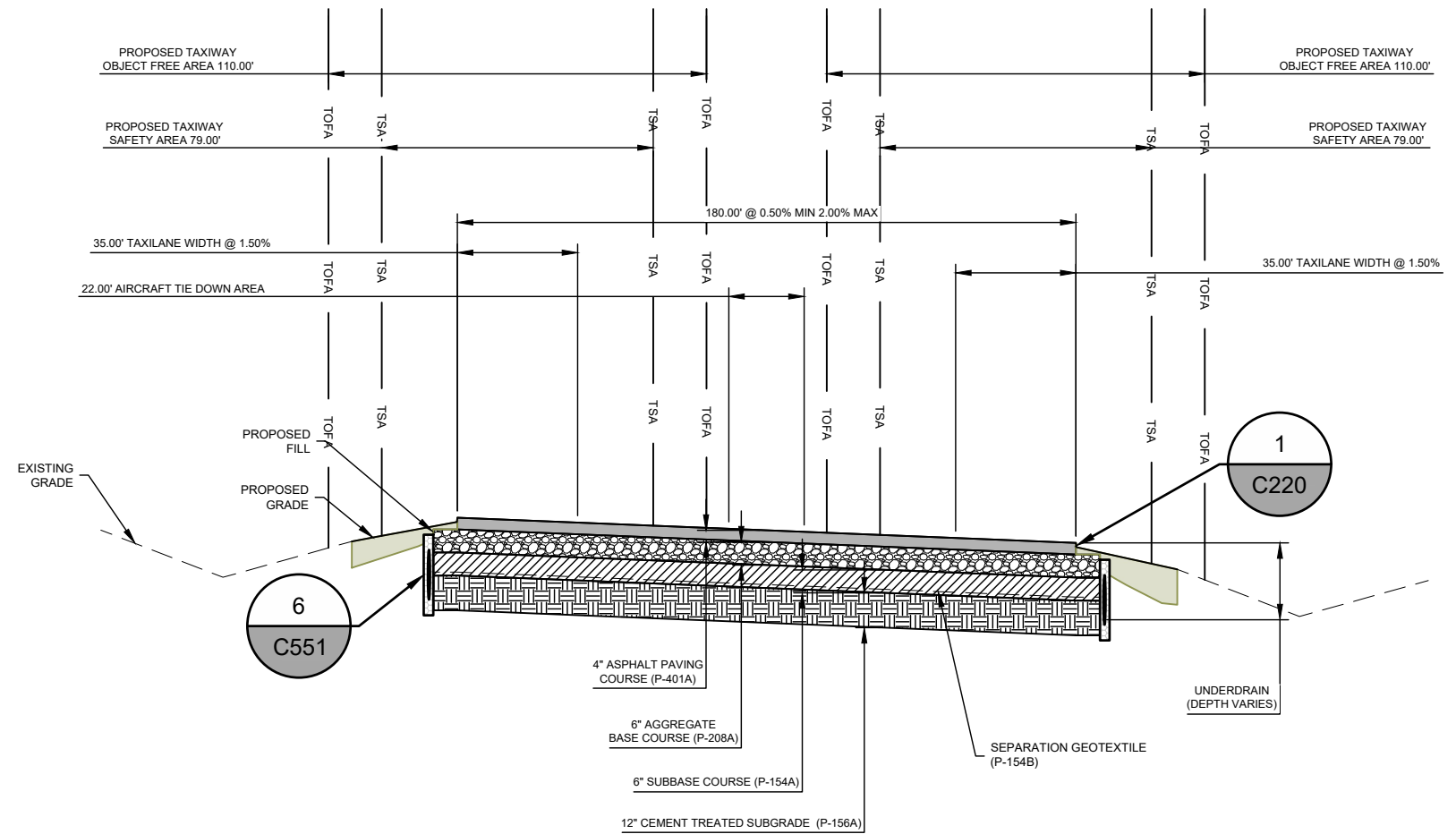
WOOLPERT PROJ. NO. 1015274

SHEET NAME C220

SHEET NO. 59 of 150



C TYPICAL SECTION - TAXIWAY A AND B
NOT TO SCALE



D TYPICAL SECTION - APRON
NOT TO SCALE

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LAURA K. KOONCE	2022012014	05/28/24
NAME	REG. NO.	DATE

FOR AND ON BEHALF OF WOOLPERT

NOTE: ENTIRE SHEET HAS BEEN REVISED

Printed June 18, 2024 @ 3:25 PM by: Bernell, Violet
 S:\C24-060A-1\apron\reconstruct\CAD\PLANS\220-APRON-23-360A-1-C220-1-SEC.dwg



ISSUE RECORD				
NO.	BY	DATE	DESCRIPTION	
1	L.K.K.	05/28/24	ISSUED FOR BID	
2	L.K.K.	06/11/2024	ADDENDUM NO. 1	
3	L.K.K.	06/17/2024	ADDENDUM NO. 2	
4	L.K.K.	06/19/2024	ADDENDUM NO. 4	

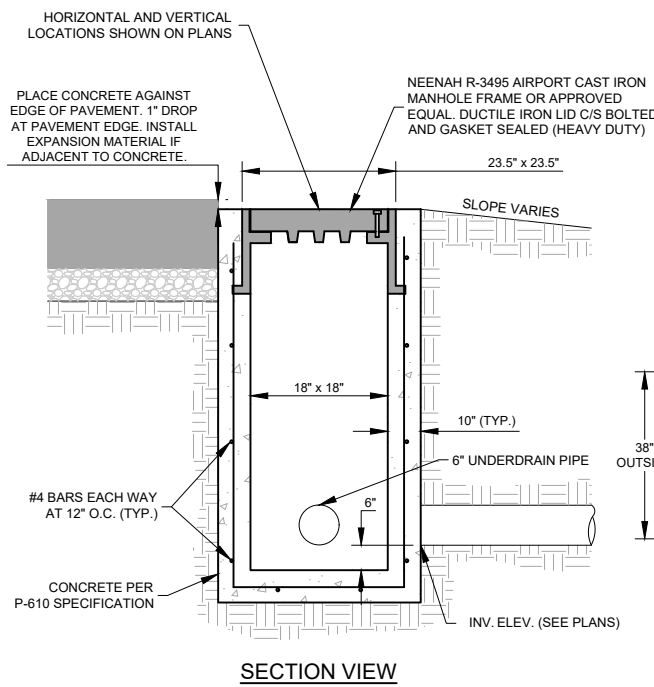
RUNWAY 2/20 RECONSTRUCTION
& WIDENING AND APRON
RECONSTRUCTION

PAVEMENT TYPICAL SECTIONS

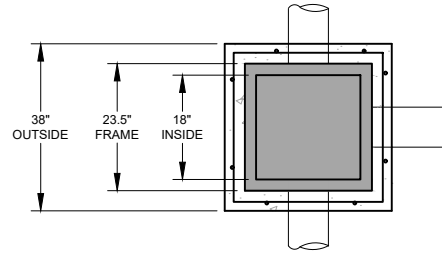
MoDOT PROJ. NO.
24-060A-1 & 24-060A-2

WOOLPERT PROJ. NO.
1015274

SHEET NAME
C221
SHEET NO.
60 of 150

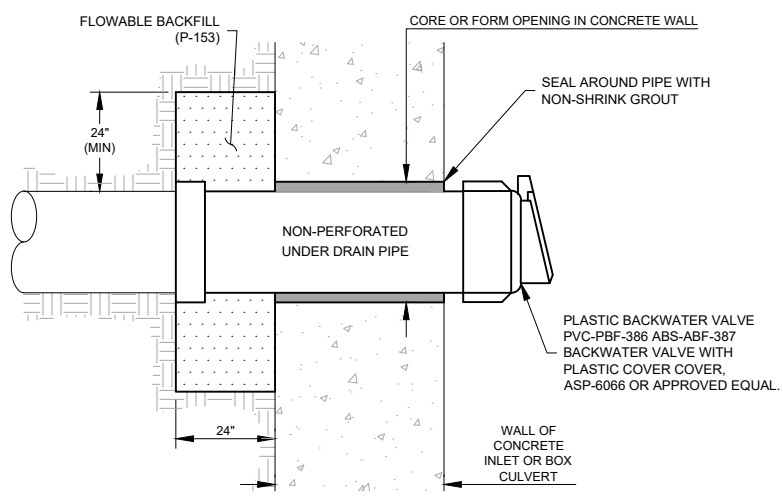


SECTION VIEW

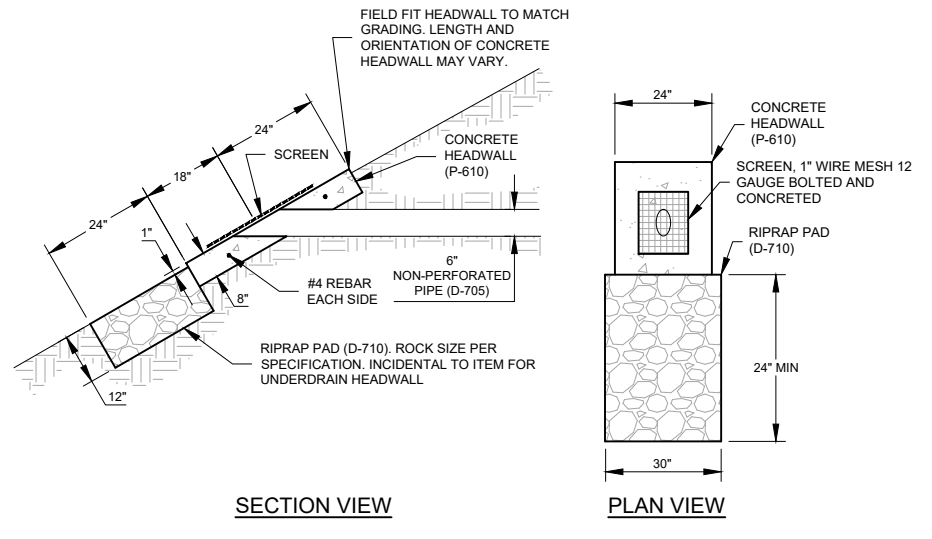


PLAN VIEW

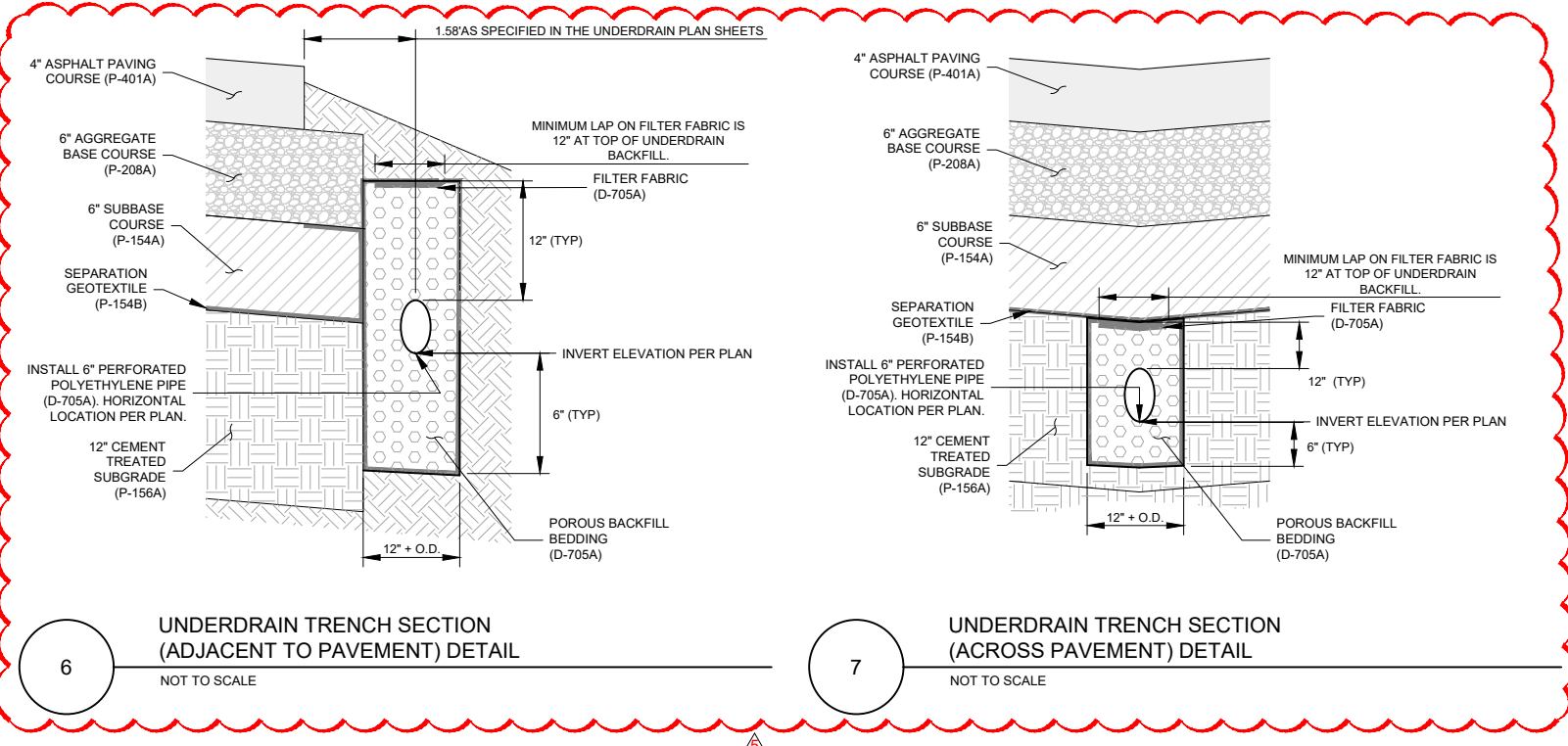
3 UNDERDRAIN INSPECTION PIT (IN TURF) DETAIL
NOT TO SCALE



4 UNDERDRAIN OUTFALL TO STRUCTURE DETAIL
NOT TO SCALE

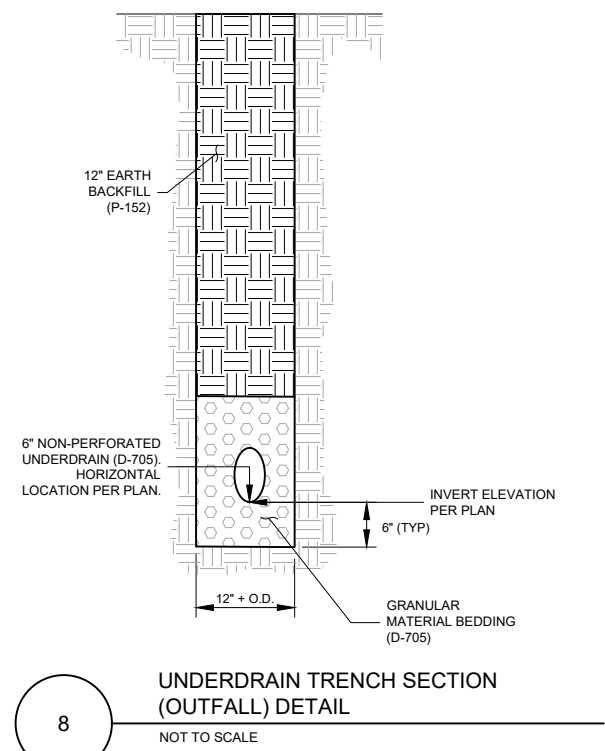


5 UNDERDRAIN OUTFALL HEADWALL DETAIL
NOT TO SCALE



6 UNDERDRAIN TRENCH SECTION (ADJACENT TO PAVEMENT) DETAIL
NOT TO SCALE

7 UNDERDRAIN TRENCH SECTION (ACROSS PAVEMENT) DETAIL
NOT TO SCALE



8 UNDERDRAIN TRENCH SECTION (OUTFALL) DETAIL
NOT TO SCALE

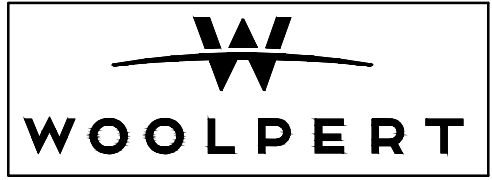
ISSUED FOR BID

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LAURA K. KOONCE	2022012014	05/28/24
NAME	REG. NO.	DATE

FOR AND ON BEHALF OF WOOLPERT

Plotted June 10, 2024 @ 3:47 PM by Bernell Violent
 S:\WC24\0601e-Lapen reconstruction\CAD\PPANS\05-RWC-23-000A-1-C060-STRM-DET1.dwg



DES: N.B.B.				
ISSUE RECORD				
NO.	BY	DATE	DESCRIPTION	
1	L.K.K.	05/28/24	ISSUED FOR BID	
2	L.K.K.	06/17/2024	ADDENDUM NO. 2	
3	L.K.K.	06/19/2024	ADDENDUM NO. 4	
DR: V.S.B.				
CH: C.L.G.				
APP: L.K.K.				

RUNWAY 2/20 RECONSTRUCTION & WIDENING AND APRON RECONSTRUCTION

UNDERDRAIN DETAILS

MoDOT PROJ. NO. 24-060A-1 & 24-060A-2
 WOOLPERT PROJ. NO. 1015274

SHEET NAME
C551

SHEET NO.
100 of 150