

Ordinance Number: 1365-23, File Number: 19-24

RTA Tunnel Membrane Replacement- Addendum 3

NARRATIVE: Addendum 3 contains the following:

- 1) Changes to the Volumes 1 and 2 of the Contract Documents due to the following:
- 2) Additional Pay Items resulting from Pre Bid Questions.
- 3) Elimination and addition of Items relating to the replacement of the footer drains and associated waterproofing for the tunnel.
- 4) Additional items required for the Mechanical Room Wall Repair.
- 5) Additional Items resulting from the addition of Plumbing Modifications at the RTA Connector/Collector and Mechanical Room.
- 6) Implementation of comments received from the Federal Aviation Administration (FAA).
- 7) Questions and answers to Pre Bid Questions
- 8) Pre Bid Conference Presentation.
- 9) Pre Bid Conference Minutes.
- 10) Asbestos Testing Correspondence.

CHANGES TO SPECIFICATIONS VOLUME 1 OF 2:

- 1) The question cut off date has been extended to March 26, 2024 at 5 PM.
- 2) Bid forms updated to incorporate the following changes:
- 3) Deleted Item P101-5.1: PAVEMENT REMOVAL-8", INCLUDING THICKENED EDGE.
- 4) Added Item P101-5.8a: REMOVE 6" VIT FOOTER DRAIN.
- 5) Replaced Item P101-5.10: REPAIR OF STRUCTURAL SLAB, TYPE A, B, OR C with individual pay items.
- 6) Added Item P101-5.10a: REPAIR OF STRUCTURAL SLAB, TYPE A.
- 7) Added Item P101-5.10b: REPAIR OF STRUCTURAL SLAB, TYPE B.
- 8) Added Item P101-5.10c: REPAIR OF STRUCTURAL SLAB, TYPE C.
- 9) Item P152-4.1: UNCLASSIFIED AND DRAINAGE EXCAVATION has been deleted.
- 10) Added Item D705-5.5: 6" SOLID PIPE UNDERDRAIN, COMPLETE INCLUDING P-153 BACKFILL.
- 11) Deleted Item MC-081-5.1: PAVEMENT MARKING REMOVAL. Pavement marking removal is now incidental to MC-003 TEMPORARY CONSTRUCTION ITEMS.
- 12) Item L109-7.4 has been moved to the end of the MC Items to align with the specifications.
- 13) Added Item MC005-5.2: TUNNEL WATERPROOFING SYSTEM INSTALLATION.
- 14) Added Item MC005-5.3: REMOVAL AND DISPOSAL OF CLASS II ASBESTOS, PER PLAN.
- 15) Revised Item MC006-5.1 to match specifications.
- 16) Changed Pay Item MC090-4.1 MECHANICAL ROOM REPAIR to Item MC090-5.1.
- 17) Added Item MC090-5.2: REMOVAL OF EXISTING ELECTRICAL SERVICE.
- 18) Added Item MC091-5.1: SEWER CLEANING AND CCTV.

- 20) Deleted Item 255-1: RIGID PAVEMENT REPLACEMENT.
- 21) Added Item 519: PATCHING CONCRETE STRUCTURE.
- 22) Deleted Item 642-1: CROSSWALK LINE, TYPE 2.
- 23) Revised Item 642-2 LANE LINE TYPE 2, 8" WIDE to match the specifications

CHANGES TO SPECIFICATIONS VOLUME 2 OF 2:

- 1) Specification Section 80-08 Failure to complete on time has been updated to reflect the latest phases and durations.
- 2) The Pay Items for Specification Section P101 have been updated to reflect changes in the plans.
- 3) Specification Section P152 is being reissued in its entirety to reflect changes in the plans.
- 4) Specification Section P153 Controlled Low Strength Material has been added.
- 5) Specification Section P610-1.1 has been revised to implement comments from the FAA.
- 6) Specification Section P610-5.1 has been revised.
- 7) Specification Section D705 has been revised to include Pay Item D705-5.5
- 8) Specification Section MC003-2.6 Portable Barrier with Fence has been added.
- 9) Specification Section MC005 is being reissued in its entirety to reflect changes in the plans and the addition pay items.
- 10) Specification Section MC090 has been revised to add Item MC090-5.2 Removal of Existing Electrical Service.
- 11) Specification Section MC091 Sewer Cleaning and CCTV has been added.
- 12) Specification Section 255 has been replaced in its entirety to reflect changes in the plans.
- 13) Specification Section 519 Patching Concrete Structures has been added.
- 14) Pay Item 642-1 has been deleted.
- 15) Pay Item 642-2 has been revised to match Contract Documents.

CHANGES TO THE PROJECT DRAWINGS:

- 1) Sheet C-2: Sheet Index and the Summary of Quantities have been updated.
- 2) General Notes on Sheet C-3 have been updated.
- 3) Typical Sections were revised on Sheet C-6.
- 4) Sheet C-7 Revised to show new sidewalk replacement limits.
- 5) Notes were revised on Sheet C-8.
- 6) Barricade with Fence Detail added to Sheets C-10 and C-11.
- 7) Sheet C-11 revised to show new limits of Phase 2.
- 8) Sheet C-12 has been deleted.
- 9) Sheet C-13 is being reissued to add Phase 4 to install pavement markings following the 30-day cure period.
- 10) Sheet C-14 is being reissued in its entirety to show changes in project phasing.
- 11) Sheet C-15 is being reissued in its entirety due to changes in phasing and waterproofing information.
- 12) Foam flashing detail has been removed from Sheet C-17.

- 13)** Sheet C-1 is being reissued in its entirety due to show waterproofing.
- 14)** Notes have been revised on Sheet C-22.
- 15)** Filter sock information and changes to the washout pit are detailed on Sheet C-23
- 16)** Sheet C-24 is being reissued to show filter sock installation around the perimeter of the laydown area.
- 17)** Electrical Service notes have been revised on Sheet C-25.
- 18)** Sheet C-26 has been revised to show circuits currently out of service.
- 19)** Sheet 27 Plumbing Modifications has been added to the Set.

BASE BID-RTA MEMBRANE REPLACEMENT						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (FIGURES)	UNIT PRICE (WRITTEN)	EXTENSION (FIG-S)
C100	CONTRACTOR QUALITY CONTROL PLAN	LS	1	\$		
C102-5.1F	DANDY BAG CURB INLET PROTECTION	EA	15	\$		
C105	MOBILIZATION	LS	1	\$		
P101-5.6	COLD MILLING-4"	SY	1200	\$		
P101-5.7	REMOVE SLOTTED DRAIN	LF	200	\$		
P101-5.8	REMOVE 6" UNDERDRAINS	LF	360	\$		
P101-5.8a	REMOVE 6" VIT FOOTER DRAINS	LF	360	\$		
P101-5.9	CONCRETE WEARING SURFACE REMOVAL-4"	SY	700	\$		
P101-5.10a	REPAIR OF STRUCTURAL SLAB, TYPE A	SY	60	\$		
P101-5.10b	REPAIR OF STRUCTURAL SLAB, TYPE B	SY	60	\$		

Signature

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BASE BID-RTA MEMBRANE REPLACEMENT						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (FIGURES)	UNIT PRICE (WRITTEN)	EXTENSION (FIG-S)
P101-5.10c	REPAIR OF STRUCTURAL SLAB, TYPE C	SY	30	\$		
D705-5.4	6" PIPE UNDERDRAIN, COMPLETE INCLUDING BACKFILL AND FILTER	LF	180	\$		
D705-5.5	6" SOLID PIPE UNDERDRAIN, COMPLETE INCLUDING P-153 BACKFILL	LF	150	\$		
D751-5.3	BOX INLETS	LF	200	\$		
D751-5.4	INSPECTION HOLES	EA	3	\$		
MC003-6.1	TEMPORARY CONSTRUCTION ITEMS	LS	1	\$		
MC004-6.1	4" CONCRETE WEARING SLAB	SY	700	\$		
MC005-5.1	TUNNEL WATERPROOFING SYSTEM REMOVAL	SY	1100	\$		
MC005-5.2	TUNNEL WATERPROOFING SYSTEM INSTALLATION	SY	1100	\$		
MC005-5.3	REMOVAL AND DISPOSAL OF CLASS II ASBESTOS, PER PLAN	SY	1100	\$		

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BASE BID-RTA MEMBRANE REPLACEMENT						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (FIGURES)	UNIT PRICE (WRITTEN)	EXTENSION (FIG-S)
MC006-5.1	10" CONCRETE WALK REMOVED AND RECONSTRUCTED	SY	180	\$		
MC090-5.1	MECHANICAL ROOM WALL REPAIR	SF	40	\$		
MC090-5.2	REMOVAL OF EXISTING ELECTRICAL SERVICE	LS	1	\$		
MC091-5.1	SEWER CLEANING AND CCTV	LF	150	\$		
MC091-5.2	FLOOR SLAB REMOVAL AND REPLACEMENT	SF	150	\$		
L109-7.4	INSTALLATION OF EQUIPMENT IN EXISTING VAULT	EA	1	\$		
407-1	TACK COAT	GAL	82	\$		
407-2	TACK COAT FOR INTERMEDIATE COURSE	GAL	44	\$		
446-1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG-22	CY	12	\$		
446-2	VARIABLES 1"-3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG 64-22	CY	36	\$		

Signature

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Date

BASE BID-RTA MEMBRANE REPLACEMENT						
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (FIGURES)	UNIT PRICE (WRITTEN)	EXTENSION (FIG-S)
516-1	3/4" PREFORMED EXPANSION JOINT FILLER	LF	200	\$		
516-2	1/2" PREFORMED EXPANSION JOINT FILLER	LF	250	\$		
516-3	1" PREFORMED EXPANSION JOINT FILLER	LF	200	\$		
516-4	JOINT SEALER	LF	2000	\$		
519	PATCHING CONCRETE STRUCTURE	SF	200	\$		
642-2	LANE LINE, TYPE 2, 8"	LF	1000	\$		
	TOTAL BASE BID			\$		

CONTRACTOR NAME
ADDRESS

PHONE
AUTHORIZED REPRESENTATIVE (PRINTED)

AUTHORIZED REPRESENTATIVE (SIGNATURE)

Signature

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80-07.1 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner’s orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Phase 1	\$1000/Day	90 Days
Phase 2	\$1000/Day	60 Days
Phase 3	\$1000/Day	1 Day
Phase 4	\$1000/Day	1 Day
Phase 5	\$1000/Day	150 Days

A3

The maximum construction time allowed for Schedules 1-5 will be the sum of the time allowed for individual schedules but not more than **181 days**. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

Item P-152 Excavation, Subgrade, and Embankment

A3

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature which is not otherwise classified and paid for under one of the following items.

Drainage excavation. Drainage excavation shall consist of all excavation made for the primary purpose of drainage and includes drainage ditches, such as intercepting, inlet or outlet ditches; temporary levee construction; or any other type as shown on the plans.

152-1.3 Unsuitable excavation. Not used

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of

the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

a. Selective grading. Not used

b. Undercutting. Not used

c. Over-break. Not used

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Not used

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed: . In those areas on which a subbase or base course is to be placed, the top 12 inches of subgrade shall be compacted to not less than 100 of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods

for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

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

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

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

The material in each lift shall be within $\pm 2\%$ of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

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

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

Density tests will be taken by the contractor for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

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

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. Under all areas to be paved, the embankments shall be compacted to a depth of 5' and to a density of not less than 100 percent of the maximum density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm) which shall be prepared for a seedbed in accordance with Item T-901 and T-906.

The in-place field density shall be determined in accordance with ASTM D1556. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compact and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. After compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton) Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80/100/150 psi (0.551 MPa/0.689 MPa/1.034 MPa) in the presence of the RPR. Apply a minimum of 4' coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The material to be compacted shall be within $\pm 2\%$ of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the $\frac{3}{4}$ inch (19.0 mm) sieve, follow the methods in ASTM D698. Tests for moisture content and compaction will be taken at a minimum of 3000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D1556. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

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

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

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

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

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

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

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

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

- a. **Smoothness.** The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.
- b. **Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as

shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

No separate measurement for payment shall be made P-152 Excavation and Embankment. P-152 Excavation and Embankment shall be considered necessary and incidental to the work of this Contract.

BASIS OF PAYMENT

No payment will be made separately or directly for P-152 Excavation and Embankment P-152 Excavation and Embankment shall be considered necessary and incidental to the work of this Contract .

REFERENCES

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

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2700 kN-m/m³))

ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2 Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66 Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

Item P-153 Controlled Low-Strength Material (CLSM)

A3

DESCRIPTION

153-1.1 This item shall consist of furnishing, transporting, and placing a controlled low-strength material (CLSM) as flowable backfill in trenches or at other locations shown on the plans or as directed by the Resident Project Representative (RPR).

MATERIALS**153-2.1 Materials.**

a. Cement. Cement shall conform to the requirements of ASTM C150 Type I or II.

b. Fly ash. Fly ash shall conform to ASTM C618, Class C or F.

c. Fine aggregate (sand). Fine aggregate shall conform to the requirements of ASTM C33 except for aggregate gradation. Any aggregate gradation which produces the specified performance characteristics of the CLSM and meets the following requirements, will be accepted.

Sieve Size	Percent Passing by weight
3/4 inch (19.0 mm)	100
No. 200 (75 μ m)	0 - 12

d. Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

MIX DESIGN

153-3.1 Proportions. The Contractor shall submit, to the RPR, a mix design including the proportions and source of aggregate, fly ash, cement, water, and approved admixtures. No CLSM mixture shall be produced for payment until the RPR has given written approval of the proportions. The proportions shall be prepared by a laboratory and shall remain in effect for the duration of the project. The proportions shall establish a single percentage or weight for aggregate, fly ash, cement, water, and any admixtures proposed. Laboratory costs are incidental to this item.

a. Compressive strength. CLSM shall be designed to achieve a 28-day compressive strength of 100 to 200 psi (690 to 1379 kPa) when tested in accordance with ASTM D4832, with no significant strength gain after 28 days.

b. Consistency. Design CLSM to achieve a consistency that will produce an approximate 8-inch (200 mm) diameter circular-type spread without segregation. CLSM consistency shall be determined per ASTM D6103.

CONSTRUCTION METHODS**153-4.1 Placement.**

a. Placement. CLSM may be placed by any reasonable means from the mixing unit into the space to be filled. Agitation is required during transportation and waiting time. Placement shall be performed so structures or pipes are not displaced from their final position and intrusion of CLSM into unwanted areas is avoided. The material shall be brought up uniformly to the fill line shown on the plans or as directed by the RPR. Each placement of CLSM shall be as continuous an operation as possible. If CLSM is placed in more than one lift, the base lift shall be free of surface water and loose foreign material prior to placement of the next lift.

b. Contractor Quality Control. The Contractor shall collect all batch tickets to verify the CLSM delivered to the project conforms to the mix design. The Contractor shall verify daily that the CLSM is consistent with 153-3.1a and 153-3.1b. Adjustments shall be made as necessary to the proportions and materials as needed. The Contractor shall provide all batch tickets to the RPR.

c. Limitations of placement. CLSM shall not be placed on frozen ground. Mixing and placing may begin when the air or ground temperature is at least 35°F (2°C) and rising. Mixing and placement shall stop when the air temperature is 40°F (4°C) and falling or when the anticipated air or ground temperature will be 35°F (2°C) or less in the 24-hour period following proposed placement. At the time of placement, CLSM shall have a temperature of at least 40°F (4°C).

153-4.2 Curing and protection

a. Curing. The air in contact with the CLSM shall be maintained at temperatures above freezing for a minimum of 72 hours. If the CLSM is subjected to temperatures below 32°F (0°C), the material may be rejected by the RPR if damage to the material is observed.

b. Protection. The CLSM shall not be subject to loads and shall remain undisturbed by construction activities for a period of 48 hours or until a compressive strength of 15 psi (105 kPa) is obtained. The Contractor shall be responsible for providing evidence to the RPR that the material has reached the desired strength. Acceptable evidence shall be based upon compressive tests made in accordance with paragraph 153-3.1a.

153-4.3 Quality Assurance (QA) Acceptance. CLSM QA acceptance shall be based upon batch tickets provided by the Contractor to the RPR to confirm that the delivered material conforms to the mix design.

METHOD OF MEASUREMENT

153-5.1 Measurement.

No separate measurement for payment shall be made for controlled low strength material (CLSM). CLSM shall be considered necessary and incidental to the work of this Contract.

BASIS OF PAYMENT

No payment will be made separately or directly for controlled low strength material (CLSM). CLSM shall be considered necessary and incidental to the work of this Contract.

REFERENCES

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

ASTM International (ASTM)

ASTM C33

Standard Specification for Concrete Aggregates

ASTM C150	Standard Specification for Portland Cement
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D4832	Standard Test Method for Preparation and Testing of Controlled Low-Strength Material (CLSM) Test Cylinders
ASTM D6103	Flow Consistency of Controlled Low Strength Material (CLSM)

Item P-610 Concrete for Miscellaneous Structures**DESCRIPTION**

610-1.1 This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

A3

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix.

If the expansion is greater than 0.20%, the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

610-3.14 Hot weather placing. When concrete is placed in hot weather greater than 85°F (30 °C), follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

QUALITY ASSURANCE (QA)

610-4.1 Quality Assurance sampling and testing. Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; test air content in accordance with ASTM C231; make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

610-4.2 Defective work. Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

METHOD OF MEASUREMENT

610-5.1 Concrete shall be considered incidental and no separate measurement shall be made.

A3

BASIS OF PAYMENT

610-6.1 Payment shall be made at the contract price concrete shall be considered incidental and no separate payment shall be made. This price shall be full compensation for furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-610-6.1	Concrete, incidental to other work items
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REFERENCES

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

ASTM International (ASTM)

ASTM A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars

705-5.2 Porous backfill. Not used

705-5.3. Filter fabric. Not used

705-5.4 Pipe underdrains, Complete. Pipe underdrains, complete (including porous backfill and filter fabric) shall be made at the contract unit price per linear foot (meter) complete (including porous backfill and filter fabric).

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item D-705-5.1	Not used
Item D-705-5.3	Not used
Item D-705-5.4	6 inch, perforated pipe underdrain per linear foot complete, including porous backfill and filter fabric
Item D-705-5.5	6 inch, solid pipe underdrains per linear foot, complete including P-153 Backfill.

A3

REFERENCES

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

ASTM International (ASTM)

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C444	Standard Specification for Perforated Concrete Pipe
ASTM C654	Standard Specification for Porous Concrete Pipe
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

003-2.5 Maintenance of Pedestrian Traffic through the RTA Connector Collector. This Item includes all required overhead protections as indicated on the project drawings and within these specifications.

003-2.6 Portable Barrier with Fence. The barrier shall meet the material requirements for ODOT Item 622.02, Fence materials shall meet the requirements of ODOT 710.11 and ODOT 710.13.

A3

CONSTRUCTION METHODS

003-3.1 Construction drums. Construction drums shall be placed as indicated on the Phasing Plan and/or as directed by the Resident Project Representative. Drums shall remain in place for the time periods shown on the plans. The construction drums shall be property of the contractor and shall be removed from the site following project completion.

003-3.2 Flagpersons. Flagpersons shall be provided, as necessary, to control the Contractor's traffic during the prosecution of work.

003-3.4 Work scheduling and accomplishment. Prior to working on or near any operational Terminal area, Contractor shall notify the Resident Project Representative who will request closures as required from Airport Operations so that provisions can be made to close the Lower Roadway to traffic. Such work shall then be prosecuted in the most expeditious manner practicable so that the Lower Roadway can be reopened to traffic at the earliest possible time. Contractor shall reference Phasing Plans for additional information. The contractor-designated representative shall contact the Resident Project Representative each day before beginning work to coordinate the status and nature of work to be performed. Contractor-designated representative shall report to the Resident Project Representative at the end of each day to schedule the work planned for the following day.

003-3.5 Vehicle marking and identification. All vehicles larger than a pickup truck operating on the site and all Contractor escort vehicles shall be marked with orange and white checkered flags, each checkerboard color being one (1) foot square. Flags shall be three (3) feet square and shall be tacked along a staff having a length of four (4) feet and a minimum thickness of one (1) inch. A revolving yellow (amber) light (FAA Approved) mounted on top of the vehicle may be used in lieu of a checkerboard flag. The revolving yellow (amber) light (FAA Approved) is required for vehicles operating on the airfield at night. Vehicles shall include identification lettering as required by the Airport Security Office (ASO).

003-3.6 Vehicle parking. No contractor on-site vehicular parking will be available. Prior to parking construction vehicles for this project, the contractor shall submit a plan indicating the areas where parking is desired for review and approval by Airport Operations. During non-working hours, construction equipment may remain inside the construction site perimeter, outside of taxiway object free areas and runway object free areas as shown on the safety and phasing Plans.

003-3.8 Marking removal and replacement. Where indicated on the phasing plans, roadway markings shall be removed for the duration of the phase, and reinstalled at the completion of the phase. Markings shall be removed as specified in ODOT Item 614 and reinstalled as indicated in ODOT Item 642. Payment for the removal and replacement of the roadway markings shall be included as part of pay item MC-003-6.1.

SAFETY REQUIREMENTS

003-4.1 General. Emergencies and operating conditions may necessitate sudden changes, both in Airport operations and in the operations of the Contractor. Aircraft operations shall always have priority over any and all of the Contractor's operations. Through the duration of the job any practice or situations that Airport Operations or the Resident Project Representative determines to be unsafe or a hindrance to regular Airport operations shall be immediately rectified. Any violation of these or the following safety

Item MC-005: Tunnel Waterproofing System

A3

DESCRIPTION

005-1.1 This work consists of the removal of the existing waterproofing system on the RTA Tunnel walls and top slab and the installation of a waterproofing system as shown in the plans and as described in these specifications. Repairs (e.g. surface scaling and/or partial depth) to the structural slab shall be paid for under separate items and be accomplished prior to waterproofing surface preparation. Waterproofing surface preparation shall be as per P-101 unless otherwise recommended by the manufacturer's written instructions.

MATERIALS

005-2.1 The waterproofing system shall be a fabric reinforced, monolithic membrane, Type 6125 (215 mils). All system components shall be obtained from a single source manufacturer to ensure compatibility and integrity of the system.

005-2.2 The waterproofing system will be composed of the following layers:

1. Surface Conditioner.
2. Hot, fluid applied, rubberized asphalt monolithic waterproofing membrane:
3. Polyester fabric membrane reinforcing:
4. Fiberglass reinforced rubberized asphalt protective board:

005-2.3 The waterproofing system shall be installed as shown in the plans and in accordance with the manufacturer's written instructions and recommendations.

005-2.4 This item will include all surface preparation, material, equipment and labor required for the installation of the waterproofing system complete and in place.

METHOD OF MEASUREMENT

005-4.1 The Waterproofing System removal shall be measured by square yards on the basis of the actual surface area removed, installed, and accepted.

005-4.2 The Waterproofing System installation shall be measured by square yards on the basis of the actual surface area removed, installed, and accepted.

005-4.2 The removal of Class II Asbestos containing materials shall be measured by square yards on the basis of the actual surface area removed. Costs shall include disposal per all Local, State, and Federal Requirements.

BASIS OF PAYMENT

005-5.1 Payment will be made under:

- Item MC-005-5.1 Existing Tunnel Waterproofing System Removal, per square yard.
- Item MC-005-5.2 Tunnel Waterproofing System Installation, per square yard.
- Item MC-005-5.3 Removal and Disposal of Class II Asbestos Containing Materials, per square yard.

END OF ITEM MC-005

halt operations and repair damage without compensation to the satisfaction of the Resident Project Representative and Airport Engineer.

090-3.3 The method used shall not materially damage the structural integrity of the walls to remain. Any damage caused by the Contractor's operations shall be corrected at the Contractor's expense and in a manner approved by the Airport Engineer. The Contractor shall take precautions to prevent any damage to equipment or facilities from any damage due to his operations. Accumulation of all debris resulting from the removal operation shall become the property of the Contractor and be removed as the work progresses and legally disposed of off Airport property.

090-3.5 The Contractor shall vacuum and/or remove all debris created by the operations during the operation and at the end of each shift.

METHOD OF MEASUREMENT

090-4.1 Structural Wall Repair shall be measured by square foot. This price shall include all associated pavement removal, excavation, backfill, and pavement replacement as indicated on the plans and according to the specifications.

BASIS OF PAYMENT

Payments will be made under:

Item MC-090-5.1 Structural Wall Repair – per square foot

Item MC-090-5.2 Removal of Existing Electrical Service-Lump Sum

A3

TESTING REQUIREMENTS

See specific specification sections.

END OF ITEM MC-090

Item MC-091 Sewer Cleaning and CCTV

A3

DESCRIPTION

MC-091-1.0 GENERAL: The designated sanitary sewers shall be cleaned of root intrusion, sedimentation, and foreign materials, by the Contractor using hydraulically propelled, high velocity jet, or mechanically powered equipment. The use of chemical root treatments or grease solvents by the Contractor shall not be permitted. Selection of the equipment used shall be at the option of the Contractor and shall be based on the condition of the pipe at the time work commences. The equipment and methods selected shall be approved by the Resident Project Representative (RPR).

The equipment used by the Contractor shall be capable of removing roots, dirt, grease, rocks, sand, other materials, and obstructions from the sewer pipe and manholes. The Contractor shall effectively clean each sanitary sewer for the purpose intended or shall restore sewers to minimum of 95% of the internal pipe diameter. The Contractor shall also clean manhole walls, benches, and inverts of all such debris, as directed.

MC-091-2.0 HIGH-VELOCITY JET CLEANING: High velocity jet cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of high velocity nozzles as may be necessary to produce a scouring action from 15 to 45 degrees in all size pipes designated to be cleaned. The equipment shall also include a high-velocity gun for washing and scouring manhole walls and floors. The gun shall be capable of producing flows from a fine spray to a solid stream of sufficient velocity for its intended purpose. The equipment shall carry its own water tank, auxiliary engines, pumps and hydraulically driven hose reel.

MC-091-2.1 OBSTRUCTIONS: Should the Contractor be unsuccessful in the cleaning of an entire sewer reach from one direction, the equipment shall then be reset from the opposite manhole and the cleaning again shall be attempted. If, on this second attempt from the opposite direction, successful cleaning cannot be performed or the equipment fails to traverse the entire sewer reach, it will be assumed that a major blockage exists, and the cleaning effort for that reach shall be abandoned until such time as the sewer reach can be inspected by television.

Should television inspection indicate a condition such as a collapsed pipe, or other major blockage that would prevent cleaning from being accomplished without additional damage, the Contractor will not be required to clean that specific reach to the degree specified. Notification to the District contact person shall be made immediately after discovery of such blockage. Should the television inspection indicate an obstruction that may be removed by cleaning, the Contractor shall again attempt the cleaning of that segment of line so that the television inspection of the entire manhole reach can be completed.

MC-091-2.2 DAMAGES TO SEWER LINE DURING NORMAL OPERATIONS: If in the course of normal cleaning operations performed by the Contractor by a method that is satisfactory to the Resident Project Representative and while using due care, damage results to the sewer pipe from pre-existing and unforeseen conditions, the Contractor shall not be held responsible, but shall notify the RPR personnel immediately.

MC-091-2.3 PRECAUTIONS: The Contractor shall utilize all necessary precautions in the use of cleaning equipment or tools which retard flow in the sewer lines to insure that the water pressure created does not damage or flood areas being serviced by the sewer.

MC-091-2.4 REMOVAL OF MATERIAL: All sludge, dirt, sand, rocks, grease and other material resulting from the cleaning operation shall be removed at the downstream manhole of each section to be cleaned. Passing of material from sewer section to sewer section shall not be permitted.

All materials removed from the sewer shall be disposed of by the Contractor on a daily basis in a manner that is satisfactory to The Department of Port Control Environmental Division.

Failure to properly remove the material from the sewer section will not be tolerated.

MC-090-3.0 SEWER FLOW CONTROL

MC-091-3.1 GENERAL: Should the depth of flow within a sanitary sewer outfall, main, or service lateral, exceed 20% of the pipe diameter for the work being contemplated, or should the flow otherwise prevent the proper execution of work in progress, the Contractor shall reduce the flow prior to proceeding, by plugging, blocking, or bypassing the flow as may be necessary.

MC-091-3.2 PLUGGING AND BLOCKING: The Contractor may control the sewer flow by plugging or blocking the flow upstream of the sewer reach being worked. The plug shall be so designed that all or any portion of the flow can be released. The plug shall at all times be secured in such a manner that will prevent the plug from entry into the outlet pipe of the manhole being used. Mechanical plugs requiring manned entry into the manhole to release the flow shall not be permitted. It will be the Contractor's responsibility to monitor the flow upstream from the plug and ensure no over flows occur.

MC-091-3.3 BY-PASS PUMPING: Should flow bypassing be required, the Contractor shall provide the pumps, conduits, and other equipment as may be necessary to divert the flow of sewage around the sewer reach in which work is to be performed. The bypass system shall be of sufficient capacity to manage the flow rates encountered throughout the bypassing operation. The Contractor shall have, on site, sufficient back-up equipment, hoses, and power supply, equal to or better than the primary equipment, to immediately replace pumping equipment, in the event of a failure.

MC-091-3.4 EQUIPMENT BLOCKAGES: Should at any time cleaning or television equipment or flow control devices become lodged within the sewer the Contractor shall take immediate steps to set a flow bypass system to divert the flow of sewage around the problem area, and the Contractor shall immediately inform the RPR of the problem and make immediate plans and take action to remedy the situation at the Contractor's expense.

MC-091-3.5 PRECAUTIONS: The Contractor shall take sufficient precautions to protect the sewer lines from damage that may result from sewer surcharging, and to insure that sewer flow control operations do not cause flooding or damage to the sewer lines involved. At such times as the flow in a sewer is plugged, blocked, bypassed or unintentionally obstructed by lodged equipment or devices, the Contractor shall immediately restore the sewer to operating condition. The restoration shall be at the Contractor's expense and will restore the sewer to a condition similar or equal to that which existed before such damages were committed, by cleaning, repairing, rebuilding, or replacing, as may be required by the RPR.

MC-091-4.0 TELEVISION INSPECTION

MC-091-4.1 GENERAL: The Contractor, upon completion of the successful cleaning, shall visually inspect and record the conditions of all sanitary sewers as herein by means of closed circuit television (CCTV).

MC-091-4.2 EQUIPMENT: The Contractor shall be capable of television inspection through a single port of access to the pipe line by means of a "tractor-camera", or "push-pull" type video cable. The television equipment utilized by the Contractor for inspection shall be specifically designed and constructed for such inspections.

Lighting for the camera shall be suitable to allow a clear and properly contrasted picture of the entire periphery of the pipes to be inspected. The camera, television monitor, and other components of the video system shall be capable of producing a clear, high quality unobstructed picture for the entire length of the reach, from manhole to manhole including the connections on either end, to the satisfaction of the RPR.

The camera shall be moved through the sewer in either direction at a moderate rate, stopping when necessary to permit proper documentation of the sewer's structure and condition. Manual winches, power winches, TV cable and power rewinds or other devices that do not obstruct the camera view or interfere with the proper documentation of the sewer inspection may be used to move the camera through the sewer. In no case, shall the camera progress at a rate greater than 30 feet per minute.

MC-091-4.3 DEPTH OF FLOW AND SAGS IN SEWER MAIN: Should the depth of flow exceed 30% of the pipe diameter at any time during the inspection of a sewer line, the Contractor shall reduce the flow to a depth within the maximum level by plugging, blocking, or bypassing the flow as herein specified. Where sags in reaches create standing water, the cleaning operation shall remove enough water such that the entire pipe is visible for inspection.

MC-091-4.4 BLOCKAGES: Should the Contractor be unsuccessful in the television inspection of an entire sewer from one direction, the equipment shall then be reset from the opposite connection and television inspection shall again be attempted. Should the television inspection indicate an obstruction that may be removed by cleaning, the Contractor shall again attempt the cleaning of that segment of line so that television inspection of the entire sewer reach can be completed. If unable to complete inspection due to a blockage or without causing more damage to the segment, the Contractor shall contact the RPR immediately to notify them of the damage.

MC-091-4.5 FINAL DELIVERABLE INFORMATION / GIS: A NASSCO compliant PACP database shall be submitted following the project and will serve as the project deliverable. GIS edits shall be communicated to District staff so that GIS can be properly updated prior to the contractor's inspection to reflect the proper location and connectivity of all pipes and manholes. Newly found manholes shall be reflected in the database and shown in the proper location. The Contractor must use the same manhole and PW_ID identification numbers as the District's GIS system for the database to properly sync the PACP information. The database will not be accepted otherwise.

MC-091-4.6 6" REINFORCED SLAB REMOVAL AND REPLACEMENT: This item shall be used at the discretion of the Airport Engineer if the Cleaning and CCTV item identifies areas of trunk line replacement.

METHOD OF MEASUREMENT

MC-091-5.0 METHOD OF MEASUREMENT

MC-091-5.1: The length of pipe cleaned and CCTV shall be the number of linear feet as measured by the Contractor following the CCTV effort.

MC-091-5.2: The 6" reinforced concrete slab to be removed and replaced in the RTA Connector/Collector and Mechanical Room will be measured by the square foot.

BASIS OF PAYMENT

Payments will be made under:

- Item MC-091-5.1 Sewer Cleaning and CCTV – per linear foot
- Item MC-091-5.2 Floor Slab Removal and Replacement – per square foot.

ODOT Item 255 Full Depth Pavement Removal and Rigid Replacement

A3

DESCRIPTION

255 1.1 This item shall consist of furnishing all labor, materials, and equipment required for the removal and replacement of pavement associated with the replacement of the tunnel footer drains with Item D705 Pipe Underdrains.

MATERIALS

255-2.1 Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

CONSTRUCTION METHODS

255-3.1 Construction methods shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

METHOD OF MEASUREMENT

This item is considered incidental to D-705 Pipe Underdrains.

BASIS OF PAYMENT

Payments will be made under:

There will be no separate payment for this item. This item is incidental to Item D705 Pipe Underdrains.

TESTING REQUIREMENTS

Testing shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

MATERIAL REQUIREMENTS

Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

END OF ODOT ITEM 255

ODOT Item 519 Patching Concrete Structures

A3

DESCRIPTION

519 1.1 This item shall consist of furnishing all labor, materials, and equipment required for the placement of flexible pavement as indicated on the plans.

MATERIALS

519-2.1 Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

CONSTRUCTION METHODS

519-3.1 Construction methods shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

METHOD OF MEASUREMENT

Patching Concrete Structures will be measured by the number of square feet (square meters) of the exposed surfaces of all completed patches, irrespective of the depth or thickness of the patch.

BASIS OF PAYMENT

Payments will be made under:

Item	Unit	Description
ODOT 519	Square Foot	Patching Concrete Structure

TESTING REQUIREMENTS

Testing shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

MATERIAL REQUIREMENTS

Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

END OF ODOT ITEM 519

ODOT Item 642 Traffic Paint

DESCRIPTION

516-1.1 This item shall consist of furnishing all labor, materials, and equipment required for the placement of expansion and contraction joints and sealers as indicated on the plans.

MATERIALS

516-2.1 Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

CONSTRUCTION METHODS

516-3.1 Construction methods shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

METHOD OF MEASUREMENT

ODOT 642-1, Lane Line Type 2 shall be measured by the linear foot.

BASIS OF PAYMENT

Payments will be made under:

ODOT 642-2, Lane Line Type 2, 8" Wide— per linear foot.

A3

TESTING REQUIREMENTS

Testing shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

MATERIAL REQUIREMENTS

Materials shall meet the requirements set forth in the latest edition of the State of Ohio Department of Transportation Construction and Material Specifications.

END OF ODOT ITEM 642