



## UNIVERSITY FACILITIES MANAGEMENT

Sixth Avenue and Grant Street • P.O. Box 172760 • Bozeman, Montana 59717-2760  
Phone: (406) 994-5413 • Fax: (406) 994-5665

### ADDENDUM NO. 2 - OUTLINE AND SUMMARY INFORMATION

Project Name: MSU Stadium Lots

PPA No.: 22-0012

Location: 1 Bobcat Circle, Bozeman, MT 59717

Date: 04-01-2024

To: *All Plan Holders of Record*

*The Plans and Specification prepared by **DJ&A P.C.** dated **04-01-2024**, shall be clarified and added as follow. The bidder proposes to perform all the following clarifications or changes. It is understood that the Base Bid shall include any modification of Work or Additional Work that may be required by reason of the following change or clarifications.*

*The Bidders are to acknowledge the receipt of this Addendum by inserting its number and date into their Bid Forms. Failure to acknowledge may subject the Bidder to disqualification and rejection of the bid. This Addendum forms part of the Contract Documents as if bound therein and modifies them as follows:*

#### I. AMENDMENTS TO THE PROJECT MANUAL

##### INVITATION TO BID

- A. REVISE – Bid opening date has been pushed back to 1:30PM on Tuesday, April 8<sup>th</sup>, 2024. Please see the attached revised INVITATION TO BID.

##### 012200 Unit Prices

- B. REVISE - Item A41 INSTALL CONCRETE VALLEY GUTTER (2' Wide): The estimated quantity was updated to 45 LF.
- C. REVISE - Item A51 STORM DRAIN STRUCTURE + INLET + ENVIROHOOD: The estimated quantity was updated to 18 EA.
- D. REVISE - Item A55 12" HDPE STORM DRAIN PIPE: The estimated quantity was updated to 1376 LF.
- E. REVISE - Item A5 REUSE EXISTING GRAVEL: The estimated quantity was updated to 30,000 SY

##### 02529 – CONCRETE SIDEWALKS

- A. ADD – ARTICLE 3.4 REINFORCEMENT: Specifications for fiber reinforcement in concrete were added.
- B. REVISION – ARTICLE 2.5 EXPOSED AGGREGATE CONCRETE MATERIALS: Clarification of aggregate size and exposure depths. Provided basis of design product selections.

- C. REVISION – ARTICLE 3.6 STRIPPING FORMS AND FINISHING: Clarification of surface retarder installation.

## II. GENERAL INFORMATION

- A. “EXTENT OF FENCE” Construction fencing clarification: The construction fencing is intended to provide flexibility for contractors to determine the most suitable means and methods for site safety and security during construction. The entire project site is not expected to be fully enclosed with fencing. The chosen contractor will have the responsibility to develop and submit a comprehensive site safety plan that includes fencing arrangements tailored to the specific requirements of the project. The contractors site safety plan should encompass, but not be limited to, the following:
  1. Identification of critical access points where fencing is necessary to control site entry and egress.
  2. Provision of fencing around areas designated for material and equipment staging to prevent unauthorized access and ensure public safety.
  3. Implementation of fencing measures around deep excavations or hazardous areas to mitigate potential risks and ensure compliance with safety regulations.

## III. ATTACHMENTS

- A. PHOTOS: TRACK EQUIPMENT ROOM

## INVITATION TO BID

Sealed bids will be received until **1:30 PM on Tuesday, April 9<sup>th</sup>, 2024**, and will be publicly opened and read aloud in the offices of **MSU University Facilities Management, Plew Building, 6<sup>th</sup> & Grant, Bozeman, Montana**, for: **MSU Stadium Lots, PPA No. 22-0012**.

Bids shall be submitted on the form provided within the Contract Documents. Contract documents may be obtained at the offices of:

**Montana State University  
UNIVERSITY FACILITIES MANAGEMENT  
Plew Building, 6<sup>th</sup> & Grant  
PO Box 172760  
Bozeman, Montana 59717-2760**

**On the web at:**  
<http://www.montana.edu/pdc/bids.html>

***A PRE-BID WALK-THROUGH IS SCHEDULED FOR Thursday, March 21<sup>st</sup>, 2024, AT 8:00 AM PARTICIPANTS SHOULD MEET AT Bobcat Stadium (1 Bobcat Circle, Bozeman, MT 59717), Gate 11 (Southeast stadium entrance near the Track & Field Complex). ATTENDANCE IS STRONGLY RECOMMENDED. Bidders should thoroughly review the contract documents before the pre-bid conference.***

Bids must be accompanied by a bid security meeting the requirements of the State of Montana in the amount of 10% of the total bid. After award, the successful bidder must furnish an approved Performance Security and a Labor & Material Payment Security each in the amount of 100% of the contract for contracts equal to or greater than \$150,000.

No bidder may withdraw his bid for at least thirty (30) calendar days after the scheduled time for receipt of bids except as noted in the Instructions to Bidders.

The Owner reserves the right to reject any or all bids and to waive any and all irregularities or informalities and the right to determine what constitutes any and all irregularities or informalities.

### Time of Completion

Bidder agrees to commence work immediately upon receipt of the Notice to Proceed and to substantially complete the project **by August 17<sup>th</sup>, 2024**.

*The State of Montana makes reasonable accommodations for any known disability that may interfere with an applicant's ability to compete in the bidding and/or selection process. In order for the state to make such accommodations, applicants must make known any needed accommodation to the individual project managers or agency contacts listed in the contract documents.*

State of Montana - Montana State University

## SECTION 012200

### UNIT PRICES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.

##### 1.2 DEFINITIONS

- A. Unit price is an amount proposed by bidders, a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

##### 1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 LIST OF UNIT PRICES

- A. GENERAL
  1. Quantities are estimated and to be verified by Contractor.
  2. Full descriptions of Bid Alternates can be found in SECTION 012300 ALTERNATES and as shown in Project Plans.
  3. The construction contract operates on a lump sum basis. The bid documents contain a tabulation of major construction items intended to assist the Contractor in calculating their lump sum bid. However, some necessary work items may not be fully tabulated or estimated within these documents. It is the Contractor's responsibility to thoroughly review the Project Plans and supporting documents, conduct necessary takeoffs, estimations, and other calculations to formulate the



proposed lump sum bid accurately. The provided bid tabulation does not encompass a comprehensive itemized list of all work essential for project completion.

4. Unit prices will only be employed in the event of a change order, with pricing derived from the unit prices specified within these bid documents. The Contractor is accountable for itemizing and delineating the work required within each bid item labeled as 'Miscellaneous' or 'Misc.'
5. The following unit abbreviations are used throughout this manual for measurement purposes:
  - a. Each EA
  - b. Cubic Feet CF
  - c. Cubic Yard CY
  - d. Lineal Feet LF
  - e. Lump Sum LS
  - f. Square Feet SF
  - g. Square Yard SY

**B. BASE BID**

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
M1	MOBILIZATION & MISC WORK	LS	1		
M2	PERMITTING	LS	1		
A1	TEMPORARY TRAFFIC CONTROL	LS	1		
A2	TEMPORARY CONSTRUCTION FENCING	LS	1		
A3	SOIL EROSION AND POLLUTION CONTROL	LS	1		
A4	RECLAIM AND REUSE EXISTING ASPHALT	SY	21000		
A5	REUSE EXISTING GRAVEL	SY	30000		
A6	CLEARING AND GRUBBING	SF	60000		
A7	EARTHWORK	CY	11000		
A8	HAUL OFF/SPREAD EXISTING CUT MATERIAL	CY	6000		
A9	REMOVE TREES	EA	23		

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
A10	REMOVE EXISTING CURB & GUTTER	LF	350		
A11	REMOVE CHAIN LINK FENCING	LF	2000		
A12	REMOVE & SALVAGE SIGNAGE	EA	24		
A13	REMOVE & SALVAGE FLAG POLES & PLAQUES	EA	3		
A14	REMOVE & SALVAGE MEMORIAL BRICKS	SF	310		
A15	REMOVE & SALVAGE LIGHT POLES (including wiring, conduit, base, etc.)	EA	35		
A16	REMOVE CONCRETE LIGHT POLE BASE	EA	15		
A17	REMOVE & SALVAGE EXISTING PIN DOWN CURBS	EA	11		
A18	SAWCUT EXISTING ASPHALT PAVEMENT	LF	1000		
A19	SAWCUT EXISTING CONCRETE	LF	500		
A20	REMOVE & RELOCATE FIRE HYDRANT (+ ductile iron extension)	EA	2		
A21	REMOVE BOLLARD	EA	12		
A22	REMOVE EXISTING PARKING DIVIDER FENCE	LF	1500		
A23	REMOVE EXISTING CONCRETE DRIVEWAY	SF	750		
A24	REMOVE & SALVAGE EXISTING INLET	EA	4		
A25	REMOVE LANDSCAPE	LF	200		

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
	WALL				
A26	REMOVE CONCRETE STEPS & RAILING	EA	1		
A27	MISC. DEMOLITION WORK	EA	1		
A28	LANDSCAPE ROCK/GRAVEL MULCH	SF	13000		
A29	BASE STABILIZER TREATMENT PRODUCT (See Geotech Report)	LS	1		
A30	WOVEN GEOTEXTILE FABRIC (Mirafi 180N)	SF	560000		
A31	GRAVEL PARKING SECTION (3" Replacement of Asphalt)	SY	25400		
A32	ASPHALT PAVEMENT (light duty – 3")	SF	184000		
A33	ASPHALT PAVEMENT (heavy duty – 4")	SF	43364		
A34	PLAZA CONCRETE FLATWORK (heavy duty – 5" + fiber mesh additive)	SF	95910		
A35	PLAZA CONCRETE FLATWORK (heavy duty – 6" + fiber mesh additive)	SF	0		
A36	CONCRETE SIDEWALK	SF	1580		
A37	INSTALL CURB & GUTTER	LF	5800		
A38	INSTALL SOLID INLET COVER	EA	3		
A39	INSTALL HEEL PROOF INLET	EA	3		
A40	INSTALL CONCRETE VALLEY GUTTER (4' Wide)	LF	577		

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
A41	INSTALL CONCRETE VALLEY GUTTER (2' Wide)	LF	45		
A42	CONCRETE DRIVEWAY APPROACH (Traffic-rated pad)	EA	1		
A43	INSTALL CONCRETE WHEEL STOPS	EA	31		
A44	INSTALL REMOVABLE BOLLARDS	EA	62		
A45	INSTALL ADA PARKING SIGN & PAVEMENT MARKING	EA	31		
A46	INSTALL CHAIN LINK FENCE	LF	400		
A47	INSTALL NEW MONUMENT SIGN	EA	4		
A48	PERMANENT PAVEMENT MARKINGS ~ 4" STRIPING	LF	22000		
A49	CHAMBER SYSTEM (Lot 20)	CF	3589		
A50	CHAMBER SYSTEM (Lot 25)	CF	4685		
A51	STORM DRAIN STRUCTURE + INLET + ENVIROHOOD	EA	18		
A52	ADJUST EXISTING UTILITIES TO GRADE	EA	51		
A53	UPGRADE EXISTING UTILITIES WITHIN TRAVEL WAY TO BE TRAFFIC RATED	EA	51		
A54	ELECTRICAL SYSTEM	LS	1		
A55	12" HDPE STORM DRAIN PIPE	LF	1376		

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
A56	18" HDPE STORM DRAIN PIPE	LF	75		
A57	BIKE RACKS	EA	13		
A58	LANDSCAPE IRRIGATION	LS	1		
A59	TREES (Canopy, Evergreen, Ornamental)	EA	21		
A60	SHRUBS	EA	205		
A61	EDGING	LF	75		
A62	SEEDING & SOIL AMENDMENTS	LS	1		
A63	16" IRRIGATION VALVE	EA	1		
A64	4" HDPE IRRIGATION PIPE	LF	645		
A65	LANDSCAPE BOULDERS	EA	72		
A66	MISC. WORK	LS	1		

C. BID ALTERNATE NO. 1:

CHANGED LINE-ITEM ESTIMATED QUANTITIES, AS A RESULT OF ALTERNATE NO. 1

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	ADD/DEDUCT
A31	GRAVEL PARKING SECTION (3" Replacement of Asphalt)	SY	25400		DEDUCTION
A32	ASPHALT PAVEMENT (Light Duty – 3")	SF	159,500		ADDITION
A33	ASPHALT PAVEMENT (Heavy Duty – 4")	SF	68,936		ADDITION
A48	PERMANENT PAVEMENT MARKINGS – 4" STRIPING	LF	23000		ADDITION

D. BID ALTERNATE NO. 2:

CHANGED LINE-ITEM ESTIMATED QUANTITIES, AS A RESULT OF ALTERNATE NO. 2

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	ADD/DEDUCT
A34	PLAZA CONCRETE FLATWORK (Heavy duty 5" + fiber mesh additive)	SF	103320		DEDUCTION
A35	PLAZA CONCRETE FLATWORK (Heavy duty 6" + fiber mesh additive)	SF	103320		ADDITION

END OF SECTION 012200

## SECTION 02529

### CONCRETE SIDEWALKS, PLAZA, DRIVEWAYS, APPROACHES, CURB TURN FILLETS, VALLEY GUTTERS AND MISCELLANEOUS NEW CONCRETE CONSTRUCTION

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- i. This work is the construction of concrete sidewalk, sidewalk finishes, and driveway approaches, curb turn fillets, valley gutters, new street monuments, and all other miscellaneous new concrete construction complete in place. In the event that there is any discrepancy between this specification section and the Geotechnical Report within the Project Documents, the more stringent requirement shall govern.

- ii. Section includes finish materials and methods for producing decorative exposed aggregate slab finish, including the use of chemical surface retarders and curing and sealing of concrete surfaces.

##### 1.2 REFERENCES

AASHTO M 213	Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction
AASHTO M 148	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete American Concrete Institute

##### 1.3 SUBMITTALS

###### A. Action Submittal:

1. Product Data: Manufacturer's descriptive data and product attributes for each product.
2. Samples:
  - i. Selection samples of exposed aggregate finish for exposure level verification.
  - ii. 10-lb sample of exposed aggregate. Information from aggregate supplier indicating source, type, color, and gradation of aggregate shall accompany sample.

##### 1.4 QUALITY ASSURANCE

- A. Mockups: Cast mockups of full-size sections of plaza concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship.
  1. Build a 4' x 4' mockup on site. If location not indicated, as directed by Owner's

representative.

2. Notify Owner's representative seven days in advance of dates and times when mockups will be constructed.
3. Obtain approval from Owner's representative before starting mockup construction.
4. Contractor shall use the methods and materials proposed for use on the final installation. Uniformity in appearance of each panel shall be the responsibility of the contractor.
5. Maintain approved mockups during construction for the duration of the project in an undisturbed condition as a standard for judging the completed pavement.
6. Demolish and remove approved mockups from the site when directed by Owner's representative.

## **PART 2 - PRODUCTS**

### **2.1 STRUCTURAL CONCRETE**

- A. Furnish structural concrete meeting the requirements of Section 03310, STRUCTURAL CONCRETE.

### **2.2 PRE-FORMED EXPANSION JOINT FILLER MATERIAL**

- A. Furnish joint material meeting the requirements of AASHTO M213.

### **2.3 GRAVEL BASE MATERIAL**

- A. Furnish crushed base material meeting applicable requirements of Section 02235, CRUSHED BASE COURSE, and meeting the gradation requirements for 1 inch minus material.

### **2.4 CURING AND PROTECTIVE COATING MATERIALS**

- A. Liquid Membrane-Forming Compounds for Curing Concrete
  1. Use liquid membrane-forming compounds meeting the requirements of AASHTO M148, Type 1, clear or translucent. Apply the compound between April 15 and August 14 unless daily temperatures outside of that date range are between 40- and 90-degrees Fahrenheit (4-32° C).
- B. Emulsified Linseed Oil Compound
  1. Apply water-soluble or emulsified linseed oil compound between August 15 and April 14 as a protective coat. Assure it meets all requirements of AASHTO M148 and contains at least 2.7 pounds of linseed oil per gallon. Furnish a



manufacturer's certification showing that the formulated weight of linseed oil per gallon equals or exceeds this limit.

## 2.5 EXPOSED AGGREGATE CONCRETE MATERIALS

### A. Aggregate:

1. Graded and washed aggregate and sand to achieve consistent appearance.
2. Pea gravel to be used shall consist of naturally occurring, semi-round, smooth, water washed, river stone. Pea gravel color ranges include brown, tan, white, and buff colors.
3. Aggregate size shall be 1/4 inch minimum to 3/8 inch maximum.
4. Aggregate size/color to be approved at mockup.
5. Exposed hard, sound, durable, and free of all deleterious materials and staining qualities.
6. Ratio of sand to aggregate per manufacturer's recommendation to achieve the desired exposure depth and appearance.
7. Provide aggregates and cements from a single source for batch consistency for the entire project.
8. Store select aggregates off the ground and protected from moisture.

### B. Water: Potable

### C. Colloidal Silica Concrete Surface Treatment: Single component colloidal silica-based admixture for improving surface properties; Reducing efflorescence in colored concrete, improving workability for consistent aggregate exposure, Improving the bond between aggregate and concrete paste for more durable exposed aggregate finishes.

1. Product: Day 1 Surface Technology by Solomon Colors, Inc.
2. Substitute: or approved equal.

### D. Surface Retarder: Water based treatment designed to retard the hydration of top layer of concrete paste, producing an exposed aggregate, or sand finish appearance.

1. Source: Brickform Select-Etch by Solomon Colors, Inc.
  - i. SE75 Blue
2. Substitute: or approved equal.
3. Exposure depth shall be 1/8".

4. Curing and Sealing: Curing and sealing products to be determined at time of mockup. Some products or methods may not be compatible with project requirements. Considerations include VOC requirements, desired sheen, color enhancement, and environmental conditions.
  - i. Concrete Curing Compound: Clear, film-forming curing/sealing compound, suitable for decorative concrete. Reference ACI 310R
    1. Water based
    2. Product: Brickform Gem Cure and Seal by Solomon Colors, Inc.
    3. Substitute: or approved equal.
  - ii. Concrete Surface Sealer: VOC compliant, clear acrylic or penetrating sealer, designed to reduce porosity of exposed aggregate concrete surface.
    - (a) Water-Based Penetrating Sealer: Natural look with no sheen and no film.
      1. Product: Brickform Stealth Seal WB by Solomon Colors, Inc.
      2. Substitute: or approved equal.

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Construct sidewalks and driveway approaches, either new or replacement, valley gutter and curb turn fillets at the locations shown on the plans and where directed by the Engineer meeting these specifications and the applicable portions of Section 03310, STRUCTURAL CONCRETE.
- B. The use of slip form machines is prohibited for items in this section unless otherwise specified or permitted by the Engineer.
- C. During periods of cold weather, Contractor must submit to Engineer a cold weather concreting plan applicable to Section 03310 for approval.

### **3.2 FOUNDATION PREPARATION**

- A. Excavate to the specified depth, or as directed by the Engineer. Assure the concrete subgrade has a firm and even surface and is compacted as specified in Section 02230: Street Excavation, Backfill, and Compaction, as may be modified by the Standard Modifications.
- B. Place and compact at least 3 inches of gravel base material compacted to 95% of ASTM D-698. This requirement is waived for concrete if it is to be installed on street base course material exceeding 3 inches or more in thickness and is approved by

Engineer.

- C. Do not remove sidewalks, private driveways, or conduct foundation preparation activities more than 4 days prior to the planned concrete pour.

### 3.3 FORMS

- A. Furnish forms to produce the shape, lines, and dimensions shown on the plans and/or drawings. Assure forms prevent leakage of mortar and are maintained in proper position and accurate alignment. Thoroughly clean and oil forms with an approved form oil before placing concrete and remove forms only after the concrete has hardened sufficiently to support all loads without damage.
- B. Form radii using flexible or curved forms set to the required curvature. Use wood forms only with the Engineer's approval. Radii may be formed by using segments of straight forms if the length of the straight segment does not exceed one-tenth of the length of the radius.
- C. Use forms and pre-formed expansion joint filler material for same depth as concrete.

### 3.4 REINFORCEMENT

- A. Fiber reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C1116, Type III, not less than  $\frac{3}{4}$ " long, 1.5 lb per cubic yard.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - Durafiber, Durafiber corp.
    - Fiberstrand 100, Euclid Chemical co.
    - Fibermesh, Fibermesh Co., Div Synthetic Industries, Inc.
    - Or approved equal.

### 3.5 PLACING CONCRETE

- A. Assure the subgrade is compacted and brought to specified grade before placing concrete. During extreme drying conditions, dampen the subgrade immediately before placing the concrete. Spade and tamp the concrete into the forms providing a dense, compacted concrete free of rock pockets. Float, finish and broom the exposed surfaces. Each placing/finishing crew shall have at least one ACI Flatwork Finisher Technician level or above, on site at all times.
- B. Assure the rate of concrete placement does not exceed the rate at which the various placing and finishing operations can be performed in accordance with these specifications.

### 3.6 STRIPPING FORMS AND FINISHING

#### A. Forms

1. Remove forms when the concrete is sufficiently set to prevent chipping or spalling. When forms are removed before the curing period has expired, protect the concrete edges with moist earth or spray edges with curing compound. Clean, oil, and examine all forms for defects before they are used again.

#### B. Finishing

1. Finish the concrete surface true to lines and grades shown on the drawings. Work concrete until the coarse aggregate is forced down into the body of the concrete and no coarse aggregate is exposed. Float the concrete surface using a magnesium float to a smooth and uniform surface. Plastering of the surface is prohibited. Edge all outside edges of the slab and all joints using a ¼ inch radius edging tool.
2. Immediately after the forms have been removed, remove all form bolts and tie wires to a depth of at least ½ inch below the surface of the concrete. Clean and fill all holes and depressions caused by the removal or setting back of form bolts or tie wires with Portland Cement mortar composed of 1 part cement by volume and 2 parts sand. Chip out, clean and fill all rock pockets, honeycombs, and air pockets with mortar, in compliance with instruction of the Engineer. If, in the judgment of the Engineer, rock pockets are of such an extent or character as to materially affect the strength of the structure or to endanger the life of the steel reinforcement, they may declare the concrete defective and order the complete removal and replacement of that portion of the structure so affected.
3. Carefully make all mortar patches using a very dry mortar tamped firmly in the void. Keep the patches wet for a period of 3 days after which it will be inspected for shrinkage cracks. Excessive cracking will require complete removal and replacement of the patch.
4. Screed, float and light broom finish sidewalks, exterior slabs, approaches, etc. and membrane cure. After concrete has hardened sufficiently, give the surface a broom finish. Obtain Engineer approval of the broom before use. Assure the broom strokes are square across the concrete from edge to edge, overlapping adjacent strokes. Broom without tearing the concrete. Assure the broomed finish produces regular corrugations not exceeding 1/8 inch in depth.
5. Steel trowel finish interior floor surfaces which will be exposed after construction is completed, surfaces to be covered with resilient floor coverings or seamless floor coverings, the exposed portion of the top of equipment bases, the top of interior curbs, and other surfaces designated on the drawings. Perform troweling after the second floating when the surface has hardened sufficiently to prevent an excess of fines from being drawn to the surface. Produce a dense, smooth, uniform

surface free from blemishes and trowel marks.

6. Apply liquid or shake-on floor hardener to all interior concrete floors which are subject to foot or equipment traffic and are not required to be covered with resilient floor coverings or seamless flooring. Prior to application, thoroughly clean the floor of all dirt, grease, and other foreign matter. Do not apply curing compounds to floors scheduled to receive floor hardener unless compatibility with the hardener is demonstrated in manufacturer's data.
7. Do not apply additional surface water. The Engineer may permit adding water, but it must be applied by fog spray only. Use of a film forming evaporation retardant, following the manufacturer's directions, is permitted.



8. Exposed Aggregate Finish:

i. General

- (a) Apply materials in accordance with manufacturer's recommendations.
- (b) Methods and materials shall match that of approved mockup production.

ii. Finishing

- (a) Do not use tools that may force the aggregate away from the surface creating a non- uniform surface after exposure
- (b) Finish slab surface to be uniform, flat, without low spots or ridges. Do not overwork the surface to be exposed.

iii. COLLOIDAL SILICA SURFACE TREATMENT INSTALLATION

- (a) Apply per manufacturer's recommendations based on application time.
- (b) Prevent overspray of material to adjacent equipment and construction materials.

iv. CONCRETE SURFACE RETARDER INSTALLATION

- (a) Protect all adjacent concrete surfaces, pavers, stones, borders, etc. that are not to receive retarder finish prior to concrete placement and retarder application.

(b) Application

1. Spray the Concrete Surface Retarder with low-pressure sprayer at a rate of 250- 300 ft<sup>2</sup>/gallon.
2. Maintain an even continuous application.
3. Once dry, Concrete Surface Retarder will yield a coating that provides

intermittent rain protection. Protect the surface if heavy extended rains are predicted or during extremely hot weather to retain moisture and protect the etch retention.

(c) Removal

1. Concrete Surface Retarder can be removed when the underlying concrete has sufficiently hardened, typically ranging from 5 to 12 hours after initial placement. Do not exceed 24 hours before removing
2. Wash surface with running water with a push broom, high pressure washing, or a rotary buffer with bristle attachment and water.
3. Timing and removal should be determined by the project testing and jobsite samples. When using light etches, it is generally better to remove Surface Retarder the same day.
4. Dispose of wash water slurry in accordance with environmental regulations per relevant jurisdictional authority.

(d) Curing Compound, as determined: After water from removal has dissipated from the slab, apply curing compound uniformly. Follow manufacturer's recommendations for coverage, methods, and environmental allowances.

(e) Sealer, as determined: After recommended cure time has been achieved, apply surface sealer. Follow manufacturer's recommendations for coverage, methods, and environmental allowances.

### 3.7 CURING

- A. Cure meeting Section 03310, STRUCTURAL CONCRETE requirements.

### 3.8 JOINTS

- A. Plaza areas within the project shall conform to the jointing requirements as indicated in the Project Plans.
- B. Extend isolation joints the full depth of the concrete and fill using ½-inch thick, pre-formed expansion joint filler material as specified in Section 02529.3.3. Place isolation joints meeting this requirement where new concrete abuts existing concrete. Form isolation joints around all appurtenances, such as manholes, utility poles, etc. extending into and through the concrete.
- C. Install pre-formed joint filler between concrete and any fixed structure, such as a building or bridge. Assure all expansion joint materials extend the full depth of the concrete. Place isolation joints at radius points, junctions with existing concrete, and opposite to or at expansion joints in adjacent concrete. Form cold joints at unions of

consecutive pours as shown on the plans or directed by the Engineer. Assure the cold joint is vertical, the full depth of the concrete, and tooled to a ¼-inch radius.

- D. Divide sidewalk into sections using contraction joints formed by a jointing tool or other approved methods. Extend the contraction joints into the concrete for at least 25% of its depth and be approximately 1/8-inch wide. Unless otherwise directed, space contraction joints at maximum 10-foot intervals or at a distance equal to the sidewalk width, whichever is less. In continuous sidewalk runs, install isolation joints every 100 feet at intervals equal to the nearest multiple of the contraction joint interval.

### **3.9 BACKFILL**

- A. In areas adjacent to existing lawns, backfill the top 4 inches using black loam or good topsoil suitable for lawn growth. Place it out from the sidewalk or driveway to replace turf or lawn removed during installation. Place the backfill level with the top of the curb, immediately adjacent to the curb, graded and blended to match the existing undisturbed lawn area.
- B. Where lawns do not exist, backfill the top 4 inches with impervious dirt and place to meet the typical sections shown on the plans.
- C. Compact backfill to prevent settlement and level the surface to a neat appearing and free draining surface within 4 days after concrete is placed. Where required by the contract, topsoil shall be placed to the lines and grades of the work. The addition of topsoil, seed, and/or sod and all finish grading work shall be completed and ready for inspection within 6 days of concrete placement.

### **3.10 TOLERANCES**

- A. Assure all items of construction covered by this section present clean, uniform surfaces and lines free of irregularities and distortions. Plane surfaces and vertical tangent lines are tested with a 10-foot straightedge and cannot deviate more than ¼-inch from the straightedge.

### **3.11 MISCELLANEOUS NEW CONCRETE CONSTRUCTION**

- A. Construct new street monuments, new street light bases, and other miscellaneous concrete construction in accordance with detail drawings, or as directed by the Engineer.
- B. New concrete construction required to maintain or restore existing structures will be considered incidental to the cost of pipe installation and no additional payments made. Include the concrete costs associated with thrust blocks with the unit costs bid for the valve, fittings, or appurtenance requiring the thrust block. New concrete work not included above, or specifically called out on the drawings, must first be approved by Engineer.
- C. Construct all curb ramps with detectable warning surfaces in conformance with the

requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Detectable warning surfaces shall be considered deficient and subject to replacement by the Contractor if more than 5% of the truncated domes on a ramp surface are missing or damaged, if the detectable warning product has lost any adhesion to the concrete, or if the detectable warning product is cracked or shows other signs of distress, at the end of the two-year warranty period.

## **PART 4 - MEASUREMENT AND PAYMENT**

### **4.1 CURB TURN FILLETS**

- A. This item is measured and paid for by the number of curb turn fillets constructed, complete in place, including curb, at the contract unit price bid for "Curb Turn Fillets". Price and payment are full compensation for all material, excavation, backfill, curing of concrete, pre-molded mastic material, equipment, tools and labor, and for the performance of all work and incidentals necessary to complete this item.
  - 1. Payment is made under Curb Turn Fillets – Per each.

### **4.2 CONCRETE VALLEY GUTTERS**

- A. This item is measured and paid for by square foot at the contract unit price bid for "Concrete Valley Gutters". Price and payment are full compensation for all material, excavation, backfill, curing of concrete, pre-molded mastic material, reinforcing steel, equipment, tools and labor, and for the performance of all work and incidentals necessary to complete this item.
  - 1. Payment is made under:
    - i. Concrete Valley Gutters (4' wide) – per lineal foot.
    - ii. Concrete Valley Gutters (2" wide) - per lineal foot.

### **4.3 CONCRETE DRIVEWAY APPROACH**

- A. This item is measured and paid for per each (as defined on the plan detail and excluding curb) at the contract unit price bid for "Concrete Driveway Approach". Price and payment are full compensation for all material, excavation, backfill, curing of concrete, pre-molded mastic material, equipment, tools and labor, and for the performance of all work and incidentals necessary to complete this form.
  - 1. Payment is made under: Concrete Driveway Approach (Traffic-rated pad) – each

### **4.4 CONCRETE SIDEWALK AND PLAZA**

- A. This item is measured and paid for by the square foot. Price and payment are full compensation for all material, excavation, backfill, curing of concrete, pre-molded mastic material, equipment, tools and labor, and for the performance of all work and incidentals necessary to complete this item. Item includes formwork, grading,



preparation, and installation of all ADA appurtenances including truncated domes (Detectable Warning Surfaces), and all other items to ensure ADA compliance of ADA pedestrian access ramps.

1. Payment is made under:
  - i. Plaza concrete flatwork (heavy duty – 5” + fiber mesh additive reinforcement – per square foot.
  - ii. Concrete Sidewalk – per square foot.

#### **4.5 STREET MONUMENTS**

A. This item is measured and paid for by the number of monuments constructed as shown on the plans at the contract unit price bid for “Install Monuments, Type I or II”. Price and payment are full compensation for all materials, excavation, backfill, forming and curing of concrete, equipment, tools and labor, and for the performance of all work and incidentals necessary to complete this form.

1. Payment is made under Install Monuments:
  - i. Type I – per each.
  - ii. Type II – per each.

**END OF SECTION**

PHOTOS: TRACK EQUIPMENT ROOM







