



NEWLINE
SKATEPARKS

EL PASO COUNTY SKATE PARKS RENOVATION

El Paso County, TX

SPECIFIC SKATE PARK TECHNICAL SPECIFICATIONS

March 2023

PREPARED BY

New Line Skateparks, Inc.

137 Marion Avenue #1

Edgewater, FL 32132



TABLE OF CONTENTS

El Paso County Skate Parks Renovations – El Paso County, TX

<u>SECTION</u>		<u>NO. OF PAGES</u>
Cover		1
Table of Contents		1
<u>SPECIFIC SKATE PARK TECHNICAL SPECIFICATIONS</u>		
<u>DIVISION 0 – BID FORMS</u>		
SECTION 00 41 13	BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)	11
<u>DIVISION 2 – EXISTING CONDITIONS</u>		
SECTION 02 00 00	SITE CONDITIONS	2
<u>DIVISION 3 – CONCRETE</u>		
SECTION 03 10 00	CONCRETE FORMWORK	3
SECTION 03 20 00	CONCRETE REINFORCING	3
SECTION 03 30 00	CAST IN PLACE CONCRETE	9
SECTION 03 33 51	CONCRETE FINISHING	5
SECTION 03 36 00	SHOTCRETE	11
SECTION 03 37 00	CONCRETE CURING	1
<u>DIVISION 5 – METALS</u>		
SECTION 05 50 00	METAL FABRICATIONS	6
<u>DIVISION 9 – PAINTING</u>		
SECTION 09 90 00	PAINTING	8
<u>DIVISION 31 – EARTHWORK</u>		
SECTION 31 00 00	SITE EARTHWORK	9
SECTION 31 10 00	SITE SELECTIVE CLEARING	2
SECTION 31 23 13	SITE SUBGRADE PREPARATION	3
Appendix - Geo-Tech Report prepared by CQC Testing and Engineering issued on March 10, 2023		27

DOCUMENT 004113 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____.

Primary Contact: _____

Phone: _____

Email: _____.

B. Project Name and Location:

1. Agua Dulce Skate Park 15371 Kentwood Ave #9028, El Paso, Texas 79928
2. Estrella Skate Park 14590 Greg Dr., El Paso, Texas 79938
3. Gallegos Skate Park 7361 Bosque Rd, Canutillo, Texas 79835

C. Owners Representative:

Veronica Myers, CPRP Director
VeMyers@epcounty.com
Parks and Recreation Department
County of El Paso Public Works
Ascarate Park Administrative Offices
6900 Delta Drive
El Paso, Texas 79905
915-771-2380 Ext. 2685

D. Architect:

Carmen Renee Jimenez, AIA, LEED AP BD+C
rjimenez@mnkarchitects.com
MNK Architects, Inc.
330 Eubank Court
El Paso, Texas 79902
915.587.8023

E. Skate Park Designer Consultant:

Kanten Russell
kanten@newlineskatepark.com
Newline Skateparks Inc.
137 W. Marion Ave. #1
Edgewater, Fl 32132
604-530-1114

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract,

Drawings, Specifications, and all subsequent Addenda, as prepared by MNK Architect's Inc. and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. BASE BID 1 - Agua Dulce Skate Park
_____ Dollars (\$_____).
2. BASE BID 2 - Estrella Skate Park
_____ Dollars (\$_____).
3. BASE BID 3 - Gallegos Skate Park
_____ Dollars (\$_____).
4. Unit-Price No. 1: Cutting/removal and replacement of concrete sidewalks-on-grade
_____ Dollars (\$_____) per sf.

1.3 SUBCONTRACTORS AND SUPPLIERS

- A. The following companies shall execute subcontracts for the portions of the Work indicated:

Provide list of sub-contractors and proposed contract amounts.

1. Earthwork: _____
2. Concrete Work: _____
3. Skate Elements: _____
4. Landscaping Work: _____
5. Other Work: _____

6. Self-Performing work:

1.4 TIME OF COMPLETION

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect, and the

undersigned further understands the final completion of the Project and timing to achieve Final Acceptance is on or before (90) Calendar days from the date of the Owner's Notice to Proceed. The undersigned proposes that (____) calendar days be added or removed from the completion time. Indicate (0) if no days are being added.

- B. Weather Delays. Procedures for evaluating time extensions for delays related to adverse weather conditions shall be as follows:

Weather experienced on site must be more severe than the weather reasonably anticipated at the project location for the specific time of year.

Adverse weather must impact scheduled construction activities for over 50% of the work day.

Time of Completion shall take into account and includes the following quantity of weather days: (1) business day in February, (3) business days in March, (3) business days in April, (2) business days in May, (1) business day in June, (3) business days in July, (3) business days in August, (2) business days in September, (1) business day in October, (1) business day in November, and (2) business days in December.

The Contractor shall request Weather Days to the Architect no later than 5 business days from their occurrence. Impact to critical path activities, together with photos or documentation from a weather data gathering agency shall be provided with request.

Time extensions are the contractor's sole remedy and compensation for weather delays.

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____, signed _____.
2. Addendum No. 2, dated _____, signed _____.
3. Addendum No. 3, dated _____, signed _____.
4. Addendum No. 4, dated _____, signed _____.

1.6 BID SUPPLEMENTS

- A. The following supplements are a part of this Bid Form and are attached hereto.

1. Bid Form Supplement - Bid Bond Form (AIA Document A310).

1.7 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in El Paso, Texas, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.8 CONTRACTOR QUALIFICATIONS – FOR SKATE PARK CONSTRUCTION

- A. The intent of El Paso County and Skate Park Designer is to qualify skate park builders (PRIME
- B. SUBMITTING GENERAL CONTRACTOR OR SPECIALTY SUB-CONTRACTOR) for this project WHO MUST HAVE prior specialty skate park construction experience. This qualification is required for specialty skate park items only. Other work normally performed by a general contractor (site grading, drainage, paving, concrete flatwork, landscaping, irrigation, site lighting, building construction, etc.) that is considered site work does not require qualification. This statement will determine the prime submitting general contractor or specialty contractor’s qualification for this project. In addition to skate park construction experience, firms must also demonstrate an ability to meet minimum guidelines as set in the SPECIAL PROVISIONS of the Contract Documents. Submission of this questionnaire does not constitute qualification.
- C. Qualification may be denied for any reason the County deems necessary for the successful completion of the project.

D. PRIME SUBMITTING GENERAL CONTRACTOR OR SPECIALTY SUB-CONTRACTOR INFORMATION WITH SKATE PARK EXPERIANCE

- 1. COMPANY NAME (Full Legal Name) _____
- 2. STREET ADDRESS _____
- 3. MAILING ADDRESS (If Different Than Above) _____
- 4. CITY STATE ZIP PHONE # _____
- 5. CONTACT PERSON E-MAIL FAX # _____
- 6. FEDERAL TAX ID NO. _____

E. SPECIALTY SUB-CONTRACTOR INFORMATION

- 1. If the Specialty Sub-Contractor is a corporation, provide the following:
 - a. State & Date of Incorporation _____
 - b. Contractor License # and Classification _____
 - c. Secretary / Treasurer’s Name _____
- 2. If the Specialty Sub-Contractor is a partnership, provide the following:
 - a. State & Date of Partnership _____
 - b. Contractor License # _____
 - c. General Partner(s) Names _____
- 3. If the Specialty Sub-Contractor is sole proprietor, or individually owned, provide the following:
 - a. State, & Date of Ownership _____
 - b. Primary Owner’s Name& License # _____

F. How many years has your organization been in business under your present name? ____yrs.

Check

YES NO

Have you ever operated under any other names in the past?

If so, name of organization _____

Has any owner, officer or partner of your organization ever been an owner, officer or partner of this or any other organization that failed to complete a construction contract or been charged liquidated damages? If yes, provide additional information on a separate sheet.

Has your organization ever been denied, debarred, or suspended by a government agency regarding licensing or award of contracts? If yes, provide additional information on a separate sheet. Does the organization owe back taxes to the IRS? If so, how much? _____

Has your organization ever failed to qualify as a Specialty Contractor of any project? If yes, provide additional information on a separate sheet.

Has your firm excavated a below ground skate park structures and prepared it for shotcrete application?

1.9 QUALIFICATION REQUIREMENTS: Below are **minimum** qualifications required for this project, failure to satisfy these requirements shall result in disqualification. If minimum qualifications are not met bidders will be subject to disqualification.

A. The successful Specialty Contractor must be able to provide valid and in good standing the following insurance coverage for the entire duration of the project, naming your firm and the Owner as additionally insured. A sample certificate with the following minimum coverage's must be submitted with this statement:

1. Commercial General Liability \$1,000,000 Each Occurrence / \$2,000,000 General Aggregate
2. Automobile Liability Insurance \$1,000,000 Minimum
3. Workman's Compensation Insurance State Minimum Coverage as Required by Law.

B. Attach 3 Letters of Reference from a past public agency giving recommendation of your organization's ability to perform quality skate park construction.

C. CURRENT SKATE PARK PROJECT EXPERIENCE

1. Provide a list of all concrete skate park construction projects that are in progress by your organization or which are complete but have not been open and in operation for a period of at least ONE (1) year. The projects listed must have a construction agreement.

2. PROJECT INFORMATION REQUIRED – Provide all information requested and utilize additional sheets, as necessary.

a. PROJECT 1

1) Name and Location of Project

2) Owner's Name

3) Address

4) Phone Number

5) Email

- 6) Project Size (Skating area only)_____sq ft
- 7) Construction Value \$_____
- 8) % Complete_____ Completion Date_____
- 9) Designer and Architect

10) Project Description and Scope of Work

b. PROJECT 2

- 1) Name and Location of Project

2) Owner's Name

3) Address

4) Phone Number

5) Email

6) Project Size (Skating area only)_____sq ft

7) Construction Value \$_____

8) % Complete_____ Completion Date_____

9) Designer and Architect

10) Project Description and Scope of Work

c. PROJECT 3

- 1) Name and Location of Project

2) Owner's Name

3) Address

4) Phone Number

5) Email

6) Project Size (Skating area only)_____sq ft

7) Construction Value \$_____

8) % Complete_____ Completion Date_____

9) Designer and Architect

10) Project Description and Scope of Work

d. PROJECT 4

- 1) Name and Location of Project

2) Owner's Name

- 3) Address _____
- 4) Phone Number _____
- 5) Email _____
- 6) Project Size (Skating area only) _____ sq ft
- 7) Construction Value \$ _____
- 8) % Complete _____ Completion Date _____
- 9) Designer and Architect _____
- 10) Project Description and Scope of Work _____

e. PROJECT 5

- 1) Name and Location of Project _____
- 2) Owner's Name _____
- 3) Address _____
- 4) Phone Number _____
- 5) Email _____
- 6) Project Size (Skating area only) _____ sq ft
- 7) Construction Value \$ _____
- 8) % Complete _____ Completion Date _____
- 9) Designer and Architect _____
- 10) Project Description and Scope of Work _____

D. PAST COMPLETED SKATE PARK PROJECT EXPERIENCE

- 1. The prime submitting firm or its specialty contractor, to be qualified for this project, must have completed THREE (3) public concrete skate park facilities with a minimum skating area of 5,000 square feet in the last FIVE (5) years. These skate parks must be open and in good operating condition for at least ONE (1) year. Only those projects where the complete construction of the facility has been the sole responsibility of your firm can be included. Provide detailed project information and verifiable references for each of these qualifying skate park facilities. If the prime submitting firm will not be performing the specialty items listed on the plans but will have these items constructed by a specialty subcontractor, only the subcontractor will be required to be qualified for these specialty bid items. No exceptions will be made to these requirements.
- 2. PROJECT INFORMATION REQUIRED – Provide all information requested and utilize additional sheets, as necessary.
- 3. PROJECT PHOTO REQUIRED – Provide at least one (1) photo of each completed construction.

a. PROJECT 1

- 1) Name and Location of Project

- 2) Owner's Name

- 3) Address

- 4) Phone Number

- 5) Email

- 6) Project Size (Skating area only)_____sq ft
- 7) Construction Value \$_____
- 8) % Complete_____ Completion Date_____
- 9) Designer and Architect

- 10) Project Description and Scope of Work

b. PROJECT 2

- 1) Name and Location of Project

- 2) Owner's Name

- 3) Address

- 4) Phone Number

- 5) Email

- 6) Project Size (Skating area only)_____sq ft
- 7) Construction Value \$_____
- 8) % Complete_____ Completion Date_____
- 9) Designer and Architect

- 10) Project Description and Scope of Work

c. PROJECT 3

- 1) Name and Location of Project

- 2) Owner's Name

- 3) Address

- 4) Phone Number

- 5) Email

- 6) Project Size (Skating area only)_____sq ft
- 7) Construction Value \$_____

- 8) % Complete _____ Completion Date _____
- 9) Designer and Architect

10) _____
Project Description and Scope of Work

d. PROJECT 4

- 1) Name and Location of Project

2) _____
Owner's Name

3) _____
Address

4) _____
Phone Number

5) _____
Email

6) _____
Project Size (Skating area only) _____ sq ft

7) _____
Construction Value \$ _____

8) % Complete _____ Completion Date _____

9) Designer and Architect

10) _____
Project Description and Scope of Work

e. PROJECT 5

- 1) Name and Location of Project

2) _____
Owner's Name

3) _____
Address

4) _____
Phone Number

5) _____
Email

6) _____
Project Size (Skating area only) _____ sq ft

7) _____
Construction Value \$ _____

8) % Complete _____ Completion Date _____

9) Designer and Architect

10) _____
Project Description and Scope of Work

E. ADDITIONAL QUESTIONNAIRE & REQUIREMENTS

- 4. Accurately answer & provide for all the information requested utilizing a separate sheet, as necessary. If response is no to any of the following questions bidders will be subject to disqualification.

Check

- | YES | NO |
|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> Has your firm placed transitional and radial shotcrete skate structures using approved methods including a smooth trowel finish? |
| <input type="checkbox"/> | <input type="checkbox"/> Does your firm possess all the necessary equipment, labor forces, and material suppliers to complete this project per plans and specifications within the given schedule? |
| <input type="checkbox"/> | <input type="checkbox"/> Has your firm fabricated, galvanized, and installed rolled/bent ornamental metal coping? |
| <input type="checkbox"/> | <input type="checkbox"/> Has your firm installed standard pool coping and tile? |
| <input type="checkbox"/> | <input type="checkbox"/> Has your firm performed any concrete skate park construction with workmanship issues, defects, or warranty problems, including having to repair or replace portions of work? |
| <input type="checkbox"/> | <input type="checkbox"/> Can your firm provide shop drawings and submittals for all the required and specified materials on this project? |

F. SCHEDULE & SKATE PARK MANAGEMENT EXPERIENCE

1. Provide a schedule identifying key tasks and milestones your project team has identified to demonstrate your ability to coordinate the entire job. This will be for evaluation purposes only and is not intended to be submitted as a working schedule.
2. Provide a detailed list identifying your firm's key personnel and management team that is responsible for the aforementioned skate park experience. Include any owners, officers, managers, construction supervisors, or any other employee with the identified experience for the listed qualifying projects. Show that the individual directly responsible for the construction management of these projects will be the same individual utilized on this project.
3. This qualification statement will not be considered responsive or valid unless it is completed in its entirety and signed, and dated. The El Paso County and Skate Park Designer reserves the right to disqualify any firm for any reason deemed necessary for the successful completion of this project.
4. The PRIME SUBMITTING GENERAL CONTRACTOR OR SPECIALTY SUB-CONTRACTOR (undersigned) hereby certifies and that all the information contained in this document is true and correct to the best of their knowledge. I declare under penalty of perjury that the foregoing is correct.

Legal Business Name of Submitting Individual, Partnership, Limited Liability Company,
or Corporation & Contractor License Number

Printed Name of Prime Submitting General Contractor or Specialty Sub-contractor or
Authorized Agent.

Signature of Prime Submitting General Contractor or Specialty Sub-contractor or
Authorized Agent.

1.10 SUBMISSION OF BID

- A. Respectfully submitted this ____ day of _____, 2023.
- B. Submitted By _____ (Name of bidding firm or corporation).
- C. Authorized Signature: _____ (Handwritten signature).
- D. Signed By: _____ (Type or print name).
- E. Title: _____ (Owner/Partner/President/Vice President).
- F. Witness By: _____ (Handwritten signature).
- G. Attest: _____ (Handwritten signature).
- H. By: _____ (Type or print name).
- I. Title: _____ (Corporate Secretary or Assistant Secretary).
- J. Street Address: _____.
- K. City, State, Zip _____.
- L. Phone: _____.
- M. License No.: _____.
- N. Federal ID No.: _____ (Affix Corporate Seal Here).

END OF DOCUMENT 004113

Part 1 General**1.01 RELATED INFORMATION**

Related information and requirements are included in the General and Supplementary Conditions with regards to existing underground utilities.

1.02 INFORMATION ON SITE CONDITIONS

- A. All information obtained by the Engineer regarding site conditions, subsurface information, groundwater elevations, existing constructions of site facilities, and existing underground utilities and similar data are shown on the plans or provided herein.
- B. Information derived from inspection of topographic maps, or from plans showing locations of utilities and structures will not in any way relieve Prime General Contractor from any risk, or from properly examining the site and making such additional investigations as he may elect, or from properly fulfilling all the terms of the contract documents.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall satisfy himself as to the nature and location of the work and the general and local conditions.
- B. The Prime General Contractor further shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials to be encountered by reviewing Soils Report (if applicable) and reviewing any other pertinent information. Any new exploratory work must be approved by the Client. Failure of the Contractor to acquaint himself with the site and all available information will not relieve him of the responsibility for properly estimating the difficulty or cost of completing the work.

The Contractor will not be responsible for inspections. Client to provide third party inspections.

- C. The Prime General Contractor shall anticipate underground obstructions such as utility lines, concrete, water table and variation hereof due to rainfall, soil conditions and debris. No extra payment will be allowed for the removal, replacement, repair, or possible increased cost caused by underground obstructions. Any such lines or obstructions indicated on the map show only the approximate location and must be verified in the field by the Contractor. The Client and Engineer will endeavor to familiarize the contractor with all known underground obstructions, but this will not relieve the Contractor from full responsibility in anticipating and locating all underground obstructions.

D. Additional information

Prior to construction, the Prime General Contractor may make their own subsurface investigations subject to time schedules and arrangements approved in advance by the Client. Before any subsurface test holes are excavated, obtain permits from governing agency to perform such work.

End of Section 02 00 00

Part 1 General

1.01 DESCRIPTION

Provide formwork and accessories for construction of cast-in-place concrete work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 20 00-Concrete Reinforcing
- B. Section 03 30 00-Cast-in-Place Concrete
- C. Section 03 36 00-Shotcrete

1.03 QUALITY ASSURANCE

- A. Design Criteria: Conform to ACI 347-68, Chapter I.
- B. Allowable Tolerances: Conform to ACI 347-68, 2.4.

1.04 STORAGE OF MATERIALS

- A. Store materials on and under protective sheeting.

1.05 COORDINATION

- A. Notify responsible trades of schedules of concrete pours to allow time for installation and coordination.

Part 2 Products

2.01 MATERIALS

- A. Forms
 - 1) Flatwork: Nominal 2" thick No. 2 Common Southern Yellow Pine or steel forms.
 - 2) Vertical and Custom Work: Exterior grade Standard Douglas Fir (or equal plywood), minimum three ply, one smooth side sufficiently thick to sustain loads, or steel forms.

- B. Form Oil: Non staining, paraffin-base oil having a specific gravity of between 0.8 and 0.9.
- C. Form ties, bolts, rods, or patented devices having tensile strength of 3000 lbs., adjustable length, free of lugs which would leave a hole larger than 5/8" diameter and having a full one-inch depth of break-back.

Part 3 Execution

3.01 CONSTRUCTION AND ERECTION

- A. Construct forms in accordance with ACI 347-68.
- B. Build forms to shapes, lines and dimensions of detailed members of concrete construction. Set to line and grade, brace and secure to withstand placing of concrete and maintain their shape and position.
- C. Construct forms with care to produce concrete surfaces without unsightly or objectionable form marks in exposed concrete surfaces.
- D. Thoroughly clean surfaces of form material and remove nails before reuse. Do not reuse damaged or worn forms. Coat contact surfaces of forms with non-staining form oil prior to placing metal reinforcement.
- E. Immediately before placing concrete, clean forms of chips, sawdust, and debris. Immediately after removal of forms, remove form ties, wires, and defects and patch.

3.02 INSERTS AND ACCESSORIES

- A. Make provisions for required installation of accessories, bolts, hangers, sleeves, anchor slots and inserts cast in concrete. Obtain suitable templates or instructions for installation of items. Place expansion joints where detailed and required.

3.03 REMOVAL OF FORMS AND SHORING

- A. Remove forms and shores in accordance with ACI 347-68.

3.04 CLEANUP

- A. Remove debris and trash.

End of Section 03 10 00

Part 1 General

1.01 DESCRIPTION

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all concrete reinforcement related to the skate park as indicated on scope of work contract and shown on drawings and as specified herein.
- B. Provide all steel reinforcement for construction of concrete paving for the skate park.

1.02 RELATED INFORMATION

- A. Section 03 10 00-Concrete Forming and Accessories
- B. Section 03 30 00-Cast-in-Place Concrete
- C. Section 03 36 00-Shotcrete

1.03 REFERENCE STANDARDS

- A. American Concrete Institute (ACI)
 - 1) ACI 315-80, Manual of Standard Practice for Detailing Reinforced Concrete Structures.
 - 2) ACI 318-77, Building Code Requirements for Reinforced Concrete.
- B. American Society for Testing and Materials (ASTM - latest editions)
 - 1) ASTM A233, Mild Steel Arc Welding Electrodes.
 - 2) ASTM A615, Deformed Billet-Steel Bars for Concrete Reinforcement.
 - 3) ASTM A706, Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
- C. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice, latest edition.
- D. American Welding Society (AWS): Reinforcing Steel Welding Code, D12.1-75, including latest revisions.

1.04 DELIVERY AND STORAGE

Stack reinforcing steel in tiers. Mark each length, size, shape, and location. Maintain reinforcement free of dirt, mud, paint, or rust.

1.05 SUBMITTALS

Shop Drawings

Indicate complete reinforcing method for each concrete member including materials, sizes, bends, dimensions, stirrup spacing, and placing details not shown on drawings.

Part 2 Products

2.01 MATERIALS

- A. Steel Reinforcement: Deformed billet steel, ASTM A615, Grade 60. Minimum 75% Recycled Product.
- B. Welded Steel Reinforcement: Deformed low-alloy steel, ASTM A706, carbon content not exceeding 0.30% and manganese content not exceeding 0.60%. Identify and tag with manufacturer's heat identification number.

2.02 FABRICATION

- A. Fabricate to sizes, shapes, and lengths detailed in accordance with requirements of ACI 318-71 and ACI 315-65.

Part 3 Execution

3.01 INSTALLATION

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice and

- other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover over reinforcement.
 - D. Accurately place reinforcing steel in accordance with drawings. Rebar shall be 2" beneath concrete surfaces. Thoroughly clean reinforcement of any coating which would reduce bonding. Do not heat, cut, or bend bars without Owner's approval. Do not splice reinforcement at points of maximum stress. Stagger splices in adjacent bars and provide a minimum overlap of 30-bar diameters at splices unless specifically noted otherwise on Drawings.
 - E. Securely saddle tie intersections with No. 18-gauge black annealed wire. Rigidly secure reinforcement in place. Provide concrete coverage as shown on Drawings.

3.02 WELDING REINFORCEMENT

- A. Weld deformed steel reinforcement bars in strict accordance with AWS 12.1, using recommended pre-heat temperature and electrode for type of steel being welded.
- B. Do not weld steel reinforcement bars without proper heat identification of bars.

3.03 CLEANUP

- A. Remove debris and trash resulting from specified work.

End of Section 03 20 00

Part 1 General

1.01 DESCRIPTION

Furnish materials, labor, transportation, services, and equipment necessary to install all Cast-In-Place Concrete related to the skate park as indicated on scope of work contract and shown on drawings and as specified herein.

1.02 RELATED INFORMATION

- A. Section 03 10 00-Concrete Forming and Accessories
- B. Section 03 20 00-Concrete Reinforcing
- C. Section 03 36 00-Shotcrete
- D. Section 03 33 51-Concrete Finishing
- E. Section 03 37 00-Concrete Curing

1.03 REFERENCE STANDARDS

- A. American Concrete Institute (ACI)
 - 1. ACI 315-80, Manual of Standard Practice for Detailing Reinforced Concrete Structures.
 - 2. ACI 318-77, Building Code Requirements for Reinforced Concrete.
- B. American Society for Testing and Materials (ASTM - latest editions)
 - 1. ASTM A233, Mild Steel Arc Welding Electrodes.
 - 2. ASTM A615, Deformed Billet-Steel Bars for Concrete Reinforcement.
 - 3. ASTM A706, Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
- C. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice, latest edition.
- D. American Welding Society (AWS): Reinforcing Steel Welding Code, D12.1-75, including latest revisions.

1.04 SUBMITTALS

- A. Design of Concrete Mixes
 - 1. Contractor shall be responsible for and pay for design of concrete mixes. Design of concrete mixes shall be performed by a Testing Laboratory selected by Contractor and reviewed and approved by the Resident Engineer / Skate Park Designer. Design methods to be in accordance with ACI 318-71.
 - 2. Concrete mix plant to conduct advance tests of trial mixes with

proposed materials. Test four (4) cylinders in accordance with ASTM C39 at seven (7) days and twenty-eight (28) days. Do not place concrete on project until laboratory reports and breaks of confirmations cylinders indicate that the proposed mixes will meet the strength requirements.

3. Check mix design and revise, if necessary, wherever changes are made in aggregate or in surface water content of aggregate or workability of concrete. Slump shall be the minimum to produce workable mix. Laboratory shall prescribe minimum quantity of water.
4. If Portland Cement reducers or other additives are used, submit control mix design without reducers or additives as well as mix exactly proposed to be used. Submit W.R. Grace Co. recommendations for retarder and shrinkage compensation of slab on grade.
5. Forward two (2) copies of design mix to the County.

B. Submit product data and manufacturer's instructions for:

1. Color admixture.
2. Expansion joint fill material.
3. Curing compound.
4. Dowel aligners/caps.
5. Crack repair materials.
6. Form facing materials.
7. Proprietary cleaning agents.
8. Plastic film for curing.
9. Surface retarders.
10. Micro-Fiber reinforcement

C. Samples

1. Samples for Color Selection: Submit color additive manufacturer's color chart & sample chip set; indicate color additive number and required dosage rate. Samples indicate general color and may vary from concrete finished in field according to Specifications.
2. Joint Fill Materials: Submit data sheets for Sika 1A and Sika 1C-SL.

D. Placement / Pour Schedule

1. Contractor to indicate on plans the locations to be installed within a day's work and not exceeding 50 cubic yards per day for quality control and inspection schedules.
2. Schedule and sequence to be reviewed and approved by the Resident Engineer / Skate Park Designer prior to starting this work.

E. Cast in Place Concrete Samples / Mock-Ups

1. Contractor shall prepare 4'x 4' samples for each cast-in-place

concrete type indicated on Drawings. Contractor may pour each type as part of the finished project, and if approved by the Resident Engineer / Skate Park Designer it may remain in place as finished product. If the sample is not approved, the Contractor in charge of the specific scope of work shall remove and replace another sample for Resident Engineer / Skate Park Designer's approval at no additional cost to the County.

2. Samples shall be completed to the satisfaction of the Resident Engineer / Skate Park Designer including aggregates, texture, color, and finishes. If samples are rejected by the Resident Engineer / Skate Park Designer, the Contractor in charge of the specific scope of work shall remove and replace the sample for the Resident Engineer / Skate Park Designer's approval at no additional cost to the County.
3. These samples will become the standard of quality by which future paving samples and work will be judged.
4. Samples to remain on-site and be protected during construction, to compare work in progress. If samples are damaged or removed, the Contractor in charge of the specific scope of work shall repair/replace in-kind immediately at no additional cost to the County.

F. Test Reports: Compressive strength of concrete test cylinders taken upon delivery of concrete.

1.05 QUALITY ASSURANCE

A. Concrete Testing

1. Prepare samples by each application crew using the equipment, materials and mix proportions proposed for the Project. County shall observe preparation of test panels noting placement of cast in place concrete by applications crew.
2. Test panel shall be minimum 6" x 18" x 18" maximum 6" x 24" x 24". Test panel shall conform to Part 1.04 Submittals.
3. Secure and protect samples during construction and test for compliance with Specifications.
4. Test strength of the cast in place concrete as work progresses as follows:
 - a. Cut cores from the test panel and test in accordance with ASTM C42.
 - b. One test panel per 50 yards of accumulated cast in place concrete, minimum 6" x 18" x 18" maximum 6" x 24" x 24". Cores taken from the test panel shall be taken not less than once each shift nor less than one for each 50 cubic yards of cast in place concrete placed through the nozzle.

- c. Cores shall be soaked in water for a minimum of forty (40) hours before testing.

B. Certification

Nozzleman certification shall be in accordance with ACI 506.3R.

C. Regulatory Requirements

Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work

D. Acceptance

Final acceptance of the cast in place will be done by the Resident Engineer / Skate Park Designer and will be based upon the results obtained from cores.

E. Concrete Manufacturer Qualifications

Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

F. Skate Park Contractor / Sub-Contractor Experience

Provide evidence to indicate successful experience in providing cast in place concrete work for skate parks similar in scope to that specified herein and can demonstrate successful experience through past project documentation and references.

1. Required Experience

Skate Park Contractor or Sub-Contractor must have completed three (3) public concrete skate park facilities with a minimum size of 5,000 square feet, in the last five (5) years. Parks must be open and in good operating condition for at least one (1) year.

2. Evidence of Experience

Skate Park Contractor or Sub-Contractor shall submit to Field Engineer Inspector satisfactory documentation of previously mentioned experience and qualification. If a Contractor cannot provide this information or if it is unverifiable, work under this Section and any other related Section cannot be completed by Contractor. This submission must contain the Project Name & Location, County Name & Contact Information, Designer Name & Contact Information, Project Size, Contract Value, Completion Date, and Supervisor and/or Key Personnel responsible for this experience for each of the qualifying projects.

3. Safety and Performance Guidelines

Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.

4. ACI Requirements

Meet all requirements of ACI 6. ACI 318-77 – Building Code Requirements for Reinforced Concrete.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Store materials in dry and protected locations and protect from damage.
- B. Do not change brand of cement or source of aggregate during course of Work, without prior approval from the Resident Engineer / Skate Park Designer.

1.07 SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Contractor shall submit plan to monitor wind velocity, relative humidity, temperature, and concrete temperature to maintain specified maximum rate of evaporation.
 - 2. Do not place concrete when sub-base surface temperature is less than 40 degrees F, nor when surface is wet.
 - 3. Protect concrete against extreme cold and heat, frost, rapid drying, and damage by rain.
- B. Coordination:
 - 1. Coordinate schedules of concrete placement to allow adequate time for installation of other related work.
 - 2. Verify that anchor bolts and other embedded steel items to be cast into concrete are properly placed.
 - 3. Coordinate size and location of mechanical and electrical equipment concrete pads.
 - 4. Coordinate earthwork and Soils Report requirements with placement requirements.
 - 5. Coordinate with formwork and finishes sections to provide finish floor levelness and flatness as specified herein. Slope to drains at grades and percent slope shown on contract documents.
 - 6. Ensure that irrigation sleeves, electrical conduit, drainage lines and other utility elements are accommodated and as-built located prior to placing concrete.

2.01 MATERIALS

- A. Ready Mixed Concrete: Batched, mixed, and transported in accordance with ASTM C94 – Specifications for Ready Mixed Concrete.
- B. Portland Cement: Refer to Drawings for specific paving type and finish required and conform to ASTM C-150, Type II. Use same brand of cement from single source throughout entire project for each paving type unless approval from the Resident Engineer / Skate Park Designer states otherwise.
- C. Fine Aggregate (washed concrete sand): Clean, hard, durable, uncoated washed natural sand, free from silt, loam, or clay, and conforming to ASTM C33.
- D. Coarse Aggregate: Class II-Hard durable, un-coated crushed limestone meeting requirements of ASTM C-33. Unless otherwise noted in aggregate size 1” minimum, No., 56 or 57. Base rock shall conform to local code.
- E. Water: Potable and free from deleterious materials such as oils, acids, and organic matter.
- F. Admixture: Cement-dispersing, water-reducing compound, ASTM C 494, Type A, as made by Master Builders, Sika, or Gifford-Hill Co., or equal. Depending upon weather conditions at time of placing, ASTM C 494, Type D (water-retarding) or Type E (water-reducing, accelerating) may be used if approved by the Resident Engineer / Skate Park Designer.
- G. Additives: Micro-Fiber reinforcement that is designed to mitigate plastic shrinkage cracking, to be approved by the Resident Engineer / Skate Park Designer, in all concrete (dosage as recommended by the manufacturer).
- H. Curing Materials:
 - 1. Water: Domestic Quality, clear and potable with no chemical content.
 - 2. Sheet Material: Comply with ASTM C171. Moisture loss maximum .055 g/cm sq. Color: White.
 - 3. Curing Compounds/Sealer: Curing compound shall comply with ASTM C309 and be approved by color additive manufacturer for use with colored concrete

2.02 PROPORTIONS AND MIXING

- A. Proportions and Design: In accordance with approved mix design. Minimum allowable compressive strength at 28 days is 4000 psi (as marked per plan).
- B. Admixture: No admixtures without approval of the Resident Engineer / Skate Park Designer. Introduce admixtures in quantities and according to methods recommended by admixture manufacturer. Add air-entraining agent to concrete as scheduled.
- C. Slump: Not to exceed 4”

- D. Mixing: Ready mixed concrete in accordance with ASTM C-94. Do not transport or use concrete after 1-1/2 hours have elapsed from time of initial mixing. Supplier of transit-mixed concrete shall have a plant of sufficient capacity, and adequate transportation facilities to assure continuous delivery at required rate, to provide continuous concrete placement throughout a pour.
- E. Grout and Dry Pack: Non-Shrink, Non-Metallic: U.S. Grout Corp or equal. "Five Star Grout" ASTM C- 827, C-1107-02 Grades A, B and C, and C-1107-07, 5,000 PSI.

2.03 CURING MATERIALS

- A. Water: Domestic Quality, clear and potable with no chemical content.
- B. Sheet Material: ASTM C171. Moisture loss maximum .055 g/ cm sq. Color: White.
- C. Curing Compounds: Ashford Formula™ Curecrete by Curecrete Distribution, Inc., Phone (800) 998-5664, or equal.

Part 3 Execution

3.01 INSPECTION

- A. Inspect subgrade, forms, reinforcing steel, pipes, conduits, sleeves, hangers, anchors, inserts, and other work required to be built into concrete and report any discrepancies. Notify County at least five (5) working days in advance of scheduled placement.
- B. Correct unsatisfactory work prior to placing concrete.
- C. Remove rubbish from formwork immediately prior to placing concrete.

3.02 INSTALLATION

- A. Placing Concrete:
 - 1. Convey and place concrete allowing no separation of ingredients in accordance with ACI 304 and as specified below.
 - 2. Maximum height of concrete free fall – five (5) feet.
 - 3. Regulate rate of placement to maintain plasticity and flow into position.
 - 4. Deposit concrete continuously until panel or section is completed.
 - 5. Place concrete in horizontal layers 18" maximum thickness.
- B. Consolidation:
 - 1. Use mechanical vibrating equipment for consolidation.
 - 2. Vertically insert and remove hand-held vibrators at 18" O.C. for 10 to 15 seconds.
 - 3. Do not use vibrators to transport concrete in forms.
 - 4. Provide vibrators with minimum speed of 8000 RPM and with amplitude to consolidate effectively.
 - 5. Thoroughly consolidate concrete and work around reinforcement,

embedded items and into corners of forms. Thoroughly consolidate layers of concrete with previous layers.

- C. Construction Joints:
1. Unless otherwise shown on Drawings, each footing, wall, beam, and slab shall be considered as a single unit of operation and shall be monolithic in construction.
 2. Where construction joints are unavoidable, locate joints at or near quarter points of spans where approved by Resident Engineer / Skate Park Designer and/or shown on plan.
 3. Saw Cut joints, Expansion Joints and Cold Joints as detailed in contract documents.
- D. Expansion Joint Fillers:
1. Refer to Drawings for Expansion Joint locations and details.
 2. Finish joint material flush with concrete surface.
- E. Hot Weather Placement:
1. Prevent high temperature in fresh concrete during hot weather in accordance with ACI 305.
 2. Use water reducing set retarding admixtures in such quantities as especially recommended by manufacturer to assure that concrete remains workable and lift lines will not be visible.
- F. Flatwork:
1. Cast slabs-on-grade in alternate sections unless permanent forms are used. Wait 48 hours between all adjacent concrete castings.
 2. Plane Surface Tolerance: Exterior- Class AX, 3/16" in 10' with no ponding.
 3. Maximum 1:500 slope from indicated plane at any point.
- G. Finish:
1. Smooth Trowel finish to match approved Mock-Up finish. If the finish is not approved, the Contractor in charge of the specific scope of work shall remove and replace another sample for Resident Engineer / Skate Park Designer's approval.
 2. After surface water disappears and floated surfaces have sufficiently hardened, steel trowel then re-trowel the surface to a smooth and consistent finish.
 3. After concrete has set enough to provide edge troweling, re-trowel edges to a smooth and uniform finish.
- H. Cracking:
1. Cracking from inadequate curing is not allowed. Sawcut joints and construction joints are shown on drawings. Contractor may, with review and approval by the Resident Engineer / Skate Park Designer, recommend and detail other joints required to prevent cracking.

- A. Remove and replace concrete paving that is broken, damaged, defective, or does not meet the requirements of this Section or conformance with ASTM F 2480 - Standard Guide for In-ground Skate Parks.
- B. Protect concrete from damage; exclude traffic from paving for at least 28 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Maintain concrete paving free of stains, discoloration, dirt, wax, and other foreign material.

3.04 TOLERANCES

Minor variations in appearance of colored concrete, which are like natural variations in color and appearance of uncolored concrete, are acceptable but subject to approval by the Resident Engineer / Skate Park Designer.

3.05 REJECTIONS

- A. Major variations in the appearance of integral colored concrete compared to manufacturer's sample chip shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the County.
- B. Defects in the concrete including lack of uniformity, exhibits segregation honeycombing, or lamination, or which contains any dry patches, slugs, voids, or pockets shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the County.
- C. Radial wall finishes shall consist of smooth, hard, uniform surface of smooth trowel with a level tolerance of 1/8 inch in 10 feet when tested with a 10-foot steel straightedge placed on the surface horizontally and vertically. Grinding the surfaces will not be an acceptable means of achieving the intended radii and uniformity shall be approved by the Resident Engineer / Skate Park Designer. If rejected, The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.

3.06 CLEAN UP

At completion of Work, remove concrete stains from adjacent work, including but not limited to dissimilar paving types, walls, columns, railing posts, light fixtures, plant materials, to satisfaction of the Resident Engineer / Skate Park Designer.

Part 1 General

1.01 SPECIALTY SKATE PARK CONSTRUCTION

All work contained in this Section is considered Specialty Skate Park Construction. Only those Contractors that meet the minimum experience requirements contained in the Quality Assurance Section of this specification may perform this work as specified herein.

1.02 REGULATIONS

The work shall conform to requirements of the American Concrete Institute (ACI) and the local Building Code for concrete finishing, as supplemented and modified on drawings or herein.

1.03 REFERENCE STANDARDS

The Concrete Finishing shall conform to requirements of the following Reference Standards or as modified and supplemented hereinafter.

- A. American Concrete Institute (ACI) Specifications for Structural Concrete for Buildings, ACI 301
- B. ACI Recommended Practice for Cold Weather Concreting, ACI 306
- C. ACI Recommended Practice for Hot Weather Concreting, ACI 605

1.04 RELATED SECTIONS

- A. Section 03 10 00 - Concrete Formwork
- B. Section 03 20 00 - Concrete Reinforcement
- C. Section 03 30 00 - Cast in Place Concrete
- D. Section 03 36 00 - Shotcrete

1.05 QUALITY ASSURANCE

Skate Parks are not considered standard concrete flatwork. Where indicated to be exposed, Skate Park concrete is architecturally finished concrete represented in the form of complex and unique shapes. Typical Skate Park features will incorporate concave and convex transitioning between surfaces which require the specified finishes to sculpturally blend along compound radius curves. It is critical that Skate Park concrete work be completed with a high level of precision for the skate facility to function properly and safely. Special care must be taken to provide the specified finished surfaces without gravel pockets, and other defects/defacements. The Resident Engineer / Skate Park Designer shall inspect concrete after removal of forms and before concrete repair work begins. Concrete that does not meet the minimum requirements of the specifications shall be rejected by the Resident Engineer / Skate Park Designer and therefore removed and replaced in its entirety by the Contractor at their expense.

1.06 CONTRACTOR QUALIFICATION STATEMENT / SUBMITTAL

To be considered a qualified and responsible Bidder, the Bidder shall provide documentation establishing that the Bidder and/or subcontractor has satisfied the experience requirements listed below:

- A. The Skate Park specialty contractor, or subcontractor must provide proof of three (3) public concrete skate park facilities with a minimum size of 5,000 square feet, in the last five (5) years. Parks must be open and in good operating condition for at least one (1) year.
- B. Installation of storm drainage systems in conjunction with Skate Park components.
- C. Shaping of earthwork to specified radius.
- D. Experience creating the following in facilities specifically intended for skateboarding: Cast in place concave and convex shaped concrete elements containing compound radius curves that must be precisely shaped to function as intended.
- E. Experience in application of vertical and horizontal shotcrete work, including horizontal and vertical radius transitions that include compound radius curves and blends, formed concrete, grinding rails, and associated concrete reinforcement as needed.
- F. The Contractor shall be skilled with the installation of steel coping edges, smooth flowing seamless transition areas, and smooth trowel concrete finish work.
- G. Layout, fabrication, and construction of the steel coping.
- H. Installation of concrete flatwork between bowled areas.

1.07 PROTECTION

Protect persons and adjacent materials and finishes from dust, dirt and other surface or physical damage during finishing operations, including materials driven by wind.

Part 2 Products – Not Applicable

Part 3 Execution

3.01 REPAIRS

Immediately after the removal of forms inspect all surfaces for defects. Repair or patch defects only after defects are inspected by the Resident Engineer / Skate Park Designer and then only with the Resident Engineer / Skate Park Designer's permission. Do all cutting and repair within 48 hours after removal of forms; cure

repairs same as new concrete.

3.02 FINISHES FOR FORMED SURFACES

A. Rough Form Finish

Provide for surface of walls and footings adjacent to grade or below grade. This is the concrete surface having texture imparted by form facing material use with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth Formed Finish

Provide a smooth formed finish on formed concrete surfaces exposed to view. This is an as-cast concrete surface obtained with selected form facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections completely and smoothed. Repair and patch honeycombs and defective areas as directed by the Resident Engineer / Skate Park Designer. Tie holes shall not be filled.

C. Sacked Finish

1) On all inconsistent surfaces of the exposed concrete, provide a sacked finish by coating the concrete with sacking mortar. Sacking of patched or defective concrete surfaces may be required by the Resident Engineer/ Skate Park Designer for areas not otherwise already requiring this work.

2) Repair and patch tie holes, honeycombs and defective areas and trowel to smooth finish. Remove fines and other projections completely.

3) Thoroughly wet surface to prevent absorption.

4) Coat entire surface with sacking mortar as soon as surface of concrete approaches surface dryness.

5) Thoroughly and vigorously rub mortar over area with clean burlap pads to fill all voids.

6) While mortar is still plastic but partially set (so it cannot be pulled from voids), sack-rub surface with dry mix of sacking mortar (leave out water). There should be no discernible thickness of mortar on concrete surface, except in voids; all surfaces should be uniformly textured.

7). Immediately begin a continuous moist cure for 72 hours.

D. Related Unformed Surfaces

At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated. Provide for face surface of walls adjacent to plaza, walks and

stairs.

3.03 FINISHES FOR UNFORMED SURFACES

- A. Screed all slabs, for whatever finishes, to true levels or slopes, work surfaces only to the degree required to produce the desired finish; do no finishing in areas where water has accumulated until they have been drained and excess moisture has dried. Carefully finish all joints and edges with proper tools, unless otherwise specified.

B. Rough Screed Finish

Consolidate, level, and screed all surfaces to obtain evenness and uniformity; remove all surplus concrete after consolidation by striking off with sawing motion against guide strips.

C. Float Finish

Apply float finish to monolithic slabs to receive trowel or other finishes. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using floats appropriate to the surface contours only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155. Uniformly slope surfaces to drains. Cut down high spots and fill low spots immediately after leveling, re-float surface to a uniform, smooth, granular texture.

D. Hard Trowel Finish

After floated surface is firm enough to receive steel trowels, trowel at least two complete passes, or until last stage before blackening. Leave no trowel marks discernible to the touch. Do not use excessive water, especially on last the pass.

E. Defective Work

Remove and replace when directed by the Resident Engineer/ Skate Park Designer , surfaces which show inferior finish quality.

3.04 CURING

- A. Protect concrete surfaces against rapid drying. Apply Clear Spray-on cure agent after final finish is achieved. Keep sealed with cure agent for necessary amount of time to reach concrete strength and inhibit moisture loss after placing per manufacturer's recommendation.

B. Duration of Curing

In addition to the initial overnight curing, continue final curing operations until the cumulative number of days or fractions thereof (not necessarily

consecutive) occurs, during which time the temperature of the air in contact with the concrete is above 50 degrees F, equals 7 days. Curing period considered done when compressive strength is reached. If high-early strength concrete has been used, continue final curing operation for 3 days total time, calculated as before. Take care to prevent rapid drying at the end of the curing period. Early removal of forms will not be approved when forms are removed during the curing period.

3.05 INSPECTION

Contractor shall notify Resident Engineer / Skate Park Designer that they are starting concrete finish repair work at least five (5) working days prior to the beginning of work.

3.06 REJECTIONS

- A. Major variations in the appearance of integral colored concrete compared to manufacturer's sample chip shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.
- B. Defects in the concrete including lack of uniformity, exhibits segregation honeycombing, or lamination, or which contains any dry patches, slugs, voids, pockets or does not meet the radius requirements of the design shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer approval at no additional cost to the Client.
- C. Radial wall finishes shall consist of smooth, hard, uniform surface of smooth trowel with a level tolerance of 1/8 inch in 10 feet when tested with a 10-foot steel straightedge placed on the surface horizontally and vertically. Grinding the surfaces will not be an acceptable means of achieving the intended radii and uniformity shall be approved by the Resident Engineer / Skate Park Designer. If rejected, The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.

3.07 CLEANING

Leave premises clean and free of residue from work in this section.

3.08 PROTECTION AND SITE SECURITY FROM VANDALISM

It shall be the contactors responsibly to protect site from theft and vandalism.

Part 1 General

1.01 DESCRIPTION

Provide sprayed-on concrete (concrete conveyed into place by air pressure through a flexible tube or gun with controlled nozzle) referred to herein as shotcrete, complete as shown and as specified by Skate Park Contractor.

- A. Provide sprayed-on concrete (concrete conveyed into place by air pressure through a flexible tube or gun with controlled nozzle) referred to herein as shotcrete, complete as shown and as specified.
- B. Application, cutting, and sculpting and finish work related to this Work is deemed specialty work within the Contract Documents.
- C. All work related to this application, cutting, sculpting, and installation shall be coordinated with the Resident Engineer / Skate Park Designer, prior to project start.

1.02 RELATED INFORMATION

- A. Section 03 10 00-Concrete Forming and Accessories
- B. Section 03 20 00-Concrete Reinforcing
- C. Section 03 30 00-Cast-In-Place Concrete
- D. Section 03 33 51-Concrete Finishing
- E. Section 03 37 00-Concrete Curing
- F. Section 05 50 00-Metal Fabrications

1.03 REFERENCES

- A. Comply with the requirements of the current edition of the following codes and standards, except as herein modified:
- B. Latest Uniform Standard Specifications issued by the Client.
- C. American Concrete Institute (ACI): 506, Chapter 13, Wet Method. Chapter 5, Shotcrete Crew.
- D. American Society for Testing Materials (ASTM)

1.04 SUBMITTALS

- A. Submit current product data and manufacturer's instructions for proprietary materials including:
 - 1. Color admixture
 - 2. Expansion joint fill material
 - 3. Curing compound
 - 4. Dowel aligners / caps
 - 5. Form facing materials
 - 6. Form release agents

7. Proprietary cleaning agents
8. Plastic film for curing
9. Surface retarders
10. Micro-Fiber reinforcement

B. Shop Drawings

1. Section and plan views showing all proposed construction joints.
2. Contractor to submit shop drawings for all templates to be used on the project.

C. Design of Concrete Mixes

1. Contractor shall be responsible for and pay for design of concrete mixes for each type of concrete specified. Design of concrete mixes shall be performed by a Testing Laboratory selected by Contractor and approved by the Resident Engineer / Skate Park Designer. Design methods to be in accordance with ACI 318.
2. Make three (3) trial mixes using aggregate proposed.
3. Check mix design and revise, if necessary, wherever changes are made in aggregate or in surface water content of aggregate or workability of concrete. Slump shall be the minimum to produce workable mix. Laboratory shall prescribe minimum quantity of water.
4. Forward two copies of design mix to the Client and Resident Engineer / Skate Park Designer for approval.

D. Placement / Pour Schedule

1. Contractor to indicate on plans the locations to be shot within a day's work and not exceeding 50 cubic yards per day for quality control and inspection schedules.
2. Schedule and sequence to be reviewed and approved by the Resident Engineer / Skate Park Designer prior to starting this work.

E. Shotcrete Samples / Mock-Ups

1. Provide representative samples of materials for material testing, mix proportion testing, and finish.
2. Sample of each of the following must be provided: Bowl section with 2" round steel coping and a standard bank with radius transition bottom. The shotcrete samples need to match the same height, radius, angle, curvature, finish, and reinforcement of the corresponding sections and details for

inspection an approval. The sample may be part of the finished product and can remain in place as finished product if approved by the Resident Engineer / Skate Park Designer. If the sample is built in place it needs to follow the jointing outlined in the Concrete Jointing plan. If the samples are built elsewhere on-site, they only need to be six feet (6') wide with height and length corresponding to the sections.

3. Contractor shall prepare and pay for a sample for each paving type indicated on Drawings prior to installation.
 4. Samples shall be completed to the satisfaction of the Resident Engineer / Skate Park Designer and shall include aggregates, texture, color, and finishes. If samples are rejected by the Resident Engineer / Skate Park Designer, the Contractor in charge of the specific scope of work shall remove and replace the sample for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.
 5. These samples will become the standard of quality by which future paving samples and work will be judged.
 6. Samples to remain on-site and be protected during construction, to compare work in progress. If samples are damaged or removed, Contractor shall repair / replace in-kind immediately at no additional cost to the Client.
- F. Test Reports: Compressive strength of concrete test cylinders taken upon delivery of concrete.

1.05 QUALITY ASSURANCE

A. Concrete Testing

1. Prepare samples by each application crew using the equipment, materials and mix proportions proposed for the Project. Resident Engineer / Skate Park Designer shall observe preparation of test panels noting placement of shotcrete by applications crew.
2. Test panel shall be at least 6" x 18" x 18". Test panel shall conform to Section 03 36 00 Shotcrete, Part 1.04 Submittals.
3. Secure and protect samples during construction and test for compliance with Specifications.
4. Test strength of the shotcrete as work progresses as follows:
 - a. Cut cores from the test panel and test in accordance with ASTM C42.
 - b. One 6" x 18" x 18" test panel every 50 cubic yards of accumulated shotcrete. A set of four 43) 2' x 2' x 6" cores taken from the test panel shall be taken and broken on days 7, 14, 21 and 28. shotcrete placed through the nozzle.
 - c. Cores shall be soaked in water for a minimum of 40 hours before testing.

B. Certification

Nozzleman certification shall be in accordance with ACI 506.3R.

C. Regulatory Requirements

Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work

D. Acceptance

Final acceptance of the shotcrete will be done by the Resident Engineer / Skate Park Designer and will be based upon the results obtained from cores.

E. Concrete Manufacturer Qualifications

Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

F. Skate Park Contractor / Sub-Contractor Experience

Provide evidence to indicate successful experience in performing shotcrete concrete work for skate parks similar in scope to that specified herein and can demonstrate successful experience through past project documentation and references.

1. Required Experience

Skate Park Contractor or Sub-contractor must have completed three (3) public concrete skate park facilities with a minimum size of 5,000 square feet, in the last five (5) years. Parks must be open and in good operating condition for at least one (1) year.

2. Evidence of Experience

Skate Park Contractor or Sub-contractor shall submit to Field Engineer Inspector satisfactory documentation of the experience and qualification. If a Contractor cannot provide this information or if it is unverifiable, work under this Section and any other related Section cannot be completed by Contractor. This submission must contain the Project Name & Location, Client's Name & Contact Information, Designer Name & Contact Information, Project Size, Contract Value, Completion Date, and Supervisor and/or Key Personnel responsible for this experience for each of the qualifying projects.

3. Safety and Performance Guidelines

Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.

4. ACI Requirements

Meet all requirements of ACI 506, Chapter 13, Wet Method and Chapter 5, Shotcrete Crew.

1.06 DELIVERY, HANDLING, AND STORAGE

- A. Properly deliver and handle materials to prevent contamination, segregation, or damage to materials.
- B. Store cement in weather tight enclosures to protect against dampness and contamination.
- C. Prevent segregation and contamination of aggregates by proper arrangement and use of stockpiles.
- D. Store admixtures properly to prevent contamination, evaporation, or other damage.
- E. Do not change brand of cement or source of aggregate during course of Work.

Part 2 Products

2.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I or II, one brand only.
- B. Fly Ash: ASTM C618, Class C only. The amount of fly ash used shall not exceed 20% by weight of the combined weight of fly ash and cement.
- C. Normal Weight Aggregates: ASTM C33 and as herein specified.
 - 1. Batch fine coarse aggregates separately to avoid segregation.
 - 2. Aggregates shall be free from clay, mud, loam, or other deleterious substances.
 - 3. Dune sand, bank run sand, and manufactured sand are not acceptable for fine aggregate.
 - 4. Coarse aggregate shall be clean, uncoated, heavy media processed aggregate of crushed stone or river washed aggregate.

2.02 ACCESSORIES

- A. Water: Fresh, clean, potable, and free of deleterious acids, mixing, and curing water, as available from Client. Transport as required.
- B. Admixtures: Use only accepted admixtures meeting the following requirements:
 - 1. Chemical Admixtures: ASTM C494
 - 2. Air-entraining Admixtures: ASTM C260
- C. Expansion Joints: See Cast-In-Place Concrete - Section 03 30 00.
- D. Additive: Micro-Fiber reinforcement that is designed to mitigate plastic shrinkage cracking, to be approved by the Resident Engineer / Skate Park Designer, in all concrete (dosage as recommended by the manufacturer).

2.03 PROPORTIONING AND DESIGN OF CONCRETE MIXES

A. Mix

Prepare design mix to achieve an in-place 28-day compressive strength of 4,000 pounds per square inch and an air content as specified on plans. Maximum aggregate size shall not exceed 3/8 inch. Unit weight of in-place shotcrete shall be 494 pounds per cubic yard. Contractor to pay for and use an independent Testing Agency acceptable to the Resident Engineer / Skate Park Designer to prepare and report the proposed mix design. Testing is at the cost of the Contractor responsible for this mix.

B. Test Data

Submit for acceptance proportioning and test data from prior experience if available. If data from prior experience are not available or accepted, make, and have tested specimens from three or more different mix proportions in accordance with pre-construction testing requirements of this Specification.

C. Strength

Selected mix proportions based on compressive strength tests of specimens shall be cut from the shotcrete test panels not earlier than five (5) days after shotcreting. For mix acceptance purposes, average core strengths shall be least equal to f'_c for cores with L/D of 2.0. For cores with L/D between 1.0 and 2.0, use correction factors given in ASTM C42.

D. Review

Mix design shall be reviewed for acceptance by Resident Engineer / Skate Park Designer.

2.04 CONCRETE APPLICATION EQUIPMENT

A. For Wet Mix Shotcrete

1. Mixing Equipment: Capable of thoroughly mixing aggregate, cement, and water in sufficient quantity to maintain continuous placement.
2. Ready-mixed Concrete: ASTM C94, except that it may be delivered to the site in the dry state if the equipment can add the water and mixing it satisfactorily with the dry ingredients.
3. Air Supply: Clean air adequate for maintaining sufficient nozzle velocity for parts of work, and for simultaneous operation of blow pipe for cleaning away rebound.
4. Delivery Equipment: Capable of discharging aggregate-cement-water mixture accurately, uniformly, and continuously through delivery hose.

Part 3 Execution

3.01 INSPECTION

A. Examination

Examine concrete formwork and verify that it is true to line and dimension, adequately braced against vibration, and constructed to permit escape of air and rebound but to prevent mortar leakage during shotcreting. Correct deficiencies.

B. Inspection

Inspect reinforcement steel and items to be embedded in concrete. Correct any deviations from the accepted shop drawings.

C. Notification

Notify other trades involved in ample time to permit the proper installation of their work. Cooperate in setting such work.

D. Existing Surfaces

Examine existing concrete surfaces for unsound material. Correct deficiencies.

3.02 PREPARATION FOR INSTALLATION OF CONCRETE

A. Forms

Use a form-coating material on removable forms to prevent absorption of moisture and to prevent absorption of moisture and to prevent bond with shotcrete.

3.03 CONCRETE BATCHING AND MIXING

A. Proportions

Mix proportions shall be controlled by weight batching. Contractor's Testing Laboratory shall maintain quality control records during shotcrete production and make those records available to the Resident Engineer / Skate Park Designer.

3.04 CONCRETE PLACEMENT

A. Placement

Use suitable delivery equipment and procedures that will result in shotcrete in place meeting the requirements of this Specification. Determine operating procedures for placement in, extended distances, and around any obstructions where placement velocities and mix consistency must be adjusted.

B. Placement Techniques

Do not place shotcrete if drying or stiffening of the mix takes place at any time prior to delivery to the nozzle.

1. Control thickness, method of support, air pressure, and/or water content of shotcrete to preclude sagging or sloughing off. Discontinue shotcreting or provide suitable means to screen the nozzle stream if wind or air currents cause separation of the nozzle stream during placement.
2. Hold nozzle as perpendicular to surface as work will permit, to secure maximum compaction with minimum rebound.
3. In shotcreting walls, begin application at bottom. Ensure work does not sag.
4. Layering
 - a. Build up layers by making several passes of nozzle over work area.
 - b. Broom or scarify the surface of freshly placed shotcrete to which, after hardening, additional layers of shotcrete are to be bonded. Dampen surface just prior to application of succeeding layers.
 - c. Allow each layer of shotcrete to take initial set before applying succeeding layers.

- d. Use radial templates to insure exact radii from flat bottom of skate park deck and coping. Template shall be fabricated from steel or $\frac{3}{4}$ " plywood. Check every horizontal foot when applying shotcrete for conformance of intended wall radii. Brace template and place levels at arc to tangent connections to ensure no kinks will be formed. Kinks at the bottom of bowls will not be acceptable. Slumping of the shotcrete causing coping setback will not be acceptable.

5. Placement around Reinforcement

- a. Hold the nozzle at such distance and angle to place materials behind reinforcement before any material can accumulate on its face. In the dry-mix process, additional water may be added to the mix when encasing reinforcement to facilitate a smooth flow of material behind the bars.
- b. Test to ascertain if any void or sand pockets have developed around or behind reinforcement by probing with an awl or other pointed tool after the shotcrete has achieved its initial set, by removal of randomly selected bars, or coring or other suitable standards.

3.05 REMOVAL OF SURFACE DEFECTS IN CONCRETE

A. General

Remove and replace shotcrete which lacks uniformity, exhibits segregation, honeycombing, or lamination, or which contains any dry patches, slugs, voids, or pockets. Remove defective areas.

B. Sounding

Sound work with hammer for voids. Remove and replace damaged in-place shotcrete.

3.06 CONCRETE FINISH

A. Form Finish

Smooth form finish shall consist of a smooth, hard, uniform texture with a minimum of seams.

B. Unformed Finish / Radial Wall Finish

Float finish on unformed face of wall shall consist of a smooth, hard, uniform surface of smooth steel trowel. Level to a tolerance of 1/10 inch in 10 feet when tested with a 10-foot steel straightedge placed on the surface horizontally, and vertically with radial template with the appropriate radii. Grinding the surfaces will not be an acceptable means of achieving the intended radii. Concrete finish work shall match the approved sample poured on site.

3.07 CONCRETE JOINTS

A. Cleaning

The entire joint shall be thoroughly cleaned and wetted prior to the application of additional shotcrete.

B. Reinforcement

Make joints perpendicular to the main reinforcement. Continue reinforcement across joints.

3.08 CONCRETE CURING AND PROTECTION

A. Initial Curing

Immediately after finishing, keep shotcrete continuously moist for at least 24 hours. Use one of the following materials or methods:

1. Ponding or continuous sprinkling.
2. Cover and keep continuously wet.

B. Final Curing

Provide additional curing immediately following the initial curing and before the shotcrete has dried. Use one of the following materials or methods:

1. Continue the method used in initial curing.
2. Materials conforming to Specifications for Sheet Materials for Curing Concrete, ASTM C 171.

C. Duration of Curing

Continue for the first 7 days after shotcreting or until specified strength is obtained. During the curing period, maintain shotcrete above 40 degrees and in a moist condition. Prevent rapid drying at the end of the curing period.

3.09 REJECTIONS

- A. Major variations in the appearance of integral colored concrete compared to manufacturer's sample chip shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.
- B. Defects in the shotcrete including lack of uniformity, exhibits segregation

honeycombing, or lamination, or which contains any dry patches, slugs, voids, or pockets shall be rejected by the Resident Engineer / Skate Park Designer. The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client .

- C. Radial wall finishes shall consist of smooth, hard, uniform surface of smooth trowel with a level tolerance of 1/8 inch in 10 feet when tested with a 10-foot steel straightedge placed on the surface horizontally and vertically. Grinding the surfaces will not be an acceptable means of achieving the intended radii and uniformity shall be approved by the Resident Engineer / Skate Park Designer. If rejected, The Contractor in charge of the specific scope of work shall remove and replace rejected work for the Resident Engineer / Skate Park Designer's approval at no additional cost to the Client.

3.10 CLEAN UP

- A. At completion of Work, remove concrete stains from adjacent work, including but not limited to dissimilar paving types, walls, columns, railing posts, light fixtures, plant materials, to satisfaction of Resident Engineer / Skate Park Designer.
- B. Efflorescence: Remove efflorescence (as soon as practical after it appears) as part of final cleaning.
- C. Use least aggressive cleaning techniques possible.
- D. Wear protective eye wear, gloves, and clothing suitable to work and as required by cleaner manufacturer.
- E. If proprietary cleaning agents are used, pre-wet wall, test cleaning agent on a small, inconspicuous area, and check effects prior to proceeding. Begin cleaning at the top and work down. Thoroughly rinse wall afterwards with clean water. Follow cleaner manufacturer's instructions.
- F. Do not use muriatic (hydrochloric) acid on colored concrete.

End of Section 03 36 00

Part 1 General

1.01 DESCRIPTION

Provide curing material for cast-in-place concrete flatwork, and shotcrete walls (radial and angled).

1.02 RELATED INFORMATION

- A. Section 03 10 00-Concrete Forming and Accessories
- B. Section 03 20 00-Concrete Reinforcing
- C. Section 03 30 00-Cast-In-Place Concrete
- D. Section 03 36 00-Shotcrete

1.03 SUBMITTALS

- A. Submit samples and detailed technical data of products proposed for curing use for Client approval.
- B. Submit certification that materials meet specification requirements.

1.04 DELIVERY AND STORAGE

Deliver materials in original sealed containers with seal and labels intact. Store in a dry place. Use materials out of original containers only.

Part 2 Products

2.01 MATERIALS

- A. Evercrete DPS™ Deep Penetrating Sealer, manufactured by Evercrete Group, or approved non-toxic, odorless, clear, water-soluble liquid compound equivalent.
- B. Curing Agent: ASTM C 309, non-staining, water, or soy based, low or no Volatile Organic compound emitting, compatible with color admixture

Part 3 Execution

3.01 CURING

- A. Protect concrete surfaces against rapid drying. Keep moist for necessary amount of time to reach concrete strength and inhibit moisture loss after placing.
- B. Curing Method: Spread curing paper over surfaces, lapping ends and sides a minimum of 4", and maintain in place by use of suitable weights for necessary duration, then remove.

3.02 CLEANUP

Remove debris and trash resulting from specified work

Part 1 General

1.01 SCOPE

Provide labor, materials, and equipment for the installation of Metal Work as shown on the drawings and as specified.

1.02 RELATED INFORMATION

- A. Section 03 10 00 - Concrete Forming and Accessories
- B. Section 03 20 00 - Concrete Reinforcing
- C. Section 03 30 00 - Cast-In-Place Concrete
- D. Section 03 36 00 - Shotcrete

1.03 QUALITY ASSURANCE

- A. Qualifications of Fabricators: Experienced in fabrication of miscellaneous metals.
- B. Qualifications of Welders: Welding shall be done only by certified welding operators currently qualified according to AWS D1.1.
- C. Qualifications of Workmen: Provide at least one person who shall be always present during execution of this portion of the Work, and who shall be thoroughly familiar with the type of materials being installed, the referenced standards, the requirements of this Work, and who shall direct all work performed under this Section. Welds indicated may be made in shop or field with approval.
- D. Reference Standards:
 - 1) Steel: Meet requirements of AISC "Specifications of Architecturally Exposed Structural Steel," latest edition.
 - 2) Welding: Meet requirements of AWS "Structural Welding Code," D1.1, latest edition.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1) Submit shop drawings for all custom fabricated items under this section. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories. Indicate welded connections using standard AWS welding symbols.
 - 2) Verification: Verify all measurements at the job. Show dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.

3) Coordination: Coordinate with work of Cast-In-Place Concrete Section 03 30 00 and Section 03 36 00 - Shotcrete .

B. Samples

Required for all Coping and Edging of concrete work. Submit finish metal samples for final finish selection. Submit prior to delivery to site. Attach name, address of manufacturer and/or supplier to each sample.

1.05 DELIVERY, STORAGE AND HANDLING

A. Coordination

Coordinate with work of Cast-In-Place Concrete Section 03 30 00 and Section 03 36 00 - Shotcrete.

B. Storage of Materials

Materials which are stored at the project site shall be above ground on platforms, skids, or other supports. Protect steel from corrosion. Store other materials in a weather-tight and dry place until ready for use.

C. Protection

1) Use all means necessary to protect miscellaneous metals before, during and after installation and to protect the installed work and materials of all other trades.

2) Protect any adjacent materials or areas below from damage due to weld splatter or sparks during field welding.

D. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of and at no additional cost to the Client.

1.06 JOB CONDITIONS

A. Examine existing conditions in which the work is to be installed. Notify Client if conditions are unacceptable to begin work.

B. Do not proceed with the work until unsatisfactory conditions have been corrected.

1.07 COORDINATION

A. Templates and Built-ins: Furnish all anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades.

B. Delivery: Where items must be incorporated or built into adjacent work, deliver to trade responsible for such work in sufficient time that progress of work is not delayed. Be responsible for proper location of such items.

1.08 JOB SITE SAMPLE

- A. Contractor to provide fabricated, on site sample of metal item(s), complete with approved finish, for review by Client before fabrication of total quantities. Any fabrication of project item(s) by Contractor before Client review and approval is strictly at his own risk and expense.
- B. Approved sample(s) shall be used as the standard of workmanship and shall remain on site until work has been completed and approved by the Client.

Part 2 Products

2.01 MATERIALS

- A. 2" ROUND STEEL PIPE COPING- O.D. 2.375, Thickness .154: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).
- B. 2" ROUND STEEL TUBING- O.D. 2.375 Thickness .154: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).
- C. 2"x6" RECTANGULAR STEEL TUBING- Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).
- D. 6"X1/4"X1-7/8" STEEL C6 C-CHANNEL- Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).
- E. WELDING RODS: E-70 series low hydrogen unless otherwise noted on drawings.

2.02 GROUT

Embeco ® 636 Plus Grout Non-Shrink Mortar Metallic-Aggregate Grout by Degussa Building Systems, Phone (800) 433-9517; Ferrolith ® G Redi-Mix Grout by Sonneborn Building Products.

2.03 OTHER MATERIALS

All other materials, not specifically described but required for a complete and proper installation of miscellaneous metals, shall be new, first quality of their respective kinds and subject to the approval of the Client.

Part 3 Execution

3.01 EXISTING CONDITIONS

- A. Inspection

Prior to all work of this Section, carefully inspect the installed work of all other trades, and verify that all such work is complete to the point where this installation may properly commence.

- B. Discrepancies

In the event of discrepancy, immediately notify the Client.

3.02 COORDINATION

- A. General: Carefully coordinate with all other trades to insure proper and adequate interface of the work of other trades with the work of this Section.
- B. Delivery: Ensure timely delivery of all metal fabrications which must be installed in other work so as not to delay that work.

3.03 INSTALLATION

A. General

- 1) Install metal fabrications in strict accordance with the Drawings, the approved Shop Drawings, and all pertinent codes, regulations, and standards.
- 2) Obtain Client's review prior to site cutting or adjusting which are not part of scheduled work.
- 3) Install items square and level, accurately fitted and free from distortion or defects.
- 4) Align all metal fabrications as shown on the Drawings, and where vertical or horizontal members are shown, align them straight, plumb and level within a tolerance of one in 500.
- 5) Make provisions for erection stresses by temporary bracing. Keep work in alignment.
- 6) Replace items damaged in course of installation.
- 7) Perform field welding in accordance with AWS D1.1
- 8) After installation, grind, and touch-up field welds.

3.04 WORKMANSHIP

A. Layout

Set all work plumb, true, rigid, and neatly trimmed out. Miter corners and angles of exposed molding and frames unless otherwise noted.

B. Fitting

Fit exposed connections accurately together to form tight hairline joints.

C. Labor

Employ only workmen specifically skilled in such work.

3.05 FABRICATION

- A. Shop assembles in largest practicable dimensions, making members true to length so assembling may be done without fillers.
- B. Provide all surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.
- C. Steel Pipe Coping

Roll pipe to conform to top radius curve of each bowl and ledge as shown on drawings. Refer to drawings for relational tolerance to concrete surface and other steel.

3.06 ATTACHMENTS AND REINFORCEMENTS

Do all cutting, shearing, drilling, punching, threading, tapping, etc., required for site metalwork or for attachment of adjacent work. If applicable, drill or punch holes; do not use cutting torch.

3.07 OTHER CONNECTORS

Make all permanent connections in ferrous metal surfaces using welds where at all possible; do not use bolts or screws.

3.08 WELDING

- A. Preparation

Remove all rust, paint, scale, and other foreign matter. Wire brush all flame-cut edges. Clamp members as required and alternate welds, all as necessary to prevent warping or misalignment.

- B. Exposed Welds

Uniformly grind smooth (no tolerance) all welds normally exposed to view and feel in the finished work.

- C. Faulty and Defective Welding

Chip out and replace all welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and re-weld at no cost to Client.

- D. Field Welding

Procedure

Comply with AWS code of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

Protection

Protect all adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

3.09 SURFACE TREATMENT AND PROTECTIVE COATINGS

A. Cleaning

- 1) Thoroughly clean all mill scale, rust, dirt, grease, and other foreign matter from ferrous metal prior to any galvanizing and painting.
- 2) Conditions which are too severe to be removed by hand cleaning, shall be cleaned using appropriate methods for solvent cleaning, power tool cleaning and brush-off blast cleaning.

B. Exterior Ferrous Metal

- 1) Grind smooth all welds, burrs, and rough surfaces. Clean and hot - phosphate treat completed assembly. Hot phosphate treatment not required on items which are not exposed in the finish work or on those items where size prohibits such treatment.
- 2) Galvanize all ferrous metal items.
- 3) Indicate on Shop Drawings where treatment is proposed to be omitted, if any.

3.10 CLEAN-UP

- A. Keep all areas of work clean, neat, and orderly always. Keep paved areas clean during installation.
- B. Clean up and remove all debris from the entire work area prior to Final Acceptance to standards of Client.

End of Section 05 50 00

Part 1 General

1.01 GENERAL CONDITIONS

Requirements of the Contract Documents, including but not limited to, the General, Special, and Technical Provisions, apply to work in this Section with the same force and effect as though repeated in full herein.

1.02 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to install all Painting for the Skate Park as indicated on scope of work contract and shown on drawings and as specified herein.
- B. This Section includes surface preparation and field painting of miscellaneous exposed exterior items and surfaces.
- C. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether schedules indicate colors. If the schedules do not indicate color or finish, Contractor or Skate Park Designer shall select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed galvanized steel and iron work, and primed metal surfaces of mechanical and electrical equipment. Contractor to prime metal surfaces only if specified on plans.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Finished metal surfaces include the following if used:
 - a. Stainless steel.
 - b. Bronze and brass.
 - c. Iron
 - 2. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- E. Related Work
 - 1. Section 05 50 00 – Metal Fabrications

1.03 REFERENCES

- A. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable

laws, codes and regulations required by the County.
Comply with the current provisions of the following Codes and Standards.

1. ASTM - American Society for Testing and Materials
2. IBC – International Building Code
3. SSPC – Society for Protective Coatings: “Steel Structures Painting Manual,” latest edition.

1.04 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
 4. Semi-gloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
 5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60- degree meter.

1.05 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers.
1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, Contractor will furnish color chips for surfaces to be coated.
- C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
1. Provide stepped Samples, defining each separate coat, including block fillers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
 2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.
 3. Submit Samples on the following substrates for Skate Park a Designer review of color and texture only:
 - a. Ferrous Metal: Provide two 4-inch-square samples of flat metal and two 8- inch- long samples of solid metal for each color and finish.

1.06 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced Applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
- C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.08 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

Part 2 Products

2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

2.02 MATERIALS

- A. Material Compatibility: Provide fillers and finish-coat materials that are compatible with one another, and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Colors: Provide color selections made by Skate Park Designer.

Part 3 Execution

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are

thoroughly dry.

2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within an area.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each substrate condition and as specified.
 1. If specified, provide barrier coats over incompatible primer, or remove and re-prime.
 2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. if applicable, touch up bare areas and shop-applied prime coats that have been damaged. Wire- brush, clean with solvents recommended by paint

manufacturer, and touch up with the same primer as the shop coat.

- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.03 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. If specified, provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, covers, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.

2. Omit primer on metal surfaces that have been galvanized or shop primed, and touch-up painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow enough time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Fillers: Apply fillers at a rate to ensure complete coverage of pores filled.
- F. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- G. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. After completing painting, clean paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.05 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing, or replacing, and repainting, as approved by County and/or Contractor.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal.
 - 1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer, if specified on plans.
 - a. First and Second Coats: Semigloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).
 - 1) Sherwin Williams: Acrolon 218 HS Acrylic Polyurethane

End of Section 09 90 00

Part 1 General

1.01 GENERAL CONDITIONS

- A. Requirements of the Contract Documents, including but not limited to, the General, Special, and Technical Provisions, apply to work in this Section with the same force and effect as though repeated in full herein.

- B. Soils Report: The recommendations within the project's soils report shall be incorporated into this specification. In the event of a conflict between the Geotechnical Report and these specifications and the project plans, immediately consult the project's Civil Engineer or Project Manager. To prepare an accurate bid, it is suggested that bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other Geotechnical Reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

1.02 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to perform all earthwork operations related to the Skate Park as indicated on the Drawings complete as shown and as specified herein.

- B. The work of this Section includes all earthwork required for construction of the work. Such earthwork shall include, but not be limited to, the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work specified in the Contract Documents, which shall include, but not be limited to, the furnishing, placing, and removing of sheeting and bracing if necessary to safely support the sides of all excavation; all pumping, ditching, draining, dewatering, and other required measures for the removal or exclusion of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; the disposal of excess excavated materials; alluvial removals, selective grading of expansive soils, soil importing, borrow of materials to make up deficiencies for fills, and all other incidental earthwork, all in accordance with the requirements of the Contract Documents.

C. Related Work

1. Section 31 23 13 – Sub-Grade Preparation

1.03 REFERENCES

A. Comply with the applicable reference specifications as specified in the General Provisions. Comply with the applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by the Client's Representative. Work shall comply with the rules and regulations of local, state, and federal agencies having jurisdiction. Nothing contained herein shall be construed as permitting work that is contrary to such rules, regulations, and codes.

B. Comply with the current provisions of the following Codes and Standards

1. ASTM - American Society for Testing and Materials.
2. Standard Specifications (as specified in the General Provisions)
3. Latest Uniform Standards issued by the County.

1.04 SUBMITTALS

A. Submittals, including samples of materials, shall be in accordance with the GENERAL PROVISIONS.

B. Samples: Submit a one-half cubic foot sample of proposed import soils (if required) per the project's soil report for Client's Representative's review and approval, identify location and source of import soil.

1.05 QUALITY ASSURANCE

A. General: All soils testing and inspection during earthwork operations, other than agricultural suitability and chemical analysis of proposed soils, will be done by a testing laboratory of the Engineer's choice at the contractor's expense except as specified in Paragraph 1.5.C below.

Contractor shall be responsible for scheduling the tests and inspections and all tests performed on project soil will be given to the Client's Representative for review.

- B. Where soil material is required to be compacted to a percentage of maximum dry density, the maximum dry density at optimum moisture content will be determined in accordance with the latest version of ASTM D 1557. In-place field density tests will be performed in accordance with ASTM D 1556, (sand cone) and/or ASTM D 2922 and ASTM D 3017 (nuclear gauge). The number and location of field density tests will be determined by the Engineer.
- C. In case the tests of the fill or backfill show non-compliance with the required density, the Contractor shall accomplish such remedy as may be required to ensure compliance. Subsequent testing to show compliance shall be by a testing laboratory selected by the Engineer and shall be at the Contractor's expense. All imported fill material not specified in the contract shall be tested at the Contractor's expense and approved by the Engineer.

1.06 PROJECT CONDITIONS

- A. Existing Conditions: The existing topographic conditions are shown on the drawings for reference only. Upon beginning the earthwork, Contractor represents that he has inspected the site and satisfied himself as to actual grades and levels and the true conditions under which the work is to be performed. Promptly notify the Client's Representative of unexpected subsurface conditions. The Contractor is required to submit a "Site Acceptance" letter before earthwork operations begin.
- B. Soil Classification: Excavated materials are not classified as to type.

1.07 PROTECTION

- A. Protection
 - 1. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.

2. Cover holes and trenches when work is not in progress. Fence or barricade changes of plane more than 45 degrees horizontally and more than 3 feet vertically.
3. Maintain benchmarks, monuments, and other reference points. If disturbed or destroyed, replace as directed.
4. Protect existing berms and slopes from disruption. If slopes are disturbed, return to existing conditions at no additional cost to the Client.
5. Underpin adjacent structure(s), including utility service lines, which may be damaged by excavation operations.
6. Protect existing natural areas and landscape improvements from damage.
7. Promptly repair damage to adjacent facilities caused by earthwork operations. Cost of repair at Contractor's expense.

Part 2 Materials

2.01 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENT

- A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, and free from grass, roots, brush, or other vegetation; contamination; or deleterious material. The size, gradation, and properties of the materials shall be in accordance with the requirements of the Soil Report and these specifications.
- B. Suitable materials may be obtained from onsite excavations, may be processed onsite materials, or may be imported provided these materials meet all the requirements in the Contract Documents. If imported materials are required to meet the requirements of this Section or to meet the quantity requirements of the project, the Contractor shall provide the imported fill materials and the required conformance reports of test results at no additional expense to the Client, unless a unit price item is included for imported materials (including the appropriate required testing reports) in the bidding schedule.

2.02 FILL FOR MISCELLANEOUS LANDSCAPE WORK

A. General Landscape Construction

1. Mound Construction: Fill material like existing on-site soil with all rocks, etc., over 4" in diameter removed prior to placement. No rocks larger than 2" diameter are allowed on top 6" of mound.
2. Miscellaneous Landscape Filling: Fill material like existing on-site soil with all rocks, etc. over 2" in diameter removed prior to placement.
3. Remove and dispose of rocks, etc. removed during soil processing offsite.
4. Imported fill material shall be inspected, tested, and approved by the Client's Representative prior to use in work. Copy of tests will be given to the County.

2.03 PLANTING SOIL FOR PLANT BACKFILL

Native soil shall be tilled and free of noxious weeds and chemicals. Soil must be approved as growing medium from Soils Lab Report with any supplementary additives as directed by Soils Lab Report. Copy of Soils Lab Report will be given to the Client's Representative.

2.04 USE OF FILL AND BACKFILL MATERIAL TYPES

- A. The Contractor shall use the types of materials as designated on the Drawings and herein for all required fill, backfill, and embankment construction hereunder.
- B. Where these Specifications conflict with the requirements of any local agency having jurisdiction, or with the requirements of a material manufacturer, the Engineer shall be immediately notified. In case of conflict therewith, the Contractor shall use the more stringent requirement, as determined by the Engineer.

Part 3 Execution

3.01 PREPARATION

- A. Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project Engineering reference points. Set required lines, levels, and elevations.
- B. Do not cover or enclose work of this Section before obtaining required inspections, tests, approvals, and location recording.

3.02 EXISTING UTILITIES

- A. Before starting grading and excavation, establish the location and extent of underground utilities in the work area. Exercise care to protect existing utilities during earthwork operations. Perform excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as the work progresses.
- B. Maintain, protect, relocate, or extend, as required, existing utility lines to remain which pass through the work area. Pay costs for this work, except as covered by the applicable utility companies.
- C. Protect active utility services uncovered by excavation. Notify respective utility companies of damage caused to active utilities immediately.
- D. Remove abandoned utility service lines from areas of excavation. Cap, plug, or seal abandoned lines and identify termination points at grade level with markers.
- E. Accurately locate and record abandoned, and active utility lines rerouted or extended on project record documents.

3.03 SITE GRADING – GENERAL

- A. Perform grading within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide uniform levels and slopes between new elevations and existing grades.

- B. Obtain approval of scarified subgrade surfaces by Client's Representative prior to filling operations. Scarify, dry, and compact soft and wet areas; remove and replace unsuitable subgrade materials with an approved fill material. Take corrective measures before placing fill materials.
- C. Thoroughly scarify existing soil surface to a depth of 10" and verify scarification with Client's Representative prior to placing fill material in mounded areas.
- D. Spread approved fill material uniformly in layers not greater than 12" of loose thickness over entire fill zones of planting areas.
 - 1. Lift thickness requirements may be modified by Client's Representative to suit equipment and materials or other conditions when required to assure satisfactory compaction.
 - 2. Place and compact each layer of fill before placing additional fill material. Repeat filling until proposed grade, profile or contour is attained.
 - 3. Suspend fill operations when satisfactory results cannot be obtained because of environmental or other unsatisfactory site conditions. Do not use over-saturated fill materials. Do not place fill material on over-saturated subgrade surface.
 - 4. Grade surfaces to assure positive drainage and to prevent ponding and pockets of surface drainage. Install drainage swales as indicated on the Drawings.
 - 5. Protect finish graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded, and damaged areas.
- E. If, in the opinion of the Client's Representative, the completed site grading does not reflect the Contract Documents, an independent surveyor may be hired to verify the grades. If the grades are correct, the Client will pay for the survey. If the grades are incorrect, the cost of the survey will be deducted from the Contract price.

3.04 BACKFILLING / FILLING FOR PAVING & WALLS

- A. Before filling, remove debris, large rocks, formwork, and loose material.
- B. Proof-roll areas to receive fill with rubber-tired roller of sufficient weight. Weak areas or areas where excessive pumping is noted shall be removed, and if required by Client's Representative, replaced with select fill.
- C. Prior to placing fill, scarify surface to a depth of 6 inches. Moisture content of loosened material shall be such that first layer of fill will readily bond to surface.
- D. Top 6 inches shall be free from rocks larger than 3 inches diameter.
- E. Place in maximum 8-inch lifts and compact per ASTM D 1557 at optimum moisture content (-1% to +3%). This lift and compaction requirement does not apply to planting areas.
- F. Moisten fill to allow drying to correct moisture content before compaction. Do not place fill on subgrade that is over-saturated.
- G. Allowing for total thickness of finish paving and base material, fill under paving to bring subgrade to proper elevation.
- H. Soft areas that develop under construction operations shall be scarified, aerated, or moistened. Compact to full depth required to obtain specified density for each layer.

3.05 EXCAVATING

- A. It is the Contractor's responsibility to investigate the likelihood of caliches or hard rock excavation. The Client will not provide any additional compensation to the Contractor for hard rock or caliches excavation.

3.06 FINISH GRADING

- A. Grade uniformly with rounded surfaces at tops and bottoms of abrupt changes in plane. Hand grade steep slopes, areas that are inaccessible

for machine work and areas around existing plants.

- B. Slope graded surfaces to drain water away from structures, walls, etc.; minimum slope is 1/4 inch per foot.
- C. Grade areas to elevation and slopes indicated without depressions causing pocketing of surface water or humps, producing localized runoff and erosion. Ponding of water on site is not allowed. Finish surfaces to be not more than 0.10 foot above or below established grade elevation unless approved in writing by Client's Representative.
- D. See Section on Soil Preparation and Soil Mixes for additional fine grading requirements.

3.07 DRAINAGE

- A. Always provide drainage of the working area.

3.08 DISPOSAL OF WASTE MATERIALS

Refer to Construction and Demolition Waste Management Specifications for actions required regarding the disposal and diversion of all excess / waste materials, including excess excavated material and rock from the site

3.09 CLEANING

- A. Upon completion of earthwork operation, clean areas within contract limits, remove tools and equipment.
- B. Provide site clear, clean, free of debris and suitable for site work operations.
- C. Remove and dispose of properly off site all rocks and other debris from grading operations at approved recycling centers, refer to Construction and Demolition Waste Management Specifications for actions required with regards to the disposal and diversion of all excess/ waste materials.

End of Section 31 00 00

Part 1 General

1.01 DESCRIPTION

A. Work Included: Perform selective clearing of trees and complete as shown, and as specified.

B. Related Work:

1. Section 31 20 00-Earthwork

1.02 JOB CONDITIONS

A. Protection of Existing Plants to Remain, refer to Common Work Results for Existing Conditions

B. Work Schedule: Proceed and coordinate with the work as the site becomes available, consistent with seasonal limitations for clearing and transplanting.

1.03 SELECTION AND TAGGING OF TREES

Client's Representative will select and tag at the site, those trees to be saved and removed.

Part 2 Products (Contractor's option)

Part 3 Execution

3.01 TREES TO BE CLEARED (If Applicable)

A. General: Refer to drawings for locations.

B. Special Conditions: Clear trees in areas only at direction of the Client's

Representative.

- C. Stump Removal: Grind or remove tree stumps to a minimum depth of two (2) feet below proposed finish grade.
- D. Disposal: Dispose of cleared trees off the site unless otherwise directed by Client's Representative.

3.02 CLEAN-UP

- A. Keep all areas of work clean, neat, and orderly always.
- B. Clean up and remove all debris from the entire work area prior to Final Acceptance.
- C. Work Schedule: Proceed and coordinate with the work as the site becomes available, consistent with seasonal limitations for clearing and transplanting.

End of Section 31 10 00

Part 1 General

1.01 GENERAL CONDITIONS

- A. Requirements of the Contract Documents, including but not limited to, the General, Special, and Technical Provisions, apply to work in this Section with the same force and effect as though repeated in full herein.

1.02 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to perform all sub-grade preparation work for the Skate Park as indicated on the Drawings complete as shown and as specified herein.

B. Related Work:

1. Section 31 20 00 – Earthwork
2. Section 03 10 00 – Concrete Forming and Accessories
3. Section 03 20 00 – Concrete Reinforcing
4. Section 03 30 00 – Cast-In-Place Concrete
5. Section 03 37 13– Shotcrete

1.03 SUBMITTALS

- A. Contractor to provide data indicating the total of post-industrial and post-consumer recycled aggregate base content throughout the Skate Park equaling the recommendations of the Geotechnical Engineer's Report .

1.04 REFERENCES

- A. Comply with the Geotechnical Engineer's Report and applicable reference specifications as specified in the GENERAL PROVISIONS and in accordance with applicable laws, codes and regulations required by Client's Representative.

- B. Comply with the current provisions of the following Codes and Standards:

ASTM - American Society for Testing and Materials.

Latest Uniform Standard Specifications issued by the County

Part 2 Materials

2.01 SUITABLE MATERIALS

- A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, and free from grass, roots, brush, or other vegetation; contamination; or deleterious material. The size, gradation, and properties of the materials shall be in accordance with the recommendations of the Geotechnical Engineer's Report.
- B. Aggregate base materials under pavements shall be crushed aggregate base material with a recycled content per recommendations of the Geotechnical Engineer's Report.

Part 3 Execution

3.01 SUBGRADE PREPARATION

- A. Excavate and shape subgrade to line, grade, and cross-section shown on the Drawings.
- B. Subgrade is that area on which pavement, surfacing, base, sub-base, or a layer of other material which may be specified, is to be placed.
- C. Plow or scarify subgrade to a depth of below the final subgrade elevation per recommendations of the Geotechnical Engineer's Report and by harrowing, dry rolling and breaking clods, the earth shall be brought to finely divided condition. Remove boulders, hardened material, or rock encountered. The earth shall be uniform for the full depth and width of the subgrade.
- D. Water loose earth to a uniform depth per recommendations of the Geotechnical Engineer's Report.

- E. Harrow the earth to mix the wet earth with the dry beneath, until the whole mass of loose material is at the proper state of moisture for compaction.
- F. The finished subgrade, immediately prior to placing subsequent material thereon, shall be in accordance with the Standard Specifications and per recommendations of the Geotechnical Engineer's Report.
- G. The finished surface of the subgrade, at any point, shall not vary more than recommendations of the Geotechnical Engineer's Report.
- H. The Client will not provide any additional compensation to the Contractor for hard rock or caliches excavation. Refer to the recommendations of the Geotechnical Engineer's Report for test boring information and analysis.

3.02 BASE

- A. Base shall be readily compacted and spread with equipment that will provide a uniform layer conforming to the planned section.

3.03 CLEANUP

- A. Upon completion of the subgrade preparation and base, remove surplus construction materials, earth, and debris so that the job site is left in a neat and orderly condition.

End of Section 31 23 13

APPENDIX

**GENERAL GEOTECHNICAL SUBSURFACE
SOILS EVALUATION REPORT**

FOR

**THE COUNTY OF EL PASO- NEW SKATEPARK
IMPROVEMENTS PROJECT**

**ESTRELLA PARK, AGUA DULCE PARK & GALLEGOS PARK
HOMESTEAD MEADOWS/AGUA DULCE/CANUTILLO, EL PASO COUNTY, TEXAS
CQC PROJECT NO. AGCQC22-009**



PREPARED FOR

**MNK ARCHITECTS, INC.
330 EUBANK COURT
EL PASO, TEXAS 79902**



CQC TESTING AND ENGINEERING, L.L.C.
TBPE FIRM REGISTRATION NO. F-10632
4606 TITANIC AVE.
EL PASO, TEXAS 79904
PH.: (915) 771-7766
FX.: (915) 771-7786

**" People Committed to Deliver Top
Quality Services Consistently"**

- Construction Material Testing
- Geotechnical Engineering
- Environmental Site Assessment
- Forensic Analysis / Testing

AASHTO Accredited



Validated

US Army Corps
of Engineers®



HUB

Statewide Historically Underutilized Business Program

Local El Paso, Texas Firm



PROJECT TECHNICAL INFORMATION

DATE: March 30, 2022 (Final Report Date March 10, 2023)

TO: Ms. Renee Jimenez, Principal/CEO
MNK Architects
330 Eubank Court
El Paso, Texas 79902
E-Mail: rjimenez@mnkarchitects.com

CC: Mr. Miguel Hernandez
MNK Architects
330 Eubank Court
El Paso, Texas 79902
E-Mail: mhernandez@mnkarchitects.com

SUBJECT: General Geotechnical Subsurface Soils Evaluation Report
County of El Paso – Skate Park Improvement Projects
Estrella Park, Agua Dulce Park and Gallegos Park
El Paso, El Paso County, Texas
CQC Project No.: AGCQC22 009

In accordance with the approved scope of work presented within our Proposal No. PGCQC22-009, dated March 16, 2022, CQC has completed our authorized geotechnical soils evaluation for the above referenced project. Our fieldwork was completed on March 28, 2022. The following report sections present our geotechnical considerations to supplement the design of the skate park improvements for the above referenced project.

Appendix A through C presents the following exhibits to support the information presented within this report.

Appendix A.

Geotechnical General Subsurface Exploration Boring Location Aerial Plan	A1-1 – A1-3
Soil Exploration Boring Logs	A2 – A7
Soil Sample Particle Size Analysis Test Reports	A8 – A13
Summary of Laboratory Engineering Soil Classification Test Results	A14
Soil Moisture-Density Relationship Test Results	A15 – A17
Soil California Bearing Ration (CBR) Test Results	A18 – A20
Dynamic Cone Penetrometer Test Results	A21 – A23

Appendix B.

Geotechnical Report Technical Reference Information	B1
Soil Classification Chart	B2
Geotechnical Report Soil Classification Reference Information	B3

Appendix C.

Selected Project Subsurface Soil Exploration Operation and Site Condition Photographs	C1 – C3
---	---------

1. General Project Information

Based on general information and a site plan provided by our Client, we understand that the project consists of the reconstruction of the existing skate park at the following county parks within El Paso County, Texas:

- **Estrella Park** - Located at 14590 Greg Drive in Homestead Meadows, El Paso County, Texas. The improvements at this site entail the re-construction of the skate park with an approximate footprint area of 12,000 square feet.
- **Agua Dulce Park** - Located at 15371 Kentwood Avenue in Agua Dulce, El Paso County, Texas. The improvements at this site entail the re-construction of the skate park with an approximate footprint area of 9,000 square feet.
- **Gallegos Park** - Located at 7631 Bosque Road in Canutillo, El Paso County, Texas. The improvements at this site entail the re-construction of the skate park with an approximate footprint area of 9,400 square feet.

2. Site Geologic Considerations

The Geologic Atlas of Texas (Van Horn-El Paso Sheet, Revised 1983) published by the Bureau of Economic Geology at the University of Texas at Austin indicates that the project areas are located within the following geological areas:

Estrella Park is located within an area of Young Quaternary (Qb) deposits. These deposits shall consist of lacustrine and fluvial deposits of clay, sand and gypsum in bolsons with some caliche. The geologic map also indicates that an upthrown/downthrown side fault zone is located northeast of the general project area.

Agua Dulce Park is located within an area of alluvium Young Quaternary (Qalr) and colluvium Old Quaternary (Qao) deposits. These deposits shall consist of clay, silt, sand, caliche and gypsite. The geologic map also indicates that an upthrown/downthrown side fault zone is located northeast and west of the general project area.

Gallegos Park is located within an area of Young Quaternary (Qalr) deposits. These deposits shall consist of alluvium along the Rio Grande. The geologic map also indicates that an upthrown/downthrown side fault zone is located east of the general project area.

In general, the near surface geology at each site has been altered by residential and park development to some degree. It has been reported that no significant ground movement caused by the existing faults has been recorded for the past 50 years in the El Paso area. Although the local seismic observatory at the University of Texas at El Paso (UTEP) has indicated that the frequency of recordable ground movements has increased.

3. Existing Site Conditions, Vegetation and Topography

Estrella Park - The project area is within a residential area and bounded by Greg Drive to the north. The site is relatively flat with no major elevation change.

Agua Dulce Park - The project area is along Kentwood Avenue. The site is relatively flat with a minor downward slope from north to south.

Gallegos Park - The project area is along Bosque Road. The site is relatively flat with no major elevation change.

CQC was not provided any historical survey plans, historical topographic surveys, historical photographs, as-built plans or construction reports for review from our Client or owner. Therefore, CQC has no knowledge if previous site excavations or fill required to construct the existing parks were appropriately backfilled with suitable soils.

4. Seismic Considerations

Seismic ground motion values are defined in the table below. The seismic coefficients were generated through Seismic Design Maps, a USGS web service developed by the Structural Engineers Association of California's (SEAOC) and California's Office of Statewide Health Planning and Development (OSHPD). These values should be verified by the project design engineer prior to use in design analysis, as applicable. CQC should be informed if the reported values vary significantly.

Table 1 - Seismic Ground Motion Design Values

Location	Latitude	Longitude	Site Class	Period (Seconds)	Spectral Accelerations (g)	Site Coefficient, F_a	Site Coefficient, F_v
Estrella	31.79744010	-106.17045828	D	0.2 (S_s)	0.284	1.573	-
				1.0 (S_1)	0.093	-	2.400
Agua Dulce	31.6451808	-106.13677357	D	0.2 (S_s)	0.287	1.571	-
				1.0 (S_1)	0.094	-	2.400
Gallegos	31.92732627	-106.61054272	D	0.2 (S_s)	0.291	1.567	-
				1.0 (S_1)	0.096	-	2.400

Remarks: Site Class is based on the current National Earthquake Hazards Reduction Program (NEHRP 2015) and Site Classification for Seismic Design Definitions in conjunction with our review of the geologic conditions in the area. In the event that the owner and/or design representative is interested in determining the building code Site Class with a higher degree of accuracy, additional tests beyond our original requested scope of work shall be required.

5. Subsurface Exploration Evaluation & Laboratory Engineering Soil Classification Testing

As requested, the subsurface soils within the project areas were evaluated by completing a total of four (4) vertical exploration borings with a truck mounted drill rig and two (2) hand auger borings. The approximate boring locations and depths are shown in the "General Geotechnical Subsurface Exploration Boring Location Aerial Plans" presented in Appendix A, Sheets A1-1 through A1-3. Dynamic Cone Penetrometer (DCP) tests were also performed at each hand auger boring (HAB) location to generally evaluate the bearing resistance of the subsurface soil formations. The borings were advanced below the existing concrete slab elevations at the time of our soil exploration activities and logged by a member of our geotechnical engineering staff. Our boring logs are presented in Sheets A2 through A7. DCP test results are reported in Sheets A21 through A23.

During our drilling activities soil samples were collected at discrete depth intervals and selected soil samples were subjected to laboratory engineering soil classification testing. During our soil exploration activities soil samples were collected at discrete depth intervals and selected soil samples were subjected to laboratory engineering soil classification testing. Soil particle size analysis test results are reported in Sheets A8 through A13. The results of our soil classification tests are presented on our boring logs and a summary of our test results is reported in Sheet A14. In general, all laboratory soil tests were performed in accordance with applicable ASTM standard test methods.

A total of three (3) bulk subgrade soil samples were obtained from boring locations B-1, B-2 and B-3 for soil moisture-density relationship testing. The samples were collected during our soil exploration activities from auger cuttings from below the existing concrete pavement surface to the reported depth. The test results are reported in Sheets A15 through A17 and summarized in the table below.

Table 2 – Summary of Soil Moisture-Density Relationship Test Results

Borehole No.	Approx. Sample Depth (ft)	Test Method D1557	Soil Classification ^[1]	Plasticity Index	Opt. Dry Density (pcf)	Opt. Moisture (%)
B-1	1 – 5	A	SM	NP	126.0	8.9
B-2	1 – 5	B	SM	NP	116.0	10.3
B-3	1 - 5	A	SP-SM	NP	104.1	13.6

[1] Soil descriptions are reported in our test results in Sheets A15 through A17.
NP – Non Plastic by test.

A total of three (3) California Bearing Ratio (CBR) tests conducted on a collected soil samples from Boring B-1, B-2 and B-3 is summarized in the table below. The tests were performed in general accordance with ASTM standard test method D 1883. Based on our CBR test results, the subgrade soils at the sample locations shall provide a relatively low level of support for the new pavement structure when compacted. The test results are reported in Sheet A9.

Table 3 – Summary of California Bearing Ratio (CBR) Test Results

Borehole No.	Sample Depth (ft)	Dry Density prior to Soaking (pcf)	Dry Density after Soaking (pcf)	Swell %	CBR at 0.1" Pen.	CBR at 0.2" Pen.	Support Level
B-1	1 – 5	118.4	115.5	0.0222	32	35	Moderate
B-2	1 – 5	109.1	104.9	0.0*	21	27	Moderate
B-3	1 - 5	97.9	92.0	0.0*	5	8	Low

Note *: No swelling measured with standard procedure equipment.

In general, the encountered and tested subsurface soils at each site may be described as the follows.

Estrella Park: Fine to medium grained silty sands. In addition, a sandy lean silt layer was encountered in Boring B-2 at approximately 10 to 11 ½ feet. Our SPT data indicates that the soils vary from a loose to dense/very stiff relative density. SPT values ranged from about 7 to 48. The soils were encountered in a relatively moist condition with moisture contents ranging from about 4 to 19 percent. The percentage of fines of tested soils ranged from about 13 to 51 percent. The sands and silts were primarily non-plastic. The tested soils may be classified as SM and ML in general accordance with the USCS soil classification. The silt soils are not considered suitable for use as Select Embankment Fill and backfill soil materials for this project. The reported silt soil stratum in our boring logs are considered Class IV soils materials.

Agua Dulce Park - Fine to medium grained silty sands. Our SPT data indicates that the sandy soils exhibit a loose to medium dense relative density. SPT values ranged from about 4 to 14. The soils were encountered in a relatively slightly moist to moist condition with moisture contents ranging from about 6 to 10 percent. The percentage of fines of tested soils ranged from about 17 to 26 percent and are primarily non-plastic based on plasticity index test results. The tested soils may be classified as SM in general accordance with the USCS soil classification.

Gallegos Park – Fine to medium grained silty, clayey and poorly graded sands with various amounts of silt and clay particles. In addition, a sandy lean clay and fat clay layer was encountered in Boring B-5 at approximately below the existing pavement surface to 1 ½ feet and at approximately 6 ½ to 7 feet, respectively. Our DCP data indicates that the soils vary from a loose to dense/very stiff relative density. DCP values ranged from about 7 to 50. The soils were encountered in a relatively slightly moist to moist conditions with moisture contents ranging from about 3 to 16 percent. The percentage of fines of tested soils ranged from about 1 to 50 percent. The encountered sands were primarily non-plastic. The tested soils may be classified as SM and ML in general accordance with the USCS soil classification. The silt soils are not considered suitable for use as Select Embankment Fill and backfill soil materials for this project. The reported silt soil stratum in our boring logs are considered Class IV soils materials.

The non-plastic sands at each park shall be susceptible to soil sloughing during earthwork grading and excavation. It shall be considered that cleaning, stockpiling and blending of the on-site soils with off-site sources shall be required to meet specified Select Embankment Fill requirements presented in Section 11.0. Additional soil classification testing is anticipated to be required during earthwork to ensure that the blended soil material remains clean, uniformly blended and is maintained within the specified suitable Select Embankment Fill requirements.

All imported fill soil materials must be Select Embankment Fill and meet the requirements of Section 11.0.

In the event that clay layers or apparent buried debris are encountered during earthwork activities at these sites, CQC should be informed immediately so that on-site observations of the encountered conditions may be performed. It may be necessary to perform additional tests on the encountered conditions and provide additional soil overexcavation and replacement recommendations.

6. Groundwater Depth Considerations

At the time of our drilling operations groundwater and/or water seepage was not observed or encountered in our soil borings. Based on our geotechnical field experience in this area, the static groundwater elevation is well below the anticipated maximum excavation depth of 15 feet for this project.

7. Soil Related Movement Consideration

Based on our soil classification test results, the potential soil related ground movements for the encountered clay soils in our borings were estimated. Our estimates were based on the Texas Department of Transportation, Method for Determining the Potential Vertical Rise (PVR) Tex-124-E procedures. Based on the encountered soil moisture conditions, a surcharge pressure of at least 1 psi and an active soil zone ranging from 5 to 10 feet; the following PVR values were estimated for each boring.

Table 4 - Estimated PVR Values

Location	Borehole No. [1]	Estimated PVR Value (in.)
Estrella Park	B-1	Negligible
	B-2	Negligible
Agua Dulce Park	B-3	Negligible
	B-4	Negligible
Gallegos Park	B-5	< ½
	B-6	< ¼

[1] Borehole approximate locations are indicated in General Geotechnical Subsurface Exploration Boring Location Aerial Plan in Sheets A1-1 through A1-3

According to the results, the subsurface soils within the project areas exhibit a relatively low to moderate potential for swelling. Typically, soil related movements impact lightly loaded structures. The estimated PVR movements should be considered in the design of flat site work (i.e., play court, sidewalks, ramps, etc.), which shall be primarily influenced by the estimated potential vertical movement. The dead weight and live loads imposed on load bearing elements are typically anticipated to be greater than the potential uplift swelling pressure of the clay formation. However, additional soil pressure swell tests would be required to further evaluate and verify this condition.

8. Subgrade Preparation Considerations

The initial earthwork operations should consist of clearing and grubbing the site of all non-suitable materials, vegetation, organic material, roots and any debris or as required by the project plans and specifications, whichever is most stringent.

Subgrade soils with a PI less than 18 shall be re-compacted to 95 percent of maximum dry density determined per ASTM D 1557. Moisture content of subgrade shall be maintained within ±3 percent of optimum moisture content until permanently covered. Cohesive clay subgrade soils (i.e., soils with a PI greater than 18) should be compacted to at least 90 percent of maximum dry density per ASTM D 1557 with water content within 0 to 3 percentage points of optimum.

In general, pumping, weak or compressible soil zones identified during subgrade compaction operations shall be removed and replaced with properly compacted suitable Select Embankment Fill or approved rock material to a minimum depth of 8 inches or to a depth required to appropriately bridge over weak/soft soils, whichever is deeper. The contractor should also control the application of moisture to the subgrade soils during earthwork operations to mitigate potential subgrade pumping.

9. General Skate Park Considerations

It is our understanding that the skate park surfaces and structures shall be formed and shaped with embankment soils and covered with concrete and/or shotcrete surfacing. Based on our geotechnical boring data, it should be considered that the on-site soils are relatively non-cohesive soils that shall be susceptible to sloughing and erosion. It shall be considered that the on-site earth material soils shall be difficult to form and shape stable embanked soils unless they are blended with relatively cohesive imported Select Embankment Fill soils. Embankment Select Embankment Fill soils shall exhibit a plasticity index between 7 to 15, 3-inch max particle size, 10 to 45 percent fines (i.e, percent passing No. 200 sieve), and optimum dry density of at least 125 pcf determined per ASTM D-

1557.

Select Embankment Fill soils should classify as SC, SC-SM, GM, GC, GC-GM, GP-GM, and GP-GC in accordance with the Unified Soil Classification System (USCS).

We recommend that a minimum of 8 inches of compacted Embankment Fill be placed below specified flatwork structures for all the project sites. The suitable Embankment Fill should be compacted to a minimum of 95 percent of maximum dry density determined in accordance with ASTM D 1557. The moisture content of these soils should be maintained at ± 3 percent of optimum moisture content until covered. A modulus of subgrade reaction of 150 psi/in for prepared and compacted Embankment Fill may be used for design purposes. The subgrade soils supporting Embankment Fill shall be scarified to a minimum depth of 8 inches.

Alternatively, Embankment Fill materials may consist of imported crushed stone base course material that meet the requirements of a TXDOT Item 247, Type A, Grade 3 flexible base course material.

The following table presents allowable soil bearing capacities that may be considered for each park.

Table 5 – Soil Allowable Bearing Capacity

Park Location	Soil Allowable Bearing Capacity (psf)
Estrella	2,500
Agua Dulce	1,500
Gallegos	2,000

It is recommended that skate park concrete surfacing be a minimum of 5 to 6 inches thick with steel reinforcement. The specification of a concrete strength ranging from 2,500 to 3,000 psi may be considered to reduce shrinkage cracking during the initial concrete curing time. However the final design shall be specified by the design engineer.

10. Curbs and General Flat Work Considerations

We recommend that a minimum of 12 inches of compacted Select Embankment Fill be placed below specified flatwork structures for all the project sites. The suitable Select Embankment Fill should be compacted to a minimum of 95 percent of maximum dry density determined in accordance with ASTM D 1557. The moisture content of these soils should be maintained at ± 3 percent of optimum moisture content until covered.

Existing soils that will support compacted Select Embankment Fill shall be prepared according to Section 11.0.

Site work grading should be designed in a manner that will provide positive surface drainage and prevent water from ponding adjacent to flat work and structure foundations. Drainage flumes and areas where storm water will naturally be allowed to “sheet flow” should be appropriately sealed and protected to prevent erosion of the supporting soils.

11. Fill Materials

A. Select Embankment Fill should consist of granular clayey, silty sands or sandy clayey, silty gravel mixtures, free

of clay lumps, clay balls, deleterious materials, organic material, vegetation, roots, cobbles or boulders over 3 inches in nominal size. The Select Embankment Fill should have a liquid limit less than 35 and a plasticity index of 7 to 15. The Select Embankment Fill shall also exhibit an optimum dry density of at least 125 pcf determined in accordance with ASTM D-1557. Select Embankment Fill soils should also meet the gradation requirements below.

Table 6 – Select Embankment Fill Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	70 – 100
No. 4	45 – 100
No. 200	10 – 45

Select Embankment Fill soils should classify as SC, SC-SM, GM, GC, GC-GM and GP-GC in accordance with the Unified Soil Classification System (USCS).

It is recommended that on-site soils classified as SP be blended with low-plasticity clayey sands or as appropriate to mitigate potential soil sloughing during excavations in these types of soils and to create a relatively stable blended soil material that exhibits adequate bearing capacity. The blended soils should meet the requirements of Native Fill above.

Soils classified as CH, CL, MH, ML, OH, OL and PT or a combination of these under the USCS classification and soils that exhibit a plasticity index greater than 18 are not considered suitable for use as Native Fill and Select Embankment Fill soil materials. Maximum plasticity index of Select Embankment Fill soils shall be 15.

B. Crushed Stone Flexible Base Course Embankment Fill shall consist of a crushed stone base (CSB) coarse material conforming to requirements of a TXDOT Item 247 – Flexible Base, Type A, Grade 3 soil material. The flexible base material should meet the gradation requirements below, exhibit a liquid limit less than 35 and plasticity index of 12 or less. The flexible base material should also exhibit a maximum dry density of at least 135 pcf determined in accordance with ASTM D 1557. It is not recommended that recycled concrete base material be considered as a substitute for the requirement above, unless approved by the project civil engineer or owner.

Table 7 – Crushed Stone Flexible Base Course Embankment Fill Gradation Requirements

Sieve Size (square opening)	% Passing by Weight
2½ -inch	100
1¾ -inch	90 – 100
No. 4	25 – 55
No. 40	15 – 50

12. Additional Subsurface Soil Considerations

The following report section presents specific conditions that we have noted during our evaluation and should be considered by our Client and design team with respect to earthwork estimates and operations.

- At the time that this report was completed, a final civil design grading plan had not been provided for the review of CQC. However based on preliminary plans we understand the finished grade elevations shall be within -6 to +4 feet of the existing grade elevations. Site work should be performed in accordance with the Site Preparation section of this report or as required by the project plans and specifications, whichever is more stringent.
- The project Contractor shall be responsible for conducting their own tests to verify the actual depths of the soil types within the project limits to perform earthwork. The owner shall not incur additional costs for variations in the soil formations within the project limits and/or additional excavation requirements by the contractor. The boring logs and data in this report are intended for engineering design purposes. Bidding contractors may consider the information presented in this report at their own risk. If deemed necessary, bidding contractors shall collect additional subsurface material information for use and/or interpretation for earthwork or demolition estimates that comply with the project specifications and plans to complete the specified work prior to bidding.
- The indicated suitability of the on-site soils and use as suitable Select Embankment Fill of this report should be considered by the design team and bidding general contractor.
- Based on our soil borings and soil classification tests, the soils encountered at this site should be considered Type "C" soils under current Occupational Safety and Health Administration (OSHA) regulations (Standard – 29 CFR-Part 1926.650, Subpart P- Excavations) pertaining to excavations. In excavations penetrating these soils, the non-permanent sloping and benching schemes specified for Type "C" soils under the OSHA regulations require that the excavation sidewalls be sloped no steeper than 1½:1 (horizontal: vertical). Trenches or excavations 4 feet and deeper shall require the development of a trench safety plan to protect employees and the general public. Please note that it is the contractor's responsibility to assign a "competent" person to perform daily inspections and required documentation in accordance with OSHA regulations. In addition, OSHA limits excavations to 20 feet when excavations utilize soil benching and sloping methods and braced/shored trench box (i.e., rated) shielded systems designed by a licensed professional engineer. Trench excavations utilizing sheet piling systems or un-braced temporary shielded systems per OSHA regulations shall be designed by a licensed professional engineer for any excavation depth in consideration to protect the health and safety of all workers and the public.
- When utility lines are removed and/or installed at this site, the utility contractor should adequately overexcavate the soils in the utility line trench area and backfill with properly compacted approved on-site soils or pipe backfill soils to mitigate potential settlements caused by uncontrolled backfill during construction. In-situ and/or pipe backfill soils should be placed in loose lifts not to exceed 8 inches in thickness to the finished subgrade elevation or in accordance with the project plans and specifications, whichever is more stringent and compacted to at least 95 percent of the maximum dry density as determined by ASTM D 1557. Prior to placing the specified pipe backfill soils, the existing native soils at the bottom of the trench should be scarified and recompacted to a minimum 95 percent of the maximum dry density as determined by ASTM D 1557.

13. Construction Materials Testing

We recommend that construction materials inspection and testing of site work, fill placement, excavations, concrete placement, and all other applicable materials and structures be performed by CQC. The specification

testing program should include the following testing frequencies as a minimum or as required by the project specifications and plans, whichever is more stringent:

1. At least one (1) Moisture-Density Relationship test (Proctor) for each type of in-situ soil and/or imported material to be used, according to ASTM D 1557. Additional soil samples for testing shall be requested by the G.C. during the course of earthwork operations to ensure that the fill materials are maintained consistently within the specified requirements.
2. At least one (1) Soil Classification (Sieve Analysis and Atterberg Limits Test) for each type of in-situ soil and/or imported material to be used, according to ASTM D 6913 and D 4318. Additional soil samples for testing shall be requested by the G.C. during the course of earthwork operations to ensure that the fill materials are maintained consistently within the specified requirements.
3. A minimum of three (3) nuclear density test for each lift (8-inch loose) or select and/or fill material placed within the proposed building pad or 1 per 2,000 square feet, whichever gives rise to the greater number of tests, according to ASTM D 6938 or ASTM D 1556.
4. A minimum of one (1) nuclear density test per each excavated wall footing from the bottom of the footing excavation and each lift of fill, according to ASTM D 6938 or D 1556.
5. A minimum of one (1) nuclear density test for each column footing excavation and for each lift of fill according to ASTM D 6938 or D 1556.
6. A minimum of one (1) nuclear density test per lift at 50 lineal feet spacing for pipe bedding and backfill operations, according to ASTM D 6938 or D 1556.
7. A minimum of three (3) nuclear density test per each lift of subgrade preparation and/or fill placement for each drainage structure according to ASTM D 6938 or D 1556.
8. Sampling and testing for quality assurance of placed **mortar**, Type S (minimum compressive strength of 1800 psi) should be performed for the project. The design strength of the mortar mix shall be evaluated by collecting 3-cube specimens for lab curing and testing in accordance with applicable ASTM procedures. At least one set of 3 mortar cubes should be collected for every day of mortar placement or as directed by the project engineer. The mortar specimens should be tested at 7 days (1 cube) and 28 days (2 cubes) for verification of the specified design strength or as directed by the project plans and specifications.
9. Sampling and testing for quality assurance of placed **grout materials** (3/8" maximum aggregate with a minimum compressive strength of 2,500 psi) should be performed for the project. Grout field testing shall include testing for temperature and slump (8 to 10 inches maximum). The design strength of the grout mix shall be evaluated by collecting prisms specimens molded with on-site CMU blocks or approved grout boxes for lab curing and testing in accordance with applicable ASTM procedures. At least one set of four (4) grout prisms should be collected for each day's batching or as directed by the project engineer. Grout with additives should be batched and placed in not more than 2 cubic yard volumes. The grout specimens should be tested at 7 days (1 prism) and 28 days (3 prisms) for verification of the specified design strength or as directed by the project plans and specifications.

10. Sampling and testing for quality assurance of placed **concrete materials** should be performed for the project. Concrete field testing shall include testing for temperature, slump and air content (if required). The design strength of the concrete mix shall be evaluated by collecting cylindrical concrete compression test specimens for lab curing and testing in accordance with applicable ASTM procedures. At least one set of four (4) 6-inch x 12-inch or five (5) 4-inch x 8-inch concrete cylinders should be collected for every 50 cubic yards or less of poured concrete or as directed by the project engineer. The concrete specimens should be tested at 7 days (1 cylinder) and 28 days (3 cylinders) for verification of the specified design strength or as directed by the project plans and specifications. The ACI guidelines for hot weather and cold weather concreting should be followed to mitigate the potential poor performance of the concrete materials during significant periods of high (above 95° F) and low (below 35° F) temperatures.
11. The **Hot-Mixed Asphaltic-Concrete (HMAC)** paving materials should be tested during construction production for mix design verification. The plant produced HMAC should be sampled for each day's production or every 20 tons of material produced and tested for compliance with the approved Marshall Mix Design and to determine the laboratory density of the material. The placed HMAC mat should be tested by conducting a minimum of three field density test every 50 lf or as directed by the project engineer.

12. Soil Evaluation Report Considerations and Limitations

The analysis and recommendations in this report are based on the data obtained from six (6) subsurface exploration vertical borings performed at the approximate locations indicated on the attached General Geotechnical Subsurface Exploration Boring Location Aerial Plan, Sheets A1-1 through A1-3. This report may not reflect all the variations that may occur between the vertical borings. The nature and extent of the variations may not become evident until during the course of construction. If variations appear during construction, CQC should be contacted immediately, it may be necessary for a reevaluation of our recommendations provided within this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations. No other information relevant to the project site history or known conditions of concern were discussed or disclosed to CQC by our Client or design representatives.

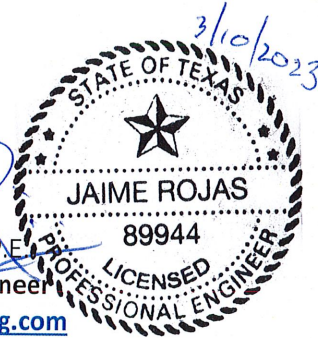
The scope of our soil evaluation did not include surveying services, ground water study, sinkhole study, landslide study, soil slope stability analysis, delineation of buried structures or material, preparation of engineering plans, specifications, cost estimates, an environmental assessment of the property's air, soil, water, site fault delineation and evaluation, preparation of a dewatering plan, trench safety and/or shoring plan, delineation of subsurface flowing water or rock conditions either on or adjacent to the project site limits, therefore no opinions and/or conclusions are presented in this report. Our geotechnical scope of work for this site did not include an environmental assessment or chemical testing and analysis of the subsurface soils.



We appreciate the opportunity to provide geotechnical consulting services on this project. Please call us if you have any questions with respect to the recommendations presented within this report.

Respectfully Submitted,
CQC Testing and Engineering, L.L.C.
TBPE Firm Registration No. F-10632


Jose Luis Arias
Project Engineer
jarias@cqceng.com


Jaime Rojas, P.E.
Principal Engineer
jrojas@cqceng.com
3/10/2023

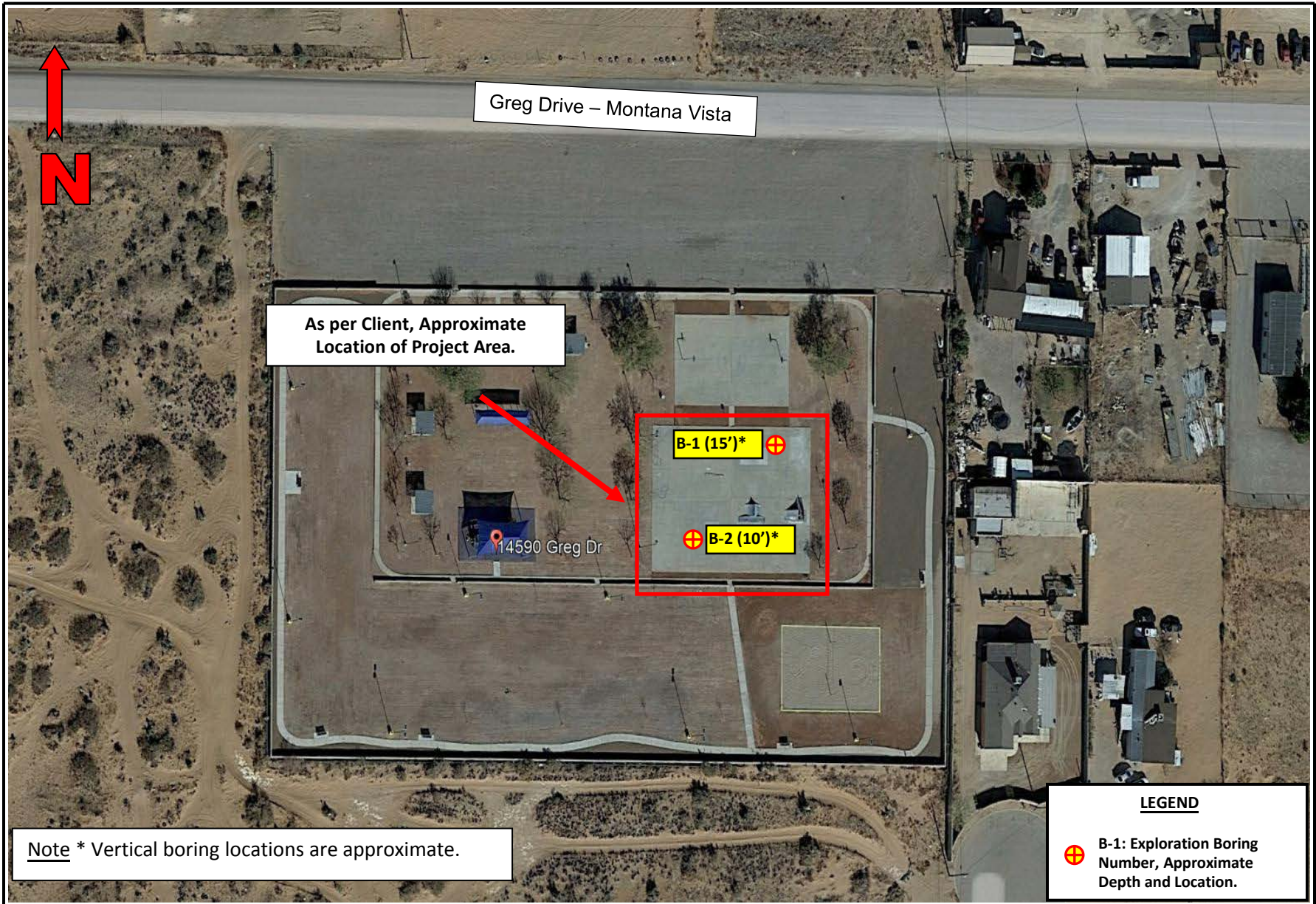
- Copies: 1.) Above Distribution
2.) File

D:\Dropbox\CQC Files\CQC Working Files\GEO\Reports\2022\22-009 - County EP Skate Park Imp (MNK)\07-Final Report Documents\22-009_TechnicalReport_Final.docx



Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

APPENDIX A



Note * Vertical boring locations are approximate.

LEGEND
 ⊕ B-1: Exploration Boring Number, Approximate Depth and Location.



General Geotechnical Subsurface Exploration Boring Location Aerial Plan

New Skate Park at Estrella Park Project
 Estrella Park - 14590 Greg Drive
 El Paso, El Paso County, Texas

Client: MNK Architects	
CQC Project No. AGCQC22-009	
Scale: NTS	Check by: JR
Date: 03/10/2023	Sheet A1-1



General Geotechnical Subsurface Exploration Boring Location Aerial Plan

New Skate Park at Agua Dulce Park Project
 Agua Dulce Park - 15371 Kentwood Avenue
 El Paso, El Paso County, Texas

Client: MNK Architects

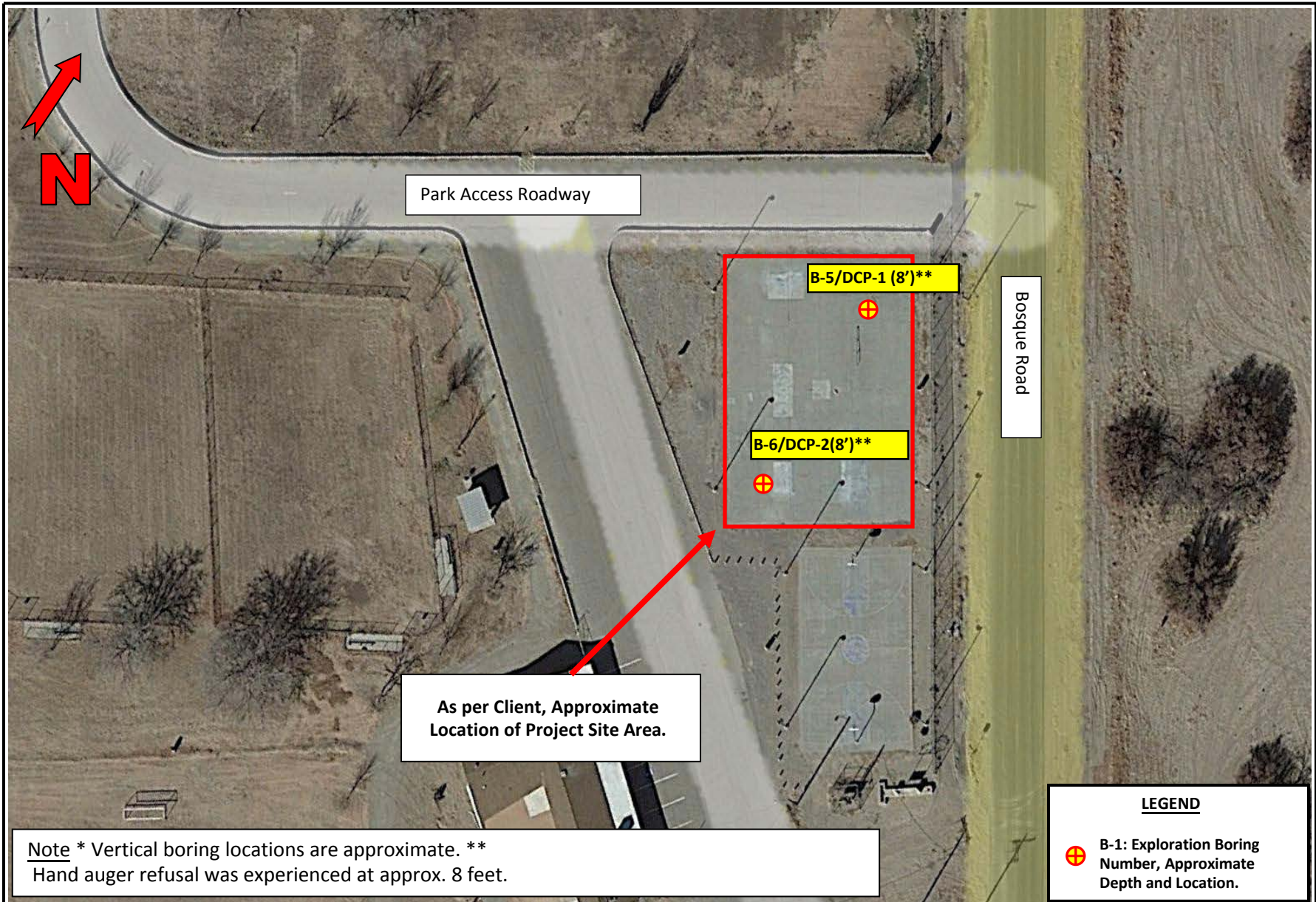
CQC Project No. AGCQC22-009

Scale: NTS

Check by: JR

Date: 03/10/2023

Sheet A1-2



LEGEND

⊕ B-1: Exploration Boring Number, Approximate Depth and Location.

Note * Vertical boring locations are approximate. ** Hand auger refusal was experienced at approx. 8 feet.



General Geotechnical Subsurface Exploration Boring Location Aerial Plan

New Skate Park at Gallegos Park Project
 Gallegos Park - 7631 Bosque Road
 El Paso, El Paso County, Texas

Client: MNK Architects

CQC Project No. AGCQC22-009

Scale: NTS

Check by: JR

Date: 03/10/2032

Sheet A1-3



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-1

Estrella Park

CLIENT MNK Architects
PROJECT NUMBER AGCQC22-009
DATE STARTED 3/23/22 **COMPLETED** 3/23/22
DRILLING CONTRACTOR CQC **DRILLED BY** SC
DRILLING METHOD CME-75 w/ 4-1/4" ID HSA
LOGGED BY PG **CHECKED BY** JLA
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1.

PROJECT NAME County of EP- New Skatepark Improvement Projects
PROJECT LOCATION Various Locations, El Paso County, Texas
GROUND ELEVATION Ext Grade **HOLE SIZE** 9 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% Moisture Content	% - 4	% - 200	PI (LL-PL)	USCS	▲ SPT N VALUE ▲									
										10	20	30	40						
										PL	MC	LL							
0.0			Concrete Slab- Approx. 4 inches thick.																
	SS 1		Apparent Base Course Material- Approx. 7 inches thick. SAND, Fine to Medium Grained, Silty, Reddish Brown to Multicolored, Medium Dense, Moist.	5-6-9 (15)	5.2	100	13	NP	SM										
2.5	SS 2		- Whittish brown to tannish brown, dense, slightly moist to very moist with calcareous material at approx. 2-1/2 feet. - Very dense caliche layer below approx. 2-1/2 to 5 feet. Layer appears to extend from 2-1/2 to 5 feet.	13-22-14 (36)	19.4	100	34	3	SM										
5.0	SS 3		- Tannish brown to multicolored, medium dense, moist at approx. 5 feet.	6-8-10 (18)	10.1	99	17	NP	SM										
7.5	SS 4		- Very dense at approx. 7-1/2 feet.	7-27-29 (56)															
10.0	SS 5		- Dense at approx. 10 feet.	15-18-18 (36)	7.0	98	16	NP	SM										
12.5																			
15.0	SS 6			8-21-27 (48)															
			NOTE: SS- Split Spoon Sample. Bottom of borehole at 15.0 feet.																

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

CQC STANDARD LOG 22-009.GPJ GINT STD US LAB.GDT



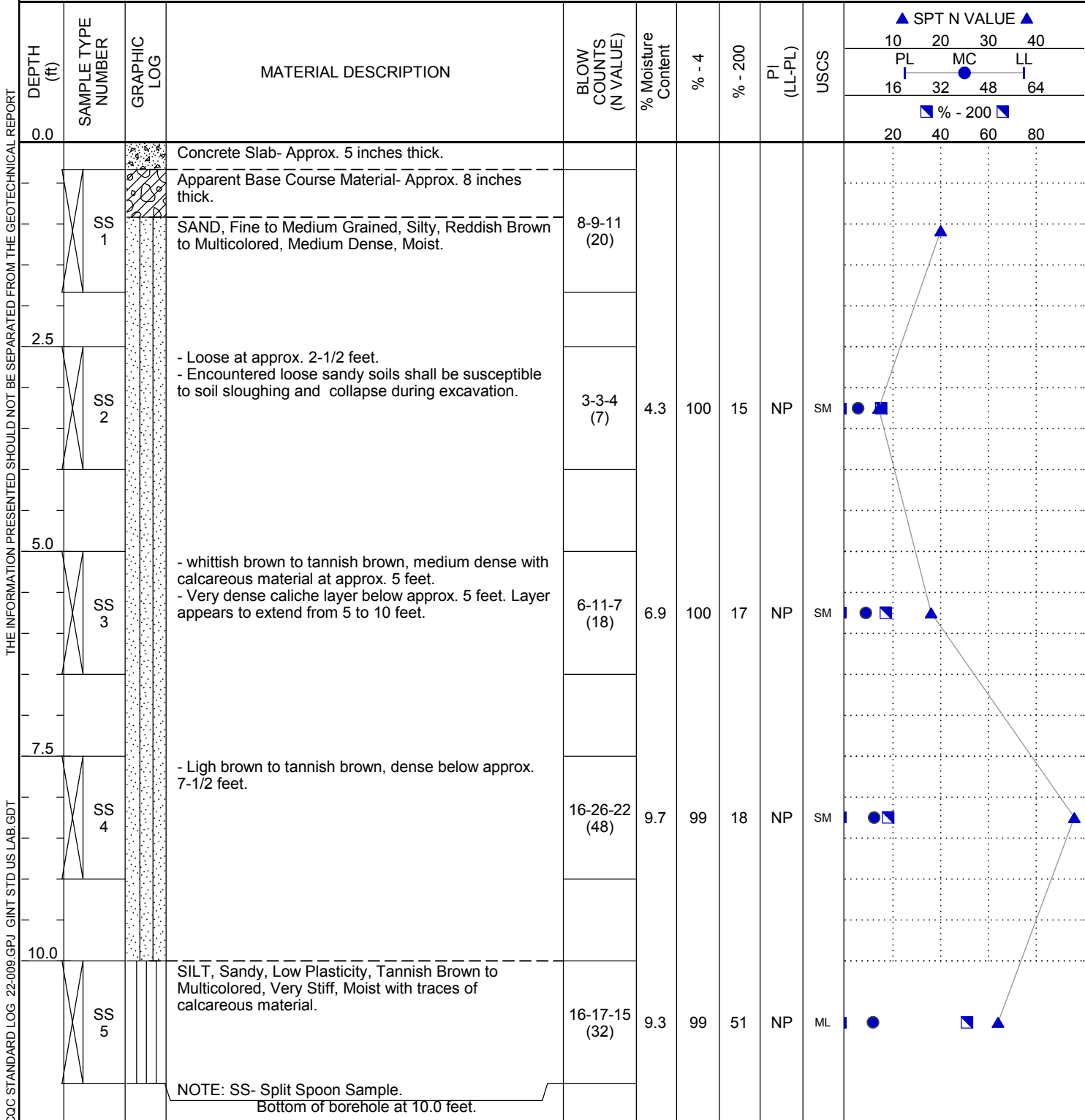
CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-2

Estrella Park

CLIENT MNK Architects
PROJECT NUMBER AGCQC22-009
DATE STARTED 3/23/22 **COMPLETED** 3/23/22
DRILLING CONTRACTOR CQC **DRILLED BY** SC
DRILLING METHOD CME-75 w/ 4-1/4" ID HSA
LOGGED BY PG **CHECKED BY** JLA
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1.

PROJECT NAME County of EP- New Skatepark Improvement Projects
PROJECT LOCATION Various Locations, El Paso County, Texas
GROUND ELEVATION Ext Grade **HOLE SIZE** 9 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---





CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-3

Agua Dulce Park

CLIENT MNK Architects
PROJECT NUMBER AGCQC22-009
DATE STARTED 3/24/22 **COMPLETED** 3/24/22
DRILLING CONTRACTOR CQC **DRILLED BY** SC
DRILLING METHOD CME-75 w/ 4-1/4" ID HSA
LOGGED BY PG **CHECKED BY** JLA
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1.

PROJECT NAME County of EP- New Skatepark Improvement Projects
PROJECT LOCATION Various Locations, El Paso County, Texas
GROUND ELEVATION Ext Grade **HOLE SIZE** 9 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% Moisture Content	% - 4	% - 200	PI (LL-PL)	USCS	SPT N VALUE									
										10	20	30	40						
										PL	MC	LL							
0.0			Concrete Slab- Approx. 4 inches thick.																
0.0 - 2.5	SS 1		Apparent Base Course Material- Approx. 4 inches thick.	6-7-7 (14)															
2.5 - 5.0	SS 2		SAND, Fine to Medium Grained, Silty, Reddish Brown to Multicolored, Medium Dense, Moist. - Loose below approx. 2-1/2 feet. - Encountered loose sandy soils shall be susceptible to soil sloughing and collapse when unconfined during excavation.	3-2-3 (5)	10.1	97	26	3	SM										
5.0 - 7.5	SS 3			3-4-4 (8)															
7.5 - 10.0	SS 4		- Tannish brown to multicolored at approx. 7-1/2 feet.	3-3-3 (6)	6.4	98	17	NP	SM										
10.0 - 12.5	SS 5		- Very loose at approx. 10 feet.	2-2-2 (4)	5.9	98	24	NP	SM										
12.5 - 15.0	SS 6			3-3-6 (9)	10.4	86	18	NP	SM										
			NOTE: SS- Split Spoon Sample. Bottom of borehole at 15.0 feet.																

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

CQC STANDARD LOG 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-4

Agua Dulce Park

CLIENT MNK Architects
PROJECT NUMBER AGCQC22-009
DATE STARTED 3/24/22 **COMPLETED** 3/24/22
DRILLING CONTRACTOR CQC **DRILLED BY** SC
DRILLING METHOD CME-75 w/ 4-1/4" ID HSA
LOGGED BY PG **CHECKED BY** JLA
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1.

PROJECT NAME County of EP- New Skatepark Improvement Projects
PROJECT LOCATION Various Locations, El Paso County, Texas
GROUND ELEVATION Ext Grade **HOLE SIZE** 9 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% Moisture Content	% - 4	% - 200	PI (LL-PL)	USCS	SPT N VALUE ▲									
										10	20	30	40						
										PL	MC	LL							
0.0			Concrete Slab- Approx. 4 inches thick.																
			Apparent Base Course Material- Approx. 4 inches thick.																
	SS 1		SAND, Fine to Medium Grained, Silty, Reddish Brown to Multicolored, Loose, Moist.	5-5-5 (10)	10.1	100	21	NP	SM										
2.5	SS 2		- Encountered loose sandy soils shall be susceptible to soil sloughing and collapse when unconfined during excavation.	3-3-3 (6)															
5.0	SS 3		- Very loose at approx. 5 feet.	2-2-2 (4)	7.5	95	24	NP	SM										
7.5	SS 4		- Loose below approx. 7-1/2 feet.	2-3-3 (6)															
10.0	SS 5			2-2-2 (4)	5.7	100	20	NP	SM										

NOTE: SS- Split Spoon Sample.
 Bottom of borehole at 10.0 feet.

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

CQC STANDARD LOG 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-5

Gallegos Park

CLIENT MNK Architects
PROJECT NUMBER AGCQC22-009
DATE STARTED 3/28/22 **COMPLETED** 3/28/22
DRILLING CONTRACTOR CQC **DRILLED BY** SC
DRILLING METHOD 4" ID - Hand Auger and Tools
LOGGED BY PG/JC **CHECKED BY** JLA
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1.

PROJECT NAME County of EP- New Skatepark Improvement Projects
PROJECT LOCATION Various Locations, El Paso County, Texas
GROUND ELEVATION Ext Grade **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% Moisture Content	% - 4	% - 200	PI (LL-PL)	USCS	▲ SPT N VALUE ▲										
										10	20	30	40							
										PL	MC	LL								
0.0			Concrete Slab- Approx. 4-1/2 inches thick.																	
	AU		LEAN CLAY, Sandy, Moderate Plasticity, Dark Brown to Tannish Brown, Slightly Moist. (Apparent Base Course Material- Approx. 11 inches thick)		15.1	100	50	9	CL											
	AU		SAND, Fine Grained, Clayey, Dark Brown to Tannish Brown, Dry to Moist with clay particles.																	
	AU		SAND, Fine Grained, Silty, Tannish Brown to Multicolored, Moist.		4.5	100	14	NP	SM											
2.5	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist with silt.																	
	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist.																	
	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist.																	
	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist.																	
5.0	AU		SAND, Fine to Medium Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist with silt.		3.3	100	3	NP	SP											
	AU		SAND, Fine to Medium Grained, Poorly Graded, Tannish Brown to Multicolored, Slightly Moist with silt.																	
	AU		FAT CLAY, Plastic, Dark Brown to Tannish Brown, Very Moist.																	
7.5	AU		SAND, Fine to Medium Grained, Poorly Graded, Tannish Brown to Multicolored, Slightly Moist with silt.																	
	AU																			
	AU																			
	AU																			
			- Hand Auger refusal was experienced at approx. 8 feet due to an unknown obstruction. NOTE: AU- Hand Auger Sample. Reported apparent relative density information is based on DCP Data. Bottom of borehole at 8.5 feet.																	

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

CQC STANDARD LOG 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

BORING NUMBER B-6

Gallegos Park

CLIENT MNK Architects **PROJECT NAME** County of EP- New Skatepark Improvement Projects
PROJECT NUMBER AGCQC22-009 **PROJECT LOCATION** Various Locations, El Paso County, Texas
DATE STARTED 3/28/22 **COMPLETED** 3/28/22 **GROUND ELEVATION** Ext Grade **HOLE SIZE** 4 inches
DRILLING CONTRACTOR CQC **DRILLED BY** SC **GROUND WATER LEVELS:**
DRILLING METHOD 4" ID - Hand Auger and Tools **AT TIME OF DRILLING** ---
LOGGED BY PG/JC **CHECKED BY** JLA **AT END OF DRILLING** ---
NOTES Boring Location: See Attached Boring Location Plan, Sheet A1-1. **AFTER DRILLING** ---

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

CQC STANDARD LOG 22-009.GPJ GINT STD US LAB.GDT

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	% Moisture Content	% - 4	% - 200	PI (LL-PL)	USCS	▲ SPT N VALUE ▲				
										10	20	30	40	
0.0			Concrete Slab- Approx. 4-1/2 inches thick.											
	AU		Apparent Base Course Material- Approx. 10 inches thick.											
	AU		SAND, Fine Grained, Clayey, Dark Brown to Tannish Brown, Moist with clay particles.		15.9	93	43	11	SC					
	AU		SAND, Fine to Medium Grained, Silty, Tannish Brown to Multicolored, Moist.		5.6	100	22	NP	SM					
2.5	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Slightly Moist with silt.											
	AU		SAND, Fine to Medium Grained, Poorly Graded, Tannish Brown to Multicolored, Slightly Moist.											
	AU		- Encountered poorly graded sands shall be susceptible to soil sloughing and collapse when unconfined during excavation.		3.9	100	1	NP	SP					
5.0	AU													
	AU													
	AU													
	AU													
	AU													
7.5	AU		SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored, Dry to Slightly Moist with silt.											
	AU													
	AU													
	AU		- Hand Auger refusal was experienced at approx. 8 feet due to an unknown obstruction. NOTE: AU- Hand Auger Sample. Reported apparent relative density information is based on DCP Data. Bottom of borehole at 8.5 feet.											



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

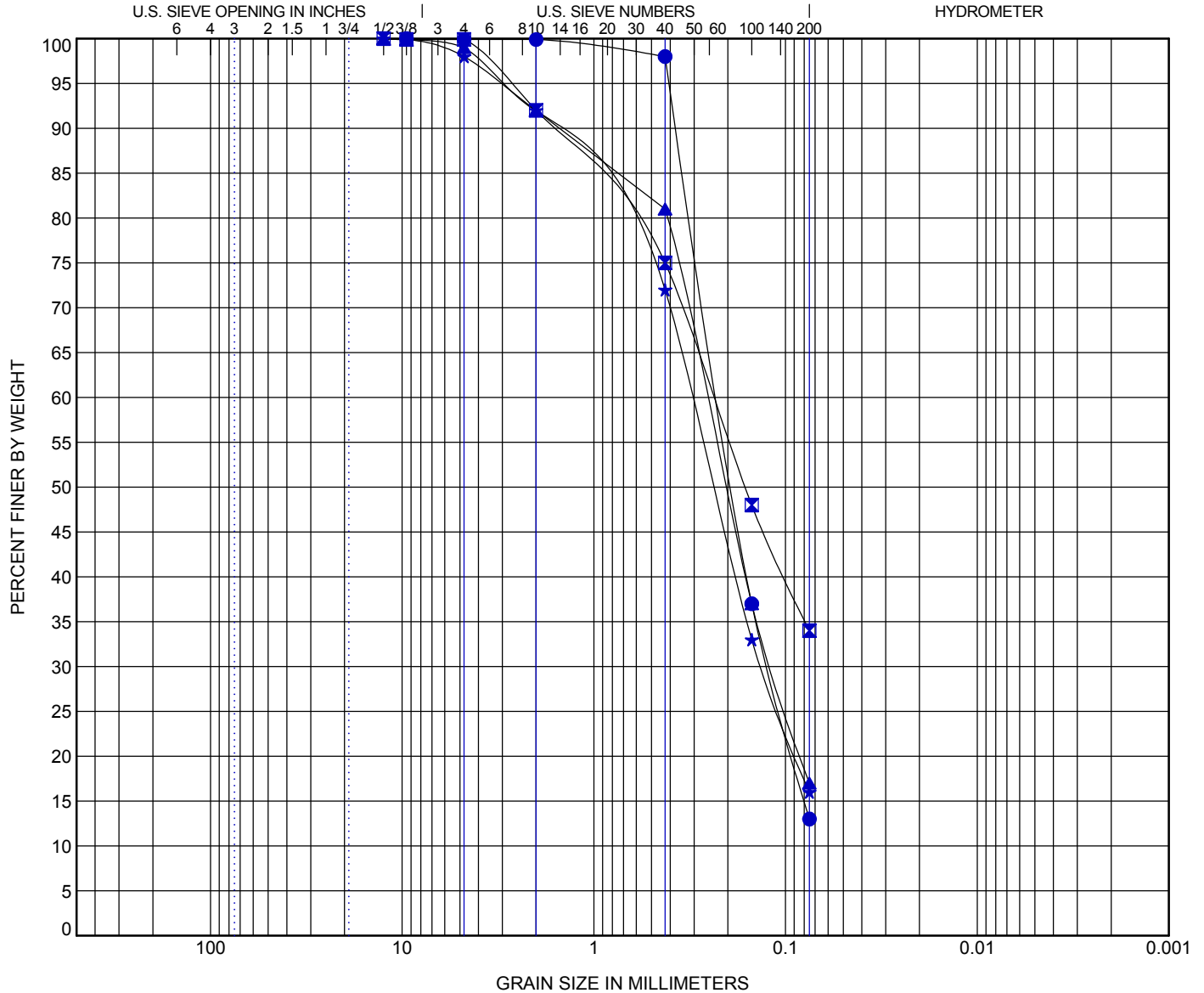
Test Method: ASTM D6913

CLIENT MNK Architects

PROJECT NAME County of EP- New Skatepark Improvement Projects

PROJECT NUMBER AGCQC22-009

PROJECT LOCATION Various Locations, El Paso County, Texas



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-1	0.3 - 1.8	SILTY SAND(SM)	NP	NP	NP		
☒ B-1	2.5 - 4.0	SILTY SAND(SM)	28	25	3		
▲ B-1	5.0 - 6.5	SILTY SAND(SM)	NP	NP	NP		
★ B-1	10.0 - 11.5	SILTY SAND(SM)	NP	NP	NP		

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-1	0.3 - 1.8	9.5	0.222	0.123		0.1	86.9		13.0
☒ B-1	2.5 - 4.0	12.5	0.238			0.1	65.9		34.0
▲ B-1	5.0 - 6.5	12.5	0.259	0.118		1.0	82.0		17.0
★ B-1	10.0 - 11.5	12.5	0.308	0.133		2.0	82.0		16.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US.LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

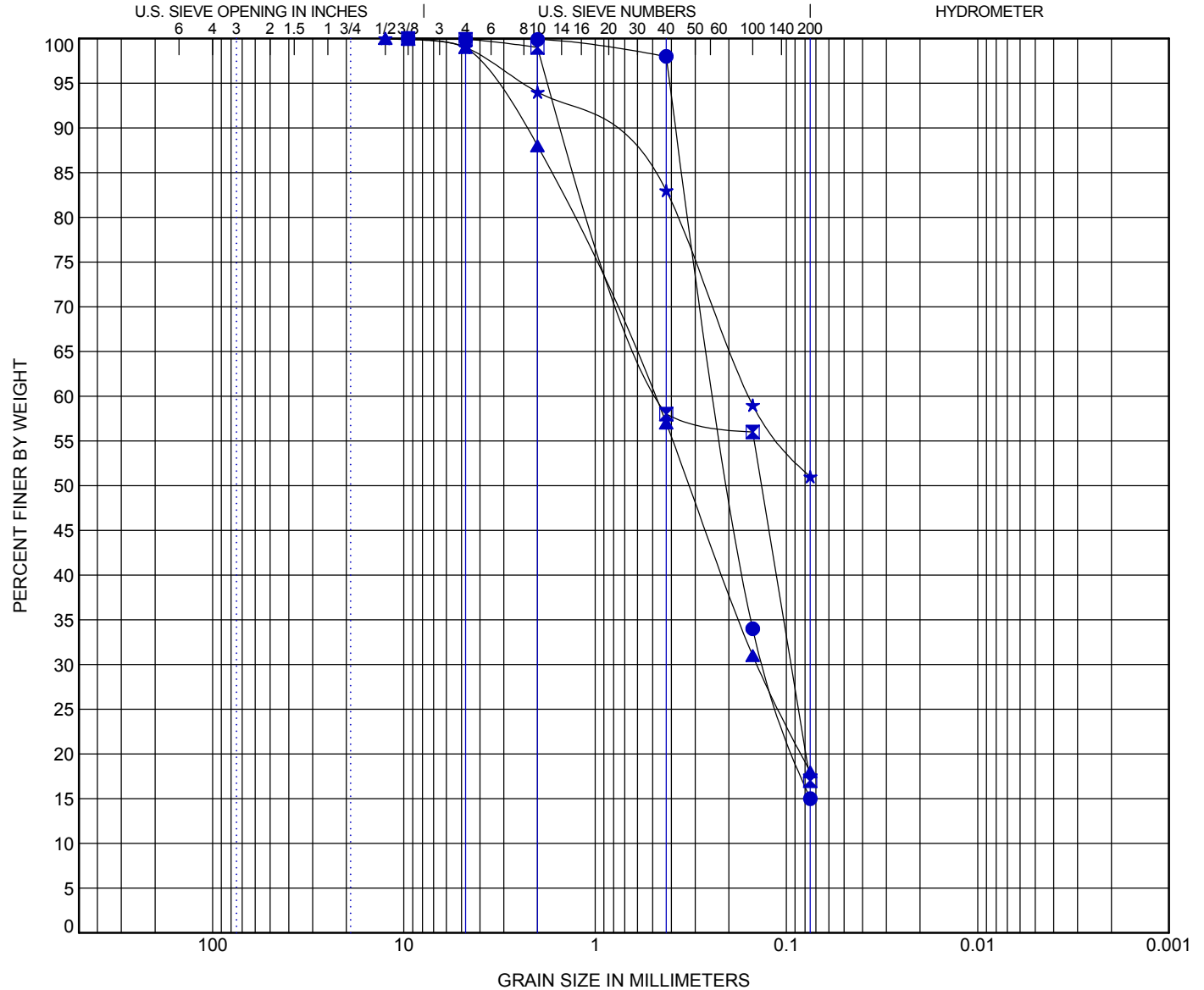
Test Method: ASTM D6913

CLIENT MNK Architects

PROJECT NAME County of EP- New Skatepark Improvement Projects

PROJECT NUMBER AGCQC22-009

PROJECT LOCATION Various Locations, El Paso County, Texas



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-2	2.5 - 4.0	SILTY SAND(SM)	NP	NP	NP		
■ B-2	5.0 - 6.5	SILTY SAND(SM)	NP	NP	NP		
▲ B-2	7.5 - 9.0	SILTY SAND(SM)	NP	NP	NP		
★ B-2	10.0 - 11.5	SANDY SILT(ML)	NP	NP	NP		

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2	2.5 - 4.0	9.5	0.229	0.13		0.1	84.9		15.0
■ B-2	5.0 - 6.5	9.5	0.458	0.094		0.1	82.9		17.0
▲ B-2	7.5 - 9.0	12.5	0.494	0.142		1.0	81.0		18.0
★ B-2	10.0 - 11.5	12.5	0.157			1.0	48.0		51.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US.LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

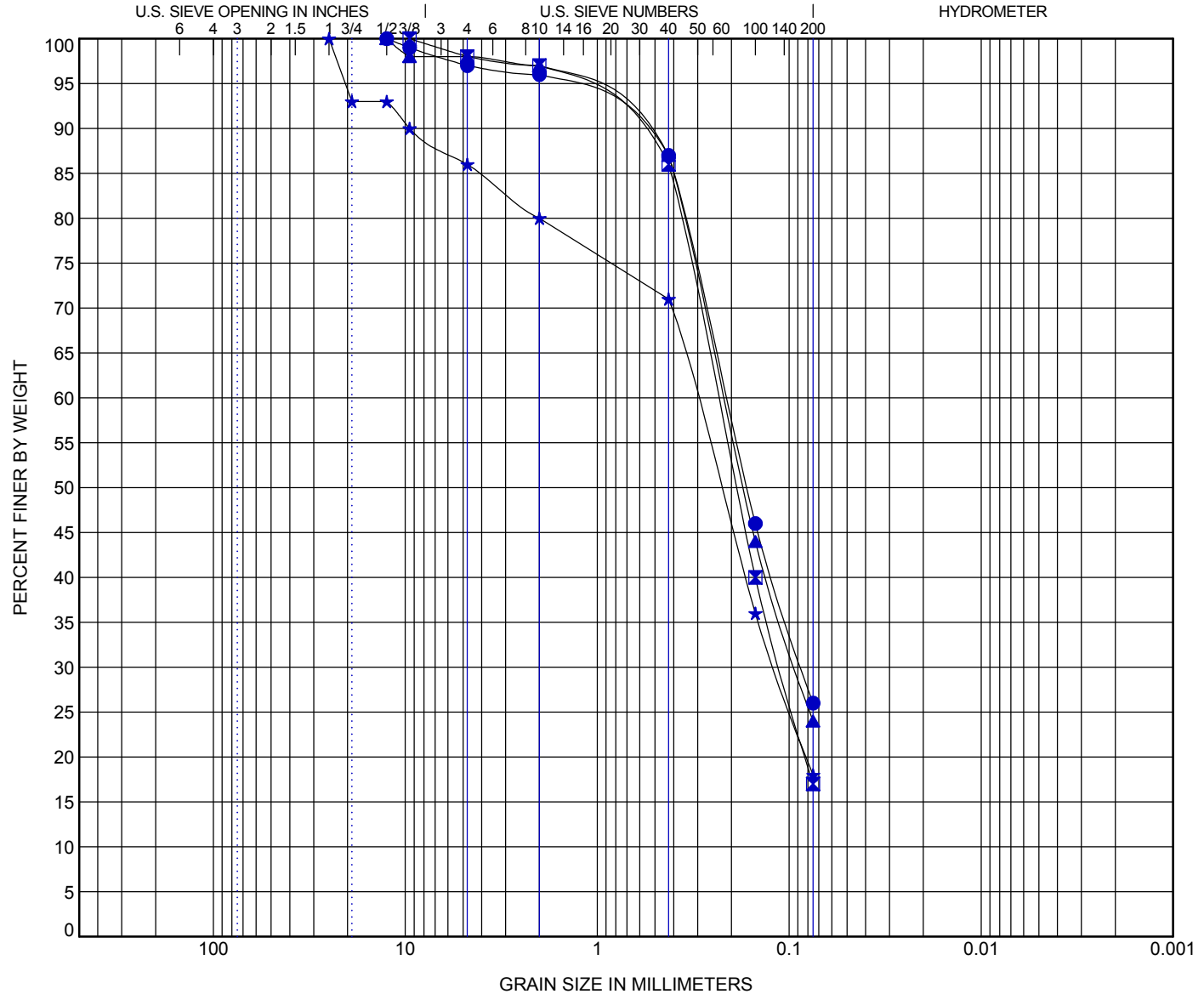
Test Method: ASTM D6913

CLIENT **MNK Architects**

PROJECT NAME **County of EP- New Skatepark Improvement Projects**

PROJECT NUMBER **AGCQC22-009**

PROJECT LOCATION **Various Locations, El Paso County, Texas**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-3	2.5 - 4.0	SILTY SAND(SM)	19	16	3		
■ B-3	7.5 - 9.0	SILTY SAND(SM)	NP	NP	NP		
▲ B-3	10.0 - 11.5	SILTY SAND(SM)	NP	NP	NP		
★ B-3	13.5 - 15.0	SILTY SAND(SM)	NP	NP	NP		

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-3	2.5 - 4.0	12.5	0.214	0.086		3.0	71.0		26.0
■ B-3	7.5 - 9.0	9.5	0.236	0.111		2.0	81.0		17.0
▲ B-3	10.0 - 11.5	12.5	0.221	0.092		2.0	74.0		24.0
★ B-3	13.5 - 15.0	25	0.306	0.119		14.0	68.0		18.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US.LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

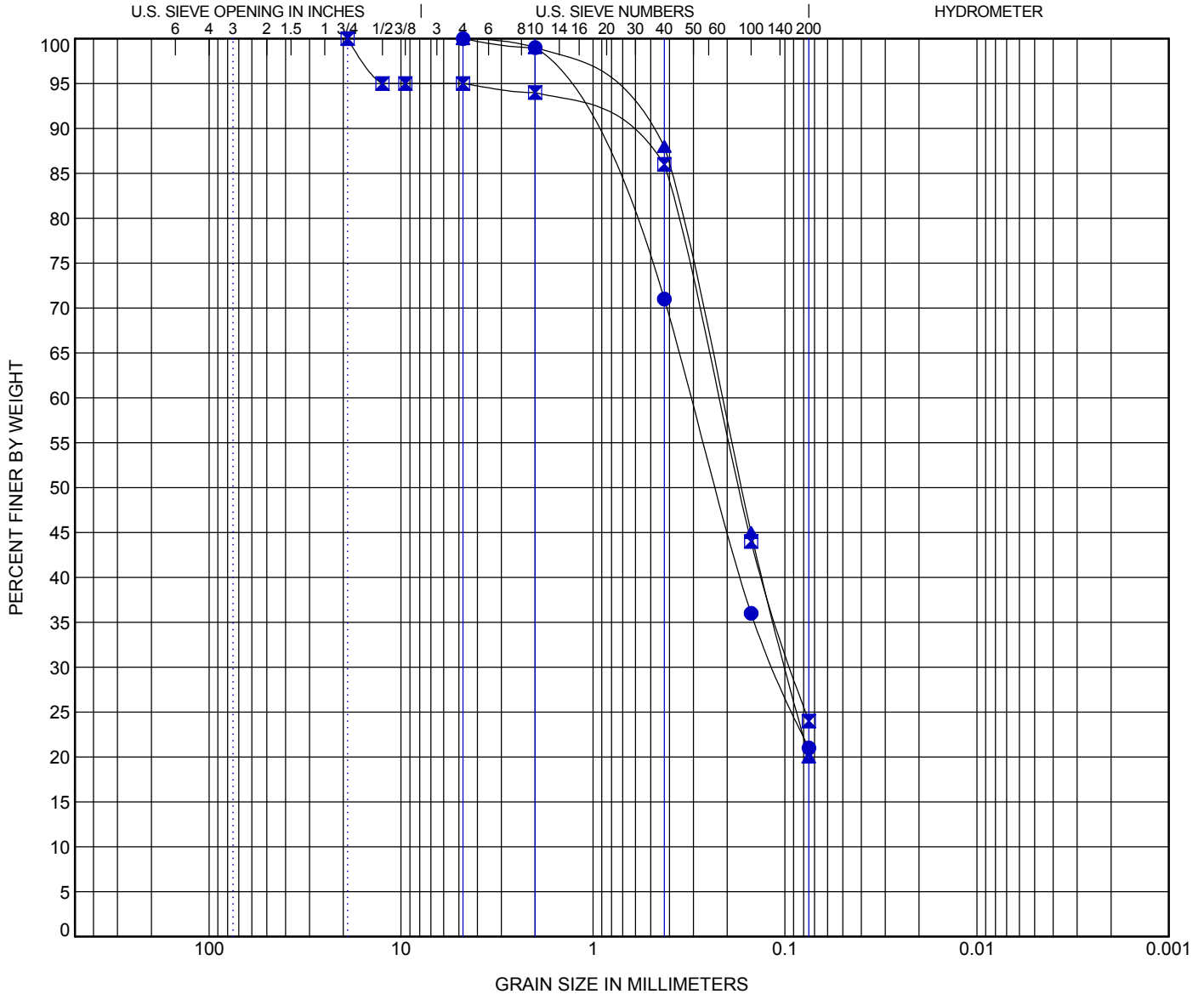
Test Method: ASTM D6913

CLIENT **MNK Architects**

PROJECT NAME **County of EP- New Skatepark Improvement Projects**

PROJECT NUMBER **AGCQC22-009**

PROJECT LOCATION **Various Locations, El Paso County, Texas**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification				LL	PL	PI	Cc	Cu
● B-4	0.9 - 2.4	SILTY SAND(SM)				NP	NP	NP		
☒ B-4	5.0 - 6.5	SILTY SAND(SM)				NP	NP	NP		
▲ B-4	10.0 - 11.5	SILTY SAND(SM)				NP	NP	NP		

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-4	0.9 - 2.4	4.75	0.306	0.114		0.0	79.0		21.0
☒ B-4	5.0 - 6.5	19	0.223	0.092		5.0	71.0		24.0
▲ B-4	10.0 - 11.5	4.75	0.216	0.099		0.0	80.0		20.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

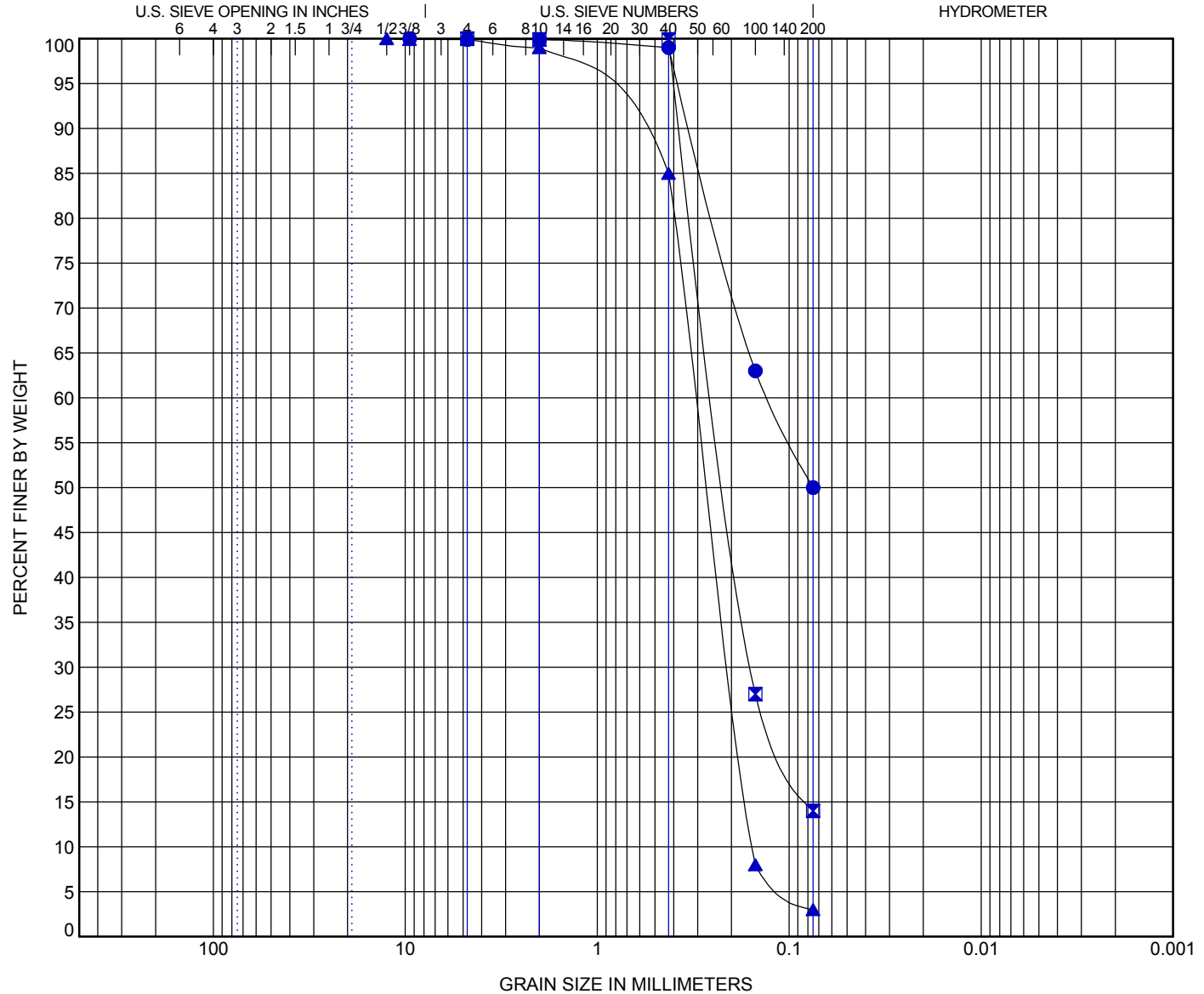
Test Method: ASTM D6913

CLIENT MNK Architects

PROJECT NAME County of EP- New Skatepark Improvement Projects

PROJECT NUMBER AGCQC22-009

PROJECT LOCATION Various Locations, El Paso County, Texas



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-5	0.5 - 1.0	SANDY LEAN CLAY (CL)					24	15	9		
⊠ B-5	2.0 - 2.5	SILTY SAND (SM)					NP	NP	NP		
▲ B-5	4.5 - 5.0	POORLY GRADED SAND (SP)					NP	NP	NP	0.87	1.97

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-5	0.5 - 1.0	9.5	0.128			0.1	49.9		50.0
⊠ B-5	2.0 - 2.5	4.75	0.24	0.157		0.0	86.0		14.0
▲ B-5	4.5 - 5.0	12.5	0.303	0.202	0.154	0.1	96.9		3.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SOIL PARTICLE SIZE ANALYSIS TESTS

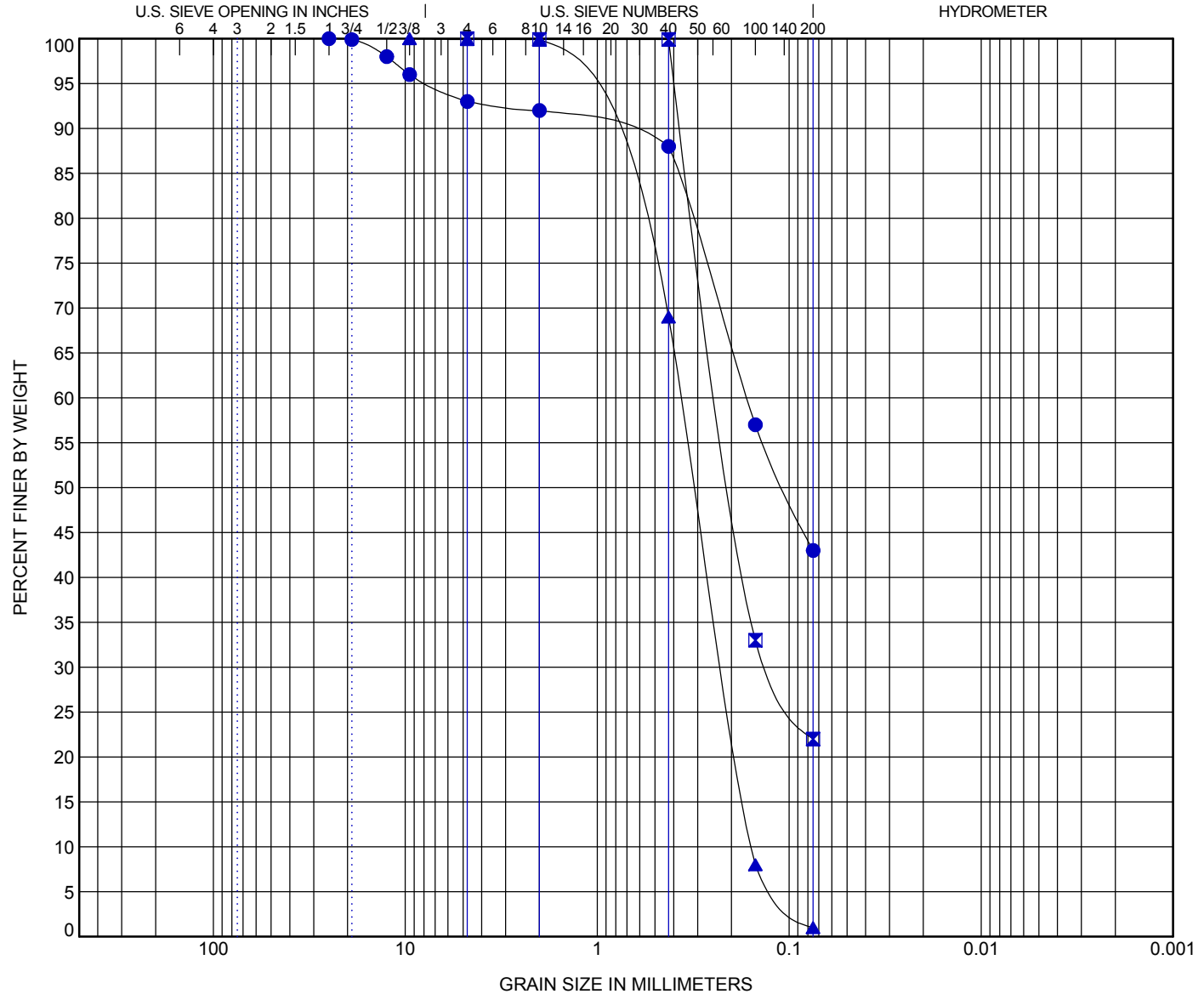
Test Method: ASTM D6913

CLIENT **MNK Architects**

PROJECT NAME **County of EP- New Skatepark Improvement Projects**

PROJECT NUMBER **AGCQC22-009**

PROJECT LOCATION **Various Locations, El Paso County, Texas**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● B-6	1.0 - 1.5	CLAYEY SAND(SC)	28	17	11		
☒ B-6	2.0 - 2.5	SILTY SAND(SM)	NP	NP	NP		
▲ B-6	4.5 - 5.0	POORLY GRADED SAND(SP)	NP	NP	NP	0.84	2.35

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-6	1.0 - 1.5	25	0.166			7.0	50.0		43.0
☒ B-6	2.0 - 2.5	4.75	0.228	0.124		0.0	78.0		22.0
▲ B-6	4.5 - 5.0	9.5	0.364	0.218	0.155	0.1	98.9		1.0

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

GRAIN SIZE 22-009.GPJ GINT STD US LAB.GDT



CQC Testing and Engineering LLC - TBPE Firm No. F-10632
 4606 Titanic Avenue
 El Paso, Texas 79904
 Ph: (915) 771-7766
 Fx: (915) 771-7786

SUMMARY OF LABORATORY ENGINEERING SOIL CLASSIFICATION TEST RESULTS

CLIENT MNK Architects

PROJECT NAME County of EP- New Skatepark Improvement Projects

PROJECT NUMBER AGCQC22-009

PROJECT LOCATION Various Locations, El Paso County, Texas

Borehole	Depth	N - Value	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing No. 4	% Passing No. 200	Pocket Pen (tsf)	Total Unit Weight (pcf)	Classification
B-1	0.3- 1.8	15	5.2	NP	NP	NP	100	13			SM
	2.5- 4.0	36	19.4	28	25	3	100	34			SM
	5.0- 6.5	18	10.1	NP	NP	NP	99	17			SM
	7.5- 9.0	56									
	10.0- 11.5	36	7.0	NP	NP	NP	98	16			SM
	13.5- 15.0	48									
B-2	0.3- 1.8	20									
	2.5- 4.0	7	4.3	NP	NP	NP	100	15			SM
	5.0- 6.5	18	6.9	NP	NP	NP	100	17			SM
	7.5- 9.0	48	9.7	NP	NP	NP	99	18			SM
	10.0- 11.5	32	9.3	NP	NP	NP	99	51			ML
B-3	0.3- 1.8	14									
	2.5- 4.0	5	10.1	19	16	3	97	26			SM
	5.0- 6.5	8									
	7.5- 9.0	6	6.4	NP	NP	NP	98	17			SM
	10.0- 11.5	4	5.9	NP	NP	NP	98	24			SM
	13.5- 15.0	9	10.4	NP	NP	NP	86	18			SM
B-4	0.3- 1.8	10									
	0.9- 2.4		10.1	NP	NP	NP	100	21			SM
	2.5- 4.0	6									
	5.0- 6.5	4	7.5	NP	NP	NP	95	24			SM
	7.5- 9.0	6									
B-5	10.0- 11.5	4	5.7	NP	NP	NP	100	20			SM
	0.5- 2.0		15.1	24	15	9	100	50			CL
	2.0- 3.5		4.5	NP	NP	NP	100	14			SM
	4.5- 6.0		3.3	NP	NP	NP	100	3			SP
B-6	1.0- 2.5		15.9	28	17	11	93	43			SC
	2.0- 3.5		5.6	NP	NP	NP	100	22			SM
	4.5- 6.0		3.9	NP	NP	NP	100	1			SP

THE INFORMATION PRESENTED SHOULD NOT BE SEPARATED FROM THE GEOTECHNICAL REPORT

LAB SUMMARY 22-009.GPJ GINT STD US LAB.GDT

SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC22-009-02
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Agua Dulce Skatepark Improvements Project
 Agua Dulce Park - 15371 Kentwood Avenue
 El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 2 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-3 **SAMPLE DATE:** 3/24/2022
SOIL SAMPLE APPROX. DEPTH: 1'-5'
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material/ SAND, Fine to Medium Grained, Silty, Reddish Brown to Multicolored.

SAMPLE TEST RESULTS

Sieve Analysis Test

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	0	100
1/2"	1	99
3/8"	2	98
No. 4	4	96
No. 10	12	88
No. 40	17	83
No. 100	59	41
No. 200	79.9	20.1

Atterberg Limits Test

Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	-
PL	-
PI	NP

NP - Non Plastic

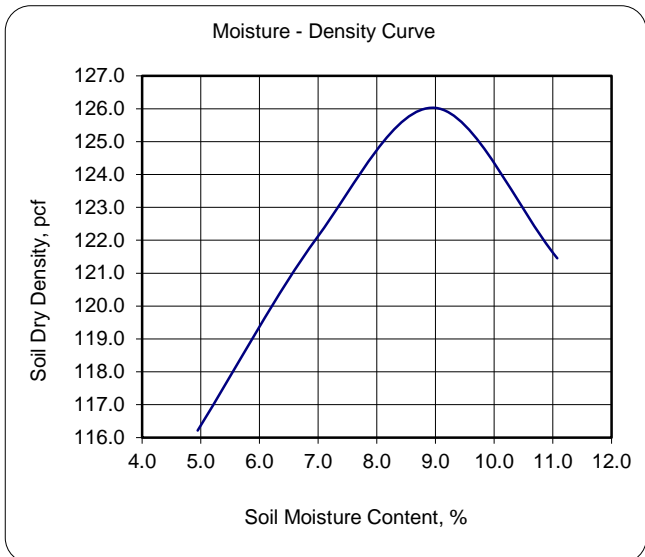
Soil Classification: **SM**
 Test Method: ASTM D 2487

Moisture-Density Relationship Test

Test Method: ASTM D 1557, Method "A"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	4.9	116.2
2	7.0	122.1
3	9.0	126.0
4	11.1	121.5

Maximum Dry Density, pcf: **126.0**
 Optimum Moisture Content, %: **8.9**



SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGQC22-009-01
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Estrella Skatepark Improvements Project
 Estrella Park - 14590 Greg Drive
 El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-1 **SAMPLE DATE:** 3/23/2022
SOIL SAMPLE APPROX. DEPTH: 1'-5'
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material / SAND, Fine Grained, Silty, Reddish Brown to Multicolored.

SAMPLE TEST RESULTS

Sieve Analysis Test

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	1	99
1/2"	3	97
3/8"	3	97
No. 4	4	96
No. 10	7	93
No. 40	9	91
No. 100	52	48
No. 200	83	17

Atterberg Limits Test

Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	-
PL	-
PI	NP

NP - Non Plastic

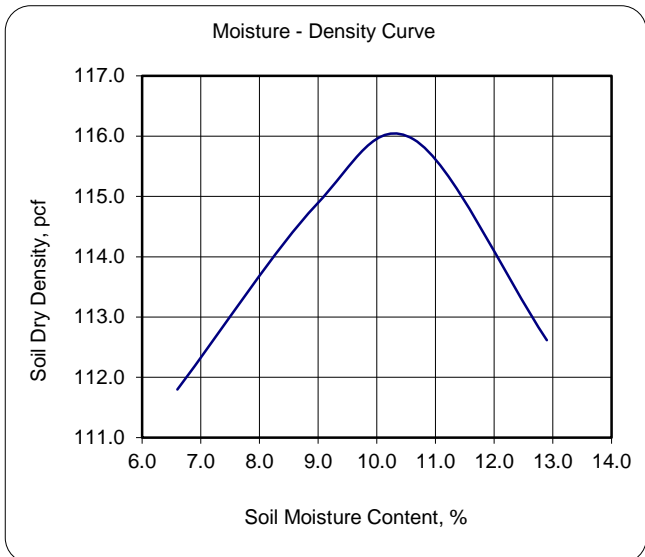
Soil Classification: **SM**
 Test Method: ASTM D 2487

Moisture-Density Relationship Test

Test Method: ASTM D 1557, Method "A"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	6.6	111.8
2	9.0	114.9
3	10.6	115.9
4	12.9	112.6

Maximum Dry Density, pcf: **116.0**
 Optimum Moisture Content, %: **10.3**



SOIL MOISTURE - DENSITY RELATIONSHIP TEST RESULTS

PROJECT NO.: AGCQC22-009-02
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Gallegos Skatepark Improvements Project
 Gallegos Park - 7631 Bosque Road
 El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 3 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-5 **SAMPLE DATE:** 3/28/2022
SOIL SAMPLE APPROX. DEPTH: 1'-5'
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material / SAND, Fine Grained, Poorly Graded, Tannish Brown to Multicolored with silt.

SAMPLE TEST RESULTS

Sieve Analysis Test

Test Method: ASTM D 6913

Sieve Size/No.	Percent Retained	Percent Passing
3"	0	100
2-1/2"	0	100
1-1/2"	0	100
1"	0	100
3/4"	0	100
1/2"	1	99
3/8"	1	99
No. 4	1	99
No. 10	2	98
No. 40	4	96
No. 100	87	13
No. 200	92.4	7.6

Atterberg Limits Test

Test Method: ASTM D 4318

Limit Test	Index Test Result
LL	-
PL	-
PI	NP

NP - Non Plastic

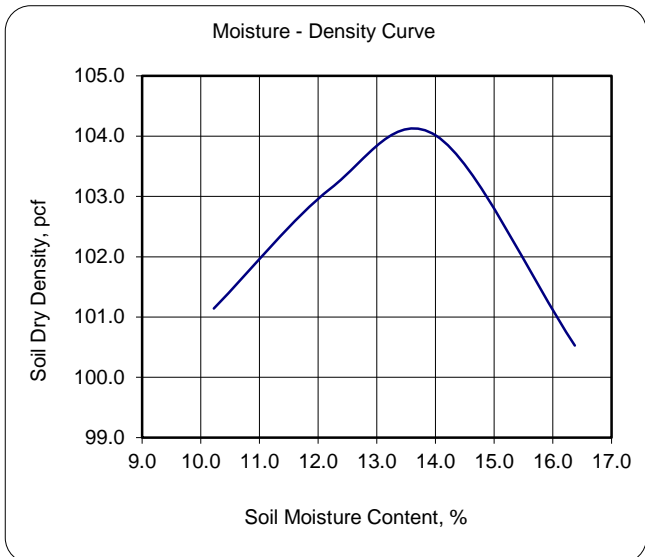
Soil Classification: **SP-SM**
 Test Method: ASTM D 2487

Moisture-Density Relationship Test

Test Method: ASTM D 1557, Method "A"

Test Sample No.	Moisture Content (%)	Sample Dry Density (pcf)
1	10.2	101.1
2	12.2	103.1
3	14.0	104.0
4	16.4	100.5

Maximum Dry Density, pcf: **104.1**
 Optimum Moisture Content, %: **13.6**



SOIL CALIFORNIA BEARING RATIO (CBR) TEST RESULTS ASTM D - 1883

PROJECT NO.: AGQC22-009-02
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Agua Dulce Skatepark Improvements Project
 Agua Dulce - 15371 Kentwood Avenue
 El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 2 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-3 **SAMPLE DATE:** 3/24/2022
SOIL SAMPLE DEPTH: 1'-5"
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material / SAND, Fine to Medium Grained, Silty, Reddish Brown to Multicolored.

TEST SPECIMEN INFORMATION:

Soil Sample Height, in. 4-1/2"
 Soil Sample Approx. Diameter, in. 6"
 Soil Optimum Dry Density, pcf 126.0
 Soil Optimum Moisture Content, % 8.9

SPECIMEN SWELL TEST INFORMATION:

Initial Swell Reading: 0.8310
 Final Swell Reading: 0.8320
 Sample Vertical Swell, % 0.0222

CBR Test Data:

Stress Contact Area, in² 3.02
 Sample Surcharge Load, lbs. 12.5
 Soaking Period, hr's. 96

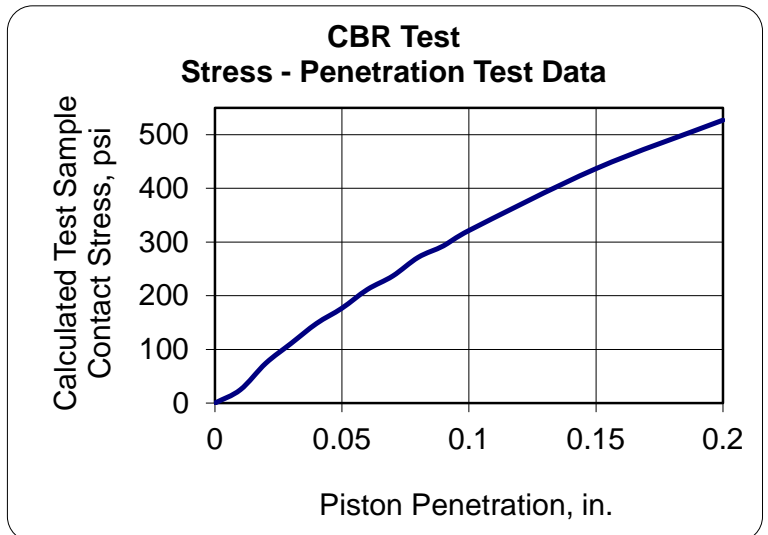
	<u>Before Soaking</u>	<u>After Soaking</u>
Dry Density, pcf	118.4	115.5
Moisture, %	9.5	12.3
% Compaction	94.0	91.7

UNCORRECTED CALCULATED SOAKED CBR VALUES:

CBR @ 0.1" Penetration	32
CBR @ 0.2" Penetration	35

Stress Versus Penetration Data

PEN.	Load, lbs.	Stress, psi
0	0	0
0.01	75	25
0.02	224	74
0.03	336	111
0.04	448	148
0.05	534	177
0.06	639	212
0.07	715	237
0.08	820	272
0.09	885	293
0.1	971	322
0.15	1319	437
0.2	1592	527



SOIL CALIFORNIA BEARING RATIO (CBR) TEST RESULTS ASTM D - 1883

PROJECT NO.: AGQC22-009-01
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Estrella Skatepark Improvements Project
Estrella Park - 14590 Greg Drive
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 1 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-1 **SAMPLE DATE:** 3/23/2022
SOIL SAMPLE DEPTH: 1'-5'
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material / SAND, Fine Grained, Silty, Reddish Brown to Multicolored.

TEST SPECIMEN INFORMATION:

Soil Sample Height, in. 4-1/2"
Soil Sample Approx. Diameter, in. 6"

Soil Optimum Dry Density, pcf 116.0
Soil Optimum Moisture Content, % 10.3

CBR Test Data:

Stress Contact Area, in² 3.02
Sample Surcharge Load, lbs. 12.5
Soaking Period, hr's. 96

SPECIMEN SWELL TEST INFORMATION:

Initial Swell Reading: 0.6150
Final Swell Reading: 0.6150
Sample Vertical Swell, % 0.0

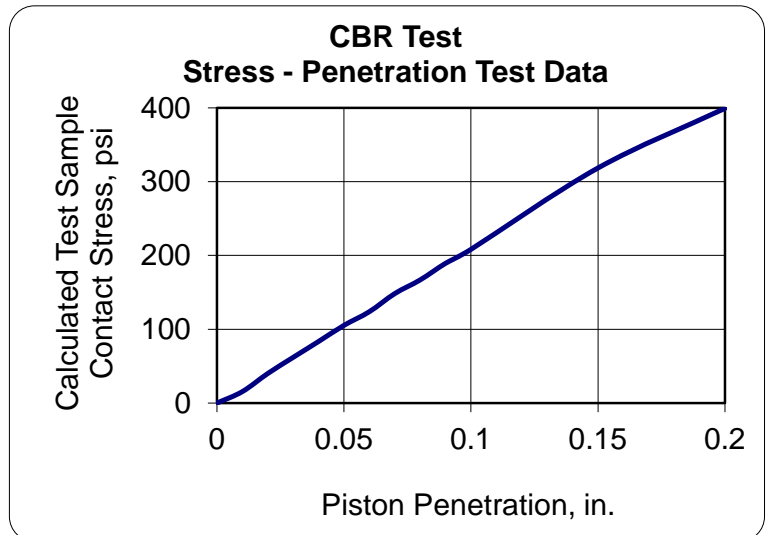
	<u>Before Soaking</u>	<u>After Soaking</u>
Dry Density, pcf	109.1	104.9
Moisture, %	10.2	14.6
% Compaction	94.1	90.4

UNCORRECTED CALCULATED SOAKED CBR VALUES:

CBR @ 0.1" Penetration	21
CBR @ 0.2" Penetration	27

Stress Versus Penetration Data

PEN.	Load, lbs.	Stress, psi
0	0	0
0.01	47	16
0.02	121	40
0.03	187	62
0.04	252	83
0.05	318	105
0.06	374	124
0.07	448	148
0.08	504	167
0.09	572	189
0.1	629	208
0.15	962	319
0.2	1206	399



SOIL CALIFORNIA BEARING RATIO (CBR) TEST RESULTS ASTM D - 1883

PROJECT NO.: AGQC22-009-02
PROJECT NAME: General Geotechnical Subsurface Soils Evaluation
The County of EP- Gallegos Skatepark Improvements Project
7631 Bosque Road
El Paso, El Paso County, Texas

SAMPLE INFORMATION

PROCTOR NO.: 3 **SAMPLED BY:** PG
SOIL SAMPLE LOCATION: B-5 **SAMPLE DATE:** 3/28/2022
SOIL SAMPLE DEPTH: 1'-5'
SOIL TYPE/DESCRIPTION: Composite Subsurface Soil Material / SAND, Fine to Medium Grained, Poorly Graded, Tannish Brown to Multicolored.

TEST SPECIMEN INFORMATION:

Soil Sample Height, in. 4-1/2"
Soil Sample Approx. Diameter, in. 6"

SPECIMEN SWELL TEST INFORMATION:

Initial Swell Reading: 0.5820
Final Swell Reading: 0.5820
Sample Vertical Swell, % 0.0

Soil Optimum Dry Density, pcf 104.1
Soil Optimum Moisture Content, % 13.6

	<u>Before Soaking</u>	<u>After Soaking</u>
Dry Density, pcf	97.9	92.0
Moisture, %	13.4	20.7
% Compaction	94.0	88.4

CBR Test Data:

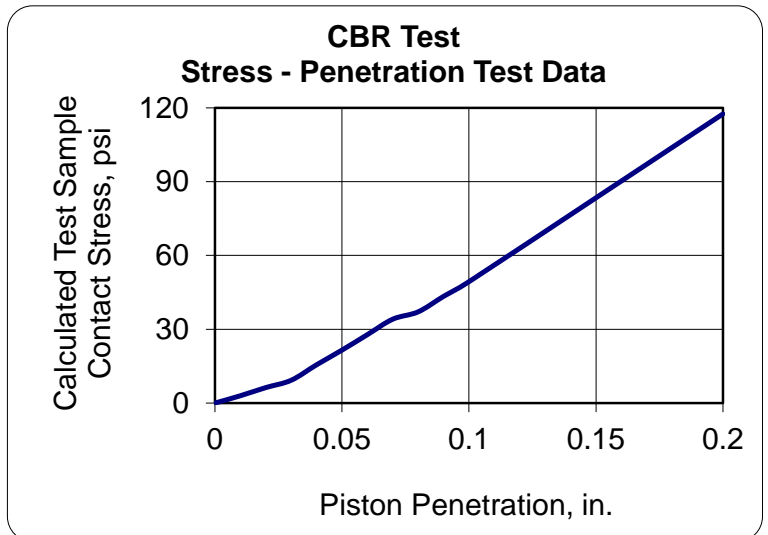
Stress Contact Area, in² 3.02
Sample Surcharge Load, lbs. 12.5
Soaking Period, hr's. 96

UNCORRECTED CALCULATED SOAKED CBR VALUES:

CBR @ 0.1" Penetration	5
CBR @ 0.2" Penetration	8

Stress Versus Penetration Data

PEN.	Load, lbs.	Stress, psi
0	0	0
0.01	9	3
0.02	19	6
0.03	28	9
0.04	47	16
0.05	65	22
0.06	84	28
0.07	103	34
0.08	112	37
0.09	131	43
0.1	149	49
0.15	252	83
0.2	355	118





DYNAMIC CONE PENETROMETER TEST RESULTS

4606 Titanic Ave.
El Paso, Texas 79904
Ph. (915) 771-7766
Fax No. (915) 771-7786

CQC PROJECT NO.: AGCQC22-009

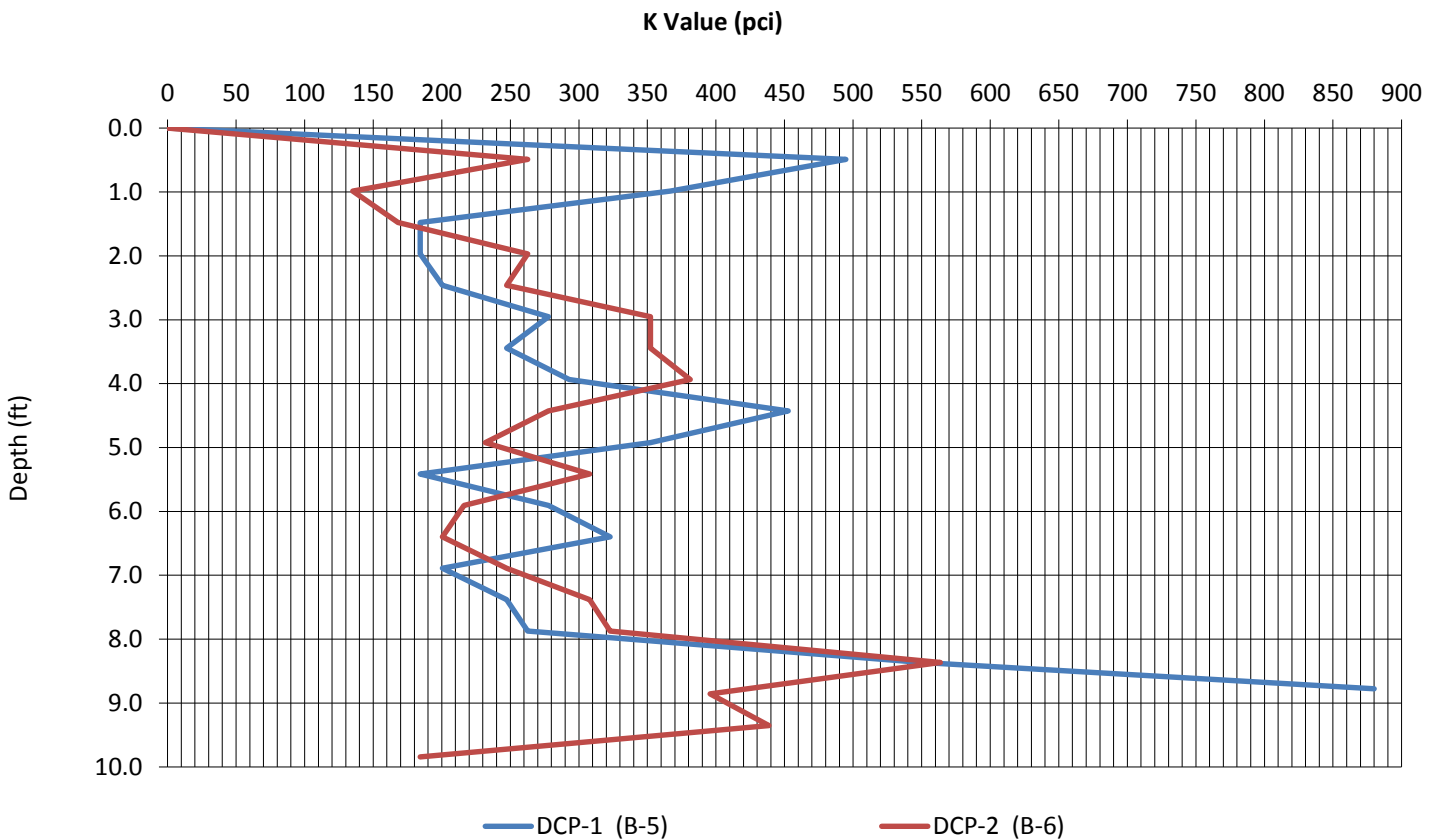
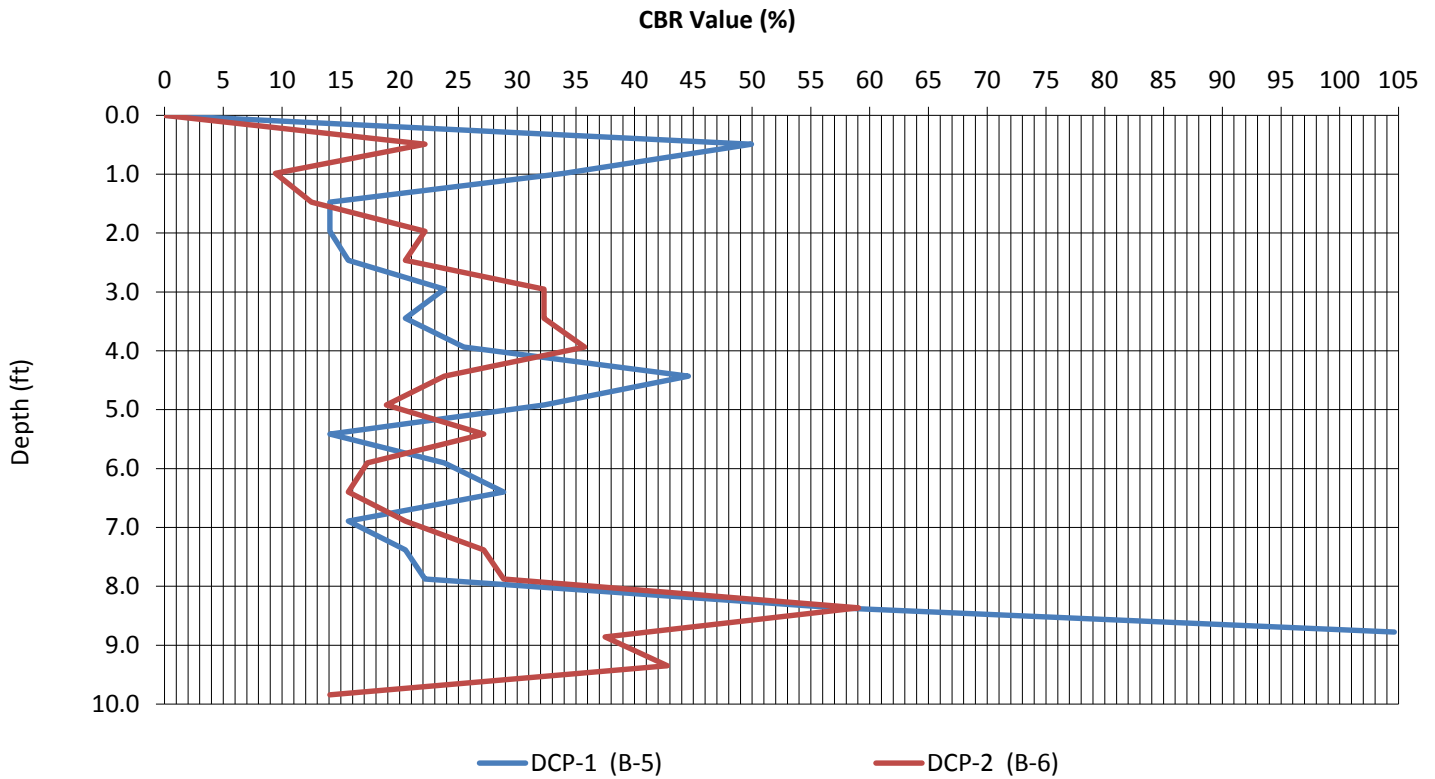
TEST DATE: 3/28/2022

PROJECT NAME: County of EP New Skatepark Improvements Project
Gallegos Park - 7631 Bosque Road
Canutillo, El Paso County, Texas

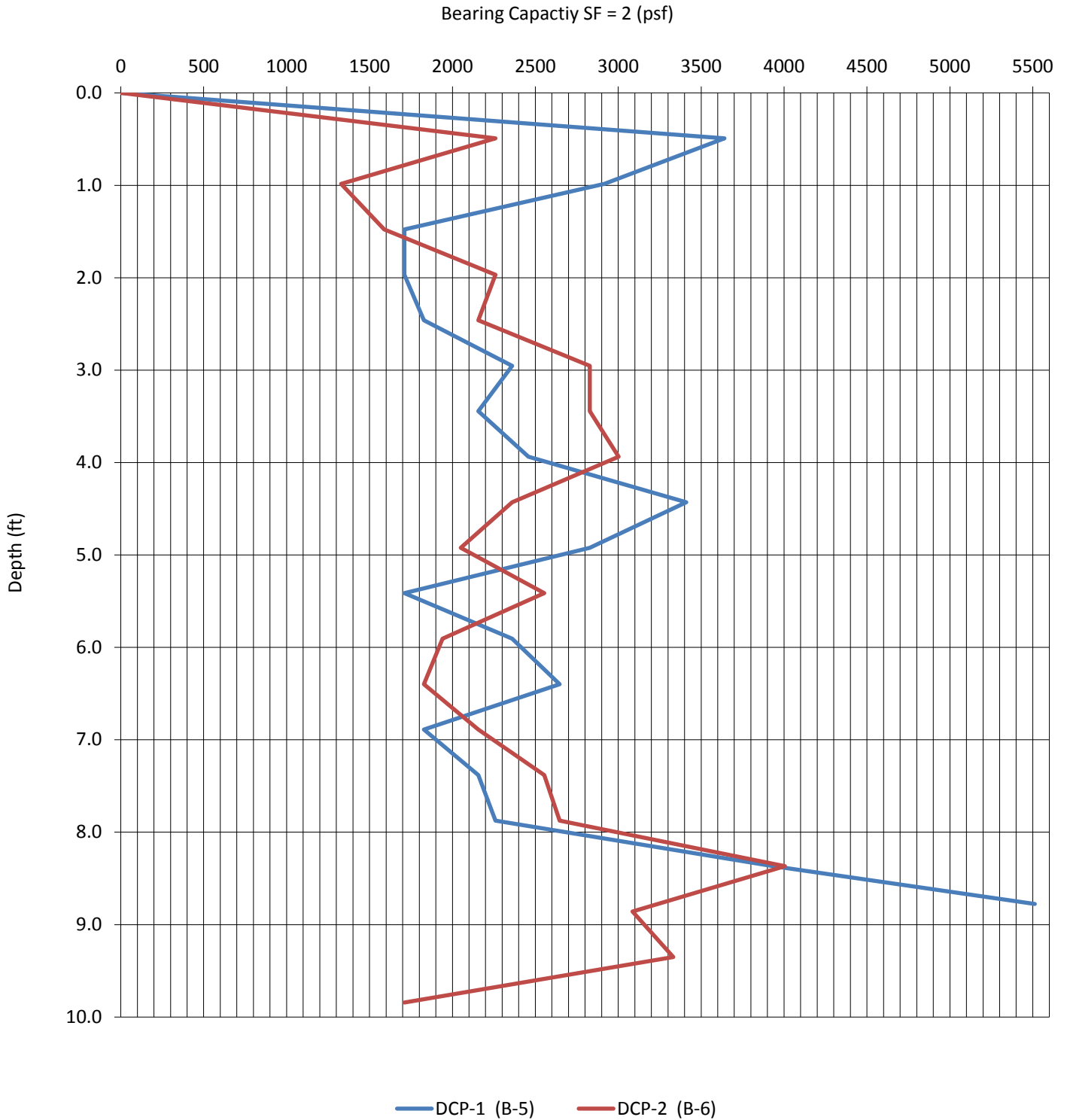
CLIENT: MNK Architects

REMARK: Testing commenced in the encountered soil beneath the existing concrete surface elevation.

DCP No.	No. of Blows	Penetration (mm)			Hammer Blow Factor	DCP Index	CBR (%)	K (pci)	Bearing Capacity		Depth	
		Accumulative	per Set	per Blow					(psf)	(psf) FS=2	(in)	(ft)
DCP-1 (B-5)	0	0	--	--	--	--	0	0	0	0	0	0.0
	31	150	150	4.8	1	4.8	50	495	7,282	3,641	5.9	0.5
	22	300	150	6.8	1	6.8	34	367	5,832	2,916	11.8	1.0
	10	450	150	15.0	1	15.0	14	184	3,421	1,711	17.7	1.5
	10	600	150	15.0	1	15.0	14	184	3,421	1,711	23.6	2.0
	11	750	150	13.6	1	13.6	16	200	3,656	1,828	29.5	2.5
	16	900	150	9.4	1	9.4	24	278	4,721	2,360	35.4	3.0
	14	1050	150	10.7	1	10.7	21	247	4,314	2,157	41.3	3.4
	17	1200	150	8.8	1	8.8	25	293	4,917	2,458	47.2	3.9
	28	1350	150	5.4	1	5.4	45	453	6,821	3,411	53.1	4.4
	21	1500	150	7.1	1	7.1	32	352	5,656	2,828	59.1	4.9
	10	1650	150	15.0	1	15.0	14	184	3,421	1,711	65.0	5.4
	16	1800	150	9.4	1	9.4	24	278	4,721	2,360	70.9	5.9
	19	1950	150	7.9	1	7.9	29	323	5,294	2,647	76.8	6.4
	11	2100	150	13.6	1	13.6	16	200	3,656	1,828	82.7	6.9
	14	2250	150	10.7	1	10.7	21	247	4,314	2,157	88.6	7.4
	15	2400	150	10.0	1	10.0	22	263	4,520	2,260	94.5	7.9
35	2550	150	4.3	1	4.3	57	550	7,868	3,934	100.4	8.4	
50	2675	125	2.5	1	2.5	105	880	11,025	5,512	105.3	8.8	
DCP-2 (B-6)	0	0	--	--	--	--	0	0	0	0	0	0.0
	15	150	150	10.0	1	10.0	22	263	4,520	2,260	5.9	0.5
	7	300	150	21.4	1	21.4	9	135	2,656	1,328	11.8	1.0
	9	450	150	16.7	1	16.7	13	168	3,177	1,589	17.7	1.5
	15	600	150	10.0	1	10.0	22	263	4,520	2,260	23.6	2.0
	14	750	150	10.7	1	10.7	21	247	4,314	2,157	29.5	2.5
	21	900	150	7.1	1	7.1	32	352	5,656	2,828	35.4	3.0
	21	1050	150	7.1	1	7.1	32	352	5,656	2,828	41.3	3.4
	23	1200	150	6.5	1	6.5	36	381	6,004	3,002	47.2	3.9
	16	1350	150	9.4	1	9.4	24	278	4,721	2,360	53.1	4.4
	13	1500	150	11.5	1	11.5	19	232	4,101	2,051	59.1	4.9
	18	1650	150	8.3	1	8.3	27	308	5,108	2,554	65.0	5.4
	12	1800	150	12.5	1	12.5	17	216	3,882	1,941	70.9	5.9
	11	1950	150	13.6	1	13.6	16	200	3,656	1,828	76.8	6.4
	14	2100	150	10.7	1	10.7	21	247	4,314	2,157	82.7	6.9
	18	2250	150	8.3	1	8.3	27	308	5,108	2,554	88.6	7.4
	19	2400	150	7.9	1	7.9	29	323	5,294	2,647	94.5	7.9
36	2550	150	4.2	1	4.2	59	564	8,010	4,005	100.4	8.4	
24	2700	150	6.3	1	6.3	37	396	6,173	3,086	106.3	8.9	
27	2850	150	5.6	1	5.6	43	439	6,663	3,332	112.2	9.4	
10	3000	150	15.0	1	15.0	14	184	3,421	1,711	118.1	9.8	



DYNAMIC CONE PENETROMETER TEST RESULTS





Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

APPENDIX B

GEOTECHNICAL REPORT TECHNICAL REFERENCE INFORMATION

DEFINITION OF DESCRIPTIVE TERMS

DENSITY OF GRANULAR SOILS

SPT N Value	Relative Density
< 4	Very Loose
4 – 10	Loose
11 – 30	Med. Dense
31 – 50	Dense
50 – 80	Very Dense
> 80	Hard

CONSISTENCY OF COHESIVE SOILS

SPT N Value	Consistency
< 2	Very Soft
2 – 4	Soft
5 – 8	Medium Stiff
9 – 15	Stiff
16 – 50	Very Stiff
> 80	Very Hard

DEGREE OF PLASTICITY

Nonplastic –	Has no cohesion; will not roll into a thread.
Trace of Plasticity –	Barely hold its shape when rolled into a thread.
Low Plasticity –	Has sufficient cohesion to form a thread but will quickly rupture when deformed.
Med. Plasticity –	Has considerable cohesion. Can be molded into a thread and will withstand considerable deformation without rupture.
High Plasticity –	Can be kneaded like dough without trace of rupture.

MOISTURE DESCRIPTIONS

	<u>GRANULAR SOILS</u>	<u>COHESIVE SOILS</u>
Dry	No Apparent Moisture	No Apparent Moisture
Slightly Moist	< Than 3% by Weight	< Less Than Plastic Limit
Moist	3% to 9% by Weight	Approximately Plastic Limit
Very Moist	> 9% by Weight	> than PL but < than LL
Wet	Submerged or Saturated	Submerged or Saturated



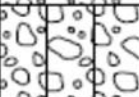
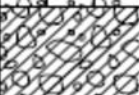






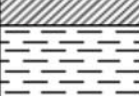
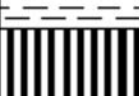



PLASTICITY

Cohesion	Plasticity	Degree of
<u>TSF</u>	<u>Index</u>	<u>Plasticity</u>
0-0.125	0-5	None
0.125-0.25	5-10	Low
0.25-0.5	10-20	Moderate
0.5-1.0	20-40	Plastic
1.0-2.0	> 40	Highly Plastic
> 2.0		

ABBREVIATIONS

V. – Very	Fl. – Fairly	Sl. – Slightly	Med. – Medium
Tr. – Trace	< - Less Than	> - Greater Than	PL – Plastic Limit
Mod. – Moderately			

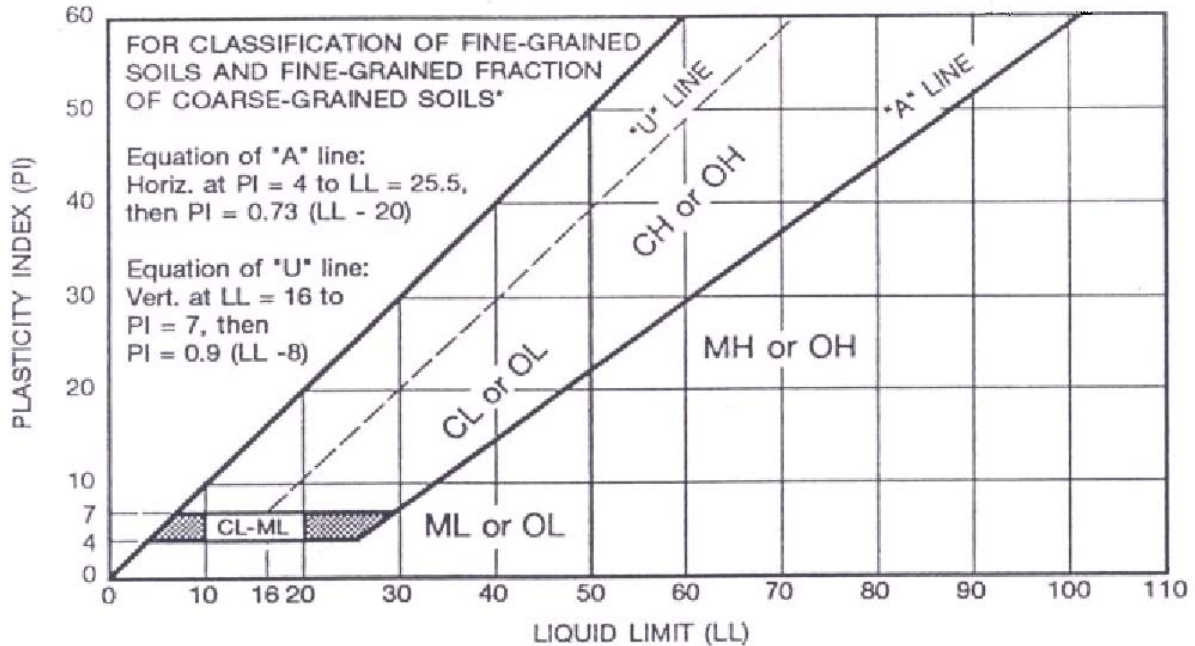
SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES	
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
					SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES	
					SC	CLAYEY SANDS, SAND - CLAY MIXTURES
	FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
						CL
					OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
SILTS AND CLAYS		LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
					CH	INORGANIC CLAYS OF HIGH PLASTICITY
					OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

GEOTECHNICAL REPORT SOIL CLASSIFICATION REFERENCE INFORMATION

Cohesive Soil Classification Chart



U.S. STANDARD SIEVE

	12"	3"	¾"	4	10	40	200		
BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY	
		COARSE	FINE	COARSE	MEDIUM	FINE			
152	76.2	19.1	4.76	2.00	0.420	0.074	0.002		

SOIL GRAIN SIZE IN MILLIMETERS

Laboratory Test Methods:

Moisture Content Tests:

Moisture Contents are determined from representative portions of a soil sample. The samples initial weight is recorded and it is then dried to a constant weight. From this data the moisture content is calculated.

Atterberg Limit Tests:

Liquid Limit (LL), Plastic Limit (PL) and Shrinkage Limit (SL) tests are performed to aid in the classification of soils and to determine the plasticity and volume change characteristics of the materials. The Liquid Limit is the minimum moisture content at which a soil will flow as a heavy viscous fluid. The Plastic Limit is the minimum moisture content at which the soil behaves as a plastic material. The Shrinkage Limit is the moisture content below which no further volume change will take place with continued drying. The Plasticity Index (PI) is the numeric difference between the Liquid Limit and the Plastic Limit and indicates the range of moisture content over which a soil remains plastic.

Grain Size Distribution Test (Particle Size Analysis, Sieve Analysis):

The distribution of soils finer than the No. 200 sieve is determined by passing a representative soil sample through a standard set of nested sieves. The weight of material retained on each sieve is determined and the percentage passing (or retained) is calculated. For determination of the percentage of material finer than the No. 200 sieve, the specimen is first washed through the sieve. The distribution of the materials finer than the No. 200 is determined by use of the different size particles while suspended in water.



Construction Materials Testing
Geotechnical Engineering
Environmental Site Assessments
Forensic Analysis/Testing

APPENDIX C

CLIENT: MNK Architects

PROJECT NAME: **County of El Paso- New Skate parks Improvement Project**
Estrella Park, Agua Dulce Park, and Gallegos Park
El Paso, El Paso County, Texas



PHOTO NO. 1 General southwest view of site and existing conditions at Estrella Park.



PHOTO NO. 2: General east view of site and existing conditions at Estrella Park.



PHOTO NO. 3: General view of our coring operation at vertical boring B-1.



PHOTO NO. 4: General view of our subsurface soil drilling operations at vertical boring B-1. .

CLIENT: MNK Architects

PROJECT NAME: **County of El Paso- New Skate parks Improvement Project**
Estrella Park, Agua Dulce Park, and Gallegos Park
El Paso, El Paso County, Texas



PHOTO NO. 5: General south view of site and existing conditions at Agua Dulce Park.



PHOTO NO. 6: General north view of site and existing conditions at Agua Dulce Park.



PHOTO NO. 7: General view of our coring operation at vertical boring B-3.



PHOTO NO. 8: General view of our subsurface soil drilling operations at vertical boring B-4.

CLIENT: MNK Architects

PROJECT NAME: **County of El Paso- New Skate parks Improvement Project**
Estrella Park, Agua Dulce Park, and Gallegos Park
El Paso, El Paso County, Texas



PHOTO NO. 9: General northwest view of site and existing conditions at Gallegos Park.



PHOTO NO. 10: General southeast view of site and existing conditions at Gallegos Park.



PHOTO NO. 11: General view of our coring operation at vertical boring B-5.



PHOTO NO. 12: General view of our subsurface soil drilling operations at vertical boring B-6.



**construction quality control
testing and engineering**

CQC TESTING AND ENGINEERING, L.L.C.
TBPE FIRM REGISTRATION NO. F-10632
4606 TITANIC AVE.
EL PASO, TEXAS 79904
PH.: (915) 771-7766
FX.: (915) 771-7786