THINK LEARN BE MORE TOGETHER

POCATELLO/CHUBBUCK SCHOOL DISTRICT 25

LEARNING TODAY FOR THE POSSIBILITIES OF TOMORROW

Administration Office
3115 Pole Line Road
Pocatello, Idaho

INVITATION TO BID

2022 Baseball Field Renovation
Highland High School

Project #1: Synthetic Turf

Project #2: Fencing

Project #3: ADA Sidewalk

Project #4: Backstop and other misc. components

BIDS WITH CONDITIONS WILL NOT BE ACCEPTED

BID OPENING

August 9, 2022
10:00 AM

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POCATELLO/CHUBBUCK SCHOOL DISTRICT 25

LEARNING TODAY FOR THE POSSIBILITIES OF TOMORROW

Administration Office
3115 Pole Line Road
Pocatello, Idaho

INVITATION TO BID

Sealed bids will be received by the School District No. 25 Business Office, Bannock County, Idaho at 3115 Pole Line Road, Pocatello, Idaho, 83201 until **10:00 AM on August 9, 2022** for the following:

2022 Baseball Field Renovation
Highland High School

A **mandatory** pre-bid conference and walk-thru to review the projects will be held at Highland High School, 1800 Bench Road, Idaho, on July 27, 2022 at 9:00 AM.

Specifications and additional details, (including bid forms), may be secured at 3115 Pole Line Road, Pocatello, Idaho, 83201 and on the District website at: https://www.sd25.us/Content/bo-bidding

All bids must be on the forms furnished, all blank spaces filled in, and signed with the name and address of the Bidder. No unqualified bids will be read.

Each bid shall be accompanied by a certified check, cashier's check, or a bidder's bond, (executed by a qualified surety company with the power to do business in the State of Idaho) in the sum of not less than five percent (5%) of the total bid, made payable to School District No. 25, Bannock County, Pocatello, Idaho. This surety shall be forfeited by the bidder in the event of failure to enter into a contract. Personal or company checks will not be accepted. Compliance with Idaho Public Works Law is required.

The Board of Trustees reserves the right to reject any or all bids or to waive any informalities, or to accept the bid or bids deemed best for School District No. 25, Bannock County, Pocatello, Idaho.

Renae Johnson, Clerk
School District No. 25

Publish dates:

July 13, 2022
July 20, 2022

INSTRUCTIONS TO BIDDERS

BIDS:

Sealed "BIDS" will be received on or before the time and date set forth under "INVITATION TO BID".

The owner reserves the right to accept or reject any part or all bids.

Bidders submitting a "Bid" on this work will be required to figure and furnish everything as called for by these specifications and the requirements of the "Bid" sheet.

All bids shall be in a sealed envelope addressed: Business Office, 3115 Pole Line Road, Pocatello, Idaho, 83201. The following shall be written on the exterior of the envelope:

"BIDS FOR 2022 BASEBALL FIELD RENOVATION
TO BE OPENED ON AUGUST 9, 2022 AT 10:00 AM"

Bids not delivered by contractors at time of bid opening must be received in mail no later than 4:00 PM on August 8, 2022, the day before the bid opening.

EXAMINATION OF THE SITE AND DOCUMENTS:

Refer questions to Jonathan Balls, Director of Business Operations, (208) 233-3212 or Alan Spidell, School Plant Coordinator, (208) 233-2604. Contact with other district staff, Board of Trustees, or Administration, will be by written permission only.

A **mandatory** pre-bid conference and walk-thru to review projects will be held at 9:00 AM on July 27, 2022 at the Highland High School, 1800 Bench Rd, Pocatello, Idaho.

Before submitting a proposal, the bidder shall:

1. Carefully examine the specifications.
2. Visit the worksite.
3. Be fully informed of existing conditions and limitations.
4. Include in the bid, sums sufficient to cover all items required by the contract, and shall rely entirely upon his own examinations in making his proposal.

INTERPRETATIONS:

Should a bidder find discrepancies in or omissions from the specifications, or be in doubt as to their meaning, he should at once notify the Owner, who will send written instructions or addenda to all bidders. The owner will not be responsible for oral interpretations. Questions received less than 48 hours before time for bid opening cannot be answered. All addenda issued during the time of bidding will be incorporated in the contract.

BID GUARANTEE:

As a guarantee that, if awarded the contract, the bidder will execute same and furnish bond. Each bid will be accompanied by a Certified check, Cashier's Check, or Bid Bond for not less than five percent (5%) of the base bid payable to the Owner. NO PERSONAL OR COMPANY CHECKS WILL BE ACCEPTED.

OBJECTIONS:

Written objections to specifications or bid procedures must be received by the clerk, secretary, or other authorized official of the District at least one (1) business day before the date and time upon which bids are scheduled to be received, per Idaho Code Section 68-2806(c).

LAWS AND ORDINANCES:

The contractor hereby binds himself to protect and save harmless the owner from all damages arising from the violation of any and all Federal, State, County, City, and all other laws, rules, regulations, in the performance of the terms of the contract.

HOLD HARMLESS AGREEMENTS:

The District expects your work to conform to professional standards. The contractor is expected to hold the District harmless for all damages or claims arising out of the work performed by the contractor. The District will not agree to hold the contractor harmless for damages or claims.

EQUIPMENT:

The contractor shall provide all labor, materials, tools, and equipment, etc. necessary for the complete and substantial execution of everything described in the specifications.

STORAGE OF MATERIALS:

The contractor shall make arrangement and coordinate with the Maintenance Department for storage of materials. Any damages of life or property caused by storage of materials on the above indicated place shall be paid for by the contractor, who shall hold the owner harmless for any damages concerning the same.

SUPERVISION:

The supervision of this work will be done by School District #25 Maintenance Department.

EVIDENCE OF QUALIFICATIONS:

Upon request of the owner, a bidder whose bid is under consideration for award of the contract shall submit, promptly, satisfactory evidence of his financial resources, his experiences, and the organization and equipment he has available for performance of the contract.

EMPLOYMENT OF RESIDENTS OF IDAHO:

In compliance with Idaho Laws, Section 44-1001 and 44-1002 Idaho Code, the contractor must employ ninety-five percent 95% bona fide Idaho residents as employees on any such contracts except where under such contracts fifty (50) or less persons are employed the contractor may employ ten percent (10%) nonresidents, provided however, in all cases such employers must give preference to the employment of bona fide Idaho residents in the performance of such work.

CONTRACTOR'S LICENSE:

In compliance with Idaho Laws, the contractor must be registered with the State of Idaho, and hold the required *Public Works Contractor's License* before obtaining the contract documents and before submitting a bid for this work.

INSURANCE:

All contractors who provide goods or services to the District are required to provide the District with certificates of insurance for General Liability, Auto Liability, Workers Compensation, and Professional Liability if applicable.

The General Liability and/or Professional Liability certificate must name the District as an additional insured under the contractor's policy. Certificates are to be provided to the District prior to any work commencing on District property. This would include the placement of any equipment or materials at the work site

Minimum Insurance Limits

General Liability	$1,000,000 per occurrence $1,000,000 products and completed operations $1,000,000 annual aggregate
Auto Liability	$1,000,000 per occurrence
Worker' Compensation	Statutory
Professional Liability	$1,000,000 per occurrence $1,000,000 annual aggregate

OWNER/CONTRACTOR AGREEMENT:

The Agreement for the work will be written on a District provided Form of Agreement between Owner and Contractor where the basis of payment is a stipulated sum.

PERFORMANCE BOND:

The successful bidder will be required to furnish a 100% performance bond when entering into the contract work, per Idaho Code Section 54-1926, "....conditioned upon the faithful performance of the contract in accordance with the plans, specifications and conditions thereof."

PAYMENT BOND:

The successful bidder will be required to furnish a 100% payment bond when entering into the contract work, per Idaho Code Section 54-1926, "solely for the protection of persons supplying labor or materials, or renting, leasing, or otherwise supplying equipment to the contractor or his subcontractors in the prosecution of the work provided for in such contract."

5% RETAINAGE:

The Owner will retain 5% of the Contractor's earned sum to ensure faithful performance. This 5% will be released to the Contractor upon receipt of approval from State of Idaho.

LIQUIDATED DAMAGES:

Contractor shall be required to pay Owner as liquidated damages the sum of $500 for each day, after the scheduled completion date, that the project is unfinished.

CHANGES IN THE WORK:

The owner, without invalidating the contract, may order extra work or make changes by altering, adding to, or deducting from the work; the contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract, except that any claim for extension of the time caused thereby shall be adjusted at the time of ordering such change.

The total allowance for combined overhead and profit for changes shall be included in the total cost to the owner and shall be based on the following schedule:

a) For the Contractor, 10% over cost;
b) For the Sub-Contractor, 15% over cost to be divided 10% for Sub-Contractor and 5% for Contractor; and
c) For any Sub-Subcontractor, 15% over cost to be divided 5% for Contractor, 5% for Sub-Contractor, and 5% for Sub-Subcontractor.

FORM WH5:

Per Idaho Code Section 54-1904A, within thirty (30) days of award of bid, the contractor shall file with the State Tax Commission a form WH-5, Public Works Contract Report.

INSPECTION OF WORK:

The representative of the owner shall at all times have access to the work wherever it is in preparation or progress and the contractor shall provide facilities for such access and for inspection.

WARRANTY:

Manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of one year from date of delivery.

Warranty shall cover repair or replacement of such parts determined defective upon inspection. Warranty does not cover any product or part of a product subject to accident, negligence, alteration, abuse or misuse. Warranty does not cover any accessories or parts not supplied by the manufacturer.

Warranty shall not cover any labor expended or materials used to repair any equipment without manufacturer's prior written authorization.

CLEAN UP:

The contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, and at the completion of the work he shall remove all his rubbish from and about the building and all tools and surplus materials and shall leave his work clean. In case of dispute, the owner shall remove the rubbish and surplus materials and charge the cost to the contractor.

IDAHO EMPLOYER ALCOHOL AND DRUG-FREE WORKPLACE ACT: Include with your bid sheet a contractor's affidavit pursuant to Idaho Code Section 72-1717.

BIDDER CERTIFICATION FORM: All bidders must complete and submit the Bidder Certification Form included with this bid request.

PAYMENT:

Prices must remain firm as quoted by supplier until quantity awarded is received. Application for payment dated on or before the 25th of the month, shall be paid by the 15th of the following month. Application for payment dated after the 25th of the month, shall be paid within 30 days.

BID:

The following universal specifications are being used as a guideline. Alternate bids for equal equipment will be considered upon District approval two weeks prior to the bid due date. Substitutions or major alternations must be indicated upon the proposal sheet at the time of the bid submission. Bids must be based upon conditions at the site and these specifications. Bids shall be submitted in accordance with the requirements shown on the bid form.

BID EVALUATION CRITERIA:

Contractor selection on this project will be evaluated based on the following:

1) Price
2) Contractor reputation for quality of work with current customers or past performance with District 25. (please list all jobs/contracts greater than $10,000 performed in the past two years if contractor has not performed one for the District in past 5 years)
3) Vendor ability to best match the listed criteria as specified.

DELIVERY AND START OF WORK:

The time frame for the baseball field renovation to be completed October 28, 2022 or mutually agreed upon with the owner and contractor at the beginning of the project.

PROJECT No. 1: Synthetic Turf

SCOPE OF WORK: See sections 02 41 00 DEMOLITION, 31 11 00 CLEARING AND GRUBBING, and 32 52 00 SYNTHETIC TURF and any other applicable section(s) in the Specifications document entitled:
HIGHLAND HIGH SCHOOL
BASEBALL FIELD RENOVATION
SCHOOL DISTRICT #25
POCATELLO, IDAHO
PROJECT NO. 222011
Dated 06/29/2021

In addition, review the complete set of drawings with applicable notes.

Please provide the following three (3) BID Alternates:

1. **Synthetic Turf for brown dirt - home plate, baselines, and infield - plus black halo.**
2. **Synthetic Turf for above areas plus the green infield**
3. **Synthetic Turf for above areas plus the backstop / dugout halo area**

PROJECT No. 2: Fencing

SCOPE OF WORK: See sections 31 00 00 EARTHWORK, 32 31 13 CHAIN LINK FENCES AND GATES, and any other applicable section(s) in the Specifications document entitled:
HIGHLAND HIGH SCHOOL
BASEBALL FIELD RENOVATION
SCHOOL DISTRICT #25
POCATELLO, IDAHO
PROJECT NO. 222011
Dated 06/29/2021

In addition, review the complete set of drawings with applicable notes.

PROJECT No. 3: ADA Sidewalk

SCOPE OF WORK: See sections 31 00 00 EARTHWORK, 31 11 00 CLEARING AND GRUBBING, 32 13 13 CONCRETE FOR EXTERIOR IMPROVEMENTS, and any other applicable section(s) in the Specifications document entitled:
HIGHLAND HIGH SCHOOL
BASEBALL FIELD RENOVATION
SCHOOL DISTRICT #25
POCATELLO, IDAHO
PROJECT NO. 222011
Dated 06/29/2021

In addition, review the complete set of drawings with applicable notes.

PROJECT No. 4: Backstop and other miscellaneous components

SCOPE OF WORK: See sections 02 41 00 DEMOLITION, 04 22 00 CONCRETE MASONRY UNIT, 32 13 13 CONCRETE FOR EXTERIOR IMPROVEMENTS, 11 68 33 ATHLETIC FIELD EQUIPMENT, and any other applicable section(s) in the Specifications document entitled:
HIGHLAND HIGH SCHOOL
BASEBALL FIELD RENOVATION
SCHOOL DISTRICT #25
POCATELLO, IDAHO
PROJECT NO. 222011
Dated 06/29/2021

In addition, review the complete set of drawings with applicable notes.

BID SHEET
2022 Baseball Field Renovation
Highland High School

Board of Trustees
School District No. 25
3115 Pole Line Road
Pocatello, ID 83201

Date: _____

We, the undersigned, propose to furnish all labor, materials, tools, and equipment and complete all work called for by these specifications in connection with 2022 Baseball Field Renovation, under the supervision of the School Plant Coordinator and the Director of Business Operations, for the sum of:

PROJECT	**AMOUNT**
No. 1 – Synthetic Turf	
Bid Alternate #1	$ _____
Bid Alternate #2	$ _____
Bid Alternate #3	$ _____
No. 2 – Fencing	$ _____
No. 3 – ADA Sidewalk	$ _____
No. 4 – Backstop and other Miscellaneous Components	$ _____

Work can begin August 17th and must be completed by October 28, 2022.

The Board of Trustees reserves the right to reject any/or all bids or to waive any informalities, or to accept the bid or bids deemed best for School District No. 25, Bannock County, Pocatello, Idaho.

- Attached, if applicable, is a listing of subcontractors names and addresses for this project.
- Attached is our Affidavit of Alcohol and Drug-Free Worksite, as pursuant to Idaho Code 72-1717.
- Attached is Bidder Certification Form.

_____	_____
Company Name	Authorized Signature / Date
_____	_____
Address	Title
_____	_____
City, State, Zip	Public Works License Number
_____	_____
Phone / Fax Number	Worker's Comp & Liability Insurance Exp. Date

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF _____

COUNTY OF _____

Pursuant to the Idaho Code, Section 72-1717, I, the undersigned, being duly sworn, depose and certify that named contractor is in compliance with the provisions of Idaho Code section 72-1717; that named contractor provides a drug-free workplace program that complies with the provisions of Idaho Code, title 72, chapter 17 and will maintain such program throughout the life of a state construction contract and that named contractor shall subcontract work only to subcontractors meeting the requirements of Idaho Code, section 72-1717(1)(a).

_____
Name of Contractor

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this _____ day of _____, 2022.

Commission expires:

_____
NOTARY PUBLIC, residing at

_____

_____

THINK LEARN BE MORE TOGETHER

POCATELLO/CHUBBUCK SCHOOL DISTRICT 25

LEARNING TODAY FOR THE POSSIBILITIES OF TOMORROW

BIDDER CERTIFICATION FORM

1. **Debarment and Suspension** – In submitting this bid proposal, we hereby certify that we have not been suspended or in any way excluded from Federal procurement actions by any Federal Agency. We fully understand that if information contrary to this certification subsequently becomes available, such evidence may be grounds for non-award or nullification of a bid contract.

2. **Anti-Collusion** – In submitting this bid proposal, we hereby certify this proposal was developed and prepared without any collusion with any competing bidder or District employee. The content of this proposal has not been disclosed to any competing or potentially competing bidder prior to the proposal due date and time. Furthermore, no action to persuade any person, partnership or corporation to submit or withhold a bid has been made.

3. **Anti-Lobbying** – In submitting this bid proposal, we hereby certify that to the best of our knowledge and belief, no appropriated Federal funds have been paid or will be paid by or on behalf of person associated with this proposal to any person for influencing or attempting to influence and officer or employee of any agency, a member of Congress, an office or employee of Congress or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan or cooperative agreement.

4. **National Sexual Offender Registry** – In submitting this bid proposal, you certify to the District that your company will prohibit any persons in your employ who are registered or required to register under the Idaho Sex Offender Registration Act from participation in company business with the District if such participation would require them to be present on school property. You certify further that you have cross checked such employees against the National Sex Offender Registry found at the following web link: http://www.nsopr.gov/

Signed: _____ Date: _____

Name & Title: _____

Company: _____ Phone: _____

Address: _____

City/State/Zip: _____

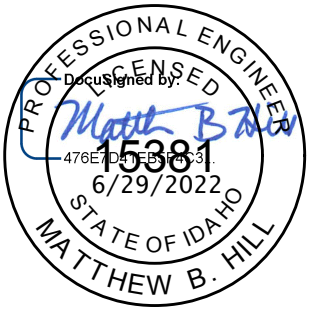
Specifications

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SCHOOL DISTRICT #25

POCATELLO, IDAHO

PROJECT NO. 222011



PREPARED BY:

KELLER ASSOCIATES

305 N 3rd Ave Suite A
Pocatello, ID 83201
(208) 238-2146

PREPARED FOR:

POCATELLO/CHUBBUCK SCHOOL DISTRICT 25

AND

HIGHLAND HIGH SCHOOL

3115 Poleline Road
Pocatello, ID 83201
(208) 232-3563

TABLE OF CONTENTS

VOLUME 1

TECHNICAL SPECIFICATIONS

DRAWINGS

SECTION 02 41 00 – SITE DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTIONS

A. Work under this Section includes providing selective demolition of part of the existing facility shown on the drawing and as specified herein.

1.2 CONDITION OF STRUCTURES

A. Owner assumes no responsibility for actual conditions of items or structures to be demolished. Conditions existing at time of commencement of contract will be the responsibility of the Contractor.

1.3 PROTECTION OF FACILITIES

A. Protect from damage existing finish work that is to remain in place that becomes exposed during demolition operations.

B. Protect adjacent areas with suitable coverings when necessary to prevent surface damage, including protecting existing concrete and asphalt surfaces from concrete staining.

C. Remove protections at completion of work.

1.4 ENVIRONMENTAL CONTROLS

A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

1.5 PERMITS

A. Obtain any permits as required by local and state codes.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions of surrounding area that could be misconstrued as damage resulting from selective demolition work.

3.2 PREPARATION

A. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of adjacent facilities to remain.

B. Cease operations immediately if safety of structure or existing facility appears to be endangered. Take precautions to support structure/facilities until determination is made for continuing operations.

3.3 DEMOLITION

A. Demolish asphalt paving only in areas shown on the drawings to be removed. However, the exact location may be adjusted in the field if required to avoid existing obstacles.

1. The line to be cut shall be marked on the surface along a string-line or straight edge with a paint mark that will not wash away from the action of the saw's cooling water. All cutting lines shall be marked along straight line prior to cutting.

2. Furnish and operate a power drive, self-propelled wheel mounted pavement sawing machine. The saw blade shall be either a wet cutting or dry cutting type. The depth of the saw shall be controlled by graduated positions set on the machine.

3. Asphalt paving shall be cut by saw cutting to full slab depth with one pass of the saw following exactly along the marked cutting line.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubble and other materials resulting from demolition work. Haul all materials from demolition to a disposal site obtained by the Contractor.

3.5 CLEANUP AND REPAIR

A. Upon completion of demolition work, remove tools, equipment, and demolished materials from site.

3.6 REPAIR

A. Repair demolition performed in excess of that required. Return structures and surfaces to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION 02 41 00

SECTION 04 22 00 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install concrete masonry unit as shown on the Drawings and as specified herein.

1.2 REFERENCE STANDARDS

A. ASTM A153 – Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

B. ASTM A307 – Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength

C. ASTM A563 – Specification for Carbon and Alloy Steel Nuts

D. ASTM A615 – Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

E. ASTM A615 – Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

F. ASTM A666 – Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

G. ASTM A1064 – Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

H. ASTM C5 – Specification for Quicklime for Structural Purposes

I. ASTM C90 – Specification for Loadbearing Concrete Masonry Units

J. ASTM C91 – Specification for Masonry Cement

K. ASTM C129 – Specification for Nonloadbearing Concrete Masonry Units

L. ASTM C140 – Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units

M. ASTM C144 – Specification for Aggregate for Masonry Mortar

N. ASTM C150 – Specification for Portland Cement

O. ASTM C207 – Specification for Hydrated Lime for Masonry Purposes

P. ASTM C216 – Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)

Q. ASTM C270 – Specification for Mortar for Unit Masonry

R. ASTM C331 – Specification for Lightweight Aggregates for Concrete Masonry Units

S. ASTM C404 – Specification for Aggregates for Masonry Grout

T. ASTM C426 – Test Method for Linear Drying Shrinkage of Concrete Masonry Units

U. ASTM C476 – Specification for Grout for Masonry

V. ASTM C780 – Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

W. ASTM C1019 – Standard Test Method for Sampling and Testing Grout for Masonry

X. ASTM C1072 – Standard Test Method for Measurement of Masonry Flexural Bond Strength

Y. ASTM C1314 – Standard Test Method for Compressive Strength of Masonry Prisms

Z. ASTM D1970 – Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

AA. ASTM E2178 – Standard Test Method for Air Permeance of Building Materials

BB. ASTM E514 – Standard Test Method for Water Penetration and Leakage Through Masonry

CC. BIA Technical Notes No. 7 – Water Penetration Resistance – Design and Detailing

DD. TMS 402/602 – Building Code Requirements and Specification for Masonry Structures

1.3 SUBMITTALS

A. General: All submittals shall be submitted in accordance with the requirements of the specification for Submittal Procedures.

B. Product Data: Provide data for each different masonry unit, fabricated wire reinforcement, mortar, accessories, and other manufactured product specified.

C. Shop Drawings: Provide shop drawings for reinforcing steel showing bar sizes, bends, and dimensions.

D. Information illustrating horizontal joint reinforcement.

E. Grout proportions.

F. Mortar proportions.

G. Material certificates for the following, signed by Manufacturer and Contractor, certifying that each material complies with requirements.

1. Each different cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.

2. Each material and grade indicated for reinforcing bars.

H. Samples:

1. One of each type of masonry to be used on Project

2. Mortar colors for color selection.

I. Informational Submittals:

1. Method of placing grout.

2. Certified field test results within 5 days of performing specified tests.

3. Certified test reports showing compliance with specified performance tests.

4. Statement of acknowledgement of Quality Assurance Plan in accordance with IBC Section 1705.4

5. Method and materials for removal of efflorescence.

J. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, NCMA, and BIA, except where exceeded by the requirements of the contract documents.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum 5 years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least 5 years of documented experience.

D. Mockups:

1. Layup sample panel for each type of masonry at Site.

2. Dimensions: Minimum 4 feet high by 4 feet long.

3. May be part of permanent construction.

4. Approved panels shall serve as basis of color, texture, bond, quality of finished joints, and for acceptance of permanent construction.

5. Demonstrate ability to keep insulation and grout isolated and in certain cells during any sequence of placement, and to demonstrate materials will be restricted to cells and bond beams intended to receive each material.

6. Construction shall show areas required to receive mortar, including webs on each side of each cell to prevent insulation from entering cells to receive grout or to prevent grout from entering cells to receive insulation.

7. Where bond beams are to be used, demonstrate proper placement of both insulation and grout to bond beam level, and proper placement of bond beam prior to placement of insulation and grout above bond beam level.

8. Demonstrate proper use of running bond.

E. Comply with the requirements and criteria of the NCMA, BIA, ASTM C90, ASTM C216, and ACI 530.1 for masonry finish and appearance, dimension tolerances, tolerances of construction, joint tolerances, and plumb tolerances.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Storage and Protection: Keep lime and other ingredients dry.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Temperature: Do not lay masonry when ambient temperature is below 40 degrees Fahrenheit on a rising temperature, or below 45 degrees Fahrenheit on a falling temperature, or when there is a probability of such conditions occurring within 48 hours, unless written approval of procedures for protection from freezing is obtained from Engineer.

B. Moisture Protection: Protect masonry construction from loss of moisture during curing period of 7 days when ambient air temperature is 90 degrees Fahrenheit or greater and when relative humidity is less than 50 percent.

PART 2 - MATERIALS

2.1 COMPRESSIVE STRENGTH OF MASONRY

A. Minimum 28 Day Compressive Field Strength (f'm) of completed assemblage: 2,000 psi.

2.2 MATERIALS

A. Concrete Block: ASTM C90 load bearing, kiln-dried, mediumweight block. Block face shall be split-faced, smooth face and fluted block as shown on the Drawings. Blocks shall be steam-cured, manufactured with lightweight aggregate conforming to ASTM C331. Scoria and tuff are not permitted for aggregate in the CMU block. Units to be tested per ASTM C426 with linear shrinkage of 0.065 percent or less. Protect from moisture at site. Moisture content of block when laid in final position shall not exceed 30 percent of total moisture absorption. Block sizes and widths as noted on Drawings. Color shall be as shown on the Drawings. Use gray smooth face block where color and block face are not shown on the Drawings.

B. Compressive Strength: 2,000 psi minimum, in accordance with ASTM C90, Table 2

C. Portland Cement: ASTM C150, Type I.

D. Masonry Cement: ASTM C91, Type II.

E. Mason's Sand: ASTM C144, except that not less than 4 percent or more than 10 percent shall pass the No. 100 sieve.

F. Pea Gravel: ASTM C404 graded with not more than 5 percent passing the 3/8-inch sieve.

G. Hydrated Lime: ASTM C207, Type S.

H. Lime Putty: ASTM C5

I. Water: Clean and potable, from domestic supply.

J. Grout Admixture: Grace Concrete Products, "Zyla 630", "Daravair AT60", "Daracem 55", and "Recover", or equals.

K. Steel Reinforcing: Deformed steel bars shall conform to ASTM A615, Grade 60.

L. Horizontal joint masonry reinforcement shall be extra heavy, Hohmann & Barnard, 120 Truss-Mesh masonry wall reinforcing manufactured from wire conforming to ASTM A1064.

M. Anchor Bolts: Steel bent bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A153, Class C.

N. Expansion Anchors: One piece, three section wedge assembly of indicated sizes of stainless steel.

O. Preformed Control Joints: Rubber material designed to fit sash block and to maintain lateral stability in masonry wall. Provide size and configuration as applicable to masonry width and conditions, fused joints.

2.3 CONCRETE BLOCK MORTAR AND GROUT PROPORTIONS

A. Mortar: Type S consisting of one-part Portland Cement, 1/2-part lime putty, and 4 parts of Mason's sand by volume. Add only enough water to give mortar good working consistency. Mortar shall be used within 1/2 hour after mixing.

B. Grout: Grout shall be one-part Portland cement and three parts Mason's sand. Grout shall have 2,000 psi minimum strength by compression test at 28 days. Grout cores greater than 2-inch square may have two parts of 3/8 inch pea gravel added to the above.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that built-in items are in proper location, and ready for roughing into masonry work.

C. Direct and coordinate placement of metal anchors supplied for installation under other sections.

D. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

E. Select and arrange units for exposed masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.

3.2 MIXING MORTAR AND GROUT

A. General: Determine all parts of mortar and grout by reasonably accurate volume measurement and mix in a mechanical mortar mixer in batches containing not less than one full sack of cement, unless otherwise approved. When partial batches are mixed, use extreme care in measuring all parts.

B. Order of Mixing: In mixing each batch of mortar or grout, mix the water, sand, and cement for not less than two minutes and until a smooth, plastic mass without lumps is obtained. Grout shall contain sufficient water to cause it to flow freely without segregation. Maintain mortar plastic and grout fluid continuously until used. Do not retemper or use mortar which has become harsh and non-plastic.

3.3 SETTING EMBEDDED ITEMS

A. All anchor bolts and miscellaneous metal work embedded in masonry shall be set in accordance with setting plans or instructions furnished by trades supplying the metal work. Exercise care to ensure that all anchors are completely surrounded by grout.

3.4 INSTALLATION OF BLOCK

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and where possible, at other locations.

B. The installation of concrete block shall be done using only mechanics skilled in the laying of masonry blocks. All necessary cutting of block on the job site shall be done with power tools in such manner to provide straight and true edges. No chipped or broken blocks shall be used. Lines shall be straight and true. Lay up concrete blocks in running bond in a full bed of mortar. Use channel blocks for lintels. Maintain alignment of cells containing reinforcement, remove projecting mortar and debris prior to grouting. Provide 3/8-inch joints, strike flush, and tool to smooth, concave, hard surface.

C. Provide cleanout openings at bottoms of all cells to be filled at each lift or pour of grout where such lift is in excess of 4 feet in height. Any overhanging mortar or other obstruction or debris shall be removed from insides of such cell walls. The cleanouts shall be sealed before grouting, after inspection.

D. All units shall be laid with full face shell mortar beds. All head and end joints shall be filled solidly with mortar for a distance in from the face of the unit equal to the full thickness of the face shall of the unit. Walls shall be erected plumb and in line.

E. Except as shown on the Drawings, all joints shall be made approximately 3/8-inch-wide, cut flush, compressed, and firmly tooled to a tight, concave joint. Joints shall have full mortar coverage on vertical and horizontal faces as noted above. Vertical joints shall be shoved tight. Seal around all pipes or ducts and make airtight. Unless otherwise indicated, build in horizontal reinforcing every third course at all walls.

F. Where required by the Drawings, and unless otherwise shown, all block walls shall have reinforcing bar steel set in vertical cell units and bonded with dowel steel which is to be set in the concrete foundation. Steel bars shall be centered and grouted solid into the cells of these units and lintels or bond beams.

G. All reinforced hollow masonry unit shall be built to preserve the unobstructed vertical continuity of the cells to be filled. Walls and cross webs forming such cells to be filled shall be full bedded in mortar to prevent leakage of grout. All head (or end) joints shall be solidly filled with mortar for a distance in from the face of the wall or unit not less than the thickness of the longitudinal face shells.

H. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear, unobstructed, continuous vertical cell measuring not less than 2 inches by 3 inches.

I. Vertical reinforcement shall be held in position at top and bottom and at intervals not exceeding 192 diameters of the reinforcement.

J. All cells containing reinforcement shall be filled solidly with grout. Vertical cells containing reinforcement shall be filled solidly with grout in lifts not exceeding eight feet in height.

K. When the grouting is stopped for one hour or longer, horizontal construction joints shall be formed by stopping the pour of grout 1-1/2 inches below the top of the uppermost unit.

L. Protect finished Work from mortar stains. Remove excess mortar and mortar smears as work progressed. Clean immediately after completing adjacent masonry work.

M. Interlock intersections and external corners.

N. Contractor shall not erect masonry when ambient temperature has dropped below 45 degrees Fahrenheit unless it is rising, at no time when it has dropped below 40 degrees Fahrenheit, except by written permission. When masonry work is authorized during temperatures below 40 degrees Fahrenheit, make provisions for heating and drying materials; protect completed Work as per Structural Clay Products Institute, Technical Notes, Volume 1, Number 1. Do not build on frozen Work. Do not lay masonry having water film or frost on its surface. Do not lay masonry in the rain.

3.5 CONTROL JOINTS

A. Preformed Control Joints:

1. Omit mortar from vertical joints.

2. Place rubber control joint material as wall is built.

3. After wall is grouted, cured, and cleaned, install backing rod and sealant.

4. Place and tool sealant to match depth of typical joint.

3.6 SHORING AND BRACING

A. All concrete block lintel beams shall be adequately shored and braced before grouting in reinforcing. Shoring and bracing shall be left in place a minimum of 14 days after grouting beams. Do not place structural members or heavy loads on lintels without adequate shoring and bracing or until 28-day concrete strength is achieved.

3.7 PROTECTION

A. Protect corners subject to possible damage. Protect block from moisture at site. Tops of all exposed open cells of block to be covered with waterproof material to prevent being filled with moisture. Protect all masonry from cold or frost. Ensure that mortar will harden without freezing. No anti-freeze ingredient shall be used in the mortar.

B. During the progress of the project, and at the end of each day's work, the tops of all exposed open cell block shall be fully covered with heavy unruptured sheets of polyethylene and weighted down with heavy plank or other suitable materials. Under no circumstances shall the interior cells of the block be allowed to fill with snow or moisture.

1. Extend cover a minimum of 24 inches down both sies of walls and hold cover securely in place.

2. After completion of walls, protect top of wall until permanent wall caps are installed.

C. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

D. Do not allow grout and mortar stains to dry on face of exposed masonry.

E. Protect tops of walls at all times. Cover tops of walls with waterproof paper when rain or snow is imminent and when the Work is discontinued.

F. Adequately brace walls until walls and roof are completed.

G. Provide sufficient bracing to protect walls against damage from elements, including wind and snow.

H. Protect masonry against freezing for minimum 72 hours after being laid.

I. Protect masonry from damage until final acceptance of the Work. Damaged units will not be accepted.

3.8 CLEANING

A. Clean off any mortar or grout stains on masonry work immediately. Any masonry showing stains from mortar, concrete, or grout at completion of Work shall be replaced. All imperfect jointing, chipped edges or corners, and similar defects shall be corrected or replaced.

B. Upon completion of the Work, point up masonry, fill holes and joints, remove loose mortar, cut out defective joints, and repaint where necessary. Leave surfaces free from mortar and other stains at completion of Work.

C. Replace defective mortar, match adjacent work.

D. Clean masonry with specified cleaners applied according to manufacturer’s written instructions.

3.9 WATER REPELLENT MASONRY SEALER

A. Remove efflorescence prior to applying water repellents. Dispose of waste generated.

B. Apply to weather exposed exterior concrete masonry walls.

C. Repoint loose, cracked, or disintegrating mortar at least 7 days prior to application. Ensure joint sealants and caulking are fully cured and wall surfaces are clean, dry, and free of chemical cleaners, efflorescence, dirt, oils, mortar smears, and other surface contaminants.

D. Follow manufacturer's recommendations for weather conditions during application.

E. Test a 5-foot by 5-foot wall area to assure proper coverage, desired water repellency properties, and desired surface appearance when sealer is fully dried.

F. Apply with spray, brush, or roller following manufacturer's recommendations, at a coverage rate of 50 square feet to 150 square feet per gallon, as determined by testing. Use two coat application where recommended by manufacturer.

3.10 FIELD QUALITY CONTROL

A. Special Inspection of masonry in accordance with IBC Section 1705.4. Refer to Structural Drawings for Special Inspection Tables.

B. Masonry shall be tested by and independent testing agency retained by Contractor, in accordance with ASTM C1314, Method B, as modified by TMS 402/602. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

C. Masonry test prisms, when required, shall be constructed onsite with same materials and workmanship to be used for Project.

D. Provide adequate facilities for safe storage and proper curing of masonry prisms, mortar samples, and grout samples, as applicable, onsite for first 24 hours, and for additional time as may be required before transporting to test lab.

E. Inspections:

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.

2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.

3. Place grout only after inspectors have verified proportions of site-prepared grout.

F. Masonry Testing:

1. Unit Strength Method:

a. Method and frequency for mortar, grout, and masonry unit sampling and testing in accordance with IBC 2105.2.2.1.

b. Provide masonry units for test samples required.

G. Corrective Action:

1. If compressive strength tests made prior to construction of permanent structure fail to meet Specifications, adjustments shall be made to mix designs for mortar, or grout, or both, as needed to produce specified strength. Masonry units shall also be tested to verify compliance to requirements of ASTM C90, Type 1.

2. If strength tests performed on materials representative of in-place construction fail to meet Specifications, prisms or cores shall be cut from constructed walls in sufficient locations to adequately determine strength in accordance with IBC 2105.3.

H. Performance Test: Masonry using concrete masonry units and mortar with integral water repellent additives, and water repellent masonry sealer, shall achieve a Class E rating when evaluated in accordance with ASTM E514, with the test extended to 72 hours.

3.11 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4-inch.

B. Maximum Variation from Unit to Adjacent Unit: 1/16-inch.

C. Maximum Variation from Plane of Wall: 1/4-inch in 10 feet and 1/2-inch in 20 feet or more.

D. Maximum Variation from Plumb: 1/4-inch per story non-cumulative; 1/2-inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8-inch in 3 feet and 1/4-inch in 10 feet; 1/2-inch in 30 feet.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4-inch, plus 3/8-inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4-inch.

END OF SECTION 04 22 00

SECTION 05 52 00 –METAL RAILINGS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnish all labor, materials and equipment as required to install all pipe and tube handrails, balusters, and fittings, as shown on the Plans.

1.2 REFERENCE STANDARDS

A. ADA Standards – Americans with Disabilities Act (ADA) Standards for Accessible Design

B. ASTM A53 – Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

C. ASTM A123 – Specification for Zinc (Hot-Dip, Galvanized) Coatings on Iron and Steel Products

D. ASTM A500 – Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

E. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

F. ASTM C1107 – Specification for Packaged, Dry, Hydraulic-Cement Grout (Nonshrink)

G. AWS D1.1 – Structural Welding Code – Steel

H. AWS D1.3 – Structural Welding Code – Sheet Steel

I. IBC – International Building Code

J. OSHA Safety Requirements.

K. SSPC-PA-1 – Shop, Field, and Maintenance Painting of Steel

L. SSPC-SP 1 – Solvent Cleaning

M. SSPC-SP 11 – Power Tool Cleaning to Bare Metal

N. SSPC-SP 6 – Commercial Blast Cleaning

1.3 SUBMITTALS

A. General: All submittals shall be submitted in accordance with the requirements of Section 01 33 00 – Submittal Procedures.

B. Shop drawings: Indicate profiles, railing layouts, post locations, and gate locations. Indicate component details, materials, finishes, connection and joining methods, attachment to supporting structure, and the relationship to adjoining work.

1. Submit design calculations for all handrail and guardrail shop drawings stamped by a professional engineer in the State where Work is to be done.

2. Submit design calculations for anchorage of railing stamped by a professional engineer in the State where Work is to be done.

C. Submit manufacturer's instructions for installation and connecting methods.

D. Samples: Submit color samples for Owner review and approval.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Quality procedures and personnel according to the following:

1. AWS D1.1, “Structural Welding Code – Steel”.

2. AWS D1.3, “Structural Welding Code – Sheet Steel”.

1.5 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturer’s written recommendations to ensure that shop primers and topcoats are compatible with one another.

PART 2 - PRODUCTS

2.1 RAILINGS – GENERAL REQUIREMENTS

A. Allow for expansion and contraction of members and building movement without damage to connections or members.

B. Dimensions: See drawings for configurations and heights.

C. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated.

2.2 STRUCTURAL PERFORMANCE

A. Code Requirements: All railings, guardrails and handrails shall conform to the code requirements for IBC and the State-approved OSHA. Railings, guardrails, and handrails, when part of the means of egress as defined by the governing codes, shall conform to the requirements of the most stringent of the codes or reference standards. The whole project area shall be public use areas.

2.3 STEEL MATERIALS

A. Steel Tube: ASTM A500, Grade B cold-formed structural tubing.

B. Stainless Steel Tube: Type 316 grade stainless steel.

C. Steel Pipe: ASTM A53 – Grade B Schedule 40, black finish.

D. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

E. Exposed Fasteners: No exposed bolts or screws.

F. Galvanizing: in accordance with requirements of ASTM A123.

1. Touch up abraded areas after fabrication using specified touch-up primer for galvanized surfaces.

2. Galvanize all exterior members.

G. Non-Shrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 RAILING SYSTEM

A. Rail Section: Railing and handrails shall be round pipe design railing system unless otherwise indicated.

B. Rail and Post: Pipe rail shall be not less than 1-1/2-inch diameter, Schedule 40 pipe. Pipe Post shall be not less than 1-1/2-inch diameter, Schedule 80 pipe.

C. Sleeves: Sleeves shall be formed with galvanized steel or PVC. Sleeves for removable posts shall be of steel, hot-dip galvanized after fabrication. Galvanizing of steel sleeves shall be done after fabrication to prevent raw steel from being exposed to the elements.

D. Fasteners: Fasteners, screws, and bolts shall be of stainless steel or aluminum. Handrail bracket fasteners and fasteners over water basins shall be stainless steel.

E. Brackets: Handrail brackets shall match the material and finish of the handrail or railing of which they are a part.

F. Socket Grout: Non-shrink grout for handrail post sockets shall consist of an inorganic, non-metallic, premixed grout with a minimum 2-day compressive strength of 4,000 psi.

2.5 FINISHES

A. Pipe railing system includes handrails, railing, tube caps, and other miscellaneous parts of rails shall be powder coated. Color by Owner.

2.6 MANUFACTURERS OR EQUAL

A. “C-V Pipe Rail” by CraneVeyor Corp.

B. “Wesrail” by Moultrie Manufacturing Co.

2.7 FABRICATION

A. Verify dimensions on site prior to shop fabrication. Fit and shop assemble sections in largest practical sizes for delivery and installation at site.

B. Accurately form components to suit specific project conditions and for proper connection to building structure

C. Supply components required for secure anchorage or handrails and railings.

D. Welded Joints:

1. Interior components: Continuously seal joined pieces by continuous welds.

2. Grind exposed joints flush and smooth with adjacent surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Fit and shop assemble components in largest practical sizes for delivery to site.

F. Galvanize all iron or steel items. Prior to galvanizing, all items after fabrication shall be cleaned thoroughly, removing scale, flux deposits, rust, oil, dirt, and other foreign matter. Except as otherwise indicated, iron or steel items specified to be galvanized shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Fabricate units complete or in largest practical sections before galvanizing.

PART 3 - EXECUTION

3.1 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials: Manufactured materials shall be delivered in original, unbroken packages, containers, or bundles bearing the label of the manufacturer.

B. Storage: All materials shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

3.2 PREPARATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Supply items to be mounted to concrete, embedded in masonry, or place in partitions with setting templates and erection drawings to appropriate sections.

3.3 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor hand railings securely to structure. Install in accordance with shop drawings, approved anchorage calculations, and manufacturer's instructions.

D. All exposed welds shall be ground smooth and flush and shall be polished and anodized. Discoloration on exposed metal surfaces, whether or not due to welding, shall constitute a basis for rejection of the entire assembly.

E. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated. Plumb posts in each direction.

F. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780.

1. Clean surfaces of weld seams according to SSPC-SP 11, “Power Tool Cleaning to Bare Metal”.

G. Maximum Variation from Plumb: 1/4-inch per floor level, non-cumulative.

H. Maximum Offset from True Alignment: 1/4-inch.

I. Maximum Out-of-Position: 1/4-inch.

END OF SECTION 05 52 00

SECTION 11 68 33 - ATHLETIC FIELD EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Baseball and Softball field accessories.

1.2 DELIVERY, STORAGE AND HANDLING

A. Protection: Use all means necessary to protect materials of this Section before, during and after installation and to protect installed work and materials of all other trades.

B. Replacement: In event of damage, immediately make all repairs and replacements necessary to approval of Owner's Representative.

C. Storage: Store and handle materials in accordance with manufacturer's recommendations. Store materials in a dry, covered area, elevated above grade.

1.3 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit for all products specified in this Section.

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods and details.
4. Maintenance and cleaning recommendations.
5. Warranty information.

C. Shop Drawings: Detailed scale drawings showing dimensions and installation procedures for equipment.

D. Structural calculations for foul ball poles.

E. Structural calculations for netting poles.

1.4 COORDINATION

A. Coordinate with other trades affecting and affected by work of this Section.

PART 2 - PRODUCTS

2.1 BASES, HOME PLATE, AND PITCHERS RUBBER

A. Bases - set of three (3) for each field. High quality rubber impact bases suitable for high school baseball and softball.

1. Include ground anchor mounts and rubber plugs per drawings.

2. Approved Product: Hollywood Impact Bases, or approved.

    a. Sportsfield Specialties @ 1-888-975-3343.
    b. C&H Baseball @ 1-800-248-5192.
    c. On Deck Sports @ 1-800-365-6171.

B. Double First Base for Softball – one (1) for each softball field. High durability, all rubber construction with no corners or edges to catch spikes and 6” stations for ground anchoring.

1. Approved Product: Hollywood Impact Double First Base, Permanent Installation, or approved.

    a. Sportsfield Specialties @ 1-888-975-3343.
    b. C&H Baseball @ 1-800-248-5192.
    c. On Deck Sports @ 1-800-365-6171.

C. Home Plates – one (1) for each field. High durability, all rubber construction with no corners or edges to catch spikes.

1. Approved Product: Hollywood Impact Bases, Permanent Installation, or approved.

    a. Sportsfield Specialties @ 1-888-975-3343.
    b. C&H Baseball @ 1-800-248-5192.
    c. On Deck Sports @ 1-800-365-6171.

D. Pitchers Rubber – one (1) for each field. Highly durable molded rubber 4 way pitching rubber.

1. Approved Product: Schutt 4-Way Pitching Rubber, or approved

    a. Sportsfield Specialties @ 1-888-975-3343.
    b. C&H Baseball @ 1-800-248-5192.
    c. On Deck Sports @ 1-800-365-6171.

2.2 OUTFIELD FOUL POLES

A. Baseball outfield foul ball pole with wing, two (2) per field.

1. Material: 0.280 inch wall aluminum, 6-5/8 inch O.D. diameter.
2. Height: 30 feet above finish grade.
3. Wing: 8 feet above finish grade extending to the top of the foul pole.
4. Finish: Powder-coated, yellow.
5. Mounting: Ground Sleeve
6. Product: Foul Ball Pole by Sportsfield Specialties, Inc, www.sportsfieldspecialties.com, or approved.
    a. Base/components: FPW630 30’ Foul Pole Equipment and Accessories

B. Softball outfield foul ball pole with wing, (2) two per field.

1. Material: 0.125 inch wall aluminum, 4 inch O.D. diameter.
2. Height: 20 feet above finish grade.

3. Wing: 8 feet above finish grade extending to the top of the foul pole.
4. Finish: Powder-coated, white.
5. Mounting: Ground Sleeve
6. Product: Foul Ball Pole by Sportsfield Specialties, Inc, www.sportsfieldspecialties.com, or approved.

    a. Base/components: FP420 20’ Foul Pole Equipment and Accessories

2.3 HITTING TUNNELS

A. Softball Field Double (2-lane) Hitting Tunnel (Batting Cage): Model BTOSD as supplied by Sportsfield Specialties or approved equal.

1. 55'-0” x 35’-3” double lane hitting tunnel system with netting and attachments. System is for in-ground sleeve mounted installation and includes (3) three bays. Dimensions to center of posts.

B. Softball Field Double (2-lane) Hitting Tunnel (Batting Cage): Model BTOSD as supplied by Sportsfield Specialties or approved equal.

1. 75'-0” x 35’-3” double lane hitting tunnel system with netting and attachments. System is for in-ground sleeve mounted installation and includes (4) four bays. Dimensions to center of posts.

2.4 TENSION NETTING SYSTEM

A. Standard pole to pole tension netting system. Submit shop drawings and structural calculations for approval prior to delivery. Coordinate design of pole tension system with backstop wall height and offset from wall to pole. Poles to be set behind wall and bottom of tension system to attach to top of backstop wall or curb as per plans.

1. Baseball Backstop, 45’ height. Model # TNPPUC as supplied by Sportsfield Specialties or approved equal, refer to plans for length of material.
2. Spectator Netting, 25’ height. Model # TNPPUC as supplied by Sportsfield Specialties or approved equal, refer to plans for length of material.

2.5 OUTFIELD BATTER’S EYE SCREEN

A. Windscreen fabric to attach to outfield fence to use as batter eye. 12’ height windscreen with fasteners, Model # VCP12 as supplied by Sportsfield Specialties or approved equal. Refer to plans for length of material. Owner to select color during submittal process.

2.6 BACKSTOP WALL PADDING

A. Install wall padding at locations indicated on the drawings. 2’ height BaseZone Field Wall Pad Model # BFWPCL as supplied by Sportsfield Specialties or approved equal. Refer to plans for length of material. Owner to select color during submittal process.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions allow for compliance with manufacturer's installation instructions.

B. Notify Owner's Representative of conflicts between manufacturer's instructions and Drawings/Details prior to beginning installation.

C. Examine surfaces to receive equipment. Do not begin installation until unsatisfactory conditions have been properly repaired.

3.2 INSTALLATION

A. Foul Pole Footing depth and diameter below finish grade in accordance with manufacturer's specifications and as indicated on Drawings.

B. Install all products as detailed. Follow manufacturer's recommendations and specifications. Set plum and level. Secure as specified or as recommended by manufacturer.

C. Install home plate flush with top of infill material.

D. Field wall pad shall be installed with a 4” +/- reveal (gap from grade to bottom of pad) for baseball and 6” +/- reveal for softball.

3.3 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris, and surplus material of this Section.

END OF SECTION 11 68 33

SECTION 31 00 00 - EARTHWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all labor, materials, and equipment as required for all excavation, grading, providing borrow materials, hauling, placing and compacting earthwork materials to construct the site to the grades shown on the plans.

B. Prior to commencement of any earthwork, the Contractor shall review the geotechnical reports. The geotechnical report is on file at the office of the Engineer for information only and the Contractor is responsible for making any interpretations there from.

C. Submit to the Engineer's Field Representative load tickets on all materials delivered to the site.

1.2 REFERENCE STANDARDS

A. ASTM D 136 Sieve Analysis of Fine and Coarse Aggregates

B. ASTM D 422 Method for Particle - Size Analysis of Soils

C. ASTM D 698 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregated Mixtures, Using 5.5-lb Rammer and 12-inch Drop

D. ASTM D 1556 Density of Soil by the Sand-Cone Method

E. ASTM D 1557 Test Methods for Moisture-Density Relations of Soils and Soil Aggregate Mixtures, Using 10 lb. Rammer and 10 inch Drop

F. ASTM D 1633 Test Method for Compressive Strength of Molded Soil-Cement Cylinders

G. ASTM D 2419 Test Method for Sand Equivalent Value of Soils and Fine Aggregate

H. ASTM D 2487 Classification of Soils for Engineering Purposes

I. ASTM D 2901 Test Method for Cement Control of Freshly-Mixed Soil Cement

J. ASTM D 2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth).

K. ASTM D 4254 Test Methods for Minimum Index Density of Soils and Calculative of Relative Density

L. OSHA - 1926.650-651 and other applicable sections.

1.3 SUBMITTALS

A. The Contractor shall submit test results of all materials proposed to be used in work.

B. Submit sieve analysis, moisture density relationship test for both ASTM D698 and D1557, and sand equivalency. The sieve analysis and moisture density relationship tests must have been completed within 12 calendar months from the date of submittal.

1.4 DEFINITIONS

A. Backfill or Fill: (a) Material used to replace material removed during construction or (b) The act of replacing or placing material during construction.

B. Backfill Operation or Fill Operation: The method and the activity required to fill surface depressions and excavations, or to construct fills to required grades.

C. Common Fill: Fill or borrow materials which are naturally occurring and not meeting a specific gradation or classification.

D. Structural Fill: The act of placing common or imported fill material under controlled operation to a certain density.

PART 2 - PRODUCTS

2.1 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENTS

A. The following types of suitable materials are defined (see Execution for the location where the materials are approved for use or where identified in other specifications and drawings):

1. Common Fill: Fill or borrow materials which are naturally occurring, not meeting a specific gradation or classification, are not Unsuitable Materials, and can be placed in a controlled operation to a certain density.

2. Sand Backfill (Bedding Sand): Sand with 100 percent passing a 3/8-inch sieve, at least 90 percent passing a Number 4 sieve and less than 3% passing the No. 200 sieve.

3. Crushed Stone Backfill (Bedding Chips): Manufactured angular, crushed stone, crushed rock, or crushed slag with the following gradation requirements:

Sieve Size	Percent Passing By Weight
1”	100
3/4"	80 - 100
3/8”	20 - 70
No. 4	5 - 20
No. 200	0 - 3

4. Foundation Stabilization Backfill: Uncrushed gravel, and sand with the gradation requirements below. The material shall have a minimum sand equivalent value of 28, sand equivalent not required if less than 5% passing the No. 200 sieve.

Sieve Size	Percent Passing By Weight
3”	100
No. 4	25 - 60
No. 200	0 - 12

5. Coarse Gravel (Drain Rock): Crushed rock or gravel which is free of shale, clay, friable materials, and or debris that conforms to the gradation below. Drain Rock shall have a minimum of 35% Air Voids as determined by ASTM C 29 Standard Test Method for Unit Weight and Voids in aggregate, Jigging Procedure.

Sieve Size	Percent Passing By Weight
3”	100
1”	25 - 60
3/8”	0 - 4
200	0 - 2

6. Aggregate Base (3/4” Road Mix): Crushed aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base. The material shall meet the following gradation requirements:

Sieve Size	Percent Passing By Weight
1”	100
3/4"	90 - 100
No. 4	40 - 65
No. 8	30 - 50
No. 200	3 - 9

   a. The sand equivalent value shall be not less than 30, sand equivalent not required if less than 5% passing the No. 200 sieve.

   b. The material shall have a Los Angeles Abrasion of 35% or less.

7. Aggregate Subbase (Pit Run): Uncrushed rock aggregate subbase material that can be compacted readily by watering and rolling to form a firm stable subbase. The material shall meet the following requirements:

Sieve Size	Percent Passing By Weight
4”	100
3”	90-100
No. 4	30-75
No. 200	0 – 15.0

a. The sand equivalent value shall be not less than 30, sand equivalent not required if less than 5% passing the No. 200 sieve.

b. The material shall have a Los Angeles Abrasion of 40% or less.

8. Imported Trench Backfill (8” Pit Run): Uncrushed rock aggregate material that can be compacted readily by watering and rolling to form a firm stable trench. The sand equivalent value shall be not less than 25, sand equivalent not required if less than 5% passing the No. 200 sieve, and the material shall meet the following requirements:

Sieve Size	Percent Passing By Weight
8”	100
No. 4	15 - 60
No. 200	0 - 12

9. Granular Borrow: Provide sand, sand and gravel, or sand and rock mixtures with a sand equivalent greater than 30. Sand equivalent is not required if the material has less than 5 percent passing the No. 200 sieve.

10. Trench Plug Material: Low permeable fill material, a non-dispersible clay material having a minimum plasticity index of 10.

11. Top Soil: Excavated material, up to 18 inches below stripped surface, free of rocks larger than 3 inches, organics, roots, refuse, brush or other debris.

12. Rip Rap: Riprap material shall be hard, durable, angular in shape and free from overburden and organic material. The breadth or thickness of any stone shall not be less than one-third of its length. The minimum unit weight of the stone shall be 165 pounds per cubic foot. Riprap material shall have less than 10 percent loss after five cycles in the sulfate soundness tests and shall conform to the following gradation:

Weight of Stones	Percent of Total Weight Less than the Stone Weight
200 lbs	100
130 lbs	80
90 lbs	50
25 lbs	10 max.

13. Gravel Surfacing: Meet the following requirements for gravel surfacing, including added binder or blending material:

Sieve Size	Percent Passing By Weight
3/4"	100
No. 4	40-80
No. 10	25-60
No. 200	8-20

a. Dust Ratio: the portion passing the No. 200 (0.075 mm) sieve cannot exceed two-thirds of the portion passing the No. 40 (0.425 mm) sieve.

b. For material passing the No. 40 (0.425 mm) sieve, the liquid limit must not exceed 35 and the plasticity index must not be below 6 or above 12.

c. A wear factor not exceeding 40% at 500 revolutions.

d. At least 35% by weight of the aggregate retained on the No. 4 (4.75 mm) sieve must have one fractured face.

14. RAP Surfacing: Unprocessed Recycled Asphalt Pavement (RAP) that has not been processed for gradation and binder content uniformity. RAP stockpile may be from different sources of unprocessed RAP together provided it is generally free of contamination from dirt, debris, clean stone, concrete, etc. Provide unprocessed RAP that has 100 percent passing the 5/8-inch sieve.

15. Non-Frost Susceptible Material: Granular material with the following gradation and a Plastic Index less than 6 for the material passing the No. 40 sieve. The material shall meet the following requirements:

Sieve Size	Percent Passing By Weight
3/4"	100
1/2"	70 - 95
No. 4	40 - 75
No. 8	25 - 55
No. 40	10 - 30
No. 200	0 - 6

16. MSE Wall Backfill: Sand and gravel or sand and rock mixture with a Plastic Index less than or equal to 6. The Material shall meet the following requirements:

Sieve Size	Percent Passing By Weight
1”	100
3/4”	75 - 100
No. 4	40 - 70
No. 40	10 - 60
No. 200	0 - 5

17. Athletic Field Root Zone Mix: Material to be pre-mixed off-site and delivered to site. Comprised of snake river dredge sand and 10-15% soil compost by loose volume.

    a. Snake River Dredge Sand: A coarse, washed, river sand.

    b. Soil Compost: Well-composted organic matter following the guidelines and tested to meet the US Composting Council's seal of testing assurance. The material shall have particle sizes ranging from 1/8" to 3/16". Material which is coarser or finer or that contains decomposed peat moss is not acceptable.

18. Filter Sand: Aggregate of natural sand or other approved inert materials composed of hard, strong, and durable particles conforming to the requirements of ASTM C-33 except as modified herein.

    a. Use only aggregates that include deleterious substances not exceeding the following:

Type	Percent Passing By Weight
Clay Lumps	0.50
Coal and Lignite	0.30
Other Deleterious Substances	2.00
Deleterious Material passing No. 200	1.75

b. Moisture content of fine aggregate shall not exceed 8 percent.

c. Aggregate that is uniformly graded from coarse to fine within the following gradation as follows:

Sieve Size	Percent Passing By Weight
3/8”	100
No. 4	95 - 100
No. 16	45 - 80
No. 50	10 - 30
No. 100	2 - 10
No. 200	0 - 4

2.2 UNSUITABLE MATERIALS

A. Unsuitable material include the materials listed below:

1. Soils which, when classified under ASTM D 2487 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System), fall in the classification of Pt, OH, CH, MH, or OL.

2. Soils which cannot be compacted sufficiently to achieve the density specified for the intended use.

3. Materials that contain hazardous or designated waste materials including petroleum hydrocarbons, pesticides, heavy metals, and any material which may be classified as hazardous or toxic according to applicable regulations.

4. Soils that contain greater concentrations of chloride or sulfate irons, or have a soil resistively or pH less than the existing on-site soils.

PART 3 - EXECUTION

3.1 PREPARATION

A. Notify Engineer prior to starting any grading operations.

B. Identify required lines, levels, contours and datum.

C. Identify and flag surface and aerial utilities, known underground utilities locations.

D. Maintain and protect existing utilities which pass through the work area.

3.2 SITE CONTROL

A. Unfavorable Weather: Do not place, spread, or roll any fill material during unfavorable weather conditions. Do not resume operations until moisture content of material is satisfactory.

B. Flooding: Provide berms or channels to prevent flooding or saturation of subgrade. Promptly remove all water collecting in depressions.

C. Softened Subgrade: Where soil has been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and recompact as specified for fill.

D. Dust Control: Use all means necessary to control dust on and near the work and on and near all off-site borrow areas. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors, residents, properties, and concurrent performance of other work on the site.

E. Noise Control: Use equipment that is equipped with adequate noise attenuation devices.

3.3 OFF-SITE IMPACTS

A. Comply with all traffic and hauling requirements of the State and County.

B. Provide all signing, flagmen, or other special traffic control required to provide for the safety of the public.

C. Use only vehicles approved for highway use and comply with all load requirements.

D. Provide wheel cleaning as required to minimize the tracking of materials onto public roadways.

3.4 PROTECTION

A. Protect trees and other features to remain as a portion of the final landscaping or project.

B. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from equipment and vehicular traffic.

C. Protect above and below grade utilities which are to remain.

D. Notify Engineer of unexpected subsurface conditions and discontinue affected work in the area until notified to resume work.

E. Protect bottom of excavations and soil adjacent to and beneath foundation from frost.

F. Grade excavation top perimeter to prevent surface water runoff into excavation.

3.5 EXCAVATION

A. Excavate all cut areas to the grades shown on the plans.

B. Excavate all areas that have excessive moisture content and cannot be compacted to the required densities.

C. Correct unauthorized excavation at no cost to the Owner.

D. Excavate or scarify and aerate soils with excessive moisture content, and allow to dry.

3.6 SUBGRADE PREPARATION

A. Excavate to subgrade elevation.

B. In the presence of a materials testing company, thoroughly proofroll with a loaded tandem-axle dump truck with a minimum weight of 20 tons, or 40-ton static roller.

C. Areas where soft or disturbed conditions are identified, excavate, remove and dispose of unsuitable soft spot material. If the material is suitable except for excessive moisture content, scarify and dry the material to the acceptable moisture content, or replace with Engineer approved materials, and recompact to the density of the material to place over the area. Soft sport repair shall be incidental to the Work. No special payment will be made for soft spot repair.

D. The Contractor’s materials testing company to submit a subgrade inspection report noting the means and methods used to proofroll the subgrade and any corrections or repairs made.

3.7 CONSTRUCTION OF EMBANKMENTS

A. Fill areas to contours and elevations as shown on the plans. Do not use frozen materials.

B. Place and compact fill materials in continuous lifts not exceeding six (6) inches in depth, unless specifically allowed.

C. Employ a placement method so as not to disturb or damage utilities in trenches.

D. Maintain optimum moisture content of materials to attain required compaction density.

E. Make smooth changes in grade. Blend slopes into level areas.

3.8 IMPORTED STRUCTURAL FILL

A. Aggregate Subbase and Base, granular borrow, and common fill material under parking areas, drive lanes, and vehicle traffic areas, shall be compacted to at least 95% of the maximum dry density as determined in accordance with ASTM D698. Maximum loose lift thickness for aggregate base shall not exceed 8 inches. Maximum loose lift thickness for aggregate subbase, granular borrow, and common fill shall not exceed 10 inches.

B. Aggregate Subbase and Base material under buildings, including 4 feet outside the building area, and under equipment pads shall be compacted to at least 95% of the maximum dry density as determined in accordance with ASTM D1557. Maximum loose lift thickness for aggregate base shall not exceed 8 inches and aggregate subbase shall not exceed 10 inches.

C. Granular material with more than 30% by weight retained on the 3/4-inch sieve shall be compacted to a minimum 75 percent of maximum index density as determined by ASTM D4253 and D4254. Drain rock and crushed stone backfill material does not require compaction.

3.9 DISPOSAL OF WASTE SOIL

A. Contractor shall dispose of waste material at an off-site location determined by the Contractor.

3.10 QUALITY CONTROL

A. Material & Compaction Testing: All soils testing of samples submitted by the Contractor will be done by an independent testing laboratory mutually agreed upon by Contractor and Owner and at the Contractor's expense. If tests indicate work does not meet specific compaction requirements, remove work, replace, and retest at the Contractor's expense.

1. Qualifications of testing company

a. Basic requirements of ASTM E 329, "Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials as Used in Construction" and ASTM D 3666, "Standard Specification for Minimum Requirements for Agency Testing and Inspecting Bituminous Paving Materials", as applicable.

b. Calibrate testing equipment at reasonable intervals by devices of accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants.

2. Frequency of Compaction Tests

a. Curbs and sidewalks: In horizontal plane, test at start with subsequent tests a maximum of every 250 feet. At landscape islands test each island at one location. At every horizontal location, obtain one test at subgrade. Perform subsequent tests every 12 inches of compacted depth and at top of backfill or when materials or procedures change. Perform a minimum of two (2) tests at finished grade.

b. Parking and vehicle areas, roadways: In horizontal plane, test each backfill area with subsequent test for every 2,500 square feet of backfill surface area. At every horizontal location, obtain one test at subgrade. Perform subsequent tests every 12 inches of compacted depth and at top of backfill or when materials or procedures change.

c. Concrete slabs for buildings, patios, concrete plaza, and entry slabs: In horizontal plane, test each backfill area with subsequent test for every 1,000 square feet of backfill surface area. At every horizontal location, obtain one test at subgrade. Perform subsequent tests every 12 inches of compacted depth and at top of backfill or when materials or procedures change.

3.11 TOLERANCES

A. Finished grade of graded areas shall meet the following requirements:

1. In paved areas including roadways, sidewalks, parking lots, etc., plus or minus 0.10 feet from the grade shown on the plans.

2. Building pads, plus or minus 0.05 feet from the grade shown on the plans.

3. In landscaped areas or similar areas, plus or minus two (2) inches.

4. Differential grades between walking surfaces shall not exceed 1/4-inch.

5. Landscape finish grade adjacent to concrete walks shall be minus 1-inch from walking surface elevation.

END OF SECTION 31 00 00

SECTION 31 11 00 - CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide removal of trees, stumps, shrubs, grass and other vegetation within the construction limits to permit construction of the new facilities.

B. Protect the adjoining properties from damage during clearing and grubbing operations.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. Clearing and grubbing shall extend to no more than 3 feet outside of the construction limits. The clearing and grubbing operation shall be conducted in a manner which will not damage any vegetation outside of the clearing and grubbing limits. All brush, roots, and other debris within the grubbing limits shall be removed to a depth of 6". Completely remove stumps and other debris protruding through the subgrade surface. The Contractor shall chop all brush and debris resulting from the Clearing and Grubbing operation and haul to a disposal site located by the Contractor off-site. Burning of debris on-site will not be allowed.

3.2 STRIPPING

A. Areas within the limits of the project shall be stripped to remove topsoil **containing organic** material before construction begins over such areas. Topsoil which contains organic material shall not be used in construction of onsite fills or trench backfills. The topsoil shall be hauled to a disposal site located by the Contractor off-site, or stockpiled for use on the site if needed.

END OF SECTION 31 11 00

SECTION 32 13 13 - CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

DESCRIPTION

A. Furnish all labor, materials, and equipment required for concrete work including forming, reinforcing steel, anchor bolts and site concrete.

1.2 JOB CONDITIONS

A. In hot and cold weather, comply with the requirements of ACI 305 and 306.

B. Do not place concrete on frozen ground. Unless adequate protection is provided, do not place concrete during rain, sleet, or snow.

C. Do not allow rain water to increase mixing water or damage surface finish.

D. When temperature of surrounding air is expected to be below 40°F, during placing, or within 24 hours thereafter, do not allow concrete temperature to drop below 55°F, for sections less than twelve inches (12”) in any dimension, or 55°F, for any other sections.

1. Keep the temperature of concrete, when placed, under 80°F, to preclude loss of slump, flash set, or cold joints.

2. When temperature of steel is greater than 120°F, spray steel forms and reinforcement with water just prior to placing concrete. Do not allow any water to pond in forms.

1.3 SUBMITTALS

A. Submit mix design to be used for each class of concrete.

B. Submit location of materials source, admixtures to be used, and other related data.

C. Submit test reports showing suitability of aggregates used in concrete mixes.

D. Indicate sizes, spacing, locations of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting, and spacing devices.

E. Alkali-Silica Reaction (ASR) test results.

F. Control joint placement plan.

G. The Contractor shall pay any material testing expenses associated with material submittals.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: Use Portland cement conforming to the requirements of ASTM C 150 Type II for low alkali cement.

B. General Admixtures: Admixtures, other than air-entraining agents, may be used when the type and amount to be used are approved. Calcium chloride will not be allowed as an admixture.

C. Air-Entraining Agents: Use air-entraining agents conforming to the requirements of ASTM C 260. Air entraining admixtures shall be added to the mixing water.

D. Water Reducing Agents: Water reducing admixtures may be used to increase workability of the concrete when approved by the Engineer. Use water reducing admixtures conforming to ASTM C 494.

E. Water: Use potable water for mixing concrete.

F. General Aggregate Requirement: The proposed aggregate for the mix shall be tested for expansion and Alkali-Silica Reaction (ASR) in accordance with AASHTO T 303. Where testing indicates aggregates are reactive, the contractor shall use fly ash, lithium compound admixtures, or both to produce a concrete mix that successfully mitigates ASR. Contractor shall provide test results of successful mitigation, using ASTM C 1567, with results showing a linear expansion at 14 days not exceeding 0.10 percent when tested.

G. Coarse Aggregate: Use coarse aggregate that consists of gravel, crushed slag, crushed stone or other approved inert materials, composed of hard, strong and durable particles, free of injurious coatings, and conforming to the requirements of ASTM C 33, except as modified herein.

1. Use only aggregates that include deleterious substances not exceeding the following:

	Percent (by weight)
Soft Fragments	0.20
Coal and Lignite	0.30
Clay Lumps	.30
Other Deleterious Substances	2.0
Minus 200 Material	1.75

2. Use coarse aggregate meeting the following gradations when tested in accordance to the requirements of ASTM C 136.

	Percent Passing (by weight)				
Coarse Aggregate Size	1"	3/4”	3/8"	No. 4	No. 8
3/4” to No. 4	100	90-100	20-55	1-10	0-5

H. Fine Aggregate: Use aggregate of natural sand or other approved inert materials composed of hard, strong, and durable particles conforming to the requirements of ASTM C 33 except as modified herein.

1. Use only aggregates that include deleterious substances not exceeding the following:

	Percent (by weight)
Clay Lumps	.50
Coal and Lignite	.30
Other Deleterious Substances	2.00
Minus 200 Material	1.75

2. Moisture content of fine aggregate shall not exceed 8 percent.

3. Use fine aggregate that is uniformly graded from coarse to fine within the following gradation, when tested in accordance to the requirements of ASTM C 136.

Sieve Size	Percent Passing (by weight)
3/8"	100
No. 4	95 100
No. 8	80 100
No. 16	50 85
No. 30	25 60
No. 50	10 30
No. 100	2 10

I. Patch Mortar: Make patching mortar using portland cement and sand to form a workable mortar suitable for filling defects in concrete surfaces.

1. Mortar: 1 part portland cement to 2 parts sand by damp loose volume.

2. Mix white and gray portland cement as required to match surrounding concrete.

3. Keep mixing water to a minimum.

4. Mix patching mortar in advance and allow to stand with frequent manipulation, without addition of water, until it has reached stiffest placeable consistency.

J. Curing Compounds: Use curing compounds that meet the requirements of ASTM C 309.

K. Sealer: Use Conspec Silane 40 or approved equal.

L. Joint Sealant: Use Sikaflex 1c SL or approved equal. Use Sonolastic Polysulfide Sealant or approved equal for submerged in water applications. Color to match that of concrete.

2.2 REINFORCING STEEL AND WELDED WIRE MESH

A. Reinforcement Steel: ASTM A 615 Grade 60

B. Welded Wire Fabric: 12x12 W5.4/5.4

2.3 FORMING MATERIALS

A. Smooth Forms: Faced with material which will produce smooth, hard, uniform texture on concrete.

B. Form accessories that are to be partially or wholly embedded in concrete are to be a commercially manufactured type:

1. Use form ties constructed so that ends or end fasteners can be removed without causing appreciable spalling of concrete faces.

C. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

D. Contraction Joint Material: Wood strips; maximum possible length.

E. Dobie Blocks: Commercial grade blocks to support horizontal reinforcement.

2.4 READY MIX CONCRETE

A. Furnish commercial ready mix shall have the following properties:

Construction Type	Minimum Compressive Strength	Minimum Cement Content	Maximum Water / Cement Ratio	Air Entrainment Percentage	Maximum Slump
Light Pole, Sign, Fence Foundations	3,000 psi	560 LB/CY	0.49	6.5 ±1.5	4 ±1
Curbs, Gutters	4,000 psi	560 LB/CY	0.44	6.5 ±1.5	2.5 ±1
Concrete Pavement	4,000 psi	560 LB/CY	0.44	6.5 ±1.5	4 ±1
Retaining Walls	4,000 psi	560 LB/CY	0.44	6.5 ±1.5	4 ±1
Walking Surfaces – Sidewalks, Patios, Driveways, Stairs	4,500 psi	564 LB/CY	0.44	6.5 ±1.5	4 ±1
Walking Surfaces with Reinforcement – Sidewalks, Patios, Driveways, Stairs	5,000 psi	611 LB/CY	0.40	6.5 ±1.5	4 ±1

B. Fly ash may be used to replace a portion of the Portland cement in the concrete mix. The fly ash used shall not exceed twenty five percent of the total cement material in the mix. The cement material in the mix includes both Portland cement and fly ash. Fly Ash shall be Class F conforming to AASHTO M 295 with the additional requirement that the available alkalies in the fly ash shall not exceed 2 percent.

C. Ready-mixed concrete shall conform to the provisions in ASTM C 94 regarding batching, mixers and agitators, mixing and delivery, inspection, consistency and air content, and certification of batches.

2.5 TRUNCATED DOMES

A. Detectable warning domes shall be pre-manufactured units integrally cast into concrete ramp. The detectable warning surface shall be removable. Use Replaceable Wet-Set, manufactured by ADA Solutions, or approved equal.

B. Color shall be Federal Yellow.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall not incorporate ready mix concrete into the work that does not meet these specifications. The ready mix concrete that is in non-compliance shall be removed from the project.

3.2 FORMING

A. Make forms sufficiently tight to prevent loss of cement paste. Arrange facing material orderly and symmetrical, keeping number of seams to a practical minimum.

B. Place chamfer strips in corners of forms to produce beveled edges on permanently exposed surfaces.

C. To maintain specified finish tolerances, chamfer formwork to compensate for anticipated deflections.

D. Provide positive means of adjustment using wedges or jacks, or shores and struts, and take up all settlement during concrete placing operation.

E. Securely brace forms against lateral deflection.

F. Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

G. At construction joints, overlap forms over hardened concrete at least six inches (6"). Hold forms against hardened concrete to prevent offsets or loss of mortar at construction joint and to maintain true surface.

H. Anchor formwork to shores or other supporting surfaces or members so that upward or lateral movement of any part of formwork system is prevented during concrete placement.

I. Anchor formwork to shores or other supporting surfaces or members so that upward or lateral movement of any part of formwork system is prevented during concrete placement.

J. Position expansion joint material and other embedded items accurately and support against displacement.

3.3 REINFORCING

A. Place all reinforcement in the exact position shown on the plans and approved shop drawings and secure in position during the placing and compacting of concrete. Wire bars together with No. 16 gage wire with ties at all intersections except where spacing is less than 12 inches in each direction, in which case tie alternate intersections.

B. Place dobie blocks to maintain clearance from subgrade.

3.4 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

B. Install accessories in accordance with manufacturer's instructions, level and plumb with templates where necessary. Ensure items are not disturbed during concrete placement.

3.5 CONVEYING CONCRETE MIX

A. Unless specifically approved by the Engineer prior to placement of ready mix concrete, all concrete mix shall be placed and discharged completely within 90 minutes of the introduction of water into the mix or before the drum has been revolved 300 revolutions, whichever comes first.

B. Handle concrete from mixer to location of final placing as rapidly as practicable by methods which prevent segregation or loss of ingredients, and assure that quality is maintained.

C. Use only equipment conforming to ASTM C 94.

D. Use only approved pumping equipment that is rated for the lift and the capacity required for placement.

1. Control pneumatic placement to prevent segregation.

2. Loss of slump in pumping or pneumatic conveying equipment shall not exceed two inches (2”).

3. Do not use aluminum or aluminum alloy pipes.

3.6 CONTROL JOINTS

A. For flatwork, place control (contraction) joints of the type indicated in the plans prior to concrete curing.

B. Install joints spaced no more than 24 times the slap thickness (i.e. a 4-inch thick slab shall have a control joint at least every 96-inches = 8-feet). Contraction joints should be placed to produce panels that are as square as possible and never exceeding a length to width ratio of 1 ½ to 1

C. Joint depth shall be at least 25% of slab depth.

D. Tooled joints shall be installed using a grooving tool. Contraction joints may be tooled into the concrete surface at the time of placement. Joints may be tooled into the surface (first pass) prior to the onset of bleeding or immediately with the first pass of the floating operation.

E. Sawcut joints between 6-12 hours after finishing concrete, unless specifically approved otherwise by the engineer. Sawcut as soon as the concrete is hard enough to withstand the energy of sawing without raveling or dislodging aggregate particles, and that the edges abutting the cut do not chip from the saw blade.

3.7 REMOVAL OF FORMS

A. Formwork for columns, walls, and other parts not supporting weight of concrete may be removed as soon as concrete has hardened sufficiently to resist damage from removal.

3.8 FINISHES

A. Provide formed concrete walls to be left exposed with Sacked Finish.

1. Point and Patch: Patch defects, chip or rub off fins exceeding one-quarter inch (1/4) in height with Patch Mortar. Patch tie holes and defects and remove fins completely. When surface texture is impaired and form joints misaligned by more than one-eighth (1/8) inch, grind or bushhammer.

2. Sacked Finish: Remove forms and perform necessary patching as soon after placement as possible. Finish newly hardened concrete no later than the day following form removal. Wet surfaces and rub with carborundum brick or other abrasive until uniform color and texture are produced. No cement grout to be used other than cement paste drawn from concrete by rubbing process.

B. Concrete flatwork shall not be trowelled, use screed, float, and broom.

C. Stairs to receive a light broom finish parallel to the nose of the tread. And shall receive nose end treatment as shown in the plans.

D. Sidewalks to receive a light broom finish perpendicular to the direction of travel.

E. Patios to receive light broom finish.

F. Curbs and Gutter to receive light broom finish parallel to flow line of gutter.

G. Pedestrian ramps to receive a light broom finish perpendicular to the direction of travel.

H. Light pole, sign, fence foundations to receive light broom finish.

3.9 CURING AND PROTECTION

A. To preserve moisture in unformed concrete surfaces, apply one of the following immediately after placement and finishing.

1. Continuous mist spray.

2. Waterproof sheet materials, ASTM C 171.

3. Curing compound, ASTM C 309. Apply in accordance with recommendations of manufacturer immediately after water sheen has disappeared. Do not use on any surface against which additional concrete or other material is to be bonded or adhesively applied, unless it is proven that curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications. Provide curing compound compatible with hardener in areas where hardener is to be used.

B. Cure concrete for seven (7) days.

C. When mean daily outdoor temperature is less than 40°F, maintain temperature of concrete between 50°F and 70°F for required curing period.

3.10 SEALER

A. Apply sealer to vertical walls, stairs, and walkways. Apply two coats. Apply in accordance with manufactures recommendations.

3.11 TESTING

A. The Contractor shall obtain and pay for the services of certified materials testing laboratory to perform all sampling and testing of installed materials to assure that the requirements of this specification are met. The Contractor shall pay all testing costs associated with product submittal prior to use in the Work.

B. Perform the following testing:

1. Entrained Air – Test every 30 yards of concrete delivered to the project.

2. Slump – Test every 30 yards of concrete delivered to the project.

3. Strength characteristics – Test every 30 yards of concrete placement with four compressive test cylinders.

4. Temperature: If air temperature is less than 40°F, test every 30 yards of concrete delivered.

C. Test results shall be reported in writing to the Engineer within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

3.12 ACCEPTANCE

A. The Engineer will base acceptance of the concrete on parameters specified for the given concrete class. The Engineer will base acceptance of strength from the results of 28-day compression strength test results on cylinders made from concrete being placed. The engineer will consider average strength from three companion cylinders as one test.

B. Replace unacceptable concrete at no additional cost to the Owner.

C. The Engineer will use a price adjustment for concrete that does not meet the intended strength, but is allowed to remain in place by the Engineer, in accordance with the following pay factor (PF) reductions:

1. If compression strength is ≥ 100% of required, PF = 1.0.

2. If compression strength is ≥ 95% < 100% of required, PF = 0.90.

3. If compression strength is ≥ 90% < 95% of required, PF = 0.80.

4. If compression strength is < 90% of required, subject to rejection, if allowed to remain in place, the PF will be 0.50.

3.13 SPECIAL WARRANTY

A. Scaled or spalled surfaces exceeding 5% (randomly dispersed or concentrated) per twenty (20) square feet of concrete surfacing area will be considered defective and shall be replaced at the Contractor's expense. The area requiring replacement will be as directed by the Engineer.

END OF SECTION 32 13 13

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The Contractor shall provide chain link fencing and swing gates and appurtenant Work, complete and operable.

1.2 SUBMITTALS

A. Furnish submittals in accordance with the requirements of the specification for Submittal Procedures.

B. Shop drawings of fences and gates with all dimensions, details, and finishes. Drawings must include post foundations.

C. Product data: Manufacturer’s catalog indicating materials and a letter certifying that all conditions of the specifications have been met.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Chain link fencing and gates shall be products of a single manufacturer which has been successfully engaged in the production of such items for a period of at least 5 years.

B. Installer's Qualifications: Installation of the chain link fence shall be by the manufacturer or by a firm accepted and licensed by the manufacturer.

PART 2 - MATERIALS

2.1 GENERAL

A. All fencing and gates vary in height as per plan. All materials and components shall be new, first quality items specifically manufactured for the intended application.

2.2 CHAIN LINK FENCE FABRIC

A. Chain link fence fabric shall be made of steel wire helically wound and interwoven in such a manner as to provide a continuous mesh without knots or ties except in the form of knuckling or twisting the ends of the wire to form the desired selvage of the fabric.

B. Galvanized fence fabric shall be No. 11 gauge steel wire, 2-inch mesh, with top selvages knuckled and bottom selvages twisted and barbed. Fabric shall be galvanized in conformance with ASTM A392, Class 1, with not less than 1.2 ounces zinc per square foot of coated surface.

2.3 STEEL FENCE FRAME MEMBERS

A. Steel pipe produced in accordance with commercial standards. Minimum yield strength of 50,000 psi. Cold formed and welded per ASTM F1043 Group IC. Pipe sections to conform to ASTM A120, Schedule 40 standard weights.

B. 4’ to 6’ Fencing, Pipe Section Size

1. End and Corner Posts: 2.38” OD, 3.65 lb/ft

2. Line Posts: 1.90” OD, 2.72 lb/ft

3. Rail and Braces: 1.66” OD, 2.27 lb/ft.

4. Gate Posts:

Gate Panel Width	Gate Post (SCH 40)	
	Nominal Size	Outside Dia.
Up to 6 ft	2-1/2”	2.88”
6 – 10 ft	3-1/2”	4.00”
10 – 12 ft	6”	6.63”

C. 8’ to 12’ Fencing, Pipe Section Size

1. End and Corner Posts: 3-1/2” OD, 7.58 lb/ft

2. Line Posts: 2-7/8” OD, 5.80 lb/ft

3. Rail and Braces: 1.66” OD, 2.27 lb/ft.

2.4 FITTINGS

A. Chain link fence fittings per ASTM F 626. All ferrous metal fittings to be galvanized.

B. Post caps: Steel, cast iron or aluminum alloy; must be weatherproof to prevent moisture intrusion into post. Top with arm to be provided when barbed wire is specified or intermediate or line post tops to have loop for top rail when only rail is specified.

C. Rail ends: Formed steel or iron, designed to provide secure connection of top rails to terminal post and brace or other rails to terminal and intermediate posts.

D. Sleeves: Lengths of top rails to be connected using 6" sleeves with a .055 minimum wall thickness that allow for expansion or contraction of the rail.

E. Tie Wire: 9 gauge galvanized steel or aluminum for attachment of chain link fabric to rails. Hog rings attach fabric to tension wire to be 12-1/2 GA steel.

F. Fabric bands and brace bands to be pressed steel.

G. Tension (stretcher) bars to be made of one continuous piece of steel or aluminum, 3/16" x 3/4", in the same height as the fence. Provide one bar, per end or gate post and two bars per corner or pull post.

H. Tension wire: Galvanized steel wire, 7 gauge core, having a tensile strength of 75,000 psi.

I. Truss rods & tightened. Rod diameter 3/8".

J. Nuts, bolts and screws shall be steel, minimum size 3/8-inch diameter, hot-dip galvanized after fabrication.

K. Galvanized coating damaged during construction of the fencing shall be repaired by application of Galvo-Weld; Galvinox; or equal.

2.5 SWING GATE

A. Chain link swing gate and fittings per ASTM F626. All ferrous metal fittings to be galvanized.

B. Chain link swing gates as per ASTM F 900 Specifications for Industrial and Commercial Swing Gates.

C. Gate to be equipped with fork latch with pad-lock hole to be pressed steel.

D. Plunger to be hot-dipped galvanized drop rod, 1/2-inch diameter, 30-inches long, with a 4-inch long handle.

2.6 SLIDE GATE

A. Chain link slide gate and fittings per ASTM F626. All ferrous metal fittings to be galvanized.

B. Chain link slide gates as per ASTM F1184 Specifications for Industrial and Commercial Horizontal Slide Gates.

C. Gate to be equipped with latch with pad-lock hole to be pressed steel.

2.7 POST FOUNDATIONS

A. Concrete Class 3000 in accordance with 32 13 13 Concrete for Exterior Improvements, Section 2.4.

PART 3 - EXECUTION

3.1 GENERAL

A. Inspection: Prior to commencing installation, require Installer to inspect all areas and conditions within which Work of this Section will be performed. Dimensions and clearances shall be verified. Final grading shall be completed and all earth, brush, or other obstructions which interfere with the proper alignment and construction of fencing shall be removed.

B. Unless otherwise indicated, all posts shall be set in concrete. Gate and related posts, corner posts, and other critical elements shall be provided with concrete foundations which are designed by an engineer to safely accommodate the loads to which they will be subjected.

3.2 INSTALLATION

A. Excavation: Holes for posts shall be drilled or hand excavated to the diameters and spacing indicated on the plans, in firm, undisturbed or compacted soil. Post foundations shall comply with the following:

B. Holes shall be excavated to a diameter not less than 12-inches or not less than 5 times the largest dimension of the item being anchored, whichever is larger.

C. Depth for holes shall be not less than 40 inches.

D. Setting Posts: Line posts shall be spaced at not more than 10-foot intervals, measured from center to center of the posts, parallel to the ground slope. Posts shall be set plumb and shall be centered in holes, 4-inches above the bottom of the excavation, with posts extending not less than 36-inches below finish grade surface.

E. Corner posts shall be installed where changes in the fence lines equal or exceed 30 degrees, measured horizontally.

F. Each post shall be properly aligned vertically and its top aligned parallel to the ground slope. Posts shall be maintained in proper position during placement and finishing operations.

G. Concrete: Concrete for footings may be placed without forms, providing the ground is firm enough to permit excavation to neat line dimensions. Prior to placing concrete, the earth around the hole shall be thoroughly moistened.

H. Encasement concrete for footings shall be placed immediately after mixing in a manner such that there will be no concentration of the large aggregates. The concrete shall be consolidated by tamping or vibrating.

I. Concrete footings shall have a neat appearance and shall be extended 2-inches above grade and troweled to a crown to shed water.

J. A minimum of 7 days shall elapse after placing the concrete footings before the fence fabric is fastened to the posts.

K. Bracing: Bracing shall be provided at all ends, corners, gates, and intermediate brace posts. Corner posts and intermediate brace posts shall be braced in both directions. Horizontal brace rails shall be set midway between the top rail and the ground, running from the corner, end, intermediate brace or gate post to the first line post. Diagonal tension members shall connect tautly between posts below horizontal braces.

L. Braces shall be so installed that posts remain plumb when diagonal rod is under proper tension.

M. Intermediate Brace Posts: Where straight runs of fencing exceed 500-feet, intermediate brace posts shall be installed, spaced equally between ends or corners; with additional posts provided as required, such that the spacing between intermediate brace posts does not exceed 500-feet. Intermediate brace posts shall be equivalent in size to corner posts and shall be braced with horizontal brace rails and diagonal tension members in both directions.

N. Top Rails: Top rails shall be run continuously through post caps, bending to radius for curved runs. Expansion couplings shall be provided as recommended by the fencing manufacturer.

O. Tension Wire: Continuous bottom tension wire shall be stretched tight with turnbuckles at end, gate, intermediate, and corner posts. Tension wire shall be installed on a straight grade between posts, with approximately 2-inches of space between finish grade and bottom selvage, unless otherwise indicated. Tension wire shall be tied to each post with not less than 6 gauge galvanized wire.

P. Fabric: The chain-link fabric shall be fastened on the secured side of the posts. Fabric shall be stretched and securely fastened to posts. Between posts, top and bottom edges of the fabric shall be fastened to the top rail and bottom tension wire, respectively. Fabric shall be stretched and anchored in such a manner that it remains in tension after the pulling force is released.

Q. Tie Wires: Tie wire shall be bent to conform to the diameter of the pipe to which it is attached, clasping pipe and fabric firmly with ends twisted at least two full turns. Ends of wire shall be bent back to minimize hazard to persons or clothing.

R. Fabric shall be tied to line posts with tie wires spaced at 12-inches on center.

S. Fabric shall be tied to rails and braces with tie wires spaced at 14-inches on center.

T. Fabric shall be tied to tension wires, with hog rings spaced 18-inches on center.

U. Stretcher Bars: Fabric shall be fastened to end, corner, intermediate brace, and gate posts with stretcher bars. Bars shall be threaded through or clamped to fabric at 4-inches on center and secured to posts with stretcher bar bands spaced no more than 14-inches on center.

V. Fasteners: Nuts for tension bands and hardware bolts shall be installed on the side of fence opposite the fabric side. Ends of bolts shall be peened or the threads scored to prevent removal of nuts.

3.3 GROUNDING

A. Fences crossed by power lines of 600 volts or more shall be grounded at or near the point of crossing and at distances not exceeding 150-feet on each side of the crossing.

B. Fences, gates and appurtenances enclosing electrical equipment areas, gas yards, or other hazardous areas shall be electrically continuous and grounded.

C. Ground conductor shall consist of No. 8 AWG solid copper wire. Grounding electrodes shall be 3/4-inch by 10-foot long copper-'clad steel rod. Electrodes shall be driven into the earth so that the top of the electrode is at least 6-inches below grade.

1. Where driving is impracticable, electrodes shall be buried a minimum of 12-inches deep and radically from the fence. Top of electrode shall be not less than 2-feet or more than 8-feet from the fence.

D. Ground conductor shall be clamped to the fence and electrodes with bronze grounding clamps so as to create electrical continuity between fence posts, fence fabric, and ground rods. After installation, the total resistance of fence to ground shall not be greater than 25 ohms.

END OF SECTION 32 31 13

SECTION 32 52 00 – SYNTHETIC TURF

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnishing, delivery, installation and warranty of a complete synthetic turf system including under field drainage, field turf, field markings and resilient infill material.

1.2 RELATED SECTIONS

A. Section 30 00 00 – Earthwork

1.3 REFERENCES

A. ATSM Standard Test Methods

1. D1577 – Standard Test Method for Linear Density of Textile Fiber
2. D5848 – Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
3. D418 – Standard Test Method for Testing Pile Yarn Floor Covering Construction
4. D1338 – Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
5. D1682 – Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
6. D5034 – Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)
7. F1015 – Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
8. F1551 – Standard Test Methods for Water Permeability
9. D2859 – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
10. F355 – Standard Test Method for Shock-Absorbing Properties of Playing Surfaces
11. F1936 – Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field
12. D1557 – Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. National Federation of High School (NFHS) Rules, as applicable. FIFA Rules of the Game or NCAA Soccer Rules, as applicable.

C. ASBA Sports Fields Contractor Manual

D. STC Suggested Guidelines for the Essential Elements of Synthetic Turf Systems

1.4 SITE EXAMINATION

A. The Contractor shall verify clearing and grubbing operations were adequate prior to repairing subgrade.

B. The Contractor, along with the Engineer, Grading Subcontractor (if applicable) and Synthetic Turf Subcontractor (if applicable), shall attend a joint inspection of the completed sub-base assembly for the purpose of determining the acceptability of that surface prior to installing the synthetic turf product and to confirm actual site dimensions.

C. The inspection shall include a check for planarity. The finished surface shall not vary from a true plane more than 1/4” in 10 feet when measured in any direction. The Contractor shall provide all required tools and materials needed for the planarity check, which may include but not be limited to, a laser level, string line, straight edge and/or other assessment materials. The Contractor shall mark in the field any deviations from grade in excess of those specified above, as well as provide a marked up plan locating the deviations. The Contractor shall correct any deviations to the satisfaction of the Engineer and Synthetic Turf installer.

D. The compaction of aggregate base shall be 95% to Standard Proctor.

E. The Contractor shall have a state registered surveyor conduct an elevation survey of the field area in a 25’ grid to determine and verify that subgrade elevations and slopes are within previously specified tolerances. This elevation survey may require further verification of smaller areas within the 25’ grid if determined necessary by the Engineer.

F. When any or all corrective procedures have been completed, the finished sub-base surface must be re-inspected, with the same representatives attending as the initial inspection. If required, additional repair and inspections are to be conducted until the subbase surface is deemed acceptable by the Engineer and Synthetic Turf Installer

G. Once the sub-base surface has been deemed acceptable, the Contractor shall submit a written certificate indicating the acceptance of:

1. The sub-base construction finished surface as totally suitable for the application of the selected synthetic turf system, and

2. The sub-base construction as totally suitable for work under this section to proceed with the final installation and fully warrant the athletic surface installation for the period and conditions specified herein.

H. Commencement of work under this section shall constitute acceptance of the work completed under other sections by the Contractor, acceptance of dimensions of the

subbase, and hence, no claims for extra work based upon these conditions will be permitted.

1.5 ENVIRONMENTAL CONDITIONS

A. Install synthetic turf surfacing only when ambient air temperature is 35 F or above and the relative humidity is below 35% or as specified by the product manufacturer. Installation will not proceed if rain is imminent.

B. Install product only when prepared base is suitably free of dirt, dust, and petroleum products, is moisture free and sufficiently secured to prevent unwanted pedestrian and vehicular access.

1.6 QUALITY CONTROL

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section.

1. Basis of design shall be “Fielder’s Choice 416-52” synthetic turf system as provided by Sporturf™. (800) 562-4492, www.sporturf.com or approved equal.

2. Materials other than those listed must be approved 15 days prior by written addendum. Materials from non-approved manufacturers will not be accepted.

3. Must be experienced in the manufacturing of tall pile synthetic infill grass systems with the same fiber as specified.

4. Must have at least 50 fields of 65,000 sq. ft. or more of the specified material, fiber, infill material and backing, or similar system, in play in the United States.

5. Source Limitations: Obtain synthetic turf fiber through one source from a single manufacturer and provide fiber manufacturer’s warranty.

6. Manufacturer must be a member in good standing with the STC.

7. Manufacturer must utilize best practices as certified by ISO-9001 and ISO-14001.

8. Manufacturer must be owned and operated in the U.S.A.

9. Manufacturer must have no periods of insolvency over the last 25 years.

B. Installer Qualifications: Company specializing in performing the work of this section.

1. The Synthetic Turf Installer must provide competent workmen skilled in this type of synthetic grass installation. All technicians must have installed tall pile synthetic turf.

2. The designated Supervisory Personnel on the project must be certified, in writing by the Turf Manufacturer, as competent in the installation of this material, including seaming and proper installation of the infill mixture.

C. Prior to the beginning of installation, the Synthetic Turf Installer shall inspect the subbase. The installer will accept the sub-base in writing when the general contractor provides test results for compaction, planarity and permeability that are in compliance with the synthetic turf manufacturer's recommendations and as stated herein.

D. The Synthetic Turf Installer shall provide the necessary testing data to the Owner that the finished field meets the required initial shock attenuation, as per ASTM F1936.

E. Remove defective Work, whether the result of poor workmanship, defective products or damage, which has been rejected by the Engineer as unacceptable. Replace defective work in conformance with the Contract Documents.

1.7 SUBMITTALS

A. Submit the following with Proposal:

1. Submit the exact product name/description as well as the name and location of the manufacturers and suppliers of each component. Manufacturers and suppliers must not be changed after the contract is awarded unless approved by the Owner in writing.

2. Submit two (2) samples, 12"x12" minimum size, illustrating details of finished product as bid, including full cross section of subbase, turf, and infill material.

3. Product Literature: Submit two (2) copies of manufacturer's recommended installation and maintenance information, including any technical criteria for evaluation of the installed product. Descriptions of all equipment recommended for the maintenance and repair of turf product, as well as a list of any activities not recommended relative to the warranty.

4. Submit a 1-lb sample of the selected bid infill material(s).

5. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.

6. Certified copies of independent (third-party) laboratory reports on ASTM tests as follows:

a. Pile Height, Face Width & Total Fabric Weight, ASTM D418 or D5848

b. Primary & Secondary Backing Weights, ASTM D418 or D5848

c. Tuft Bind, ASTM D1335

d. Grab Tear Strength, ASTM D1682 or D5034

e. Verification that product meets Gmax minimums for ASTM F1936 for life of installation.

7. ASTM test submittals may vary by no more than ¼" and 6 oz. of the specified product to bid. Bid winner must show new ASTM tests with contract submittals.

8. Name and experience of the designated supervisory personnel assigned to this project shall be submitted with the proposal. Changes to this assignment after contract can only be made if approved in writing by the Owner. Include a listing of other on-site personnel and their experience.

9. The Synthetic Turf Installer and Turf Manufacturer shall provide evidence that the turf system does not violate any other manufacturer's patents, patents allowed or patents pending.

10. The Synthetic Turf Installer and the Turf Manufacturer shall provide complete information on its warranty/insurance policy and coverage, as noted in Section 1.8. Provide a complete sample copy of all warranty documentation.

B. Prior to ordering of materials:

1. The Contractor shall submit Shop Drawings indicating:

a. Field Layout.

b. Field Marking Plan and details for baseball field.

c. Logos with color samples.

d. Roll/Seaming Layout.

e. Methods of attachment, field openings and perimeter conditions.

2. The Turf Manufacturer must submit the fiber manufacturer's name, type of fiber and composition of fiber.

3. Shop Drawings: Shop drawings are to be submitted for review by the Engineer prior to manufacture of product and are to contain information regarding locations of seams, anchorage details, goal post/insert details, line and event marking locations and dimensions, turf roll widths and dimensions.

C. Prior to Final Acceptance, the Contractor shall submit to the Owner:

1. Two (2) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and markings. Also address remedial measures for graffiti removal.

2. Written verification of a suitable training session for the Owner's maintenance staff on how to maintain the completed installation.

3. Project Record Documents: Record actual locations of seams, drains or other pertinent information.

4. Base Conditions Acceptance: Prior to installation of the synthetic turf system, the Contractor is to submit in writing an acceptance of the compacted base and sub-base system

as being acceptable by the turf manufacturer and suitable for the successful installation of the proprietary synthetic turf system.

1.8 WARRANTY

A. The Contractor shall provide a minimum one (1) year installation warranty.

B. The Manufacturer shall provide a minimum eight (8) year, 3rd party insured warranty policy by the manufacturer, against defects in materials. Defects shall include, but not be limited to ultraviolet ray fading, degradation, or excessive wear of fiber.

C. Warranty must be backed by a surety licensed to do business in the State of Idaho.

D. Submit information confirming that a 3rd Party Insurance Policy, non-cancelable, non-prorated, and pre-paid for the entire duration of the warranty is in effect covering this installation, and underwritten by a Best A Rated Insurance Carrier.

E. Warranty shall be for full replacement of any damaged product within the warranty period. Warranty shall be comprehensive and sufficient to replace entire field if necessary.

F. Warranty shall become effective from the date of substantial completion.

G. Warranty shall include Gmax testing on a bi-annual basis demonstrating an initial Gmax not exceeding 125 G’s initially and not exceeding 175 G’s at any time during the warranty period. Test results shall be submitted to the Engineer within 30 days of each test.

H. The Warranty shall contain no usage limits for warranted field.

I. Submit Manufacturer Warranty and ensure that forms have been completed in Owner’s name and registered with Manufacturer.

J. Supply Warranty Insurance Certificate with complete information on contacting the Insurance Carrier should a claim need to be made. Warranty insurance policy shall have the Owner listed as insured.

PART 2 - PRODUCTS

2.1 SUPPLIER QUALIFICATIONS

A. The Owner has conducted an extensive review of synthetic turf products, including visiting installed sites and review of other agencies’ review criteria. Based upon their research, they have established the following criteria for acceptance of a synthetic turf product. No variation from these criteria shall be allowed. The Owner’s review is considered final.

B. The Synthetic Turf Installer shall have minimum experience of at least 5 years, actively selling, installing and maintaining in-fill synthetic turf project of similar size.

C. The Respondent must have installed a minimum of 10 baseball specific sand/rubber in-filled synthetic turf fields.

D. The Synthetic Turf Installer must provide a list of references based on previous installations.

E. The Respondent must be a member in good standing with the STC (Synthetic Turf Council).

F. Installation team shall be established, insured installation firm experienced as a premium turf installer with suitable equipment and supervisory personnel, with a minimum of 5 years' experience with 15 foot wide tufted materials.

G. Installation team shall be trained and certified, in writing, by the turf manufacturer, as competent in the installation of the specified material, including seaming and proper installation of the infill mixture.

H. ASBA Certified Field Builder shall be on site for at least 25% of the installation of the sub-base and synthetic turf.

2.2 TURF SYSTEM

A. Turf Fiber:

1. The turf fiber must be tufted to the backing with a minimum tuft bind of 10 pounds.

2. The tufted fiber weight shall be a minimum of 52 ounces per square yard.

3. The turf fiber shall be non-abrasive and a minimum of 100 microns thick.

4. The turf fiber must contain less than 100 ppm of lead in all colors.

5. The turf fibers must be from the same dye lots.

6. The turf fibers must be from a single source.

7. The turf fibers must be guaranteed for a period of Eight Years not to fade or fail (as distinguished from a change in texture) or have a pile height decrease to 50% of pile height as result of UV degradation.

8. The infill must be within ¼" of the tips of the fibers upon completion of the install.

9. The turf fiber must retain a minimum of 75% of its original fibril width after 10,000 cycles on the Lisport Studded Roll Test Machine.

10. The pile fiber shall possess the following characteristics:

Characteristic	Value	Test
Linear Density (Denier)	12,600 Combined	ASTM D 1577
Yarn Thickness	100 Microns (PE slit); 100 Microns (PP)	ASTM D 3218
Tensile Strength	37 N (PE slit);16.5 N (PP)	ASTM D 2256
Pile Weight*	52 oz./yd2	ASTM D 5848
Fiber manufacturer must be from the same source		
The above specifications are nominal. *Values are +/- 5%.		

11. The pile fabric shall possess the following physical characteristics:

Characteristic	Value	Test
Finished Pile Height*	1 7/8" (47mm)	ASTM D 5823
Product Weight (total)*	81 oz./yd2	ASTM D 3218
Primary Backing Weight*	7.4 oz./yd2	ASTM D 2256
Secondary coating Weight**	22 oz./yd2	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength	200-1b-F	ASTM D 5034
Tuft Bind	>10-1b-F	ASTM D 1335
Infill (Sand)	1 lb Silica Sand	None
Infill (Rubber)	3 lbs. SBR Rubber	None
Except where noted as a minimum, the above specifications are nominal.		
* Values are +/- 5%. **All values are +/- 3 oz./yd2.		

B. Backing Material

1. Primary Backing:

   a. Primary backing must be a dual layered woven polypropylene material.

   b. Primary backing system weight must be a minimum of 7.0 ounces/square yard.

2. Secondary Backing:

   a. Secondary backing system weight must be a minimum of 22 ounces/ square yard.

   b. Secondary backing shall saturate the primary backing and effectively lock the fiber tufts in place to the primary backing.

   c. Secondary backing must be a heat activated polyurethane coating with no vegetable based polyols.

   d. Secondary backing system shall have minimum tuft bind strength of 10 pounds.

   e. Secondary backing must have Drainage Perforations: 3/16” to ¼” diameter at 4 inches or less on center each way. Non-perforated backing is not acceptable.

C. Turf roll seams: to be sewn or glued on site so that no openings larger than the porous backing mat openings are created. Roll width to coincide with tufted-in sports line markings where possible. All turf fabric edges to be securely bound as per the perimeter detail design. Adhesives for joining seams of turf together shall be Nordot 34G, Mapei 2K, Turf Claw, hot melt technology or equivalent. No substitutions.

D. Fabric surface: shall be constructed and installed in minimum widths of 15 feet with no longitudinal or transverse seams, except for inlaid lines with a finish roll assembly. Seams shall be 15’-0” apart. Rolls that do not comply with the proper length or conform to the seaming diagram, as approved prior to installation, shall be rejected from the site. No fitted pieces shall be allowed to true alignment. Parallel seams only are acceptable in the main playing areas. No head seams are acceptable on the sports fields.

E. The entire system shall be resistant to weather, including ultra-violet light and heat degradation; insects, rot, mildew and fungus growth and be non-allergenic and non-toxic.

F. Fiber Colors: Submit samples of the full available color palette for owner approval prior to placing order for turf including at a minimum the below listed colors: (Specified)

1. Color 1: Grass, green in standard color, as selected by the Owner

2. Color 2: White for baseball lines and markings

3. Color 3: Red Clay for baseball infield

4. Additional colors as needed.

G. Logos shall be provided by the owner in a standard PDF or EPS file to the selected contractor. Contractor shall submit a shop drawing of Logo to include colors and dimensions for approval by the Owner prior to ordering.

H. The turf material shall be non-combustible and pass the DIN standard Pill Burn test or ASTM D 2859.

2.3 LINES, MARKINGS AND IN-LAID TURF

A. All line material is to be identical dimensionally and of the same material to that used for the main playing field fiber system.

B. Inlaid material as indicated on the drawings to be identical, except for fiber color, as the main turf field.

C. All lines and markings shall be accurately set and surveyed to within ½” tolerance of the location shown on the drawings and in conformance with specified field marking standards.

D. All lines and markings shall be installed prior to any installation of in-fill material.

2.4 SYNTHETIC GLUE MATERIAL

A. Adhesive products shall be Nordot 34G, Mapei 2K, Turf Claw, hot melt technology or equivalent as approved by the engineer.

B. Any adhesive products required for the installation of a proposed turf system shall be purpose-suited to the system. The material and application methods shall be as recommended by the adhesive manufacturer.

C. Disposal of adhesive containers and unused adhesives as well as any fees resulting from such disposal shall be the responsibility of the Contractor.

2.5 INFILL MATERIAL

A. The synthetic infill material shall consist of a blend of graded, silica sand and treated and mixed ground rubber.

1. Sand: specially-graded, dust-free silica sand shall be placed on the turf in a minimum quantity of 1 pound/ square foot and shall include test results that demonstrate the following minimum properties:

a. Color – tan

b. Sand shall be round non-angular in shape

c. Roundness – 0.6+

d. Hardness - 0.6-0.8 on the Mohs Scale

e. Size – 1.00 mm ± 0.15 mm

f. Density – 90 – 95 lbs/ cu ft.

g. Dust - < 0.001 %

h. Angle of Repose - < 30°

i. Sand shall be heavy metal safe

2. Rubber: Rubber is SBR ambient (styrene butadiene rubber) rubber, color black, 10-18 mesh, that is 99% fiber free and is heavy metal safe. Rubber shall be placed on the turf in a minimum quantity as referenced the table in Section 2.02 in this document and shall be of the following Mesh Size Distribution:

Mesh Size	% Retained
10	0-15%
12	5-30%
16	40-70%
20	15-35%
30	0-10%
40	0-1%
Pan	0-1%

B. The infill materials shall be installed to allow an exposed fiber of not less than ¼ inch after finish brushing and ½ inch after 180 days.

C. Sufficient quantities of the top dressing infill material must be stored on site at the time of installation to be used 180 days after the completion of the installation to mitigate the differential settling of high traffic zones on the field. This fill addition must be carried out by the Contractor within the time specified above.

D. 100% new infill only. No replacement rubber from other turf permitted.

E. New infill must have point of origin with sieve analysis.

PART 3 - EXECUTION

3.1 GENERAL

A. Installation of the synthetic turf system is to comply with the manufacturer's recommendations, requirements and the reviewed and approved shop drawings.

B. Perform all work in strict accordance with the Contract Documents and the manufacturer's specifications and instructions. Only those skilled technicians proposed in the bid phase are to be assigned to this project by the Contractor.

C. The designated Supervisor for the Synthetic Turf Installer must be present during any and all construction activity associated with the field installation, including testing, cleanup and training.

D. All products and equipment are to be from sources approved by the authorized turf manufacturer and conform to the specifications.

3.2 PRODUCT DELIVERY, STORAGE & HANDLING

A. Deliver products to site in original containers and wrappers as agreed between the Engineer and Contractor. Inspect products upon delivery for damage.

B. Store products in a location and in a position that protects them from crush damage or any other defects.

C. Handle and store (on and off site) all materials safely to ensure their physical properties are not adversely affected and that they are not subject to vandalism or damage.

D. Rubber and sand infill shall arrive dry and loose. No rubber shall be accepted that is bulked or solid.

E. Adhesives shall arrive in dry, sealed containers.

F. Rubber infill shall arrive in large sacks or bags without tears or loose material about.

3.3 PLUGS AND FITTINGS

A. All permanent field fittings penetrating the turf indicated on the drawings shall be securely sealed to the turf surface so that no infill material is allowed to spill to the substrate.

3.4 TURF INSTALLATION

A. Install synthetic turf system in accordance with the manufacturer's written installation instructions.

B. All inlaid areas shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.

C. Turf shall be attached to the perimeter edge as shown in the construction plans and as per the manufacturer.

D. All seams and inlaid areas shall be brushed thoroughly before infill materials are installed.

E. All terminations shall be as detailed and approved in the shop drawings.

3.5 INFILL INSTALLATION

A. The synthetic turf shall be thoroughly brushed prior to installation of infill materials to remove wrinkles.

B. The infill materials shall be installed in layers, in accordance with the turf manufacturer's installation instructions. Any mix of materials shall be uniform and even in thickness.

C. Turf shall remain free draining at all times before, during and after the infill materials are installed.

3.6 FIELD MARKINGS

A. Sports field lines and event markings as per the Contract Documents shall be accurately positioned and marked in accordance with the current rules of the governing body. All lines shall be straight and true along the length of the marked boundary to within ½" along the length of any such boundary.

B. All markings shall be accurately measured and applied in widths and colors as required by the governing body and selected from the manufacturer's range of standard colors, or not more than one custom color if the manufacturer's standard colors do not meet the Owner's requirements.

3.7 CLEANING AND COMPLETION

A. Protect all installed work from other construction activities as installation progresses.

B. The Contractor shall keep the area clean throughout the construction period and free from the installation process, including track surfaces.

C. Upon completion of the installation, thoroughly clean surfaces and site of all refuse resulting from the installation process, including track surfaces.

D. Any damage to existing fixtures or facilities resulting from the installation of the synthetic turf system shall be repaired to original condition at the Contractor's expense prior to Substantial Completion and commencement of the Warranty Period.

E. A deficiency list will be produced by the Engineer at the conclusion of the project. All installation project deficiencies not in dispute must be remedied by the Contractor prior to the issuance of a certificate of Substantial Completion.

F. Contractor to provide a written acceptance by the Turf Manufacturer that the turf and base system is installed in accordance with their recommendations prior to final completion.

END OF SECTION 32 52 00

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SECTION 32 80 00 – IRRIGATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of Irrigation Control Assembly and control wires, at new and existing shrub and lawn zones.

B. Installation of Central Control system, control wires, at shrub and lawn zones.

1.2 RELATED REQUIREMENTS

A. Division 31 - Earthwork

B. Section 32 92 23 - Sodding

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with other trades affecting and affected by Work of this Section.

B. Preinstallation Meeting: Convene one week (minimum) prior to commencing work of this Section to coordinate utility marking procedures.

1.4 INFORMATION SUBMITTALS

A. Installer Qualifications:

1. Company specializing in performing Work of this Section who has successfully completed a minimum of 5 comparable scale projects and have the following licenses:

a. For Irrigation Work:

1) Valid Landscape Contractors license.

2) Valid Landscape Business license.

b. Successfully completed at least 5 comparable scale projects.

1) Submit names, addresses, dates, owners and locations of previous projects if requested by Owner's Representative.

B. Quality Assurance Data:

1. Submit license information and project references including name and location of previous projects, date of installation, square footage of areas with irrigation work, description of irrigation system, and Owner's contact information.

C. Controller Programming Schedule:

1. Prepare a program for the irrigation controller for Spring/Summer-Summer-Summer/Fall. Indicate start times, watering duration, day of week, repeat cycle mode, program mode, precipitation rates in inches per hour, and application quantities. Coordinate operation and programming with Owner's Representative.

D. Zoning Chart:

1. Submit colored and laminated chart showing each zone and their actual precipitation rates.

1.5 ACTION SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings called for in the installation details. Show products required for proper installation, their relative locations, and critical dimensions. Note modifications to installation details.

B. Product Data:

1. Submit Manufacturer's catalog cut sheets, specifications, and installation instructions for all material as noted in this section and on drawings. Failure to do so may result in non-acceptance of materials already used or hauled to the site. Any removal or delays incurred will be at the expense of the Contractor

1.6 CLOSEOUT SUBMITTALS

A. Record Drawings:

1. Keep one complete set of contract documents as Project Documents. Keep documents current. Do not permanently cover work until as-built information is recorded.

2. Record work which is installed differently than shown on the construction drawings.

3. Record accurate reference dimensions, measured from at least two permanent reference points, of each irrigation system valve, each backflow prevention device, each sleeve end, each main line stub out, and other irrigation components enclosed within a valve box. Use red ink to legibly re-draft actual dimensions of installed work. Include location of surge protection, and sensors used in the project.

4. Include GPS coordinates for all valves and sensors used on project.

5. Submit project record (as-built) drawings to Owner's Representative for approval prior to system demonstration to Owner.

6. Completion of the Record Drawings will be a prerequisite for the Final Completion Review.

B. Operation and Maintenance Data:

1. Written instructions for operation and maintenance of system and controls, seasonal activation and shutdown, and manufacturer's parts catalog.

1.7 MAINTENANCE MATERIAL SUBMITTAL

A. Provide the following for Owner's use in maintenance of project.

1. Extra Valve Keys for Manual Valves: One.

2. Extra Valve Box Keys: One.

3. Wrenches: One for each type head core and for removing and installing each type head.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original unopened packaging with legible manufacturer's identification.

B. Comply with manufacturer's recommendations for storage and protection.

1. Store in a cool, dry place out of direct sunlight.

2. Protect from damage by the elements and construction procedures.

3. Store plastic pipe on firm, level supports.

4. Store plastic pipe cement in cool location.

1.9 ENVIRONMENTAL CONDITIONS

A. Temperature of mating surfaces of plastic pipe and fittings to be between 40 degrees Fahrenheit and 100 degrees Fahrenheit. Perform no PVC Solvent welding in rainy weather except under cover.

1.10 REVIEWS

A. Request the following reviews by the Owner's Representative two days (min.) in advance:

1. Irrigation Head Layout

2. Pressure Test and Mainline Installation

3. Substantial Completion

4. System Demonstration to Owner

5. Final Completion

B. Coordinate Reviews to coincide with regular progress meetings where possible.

1.11 MAINTENANCE

A. During period between system installation and Final Completion Review provide maintenance to assure proper operation of the irrigation system.

1.12 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide one year warranty following Final Completion granted by Owner's Representative or one full growing season following Final Completion, whichever is later.

C. Inspection: Visit work at least once a month during warranty period. Notify Owner's Representative and Owner in writing of any observed conditions requiring attention. Failure to provide such notification renders any deficiencies the Contractor's responsibility to rectify.

D. At the end of the warranty period, as directed by Owner's Representative and at no additional cost to the Owner:

1. Irrigation system must be in proper working condition.

2. Replace work of this Section as necessary to restore system to proper working condition following the Contract Documents.

3. Complete corrective warranty work within 30 days of warranty review.

E. Contractor is not responsible for loss or damage to Work of theis Section caused by unusually extreme weather, vandalism, or lack of Owner's maintenance during warranty period.

PART 2 PRODUCTS

2.1 IRRIGATION SYSTEM MATERIALS

A. Use only new materials of brands and types shown on Drawings or specified herein.

B. Similar materials must be products of one manufacturer unless otherwise approved.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PIPE MATERIALS

A. Mainline Pipe, Lateral Line Pipe, and Irrigation Sleeves: Schedule 40 PVC Pipe, Type 1, normal impact: IPS, NSF approved conforming to ASTM D1784, ASTM D1785.

B. Risers: One piece schedule 80 gray PVC Pipe, Type 1, threaded at both ends conforming to ASTM D1784 and ASTM D2464. No snap-risers.

C. Fittings: Polyvinyl chloride type 1, white schedule 40 and gray schedule 80; ASTM D1784, ASTM D2466, or ASTM D2464, as applicable.

D. Swing Joint Assembly Pipe and Fittings: Double swing joint risers as detailed. Swing-Pipe, snap, and "Funny pipe" risers not acceptable.

E. Flex Riser Assembly: 18 inch minimum, 3 feet maximum Swing-Pipe with transfer barb 90 degree ells at both ends and a marlex ell below the irrigation head.

F. Electrical Conduit and Fittings:

1. Underground: Plastic, Class 3, Federal Specification W-C-1094.

2. Above Ground: Aluminum, Federal Specification WW-G-540.

G. PVC Solvent Cement: NSF approved solvent for Class 1245-B&C PVC through 4 inches conforming to ASTM D 2564 for PVC pipe and fittings. Ensure that manufacturer's expiration date is not exceeded.

1. IPS Corporation Weld-on #704 or #711.

2. At main lines: IPS Corporation Weld-On #705 PVC.

3. At lateral lines: IPS Corporation Weld-On #705 PVC or #721 PVC.

H. PVC Cleaner and Primer:

1. IPS Weld-on P-70 or as recommended by PVC Pipe manufacturer.

2. Oatey Lo-V.O.C. Purple Primer #31903.

2.3 VALVES

A. Isolation Valves - 3 inch and under: Threaded gate valve with resilient wedge sized to match mainline with wheel handle.

1. Approved Products:

a. Kennedy C-509 Figure Number 8057SS, or approved.

b. Nibco T-113 gate valve with bronze handle, or approved.

B. Isolation Valves - over 3 inches: Flanged gate valve with resilient wedge sized to match mainline with wheel handle.

1. Approved Products:

a. Kennedy C-509 Figure Number 8561ASS, or approved.

C. Control Valve Assembly:

1. Automatic Control Valve: Globe type, 200 psi rated, threaded connections with cross type operating handle designed to receive operating key. Size according to Valve Schedule on Drawing.

a. Approved Products:

1) Hunter ICV

2) Rainbird PEB

2. Shut Off Valve: USA manufactured gate valve. 120 psi cold water rated, constructed of brass or bronze on 2 inch and under valves with bronze wheel handle.

a. Approved Products:

1) Nibco T-113

2) Unionized angle-globe type sized to match main line: Nibco, Champion, or pre-approved equal.

D. Quick Coupling Valves:

1. Approved Products:

a. Hunter HQ44-LRC.

b. Rain Bird 44 RC.

E. Hose Bib Valve: 3/4" inverted garden valve, heavy duty with floating seat, loose key.

1. Approved Products:

a. Nibco, or pre-approved equal.

F. Master Valve: 24V AC, normally open .

1. Approved Products:

a. Size: 2 inch.

b. Buckner/Superior Manufacture.

c. Model 710 by Bermad.

G. Flow Sensor: PVC tee type sensor.

1. Approved Products:

    a. Model No. FS300P by Rain Bird.

2. Approved Products:

    a. Model FCT-200 by Hunter.

H. Manual Drain Valve: Globe or angle brass manual valve with non-floating seat disk that allows positive drainage.

1. Approved Products:

    a. Manufactured by Arrowhead.

    b. Nibco, Champion, or pre-approved equal.

2.4 VALVE BOXES

A. Valve box of suitable size with t-top type lid bolted closed.

1. Green box and green lid in plant bed areas.

2. Black box and green lid in lawn areas.

B. Install valves in the following valve boxes:

1. Control Valve Assembly: (2) Carson 1419-12.

2. Control Valve Assembly: (2) Standard 12" Pentek, Ametek, or pre-approved equal.

3. Control Valve Assembly: (2) Rain Bird VB-STD.

4. Quick Coupling Valves: Carson 910-18, T-Lid.

5. Quick Coupling Assembly: (2) Carson 1419-12.

6. Hose Bib: 10" round Pentek, Ametek, or pre-approved equal.

7. Manual Drain Valves: 10" round Pentek, Ametek, or pre-approved equal.

8. Manual Drain Valves: Carson 910-18.

9. Isolation Valves: Carson 910-18.

10. Battery Operated Control Valves: Brooks #38-PB Steel Cover.

11. Traffic Rated Box: Brooks, No.37 MB - Body, No. 37 - T Cast Iron Cover.

12. Traffic Rated Box: Brook's, Christy's, Oldcastle Precast, or pre-approved equal. Mark lids with permanent "Irrigation" label.

13. Other Valves: Sized as applicable by Pentek, Ametek, or pre-approval equal.

14. Other Valves: Sized as applicable by Carson.

2.5 IRRIGATION HEADS

A. Makes and models shown on Drawings, or approved.

2.6 WIRE

A. Zone Control Wire (conventional system): Install according to manufacturer's wire schedule for valve specifications. 14 gauge minimum. Type AWG-UF, bearing U.S. approval. Spare set of control wires to be run to each control valve:

1. Colors:

a. red - control valve wire

b. white - common wire

c. yellow - spare common wire

d. black - spare control valve wire

e. blue - tracer wire

B. Zone Control Wire (2-Wire system):

1. Approved products:

a. Zone Control Wire (2-Wire) Rainbird System: Paige Electric, Model # P7072D-REV17, or equal. Install according to manufacturer's wire schedule for valve specifications.

b. Zone Control Wire (2-Wire) Hunter System: Hunter ID 1 Wire Blue, 14 AWG, Standard Decoder Cable: ID1BLU, or equal. Install according to manufacturer's wire schedule for valve specifications.

C. Surge Protection:

1. Per manufacturer recommendations.

D. Wire from Controller to Master Valve: Install according to manufacturer's wire schedule for valve specifications. 12 gauge minimum, type AWG, bearing U.S. approval, yellow in color.

E. Communication Wire: Install according to manufacturer's central control requirements. Wire from controller to flow sensor must be a single, unspliced length.

1. PE 39 or PE 89 cable, 6 pair. 19 gauge CATS min.

F. Wire Connections:

1. Zone Control Wires: Direct bury splice Kit.

a. DBR/Y-6 by 3M.

b. WC20 Wire Connectors by Rainbird.

c. Scotchlok 3570G by 3M.

2. Communication Wire: Splice is only allowed at the termination to connect to flow sensor.

a. UR-2 butt splice kit 034005, or pre-approved equal.

G. Utility Locate Wire: 14 gauge minimum, type AWG-UF, bearing U.S. approval, blue in color.

2.7 IRRIGATION CONTROLLER

A. As specified on drawings

2.8 CONTROLLER DECODERS

A. All decoders shall be per the controller manufacturer's specifications.

B. Decoder model number shall be as shown on the drawings.

2.9 BACKFILL MATERIALS

A. Pea Gravel: 3/4 x 1/2 inch washed round rock.

B. Sand: Clean, fill sand free of clay, rocks, organic matter, or other deleterious material.

C. Topsoil or Loam: See Section 32 91 19 - Landscape Grading.

PART 3 EXECUTION

3.1 PROTECTION

A. Protect existing improvements and growth in areas to remain undisturbed until completion of project. Leave area in similar condition as found.

B. Protect existing water service. Do not interrupt water service to facilities occupied by Owner or others or existing irrigation zones not impacted by construction unless permitted by Owner and only after arranging to provide temporary water service according to requirements indicated:

1. Notify Owner or Owner's Representative no fewer than two days in advance of proposed interruption of water service.

2. Do not proceed with interruption of water service without written approval from Owner or Owner's Representative.

C. Protect utilities and maintain in continuous operation or in operational condition during work. Repair damage to known utilities at Contractor's expense.

D. Use means necessary to protect materials of this Section before, during, and after installation and to protect installed Work and materials of other trades. In the event of damage immediately make repairs and replacements as directed by Owner's Representative.

3.2 EXAMINATION

A. Verify that required utilities and sleeves are available, in proper location, and ready for use. Verify location, type, size, PSI, and GPM of existing water lines, meters, and sleeves.

B. Verify that surfaces and structures to receive Work are accurately sized and located, sound, secure, true, complete, and otherwise properly prepared.

C. Verify electrical service and conduit for Irrigation Controller is properly sized and located.

3.3 PREPARATION

A. System layout is diagrammatic. Route piping to avoid plants, ground cover, and structures. If field measurements differ slightly from Drawings modify work for accurate fit. If measurements differ substantially notify Owner's Representative prior to installation.

B. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system and piping to minimize conflict with other work.

C. Coordinate connections to existing irrigation system, including system shut down, new connections, system re-start, and scheduling of new irrigation zone run times with Owner's Representative.

D. Irrigation Head Layout Review:

1. Install flags at locations of irrigation heads and components shown on Drawings. Obtain Owner's Representative's approval and make adjustments to locations as directed. Coordinate marking of pipe trenches and location of valves prior to executing Work.

3.4 CUTTING OF PAVEMENT AND REPAIR

A. Do not cut pavement for installation of Work without Owner's Representative's approval.

3.5 BACKFLOW PREVENTION DEVICE INSTALLATION

A. Install where shown on drawings. Follow applicable codes and in accordance with manufacturer's directions when making supply and central contol component connections.

B. Coordinate connection with other trades.

3.6 MASTER VALVE AND FLOW SENSOR INSTALLATION

A. Install where shown on drawings in accordance with manufacturer's directions when making supply and irrigation control component connections.

3.7 TRENCHING

A. Excavating, trenching, and backfilling are specified in Section 32 91 19 - Landscape Grading.

B. Excavate trenches with uniform bottom and remove rocks and sharp objects to provide firm, even, clean base for pipe. Width of trench to be 1.5 times the outside diameter of the pipe.

C. Trench Depth:

1. Minimum cover over Installed Mainline Piping: 18 inches.

2. Minimum cover over Installed Lateral Line Piping: 12 inches.

3. Minimum cover over Installed Sleeves in Roadway: 24 inches.

4. Minimum cover over Installed Sleeves at other paving: 6 inches from bottom of paving.

D. More than one pipe is permitted in the same trench provided that:

1. Two pipes may be stacked vertically if 4 inches of Sand separates them.

2. Three or more pipes must be laid 4 inches apart horizontally.

E. Where excavation is performed to excess levels backfill with specified soil material to proper levels.

F. Keep trenches dry and frost free. Provide and operate pumping equipment to keep excavations free from standing water.

G. All trenches and other disturbed area shall be free from heaving and/or settling by more than half inch. If necessary adjust grade, re-grade the trench and re-seed.

H. Protect existing vegetation to remain. Cut no roots over two inches in diameter without approval of Owner's Representative. Make clean cuts, straight, at right angles to roots. Paint cuts over 1-1/2 inches diameter with approved tree paint. Repair or replace damaged plant material.

3.8 SLEEVE INSTALLATION

A. Sleeves may be jacked or pulled but cover requirements must be maintained. Jacking of PVC pipe is not permitted in rocky or bar run fills where there is potential for damage to pipes.

B. Extend sleeves 12 inches beyond pavement edge or curb. Cover pipe ends and mark with stakes.

C. Install level and perpendicular to sidewalks and pavement unless shown otherwise on drawings.

D. Provide markers where sleeve ends are concealed.

3.9 PIPE BEDDING

A. Mainline: Provide uniform bearing surface of Sand, 4 inches minimum depth, free of rocks and sharp objects under entire length of pipe.

B. Lateral Line: Provide uniform bearing surface of clean topsoil, loam, or sand. If rock or other deleterious materials are encountered bed pipe with 4 inches of Sand on all sides.

3.10 PIPE INSTALLATION

A. Irrigation lines may be jacked or pulled but cover requirements must be maintained. Jacking of PVC pipe is not permitted in rocky fill or where there is other potential damage to pipes.

B. Install pipe in accordance with manufacturer's instructions and with the following minimum clearances around pipe:

1. 2 inch diameter and smaller: 2 inches

2. 2-1/2 inch diameter and larger: 4 inches

3. Between irrigation and other utilities: 12 inches

C. Threaded Plastic Pipe Installation:

1. Do not use solvent cement on joints.

2. Wrap threaded joints with teflon tape. Minimum 4 wraps of tape.

D. Cemented Plastic Pipe Installation:

1. Cut ends square using approved pipe cutter and bevel cuts with deburring tool.

2. Clean pipe of scale, sand, dirt, etc. prior to assembling.

3. No excess primer shall be used on joints.

4. Wipe off excess cement continuously as it appears on the surface of the pipe after making joints.

5. Allow fifteen minutes of cure time on joints before moving or handling. Assemble pipe before lowering into trench.

6. Snake lines to allow for contraction.

7. Transition pipe sizes at fittings and not at bell end of pipes.

8. Install thrust blocks at 90 degree corners and tees.

3.11 THRUST BLOCK INSTALLATION

A. Install 2500psi thrust block at pipe corners, tees, ells, and stub outs as follows:

1. Pipe 2 - 3 inches in diameter: 1 cubic foot.

2. Pipe larger than 3 inches in diameter: 2 cubic feet.

3.12 VALVE INSTALLATION

A. Install plumb and square, as detailed, and according to manufacturer's specifications.

B. Manual Drain Valves:

1. Install at mainline low points and at outlet of control valves where laterals run uphill.

2. Record locations on as-built drawings.

C. Install 1 valve in each valve box assembly.

D. Valve Sump: Install a minimum of 2 cubic feet of pea gravel below each valve. Allow for 4 inches clearance between bottom of valve and valve sump.

3.13 VALVE BOX INSTALLATION

A. Install plumb and square with adjacent construction with one valve in each valve box assembly.

B. At Control Valve Assemblies bolt two valve boxes together as detailed.

C. Permanently label valve type and zone number on inside of valve box lid.

D. Set top of valve boxes flush with lawn or mulch at plant beds unless otherwise noted.

E. Provide support via bricks on each side of valve box as detailed.

3.14 CONTROL WIRE INSTALLATION

A. Install wire in continuous runs with no splices, unless approved. Notify Owner's Representative for approval prior if splices are required and locate in valve box. Mark wire runs and location of splices on Project Record (as-built) Drawings.

B. All splices will use 3M DBR/Y gel filled splices.

C. Install wires below irrigation mainline with multiple wires bundled together at 5 foot maximum intervals.

D. Install (2) yellow Control Wires from controller to master valve in a single, unspliced length.

E. Use different colored wire for each branch of 2-Wire path.

F. Use coded and labeled wires for each valve. Provide a numbered tag at each end of a wire at valve, and at controller. The number at each end of wire to be the same.

G. Provide 48 inches loop in wires at each valve where controls are connected and at 100 foot maximum intervals between. Coil wire around 1/2 inch rebar dowel inside of valve box.

H. Make electrical joints waterproof using specified connectors. Enclose joints in valve boxes.

I. Install and ground surge protection every 500 LF and at end of wire run.

J. Install wires in conduit when run above grade or independent of the mainline.

3.15 COMMUNICATION WIRE INSTALLATION

A. Install continuous run of communication wire from Flow Sensor to Irrigation Controller. Follow same installation procedures as Control Wire Installation. Splicing of wire is not permitted.

3.16 CONTROLLER INSTALLATION

A. Install controller in accordance with manufacturer's specifications and applicable codes. Connect to 120V power supply at location shown on drawings and approved by Owner's Representative.

3.17 MAINLINE PRESSURE TEST AND INSPECTION

A. Field inspection and testing will be performed under provisions of Section 01 40 00 - Quality Requirements.

B. Prior to backfilling and installing valves test irrigation mainline for leakage. Establish and maintain 100 PSI pressure for 24 hours. Perform test a minimum of 24 hours after set-up of solvent weld. Notify Owner's Representative a minimum of 24 hours for review of pressure gauge at beginning and end of test period. Mainline will be accepted if pressure loss is less than 2 psi.

C. Following the pressure test but prior to backfilling, notify Owner's Representative for review of pipe, fittings, joints, thrust blocks, bedding, control wire installation, valves, and other materials for installation and water tightness.

D. After successful inspection of pressure test and mainline, begin backfilling and assembly of zones and system components.

E. Submit a written report of the pressure testing results with images and the other above required information to the Owner's Representative for approval.

3.18 BACKFILLING

A. Remove debris, sharp rocks, and decayable matter from areas to be back filled before proceeding.

B. Mainlines: Provide 6 inches sand cover over piping then place Utility Locate Wire the entire length of pipes where control wires are not present. Backfill remainder of trench with topsoil or loam.

C. Lateral Lines: Backfill trench with topsoil or loam. Protect piping from displacement.

D. At Paved Areas: Backfill trench with sand under paved areas.

E. Compact backfill in 6 inch lifts to match density of surrounding material. Install backfill to match adjacent elevations.

3.19 FLUSHING

A. Mainline: Open valves and thoroughly flush piping system under full water head after piping, risers, and valves are installed. Flush for 3 minutes before replacing flush cap. Close valves and cap risers immediately after flushing.

B. Second Flushing: Flush a second time after installation of lateral lines and sprinklers prior to nozzle installation. Flush under full water head for three minutes. Install nozzles after flushing.

C. Drip Line Flushing: Remove flush cap and flush each zone under full water head after all connections have been made. Maintain flushing for three minutes and immediately replace flush cap.

3.20 SPRINKLER HEAD INSTALLATION

A. Install plumb with top of Topsoil/Loam or Mulch as detailed and at locations shown on drawings. Allow a maximum of 3 inches clearance between sprinkler head and adjacent lawn or planting edge.

B. Install 1 cubic foot pea gravel sump on all low irrigation heads where drainage occurs at zone shutdown.

3.21 ADJUSTMENT AND COVERAGE TEST

A. Adjustment:

1. The Contractor shall flush and adjust all sprinkler heads, valves and other equipment to ascertain that they are functioning according to the manufacturer's data.

2. Adjust all sprinkler heads not to overspray onto walks, roadways and buildings when under maximum operating pressure and during times of normal prevailing winds.

B. Coverage test:

1. The Contractor shall perform the coverage test in the presence of the Owner’s Representative after all sprinkler heads have been installed, flushed and adjusted. Each section is tested to demonstrate uniform and adequate coverage of the planting areas serviced.

2. Any systems that require adjustments for full and even coverage shall be done by the Contractor prior to final acceptance at the direction of the Owner’s Representative at no additional cost. Adjustments may also include realignment of pipes, addition of extra heads, and changes in nozzle type or size.

3. The Contractor at no additional cost shall immediately correct all unauthorized changes or improper installation practices.

3.22 SUBSTANTIAL COMPLETION REVIEW

A. When Work of this Section is complete, notify Owner's Representative for Substantial Completion Review.

B. Prior to notifying Owner's Representative prepare and start system in accordance with manufacturer's instructions, review zones, and make adjustments to ensure full and even coverage.

C. Adjust system for full water coverage as directed.

3.23 SYSTEM DEMONSTRATION TO OWNER

A. Instruct Owner in operation and maintenance of system, including adjusting of sprinkler heads. Use operation and maintenance data as basis for demonstration.

3.24 CLEANING

A. Remove excess excavation, backfill materials, and other left over materials from the site. Clean improvements soiled by work of this Section.

3.25 FINAL COMPLETION REVIEW

A. Notify Owner's Representative for Final Completion Review.

END OF SECTION 32 80 00

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SECTION 32 92 23 – SODDING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Sod installation.

B. Turf renovation from damage during construction.

1.2 RELATED REQUIREMENTS

A. Section 32 80 00 - Irrigation

1.3 DEFINITIONS

A. Weeds: Weeds: Any plant life not specified or scheduled. Includes seeds and roots.

B. Finish Grade: Elevation of finished surface of planting soil.

C. Pests: Living organisms occurring where they are not desired or cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

1.4 REFERENCE STANDARDS

A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; 2006.

1.5 ACTION SUBMITTALS

A. Certification: Submit certification of grass species and location of sod source.

B. Equipment: Provide data on equipment proposed to be used for installation of sod. Provide info on weight and wheels for approval by Owner's Representative.

C. Quality Assurance Submittals: Submit Contractor qualifications for approval by Owner's Representative.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer; and recommended application frequency of bio-amendments.

1.7 COORDINATION

A. Coordinate with other trades affecting and affected by work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver sod on pallets. Protect exposed roots from dehydration. Protect sod from breakage. Broken pads and torn or uneven ends will not be acceptable.

B. Do not deliver more sod than can be laid within 24 hours.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.9 ENVIRONMENTAL CONDITIONS

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1. Install sod during period normal for such work: March 1 through November 15

2. Cold weather: When temperature is below 32 degrees F.

3. Hot weather: When temperature is above 90 degrees F.

4. Wet weather: When soil is saturated.

5. Windy weather: When wind velocity is greater than 30 mph.

1.10 REVIEWS

A. Request the following reviews by Owner's Representative a minimum of 2 days in advance:

1. Sod Materials

2. Sample Installation

3. Substantial Completion

4. Final Completion

1.11 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide one full year of establishment and maintenance upon approval of Final Completion. Maintenance to include (but may not be limited to): mowing, watering, fertilizing, aerating, thatching, or re-sodding.

C. Upon Final Acceptance the Owner will assume responsibility for recommended landscape maintenance, as outlined in the maintenance data related to the care and maintenance of the turf.

D. Inspection: Visit work at least once a month during warranty period. Notify Owner's Representative and Owner in writing of any observed conditions requiring attention. Failure to provide such notification renders any deficiencies the Contractor's responsibility to rectify.

E. Provide guarantee, at Final Acceptance and at the end of warranty period, materials furnished under this Contract will be as specified and work will be free of defects in compliance with the Contract Documents.

F. At the end of the warranty period, as directed by Owner's Representative and at no additional cost to the Owner:

G. At end of warranty period as directed by Owner's Representative and at no additional cost to the Owner:

1. Lawns must be healthy, dense, uniform, well sodded, and reasonably weed free as judged by the Owner's Representative.

2. Replace work of this Section not surviving, in poor conditions, or not exhibiting satisfactory growth.

3. Reset sod that has settled.

4. Replace sod that appears to be a different variety than specified or approved.

5. Provide noxious weed eradication by hand or mechanical method if required.

6. Provide a new warranty commending on date of replacement.

7. Complete warranty work within 30 days of warranty review.

H. Contractor is not responsible for plant loss or damage to work of this Section during warranty period that is caused by unusually extreme weather, vandalism, or Owner's lack of maintenance.

PART 2 PRODUCTS

2.1 MATERIALS

Sod: TPI, Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, free of netting material, burned or bare spots; containing no more than 5 weeds per 1000 sq ft. Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners of the roll.

Approved Products for Athletic Field Lawn:

a. Midnight bluegrass by Alpha Sod

b. Everglade bluegrass by Alpha Sod

c. Rugby bluegrass by Alpha Sod

d. Kentucky Bluegrass by Idaho Sod

e. RTF Sod by Idaho Sod

f. Sod to be over-seeded with CSI ryegrass in spring.

Sod shall be machine cut in big rolls to widest practical width with a uniform thickness of 1/2 inch excluding top growth and thatch. Sod shall be strong enough to support a 24-inch square by its own weight when lifted by the ends. Load on pallets in accordance with TPI Guidelines

g. Width: 42 - 48 inches wide (minimum)

h. Length: Longest lengths as practical.

Sod must be free of stones, burned or bare spots and not contain more than 5 weeds per 1000 square feet.

2.2 SOIL AMENDMENT MATERIALS

A. Lawn Fertilizer: Slow release organic, uniform composition, dry, and free flowing of proportion necessary to eliminate any deficiencies of Soil Material.

1. Ringer Lawn Restore II (10-0-6), or approved.

2. Dr. Earth lawn Fertilizer (9-3-5), or approved.

3. Down to Earth Bio-Turf Lawn Fertilizer (8-3-5), or approved.

B. Mycorrhizal Fungi:

1. Endo Granular MycoApply by Mycorrhizal Applications Inc, Grants Pass, Oregon (541-476-3985).

2. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 HERBICIDE

A. Broad Spectrum Non-Selective: Buccaneer Plus, or approved.

B. Selective for Broadleaves: Speed Zone, Weed-B-Gone, or approved.

C. Selective for Grasses: Envoy or approved.

D. Not allowed within 150 feet of water.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify prepared soil is ready to receive the work of this section.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

2. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

3. Verify fertilizer was installed no more than 48 hours before laying sod.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Owner's Representative and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before installation of sod. Do not create muddy soil.

B. Before installation of sod, obtain Owner's Representative's acceptance of finish grading; restore sodding areas if eroded or otherwise disturbed after finish grading.

3.4 LAYING SOD

A. Moisten prepared surface immediately prior to laying sod.

B. Broadcast Mycorrhizal Fungi at manufacturer's recommended high rate.

C. Lay sod immediately after delivery to site to prevent deterioration. Sod must be fully laid out within 24 hours of harvesting.

D. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.

E. Where new sod adjoins existing grass areas, align top surfaces.

F. Tamp lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface.

G. Avoid damage to subgrade or sod during installation.

H. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

I. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil no more than 1 hours after installation.

J. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

K. During first week after planting, water daily, in the early morning, or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

L. Provide temporary barrier at the limits of newly planted turf.

3.5 MAINTENANCE

A. Maintain sodded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

B. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches or less. Do not cut more than 1/3 of grass blade at any one mowing. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.

C. Neatly trim edges and hand clip where necessary.

D. Immediately remove clippings after mowing and trimming.

E. Water to prevent grass and soil from drying out at a minimum rate of 1 inch (25 mm) per week unless rainfall precipitation is adequate.

F. Roll surface to remove irregularities.

G. Control growth of weeds, pest, pathogens, and disease. Apply herbicides and pesticides in accordance with manufacturer's instructions. Use integrated pest management practices wherever possible to minimize use of of pesticides and reduce hazards. Remedy damage resulting from improper use of herbicides.

H. Immediately replace sod to areas that show deterioration or bare spots.

I. Protect sodded areas with fencing or barricades and warning signs as required during maintenance period. Maintain fencing and barricades throughout initial maintenance period and remove after planting are established.

J. Apply fertilizer to provide up to 1 pound of nitrogen per 1,000 square feet and bioamendments as often as necessary or every 45 days, whichever is less, to keep lawn green and vigorously growing.

3.6 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Owner's Representative:

1. Satisfactory Sodded Turf: A healthy, well-rooted, even colored, viable turf has been established, and free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.7 CLEANUP

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

3.8 COMPLETION REVIEW

A. When lawn is fully established, dense, uniform, and weed free, notify Owner's Representative for Completion Review when Work of this Section is complete.

B. Complete corrective work within 30 days and prior to Final Completion.

END OF SECTION

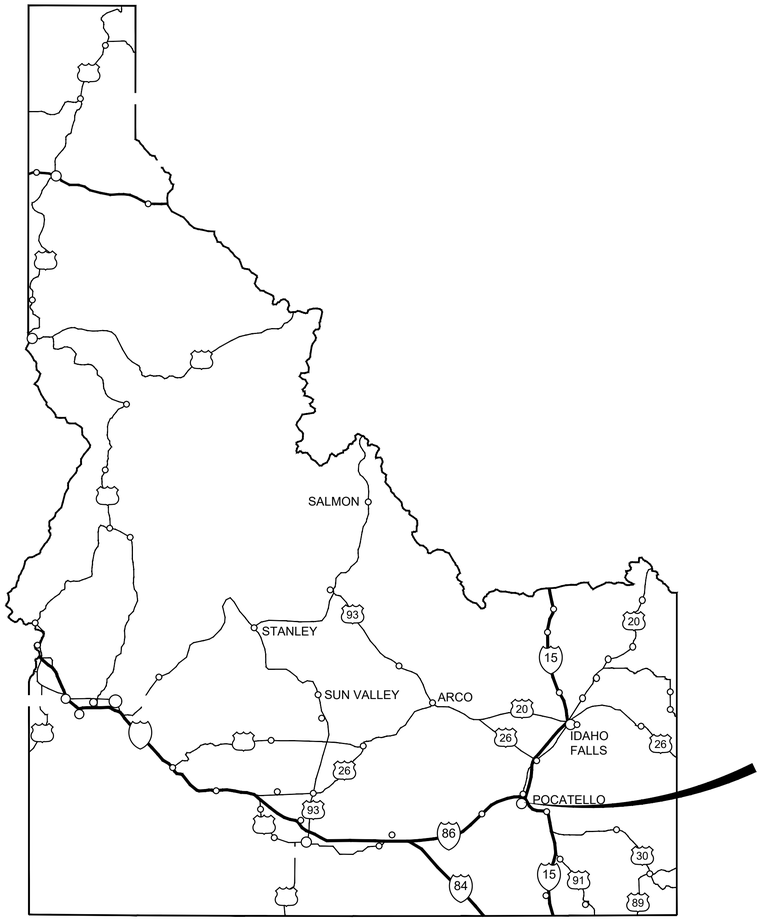
HIGHLAND HIGH SCHOOL
VARSITY BASEBALL FIELD
POCATELLO / CHUBBUCK SCHOOL DISTRICT #25

POCATELLO, ID

JUNE 2022

SHEET INDEX	
SHEET	SHEET TITLE
G-001	TITLE, LOCATION, & VICINITY MAP
G-002	GENERAL NOTES
G-003	CIVIL SYMBOLS & LINE LEGEND
V-101	EXISTING SITE PLAN
CD-101	SITE DEMOLITION PLAN
CD-102	ENLARGED DEMO PLAN
C-101	OVERALL SITE PLAN
C-102	SITE PLAN
C-103	SITE PLAN
C-104	ENLARGED SITE PLAN
C-201	SITE GRADING PLAN
C-202	ENLARGED GRADING PLAN
C-501	DETAILS
C-502	DETAILS
C-503	DETAILS
C-504	DETAILS
C-505	DETAILS
C-506	DETAILS
C-507	DETAILS

811 Know what's **below.** **Call** before you dig. 800.342.1585



LOCATION MAP

PROJECT LOCATION

811 Know what's **below.** **Call** before you dig. 800.342.1585

OWNER:
POCATELLO / CHUBBUCK
SCHOOL DISTRICT #25
3115 POLELINE RD
POCATELLO, ID 83201

DIRECTOR OF BUSINESS OPERATIONS:
JOHNATHAN R. BALLS
PHONE: 208-235-3212
EMAIL: ballsjo@sd25.us

DIRECTOR OF STUDENT SERVICES
AND ATHLETICS DIRECTOR:
TONYA WILKES
PHONE: 208-235-3253
EMAIL: wilkesto@sd25.us

CIVIL ENGINEER:
KELLER ASSOCIATES, INC.
305 NORTH 3RD, SUITE A
POCATELLO, ID 83201

PROJECT ENGINEER OF RECORD:
MATTHEW HILL, PE
PHONE: 208-238-2146
CELL: 208-497-9552
EMAIL: mhill@kellerassociates.com

PROJECT MANAGER:
KRIS WIESE
PHONE: 208-238-2146
CELL: 208-269-8956
EMAIL: kwiese@kellerassociates.com

A3 VICINITY MAP
N.T.S.

KELLER ASSOCIATES
100 East Bower St., Suite 110
Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER — LICENSED — 15381 — 6/29/2022 — STATE OF IDAHO — MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK BEYOND MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

TITLE, LOCATION, & VICINITY MAP

DRAWN: KJW | CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. G-001

FOR ALL OF THE UTILITY LOCATES, CONTRACTOR SHALL CALL DIG-LINE AT 1-800-342-1585 TO LOCATE ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER OF ANY CONFLICTS

CONTRACTOR TO CONTRACT WITH A PRIVATE UTILITY LOCATES COMPANY TO LOCATE ALL EXISTING UTILITIES ON DISTRICT PROPERTY, OR WHERE DIG-LINE WILL NOT MARK EXISTING UTILITIES ON PRIVATE PROPERTY, PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO HAVE A COPY OF THE SPECIFICATIONS ON SITE AT ALL TIMES.

THE CONTRACTOR SHALL REMOVE ALL OBSTRUCTIONS, BOTH ABOVE AND BELOW GROUND, AS REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS. THIS SHALL INCLUDE CLEARING AND GRUBBING WHICH CONSISTS OF CLEARING THE GROUND SURFACE OF ALL TREES, UNDERGROWTH, HEDGES, HEAVY GROWTH OF GRASS OR WEEDS, FENCES, STRUCTURES, DEBRIS, RUBBISH, AND SUCH MATERIAL, WHICH IN THE OPINION OF THE ENGINEER, IS ALL MATERIAL NOT SUITABLE FOR FUTURE USE ON

ALL CONTRACTORS WORKING WITHIN THE PROJECT BOUNDARIES ARE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE SAFETY LAWS OF ANY JURISDICTIONAL BODY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BARRICADES, SAFETY DEVICES AND CONTROL OF TRAFFIC WITHIN THE

ALL MATERIALS FURNISHED FOR THE PROJECT MUST MEET THE MINIMUM REQUIREMENTS OF THE APPROVING AGENCIES OR AS SET FORTH HEREIN, WHICHEVER IS MORE RESTRICTIVE. CONTRACTORS MUST FURNISH PROOF THAT ALL MATERIALS INSTALLED ON THIS PROJECT MEET THESE REQUIREMENTS AT THE REQUEST OF THE AGENCY, THE ENGINEER, AND OWNER.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND

ALL COSTS TO THE CONTRACTOR INCURRED IN CORRECTING DEFICIENT WORK SHALL BE TO THE

WORK SUBJECT TO APPROVAL BY ANY AGENCY MUST BE INSPECTED AND APPROVED PRIOR TO (A) PLACING OF CONCRETE, AND (B) PLACING OF AGGREGATE BASE. WORK DONE WITHOUT SUCH APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF PERFORMING THE

ALL MATERIAL PLACED AS FILL OR BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH

MISCELLANEOUS SMALL STRUCTURES SUCH AS FENCING, SIGNS, IRRIGATION AND DRAINAGE FACILITIES, UTILITY POLES, LINES, AND APPURTENANCES, WHEN NECESSARY TO REMOVE OR DISTURB, SHALL BE REPLACED OR RECONSTRUCTED TO EQUAL OR BETTER THAN THEIR CONDITION PRIOR TO

WHEN DISCREPANCIES OCCUR BETWEEN SPECIFICATIONS, OR SHEETS IN THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT. UNTIMELY NOTIFICATION SHALL NEGATE ANY CONTRACTOR'S CLAIM FOR ADDITIONAL COMPENSATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING SOURCES FOR GRANULAR MATERIALS, WATER, WASTE SITES, AND ANY OTHER MATERIALS SOURCES AS REQUIRED FOR PROJECT

CONTRACTOR WILL HIRE A MATERIALS TESTING FIRM TO PROVIDE ALL TESTING NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATIONS. SUCH TESTS SHALL BE SUBMITTED TO

THE CONTRACTOR SHALL COORDINATE ALL INSPECTIONS WITH THE ENGINEER OF RECORD.

WITHIN 2 WEEKS AFTER THE COMPLETION OF WORK, THE CONTRACTOR SHALL SUBMIT A SET OF

ELECTRONIC FILES FOR THE SITE CAN BE MADE AVAILABLE BY REQUEST FROM KELLER ASSOCIATES FOR USE DURING CONSTRUCTION BY THE CONTRACTOR AND/OR CONTRACTOR'S SURVEYOR.

EXISTING SURVEY MONUMENTS:

1. CONTRACTOR SHALL REFERENCE ALL PUBLIC AND PRIVATE LAND SURVEY MONUMENTS THAT WILL BE DISTURBED BY CONSTRUCTION ACTIVITIES PRIOR TO DISTURBING.
2. REESTABLISH SUCH MONUMENTS AS PART OF THE SURVEY WORK FOR THIS PROJECT BEFORE PROJECT COMPLETION.
3. SECTION CORNER AND QUARTER CORNER MONUMENTS RESET AFTER CONSTRUCTION SHALL INCLUDE CORNER PERPETUATIONS AND FILING WITH THE COUNTY.
4. SIXTEENTH CORNERS THAT ARE DISTURBED AND RESET AND HAVE EXISTING CORNER PERPETUATION FILED WITH THE COUNTY SHALL HAVE NEW PERPETUATION RECORDS FILED AFTER THE CORNER HAS BEEN RESET.
5. PERFORM ALL MONUMENT WORK IN ACCORDANCE WITH TITLE 55, CHAPTER 16 OF THE IDAHO STATE CODE.
6. PERFORM ALL CORNER REESTABLISHMENT AND CORNER PERPETUATION FILING WORK IN ACCORDANCE WITH STANDARD SURVEYING PRACTICES UNDER THE RESPONSIBLE CHARGE OF A PROFESSIONAL LAND SURVEYOR DULY AND PROPERLY REGISTERED IN THE STATE OF IDAHO.

EROSION CONTROL

1. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE FACILITIES WITHIN THE CONSTRUCTION AREA UNTIL THE DRAINAGE IMPROVEMENTS ARE IN PLACE AND FUNCTIONING.
2. ON SLOPING AREAS, THE CONTRACTOR SHALL TAKE PRECAUTIONS TO MITIGATE ANY POSSIBLE EROSION PROBLEMS IN TRENCHES DUE TO STORM WATER THAT MIGHT OCCUR DURING OR AFTER CONSTRUCTION AS DIRECTED OR APPROVED BY ENGINEER.
3. DURING CONSTRUCTION; THE CONTRACTOR IS FULLY RESPONSIBLE FOR INTERIM PROVISIONS FOR PASSAGE OF IRRIGATION AND STORM WATER. NO SUPPLEMENTAL COMPENSATION WILL BE MADE FOR WET CONDITIONS OR FLOW DIVERSIONS.
4. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL MEASURES UNTIL FINAL ACCEPTANCE OF THIS PROJECT.
5. THE CONTRACTOR SHALL ALSO BE REQUIRED TO TAKE ALL PRECAUTIONS NECESSARY TO ENSURE THAT NO STORM WATER/SEDIMENT AND/OR CONSTRUCTION DEBRIS ARE RELEASED FROM THE SITE. ANY RELEASES SHALL BE CLEANED AND MITIGATED AT CONTRACTOR'S EXPENSE.
6. THE CITY OF POCATELLO WILL REQUIRE AN EROSION & SEDIMENT CONTROL PERMIT TO BE COMPLETED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
7. CONTRACTOR IS RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.

KELLER ASSOCIATES
100 East Bower St., Suite 110
Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER LICENSED Matthew B. Hill 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

FRIENDS LEAVE IT MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

GENERAL NOTES

DRAWN: KJW | CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. G-002

CURB & GUTTER, SIDEWALK & DROP INLET

FENCE (BARBED WIRE OR OTHER WITH GATES)

FENCE (CHAINLINK WITH GATE)

PRESCRIPTIVE RIGHT OF WAY

QUARTER SECTION - NOT FOUND

EXISTING UTILITY

WATERLINE & VALVE

SANITARY SEWER LINE & MANHOLE

SANITARY SEWER SERVICE & CLEANOUT

PRESSURE SEWER LINE & VALVE VAULT

STORM DRAIN LINE & MANHOLE

PRESSURE IRRIGATION & VALVE

GRAVITY IRRIGATION & MANHOLE

OVERHEAD POWER LINE & POWER POLE

UNDERGROUND POWER LINE

SIGNAL POLE

LIGHT POLE

NATURAL GAS LINE

FIBER OPTIC LINE

TELEPHONE LINE & RISER

CABLE LINE & RISER

PROPOSED GRADING

TOPOGRAPHIC CONTOUR

RIDGELINE

DRAINAGE ARROW & SLOPE

SPOT ELEVATION

SWALE FLOWLINE

DAYLIGHT - CUT LINE

DAYLIGHT - FILL LINE

PROPOSED MISCELLANEOUS

CLEARING AND GRUBBING

CONSTRUCTION PHASE LIMITS

DEMOLITION/ABANDON

PROPOSED SITE

BUILDING OR STRUCTURE

CONCRETE

ASPHALT

GRAVEL SURFACE

GRAVEL SECTION

LANDSCAPE ROCK

PROPOSED SITE (CONT.)

FENCE (BARBED WIRE OR OTHER WITH GATES)

FENCE (CHAINLINK WITH GATE)

EDGE OF PAVEMENT

EDGE OF GRAVEL

SIGN

6" VERTICAL CURB, GUTTER, SIDEWALK & INLET

6" VERTICAL CUT CURB & GUTTER

6" REVERSE CURB & GUTTER

6" REVERSE CUT CURB & GUTTER

IMBEDDED CURB

PROPOSED UTILITY

FITTING TYPES

BEND

REDUCING TEE

TEE

REDUCER

FLANGE TO MECHANICAL JOINT COUPLING

CROSS

CAP W/BLIND FLANGE

CHECK VALVE

GATE VALVE

BUTTERFLY VALVE

BLOW-OFF VALVE

RESTRAINED FITTING

WATER SERVICE LINE & METER

FIRE HYDRANT

FIRE LINE

WATERLINE

MONITORING WELL

LOCATION WIRE BOX

NON-FREEZE YARD HYDRANT

PRESSURE IRRIGATION, TEE & GATE VALVE

PRESSURE IRRIGATION SERVICE

GRAVITY IRRIGATION & STRUCTURE

PROPOSED UTILITY (CONT.)

SANITARY SEWER & MANHOLE

SANITARY SEWER SERVICE & CAP

SANITARY SEWER SERVICE & CLEANOUT

PRESSURE SEWER & VALVE VAULT

STORM DRAIN LINE, INLET & CATCH BASIN

STORM DRAIN LINE & MANHOLE W/ VENTED LID

JOINT TRENCH IN PROFILE

CABLE & TELEPHONE RISERS

JOINT TRENCH & DEVICE

JUNCTION BOX & DUCT BANK

NATURAL GAS LINE & METER

NATURAL GAS LINE & RISER

NATURAL GAS LINE & VALVE

UNDERGROUND POWER

OVERHEAD POWER & POLE

LIGHT POLE

TELEPHONE LINE & RISER

FIBER OPTIC LINE & VAULT

TELEPHONE DATA LINE

CABLE & TV RISER

KELLER ASSOCIATES
100 East Bower St., Suite 110
Meridian, Idaho 83642
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PROFESSIONAL ENGINEER
LICENSED
15381
6/29/2022
STATE OF IDAHO
MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK LEARN BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

CIVIL SYMBOLS & LINE LEGEND

DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. G-003

SHEET KEYNOTES

01	HIGHLAND HIGH SCHOOL BUILDING
02	DUGOUT
03	SHED
04	CONCESSIONS BUILDING
05	FOOTBALL AND TRACK FACILITY
06	TENNIS COURTS
07	BATTERS CAGE
08	FOOTBALL PRACTICE FIELD
09	GOAL POST
10	FOUL POLE
11	INFIELD SURFACE
12	INFIELD GRASS
13	OUTFIELD GRASS
14	BACKSTOP
15	CHAIN LINK FENCE
16	CONCRETE APRON
17	CONCRETE SIDEWALK
18	CONCRETE STAIRS
19	DECIDUOUS TREE
20	CONIFEROUS TREE
21	OVERHEAD POWER LINE
22	POWER POLE
23	LIGHT POLE
24	POWER JUNCTION BOX
25	UNDERGROUND POWER LINE
26	STORM DRAIN INLET
27	WATER HYDRANT
28	WATER LINE
29	FIRE HYDRANT
30	SANITARY SEWER MANHOLE
31	IRRIGATION BOX
32	CHAIN LINK GATE
33	BOLLARD
34	GREEN HOUSE BUILDING
35	GUARDRAIL
36	SIGN
37	CITY SIDEWALK
38	CITY CURB & GUTTER
39	RAIL ROAD CAR STORAGE
40	BLOCK RETAINING WALL
41	CONCRETE VALLEY GUTTER
42	ROCK RETAINING WALL
43	4" PVC PIPE END
44	PITCHERS MOUND
45	BLEACHERS
46	ASPHALT PAVING
47	BASKETBALL HOOP
48	PIPE SWING GATE

GENERAL SHEET NOTES

1. EXISTING UTILITIES SHOWN IN APPROXIMATE LOCATION. **CONTACT DIG-LINE 1-800-342-1585 TO LOCATE PRIOR TO COMMENCEMENT OF WORK.**
2. ONLY KNOWN UTILITIES ARE SHOWN ON THESE PLANS. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF UTILITIES NOT SHOWN AND SHOWN ON THESE PLANS.
3. PRESERVE AND PROTECT ALL UNDERGROUND UTILITIES AND SURFACE FEATURES SUCH AS CURBS, SIDEWALKS, PAVING, LANDSCAPING, AND BUILDING THAT ARE OUTSIDE OF THE PROJECT AREA.
4. CONTRACTOR TO POTHOLE EXISTING UTILITIES TO VERIFY LOCATION AND DEPTH.

(XXX) BENCH MARK

POINT NUMBER	NORTHING	EASTING	ELEV.	DESCRIPTION
10	452043.840'	587163.516'	4758.034'	5/8" IRON ROD KELLER CONTROL ORANGE CAP
11	453104.417'	587681.309'	4762.852'	5/8" IRON ROD KELLER CONTROL ORANGE CAP

0 50 100

KELLER ASSOCIATES
100 East Bower St., Suite 110
Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER LICENSED Matthew B. Hill 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK BEYOND BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

EXISTING SITE PLAN

DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. V-101

SHEET KEYNOTES

02	DEMO GRASS, RE: GRADING PLAN
03	CLEAR AND GRUB SITE
04	DEMO, BACKSTOP
05	DEMO, FOUL POLE
06	DEMO, FENCE
08	DEMO, CONCRETE PAD
09	DEMO, REMOVE SECTION OF FENCE FOR NEW MAN GATE, RE: C-102
20	PRESERVE & PROTECT, CONCRETE PAD
21	PRESERVE & PROTECT, DUGOUT
22	PRESERVE & PROTECT, ELECTRICAL SYSTEM
24	PRESERVE & PROTECT, CHAINLINK FENCE
25	PRESERVE & PROTECT, OVER HEAD POWER, POLES, ETC.
26	PRESERVE & PROTECT, JUNCTION BOXES
27	PRESERVE & PROTECT, STORM DRAINS
28	PRESERVE & PROTECT, PRACTICE FOOTBALL FIELD
29	PRESERVE & PROTECT, BUILDING
30	RELOCATE IRRIGATION VALVES AS REQUIRED FOR CONSTRUCTION, BY OWNER.
32	REMOVE AND RELOCATE, YARD HYDRANT, RE:C-102
33	REMOVE BUILDING, BY OWNER, RE: C-102
34	REMOVE & RELOCATE BUILDING, RE:C-102

GENERAL SHEET NOTES

1. EXISTING UTILITIES SHOWN IN APPROXIMATE LOCATION. **CONTACT DIG-LINE 1-800-342-1585 TO LOCATE PRIOR TO COMMENCEMENT OF WORK.**
2. ONLY KNOWN UTILITIES ARE SHOWN ON THESE PLANS. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF UTILITIES NOT SHOWN AND SHOWN ON THESE PLANS.
3. PRESERVE AND PROTECT ALL UNDERGROUND UTILITIES AND SURFACE FEATURES SUCH AS CURBS, SIDEWALKS, PAVING, LANDSCAPING, AND BUILDING THAT ARE OUTSIDE OF THE PROJECT AREA.
4. CONTRACTOR TO POTHOLE EXISTING UTILITIES TO VERIFY LOCATION AND DEPTH.
5. IRRIGATION REPAIRS BY OWNER.

0 20 40

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LICENSED
15381
6/29/2022
STATE OF IDAHO
MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK LEARN BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

POCATELLO CHUBBUCK SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SITE DEMOLITION PLAN

DRAWN: KJW | CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. CD-101

GENERAL SHEET NOTES

1. EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION, CONTRACTOR TO VERIFY EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. SEE UTILITY PLANS FOR MORE INFORMATION.

2. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO CONDITIONS FOUND PRIOR TO CONSTRUCTION. THIS COST SHALL BE INCIDENTAL TO THE CONTRACT.

SHEET KEYNOTES

03	CLEAR AND GRUB SITE
15	PRESERVE & PROTECT, VALLEY GUTTER
16	PRESERVE & PROTECT, SIDEWALK,
17	PRESERVE & PROTECT, POWER JUNCTION BOX
18	PRESERVE & PROTECT, GATE
19	PRESERVE & PROTECT, LIGHT POLE
24	PRESERVE & PROTECT, CHAINLINK FENCE
25	PRESERVE & PROTECT, OVER HEAD POWER, POLES, ETC.
35	PRESERVE & PROTECT, RETAINING WALL

0 5 10

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POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

ENLARGED DEMO PLAN

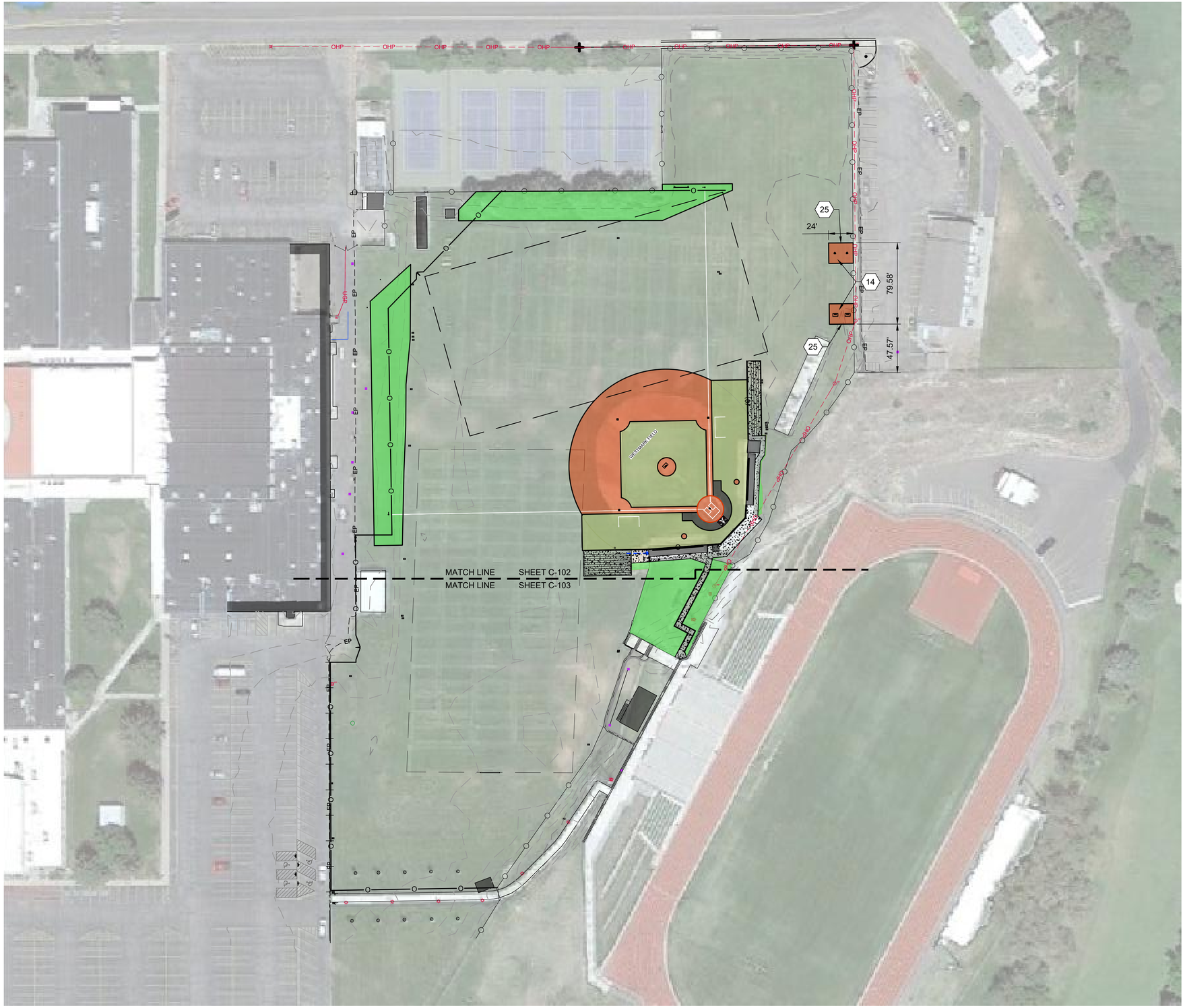
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. CD-102



SHEET KEYNOTES

14 TURF BULLPEN, RE: B2/C-504

25 6' CHAIN LINK FENCE, RE:C1/C-501

GENERAL SHEET NOTES

1. IRRIGATION REPAIRS BY OWNER.

0 50 100

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SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

OVERALL SITE PLAN

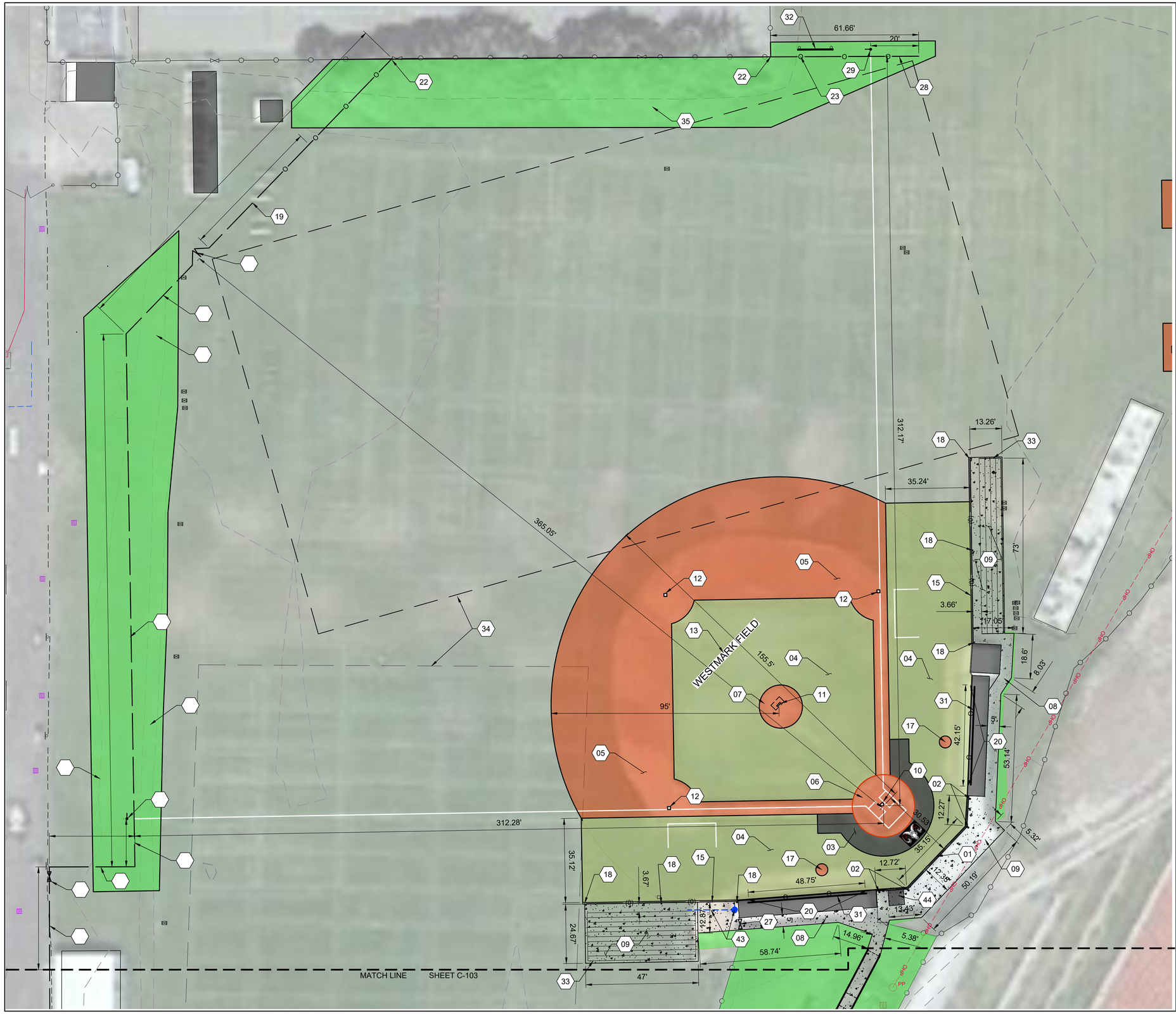
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. C-101



SHEET KEYNOTES

01	BACKSTOP CMU WALL, RE: A3/C-503
02	BACKSTOP NETTING POLE, RE: A1/C-505
03	TURF HALO, RE: B1/C-504
04	GREEN TURF, RE: A2/C-504
05	BROWN TURF, RE: A2/C-504
06	TURF BATTERS BOX, RE: a1/C-504 & A2/C-504
07	TURF PITCHERS MOUND, RE: C1/C-504 & C2/C-504
08	CONCRETE SIDEWALK, RE: A1/C-502
09	CONCRETE PAD FOR BLEACHERS, RE: B1/C-502
10	HOME PLATE, RE: B4/C-504
11	PITCHING MOUND RUBBER, RE:B5/C-504
12	STANDARD BASE, RE: A4/C-504
13	SPONSOR LOGO, 3' x 38', COORINATE FINAL SIZE AND DESIGN WITH OWNER
15	RIBBON CURB, RE: C5 & B5/C-501
17	WARM UP CIRCLE, RE: A3/C-504
18	SPECTATOR NETTING & POLE, RE:A4/C-505
19	CHAIN LINK FENCE WITH BATTERS EYE FABRIC, RE: C1/C-506
20	DUGOUT NETTING, RE: C3/C-503
22	CONNECT TO EXISITING 12' CHAIN LINK FENCE
23	12' CHAIN LINK FENCE, RE: A1/C-501
24	12' HIGH x 10' WIDE CHAIN LINK GATE, RE: A3/C-501
25	6' CHAIN LINK FENCE, RE:C1/C-501
27	6' HIGH x 4' WIDE CHAIN LINK MAN GATE, RE: A5/C-501
28	TRANSITION FENCE FROM 12' TO 6' HEIGHT, SLOPE TOP OF FENCE OVER 20-FT DISTANCE
29	FOUL POLE, RE: A1/C-503
31	DUGOUT RAIL, RE: B4/C-503
32	SCORE BOARD, BY OWNER
33	BLEACHERS, BY OWNER
34	PRACTICE FOOTBALL FIELD
35	SOD, RE: B2/C-502
43	RELOCATE EXISTING FROST FREE HYRANT AND ADD PIPING AND FITTINGS AS REQUIRED, RE: A5/C-502
44	SHED TO BE REPLACED AFTER CONCRETE PAD IS CURED AND HOOKED UP TO POWER, ETC.

GENERAL SHEET NOTES

1. IRRIGATION REPAIRS BY OWNER.

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THINK LEARN DO MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SITE PLAN

DRAWN: KJW | CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.
1-1/2 Inches

0 20 40

PROJECT NO. 222011

SHEET NO. C-102

SHEET KEYNOTES

21 CONNECT TO EXISTING 6' CHAIN LINK FENCE
25 6' CHAIN LINK FENCE, RE:C1/C-501
26 6' HIGH x 24' WIDE CHAIN LINK GATE, RE: C3/C-501
34 PRACTICE FOOTBALL FIELD
37 ADA PARKING, RE: C2/C-502
39 ADA PARKING SIGN, RE: C1/C-502
40 NO PARKING AREA 4" WHITE PAINT LINE AT 45° ANGLE 3' SPACING
42 EXISTING BUILDING, RELOCATED BY OWNER

GENERAL SHEET NOTES

1. IRRIGATION REPAIRS BY OWNER.

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STRONGER TOGETHER MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SITE PLAN

DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

0 20 40

PROJECT NO. 222011

SHEET NO. C-103

0 5 10

GENERAL SHEET NOTES

1. EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE LOCATION, CONTRACTOR TO VERIFY EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. SEE UTILITY PLANS FOR MORE INFORMATION.
2. AREAS DISTURBED BY CONSTRUCTION WHERE SURFACE REPAIR IS NOT INDICATED SHALL BE RESTORED TO CONDITIONS FOUND PRIOR TO CONSTRUCTION. THIS COST SHALL BE INCIDENTAL TO THE CONTRACT.

SHEET KEYNOTES

08	CONCRETE SIDEWALK, RE: A1/C-502
35	SOD, RE: B2/C-502
45	ADA RAMP HAND RAIL, RE: C3/C-502
46	ADA RAMP GUARD RAIL, RE: A3/C-502
47	HAND RAIL TO GUARD RAIL TRANSITION, RE: B3/C-502

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SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

ENLARGED SITE PLAN

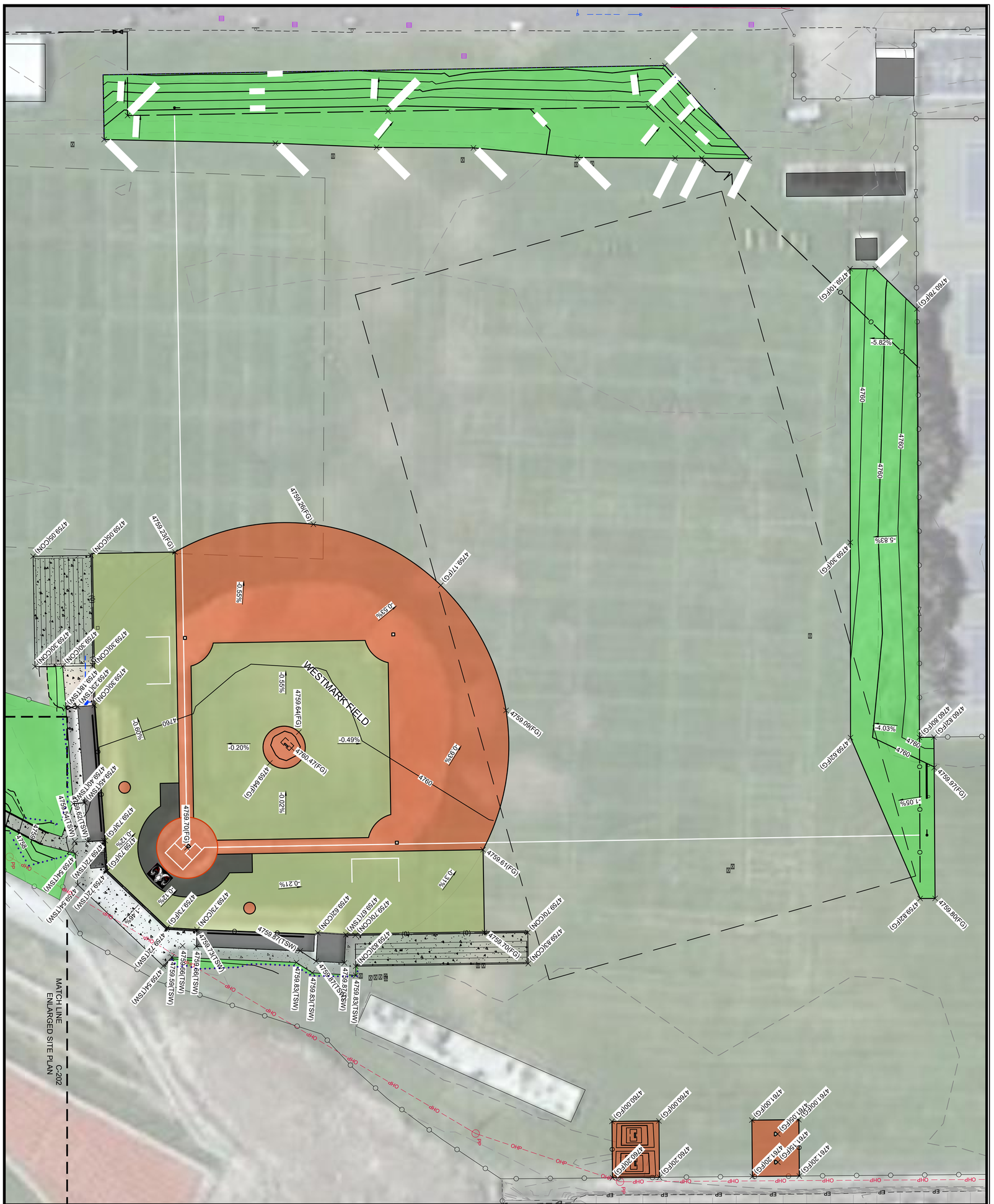
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. C-104



LEGEND

FG	FINISH GRADE
CON	TOP OF CONCRETE PAD
TSW	TOP OF SIDEWALK

0 50 100

DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints. 1-1/2 Inches

PROJECT NO. 222011

SHEET NO. C-201

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SITE GRADING PLAN

SCHOOL DISTRICT #25

THINK LEARN BE MORE TOGETHER
POCATELLO-CHUBBUCK SCHOOL DISTRICT 25

HIGHLAND HIGH SCHOOL

NO.	REVISIONS	DATE

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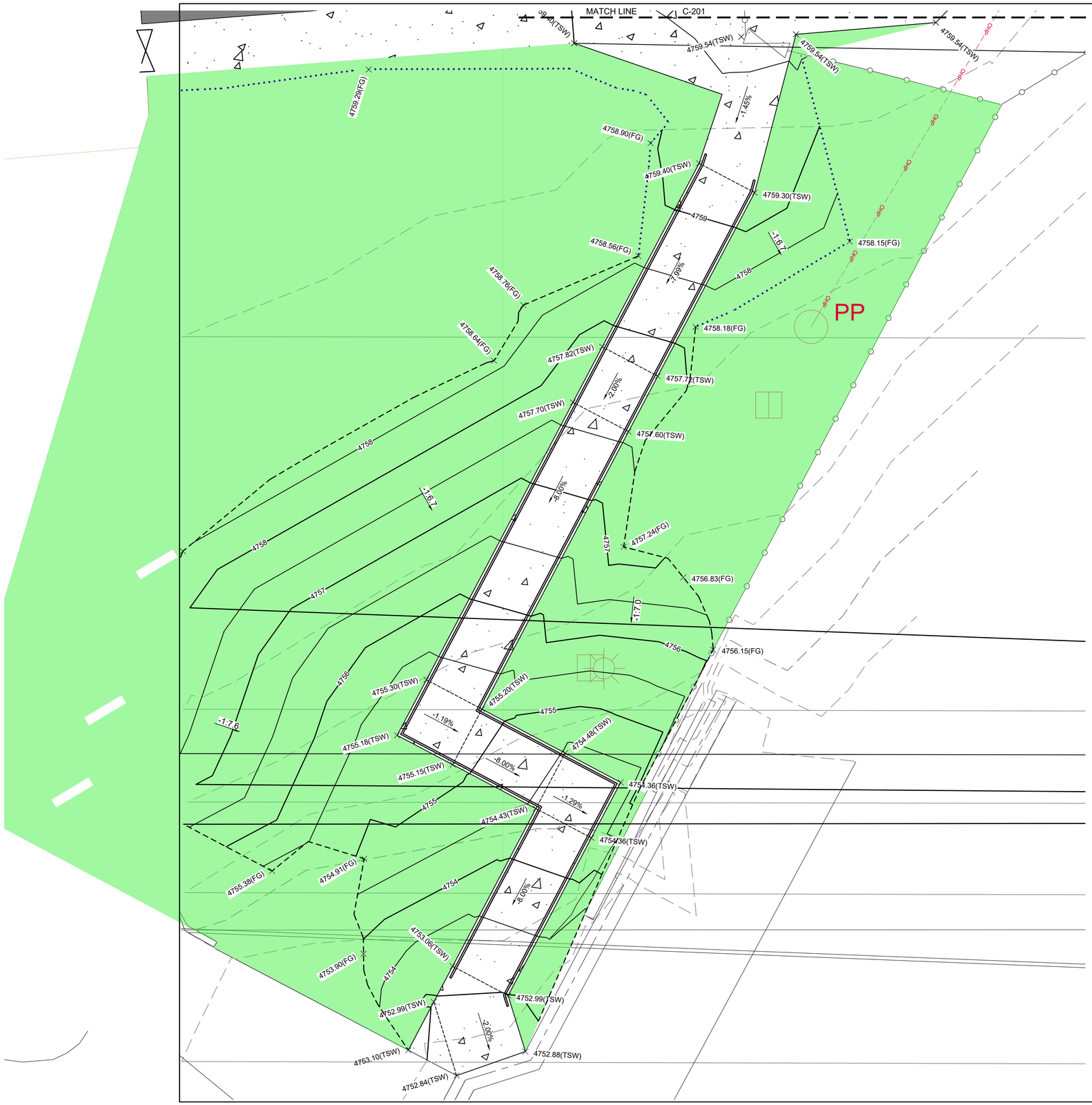

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NO.	REVISIONS	DATE

LEGEND

FG	FINISH GRADE
CON	TOP OF CONCRETE PAD
TSW	TOP OF SIDEWALK

0 5 10

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

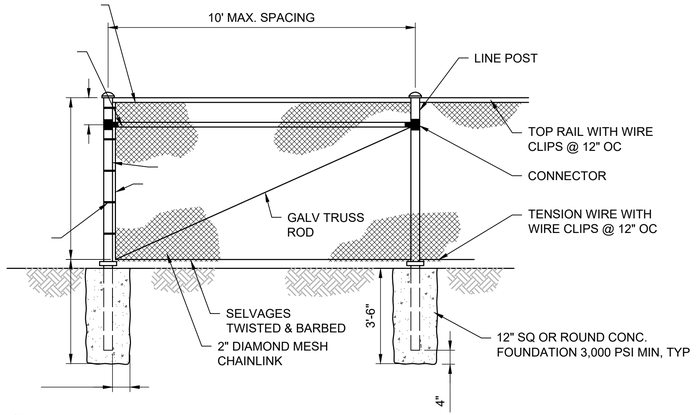
ENLARGED GRADING PLAN

DRAWN: KJW
CHECK: MBH

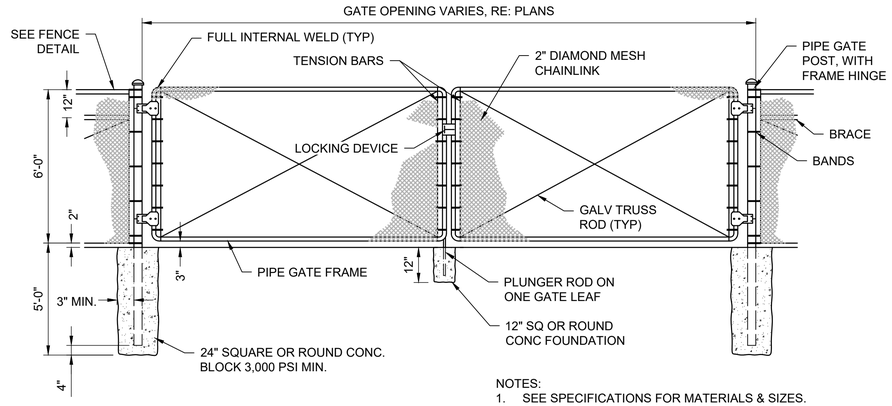
VERIFY SCALE: Scales based on 22"x34" prints.
1-1/2 Inches

PROJECT NO.
222011

SHEET NO.
C-202



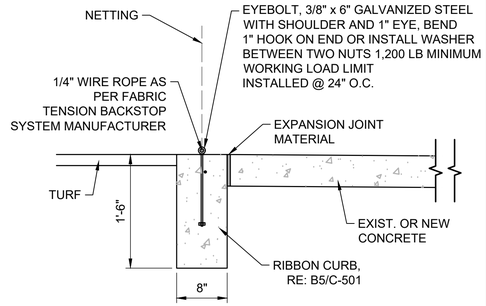
6' FENCE - CHAIN LINK



NOTES:
1. SEE SPECIFICATIONS FOR MATERIALS & SIZES.
2. SEE FENCE DETAIL FOR BRACING AT GATE.

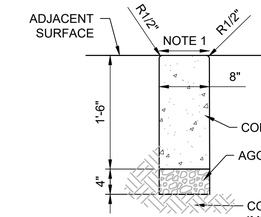
C3 6' HIGH GATE - CHAIN LINK DOUBLE SWING

N.T.S.



C5 NETTING TO RIBBON CURB CONNECTION

N.T.S.

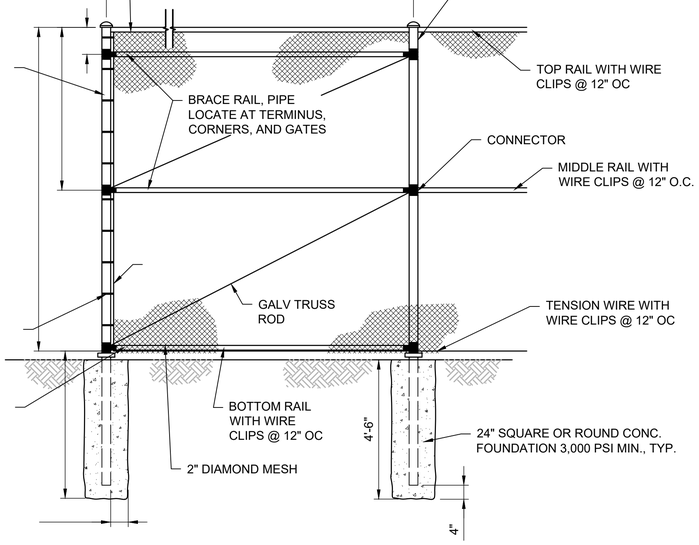


NOTES:
1. SLOPE CURB TO MATCH ADJACENT SLOPE DIRECTION.
2. PLACE EXPANSION JOINT MATERIAL AT TERMINAL POINTS OF RADII, ADJACENT TO STRUCTURES AND 60-FEET MAXIMUM SPACING.
3. CONTINUOUS PLACEMENT PREFERRED, SCORE INTERVALS 8-FEET MAXIMUM SPACING.
4. SEE SPECIFICATIONS FOR MATERIALS, PLACEMENT & COMPACTION REQUIREMENTS.
5. ADJACENT CONCRETE & TURF SURFACES TO BE FLUSH WITH TOP OF CURB. ADJACENT LAWN OR LANDSCAPE SURFACES TO BE 1-INCH BELOW TOP OF CURB.

B5 RIBBON CURB - 1 FOOT

1" = 1'-0"

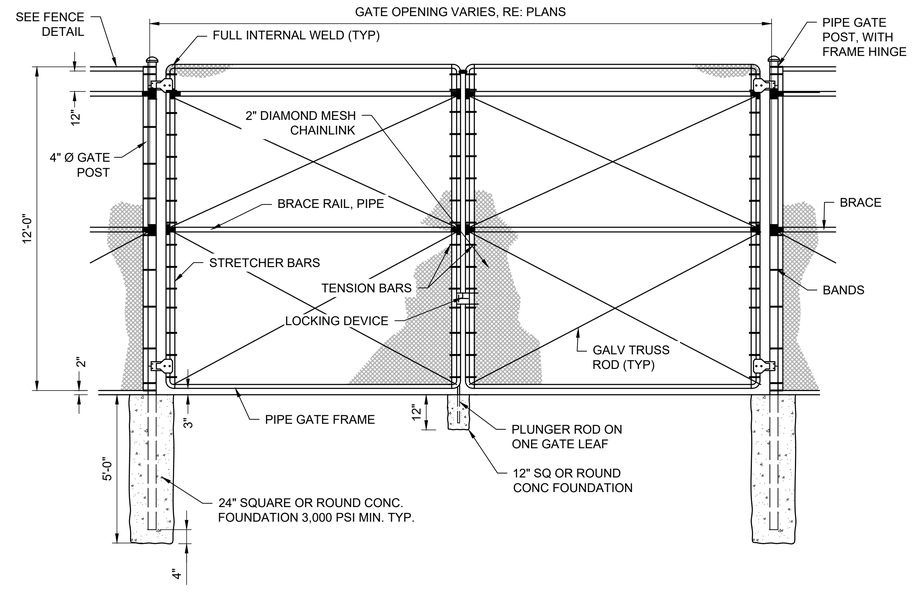
0 1/2' 1' 2'



SEE SPECIFICATIONS FOR MATERIALS & SIZES. COORDINATE WITH

COORDINATE FINAL FOUNDATION DESIGN WITH FENCE SUPPLIER.

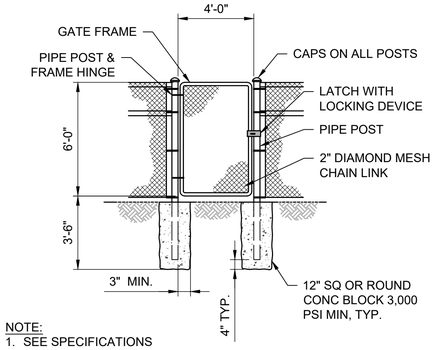
12' FENCE - CHAIN LINK



NOTES:
1. SEE SPECIFICATIONS FOR MATERIALS & SIZES.
2. SEE FENCE DETAIL FOR BRACING AT GATE.

A3 12' HIGH GATE - CHAIN LINK DOUBLE SWING

N.T.S.



NOTE:
1. SEE SPECIFICATIONS FOR MATERIALS & SIZES.
2. SEE FENCE DETAIL FOR GATE BRACING.

A5 6' HIGH MAN GATE - CHAIN LINK

N.T.S.

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THINK LEARN BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

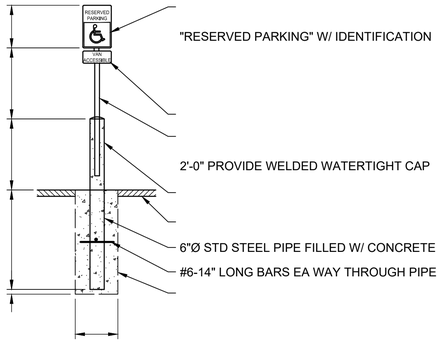
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

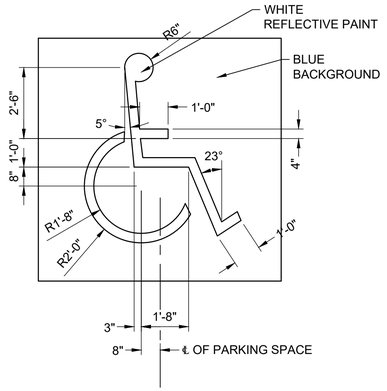
PROJECT NO. 222011

SHEET NO. C-501



ACCESSIBLE PARKING SIGN - BOLLARD

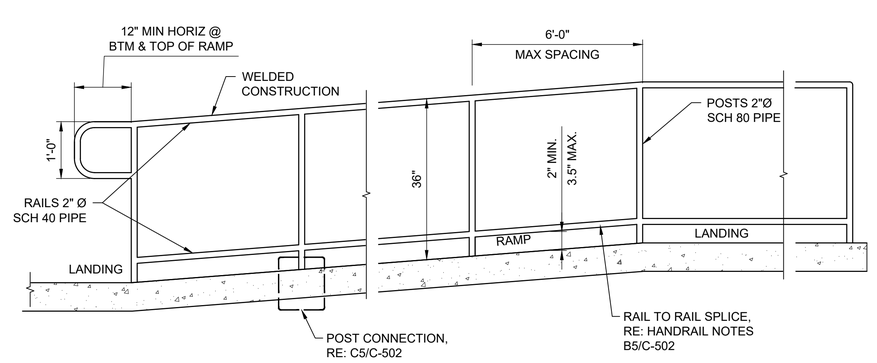
6'



C2 ACCESSIBLE SYMBOL

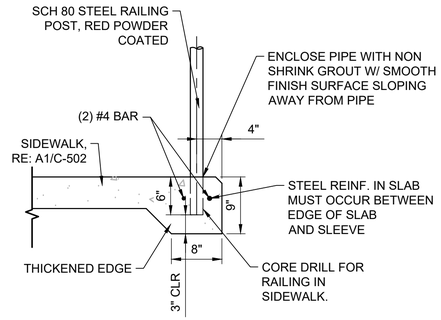
3/8" = 1'-0"

0 2' 4' 6'



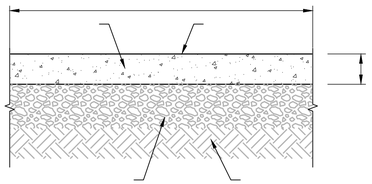
C3 RAMP HANDRAIL

N.T.S.



C5 RAILING INSTALL

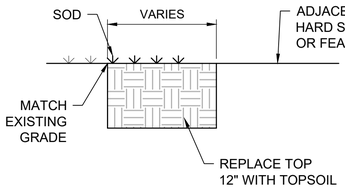
N.T.S.



PLACE EXPANSION JOINT MATERIAL ADJACENT TO STRUCTURES

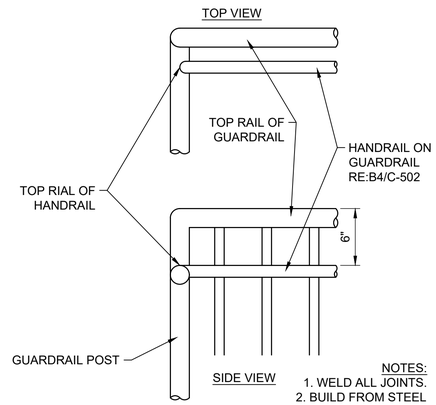
PREFERRED, SCORE INTERVALS AT 5-FEET MAXIMUM SPACING.

CONCRETE PAD



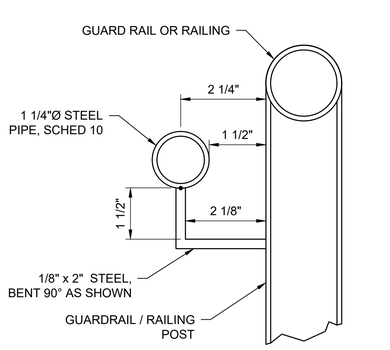
B2 TYPICAL LANDSCAPE REPAIR-SOD

N.T.S.



B3 HANDRAIL TO GUARDRAIL TRANSITION

N.T.S.



NOTES:
1. WELD ALL JOINTS.
2. BUILD FROM STEEL

B4 HANDRAIL SECTION

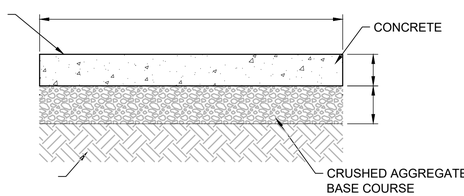
N.T.S.

NOTES:

1. GUARDRAIL SHALL BE PROVIDED AT STAIRS AND OPEN SIDED WALKING SURFACES WHEN THEY ARE ELEVATED MORE THAN 30" ABOVE GRADE OR ADJACENT CONSTRUCTION.
2. SEE DRAWINGS OR SPECIFICATIONS FOR RAIL MATERIAL TYPE(S).
3. ALL RAILS SHALL BE FIXED UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
4. PLACE RAIL POSTS OPPOSITE EACH OTHER WHERE RAILINGS ARE PARALLEL.
5. PROVIDE SLIP JOINTS AT 24' MAX CENTERS FOR EXPANSION OF RAIL. LOCATE RAIL SLIP JOINTS AT FACE OF POST. GAP AT TIME OF INSTALLATION SHALL BE BASED ON TEMPERATURE OF RAIL (3/8" GAP AT 25° F, 0" GAP AT 100° F). AT CONCRETE EXPANSION JOINTS, PROVIDE MINIMUM OF 1" GAP IN SLIP JOINTS BUT NOT LESS THAN WIDTH OF CONCRETE EXPANSION JOINT. INSERT SLEEVES SHALL BE LONG ENOUGH TO ALLOW FOR THE FULL RANGE OF MOVEMENT.
6. MATERIAL FOR SLIP JOINT PLATE CHANNEL SHALL BE OF THE SAME MATERIAL AS THE RAIL.
7. ALL RAILINGS TO BE POWDER COATED RED, RE: SCHOOL DISTRICT FOR COLOR CODE.

B5 HANDRAIL / GUARDRAIL NOTES

N.T.S.



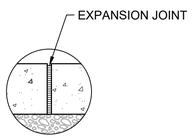
PLACE EXPANSION JOINT MATERIAL ADJACENT TO STRUCTURES

CONTINUOUS PLACEMENT PREFERRED, CONTROL JOINT INTERVALS

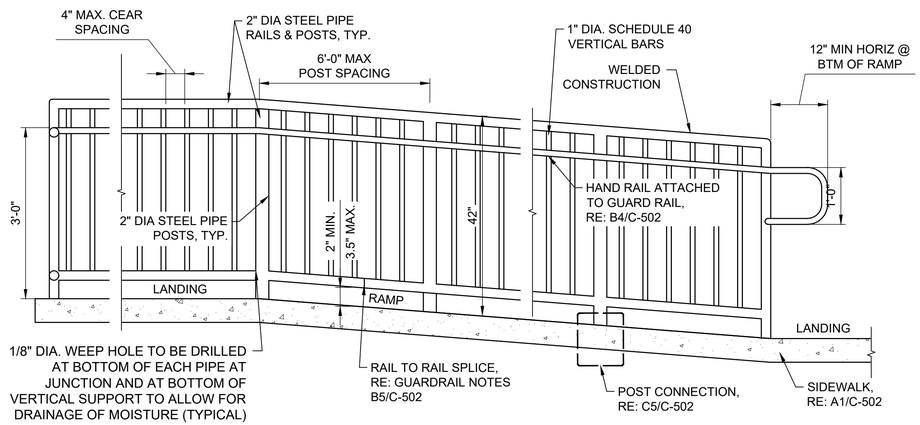
PREPARE SUBGRADE IN ACCORDANCE WITH SPECIFICATIONS.
AT RAILING POST LOCATIONS THICKEN THE EDGE OF SIDEWALK PER

CONCRETE SIDEWALK

CONTROL JOINT

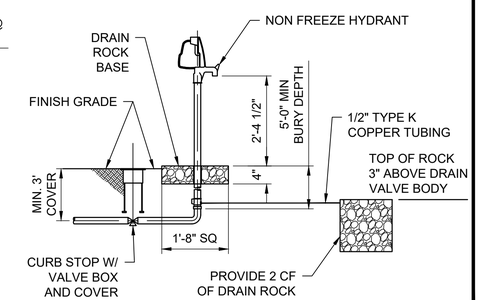


EXPANSION JOINT



A3 RAMP GUARDRAIL

N.T.S.



NOTES:
1. WOODFORD IOWA YARD HYDRANT MODEL Y34 & Y1 OR EQUAL.

A5 NON-FREEZE YARD HYDRANT

N.T.S.

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100 East Bower St., Suite 110
Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER LICENSED 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

FRUITLAND MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

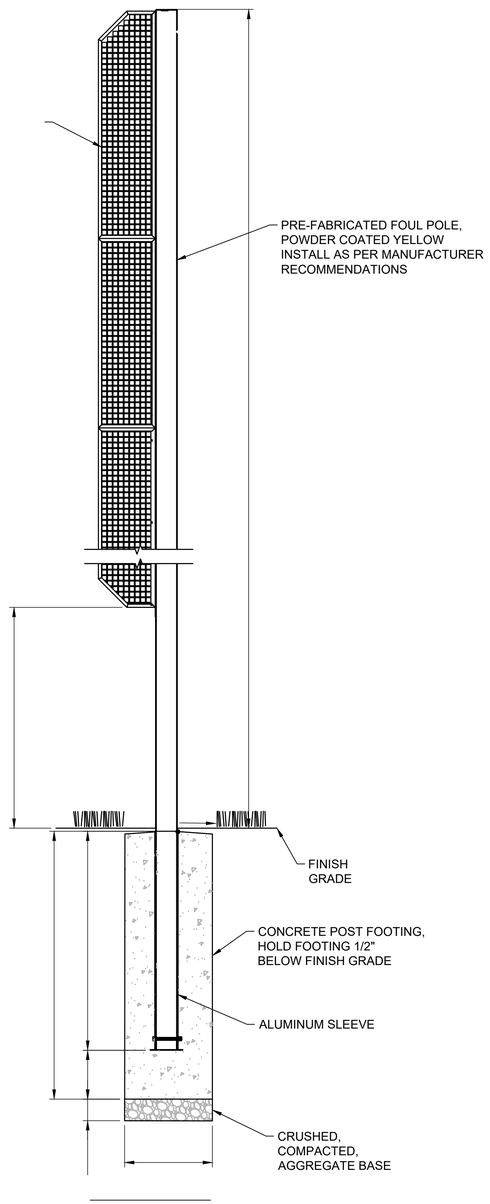
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

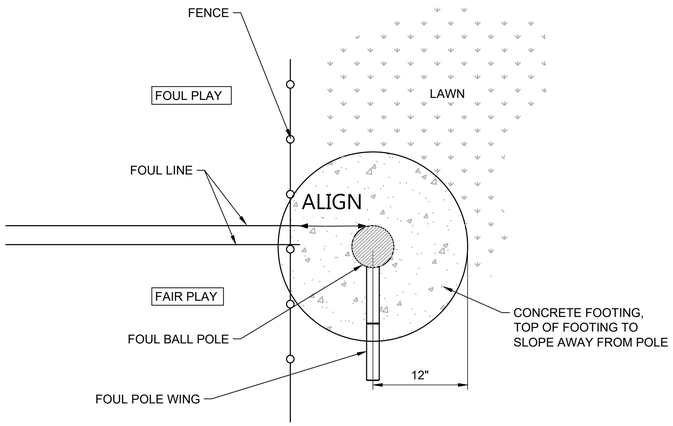
SHEET NO. C-502



INSTALL AS PER MANUFACTURER'S DETAILS. SEE SPECIFICATIONS FOR PRODUCT INFORMATION.

CONTRACTOR TO PROVIDE FOUNDATION DESIGN AND PLACEMENT. COORDINATE FINAL FOUNDATION DESIGN

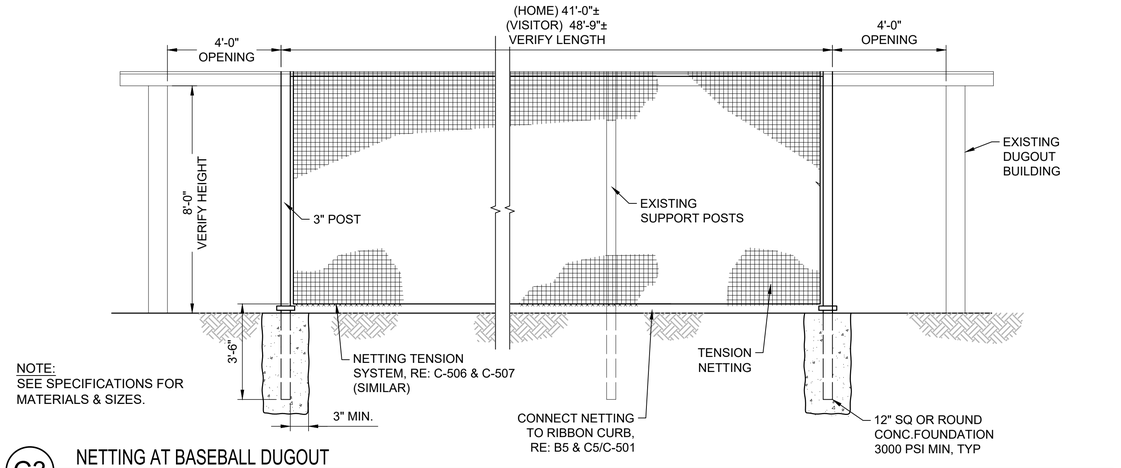
FOUL POLE



PLAN VIEW

NOTES:

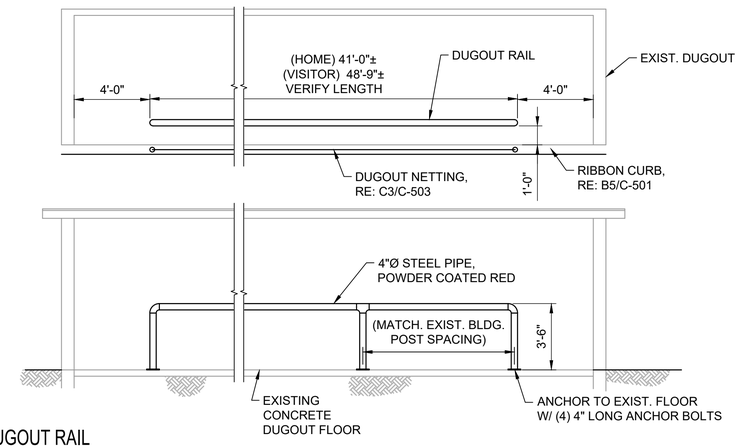
1. PLACE FOUL BALL POLE BEHIND FENCING.



NOTE:
SEE SPECIFICATIONS FOR MATERIALS & SIZES.

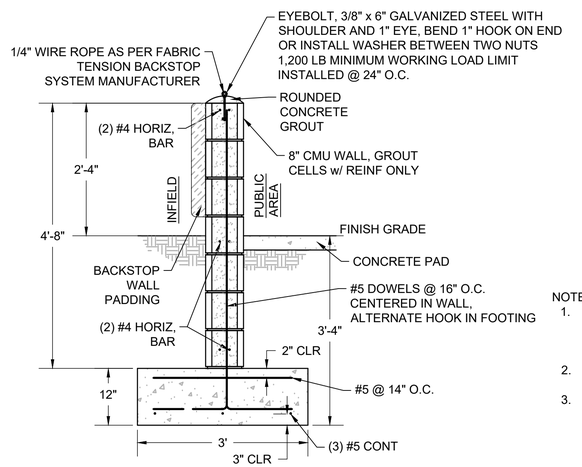
C3 NETTING AT BASEBALL DUGOUT

N.T.S.



B4 DUGOUT RAIL

N.T.S.



NOTE:
1. CMU TO MATCH TYPE, COLOR, AND STYLE OF THE EXISTING CONCESSIONS BUILDING. COORDINATE WITH OWNER.
2. INFIELD SIDE TO BE SMOOTH FACE. PUBLIC SIDE TO BE SPLIT FACE BLOCK.
3. BACKSTOP WALL PADDING TO HAVE 4" REVEAL FROM FINISH GRADE TO BOTTOM OF PAD FOR BASEBALL FIELD.

A4 CMU BACKSTOP WALL

1" = 1'-0"

0 1/2" 1" 2"

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PROFESSIONAL ENGINEER LICENSED 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

TRUSTEE AREA 1 MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

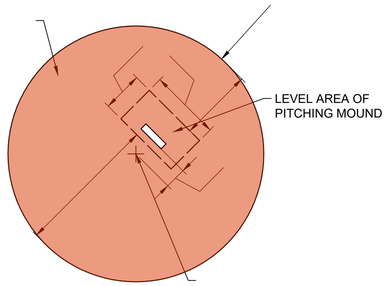
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

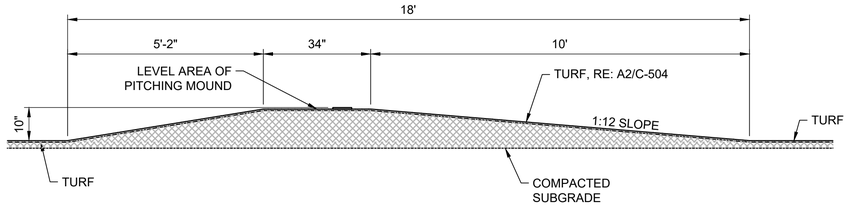
PROJECT NO. 222011

SHEET NO. C-503



BASEBALL PITCHING MOUND PLAN

12'

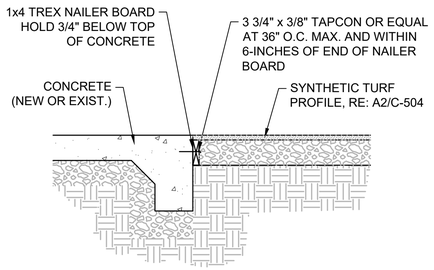


NOTES:

1. SUBGRADE SHALL BE COMPACTED T 90%-95% PRIOR TO PLACEMENT OF FIELD CLAY.

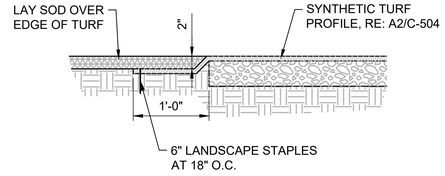
C2 BASEBALL PITCHING MOUND PROFILE

N.T.S.



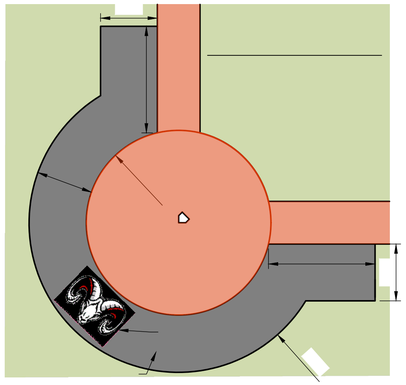
C4 TURF EDGE CONNECTION AT CONCRETE

1/2" = 1'-0"

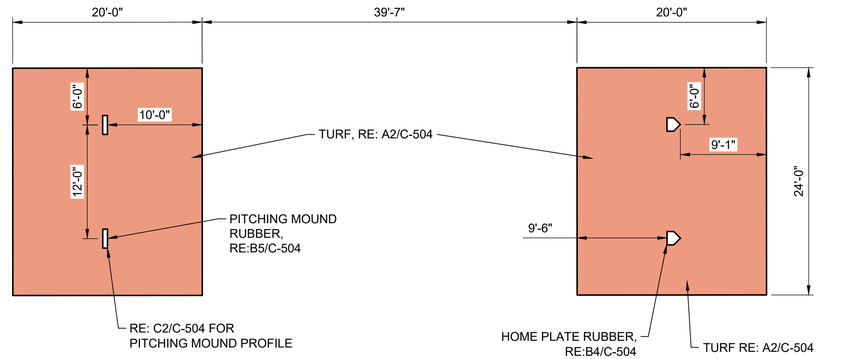


C5 TURF TO SOD CONNECTION

1/2" = 1'-0"

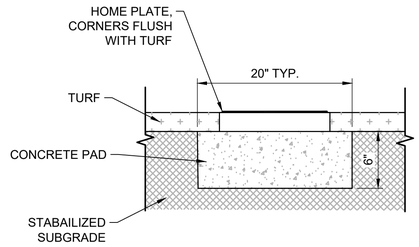


VARSITY BASEBALL HOME PLATE HALO



B2 BULL PEN

1/8" = 1'-0"

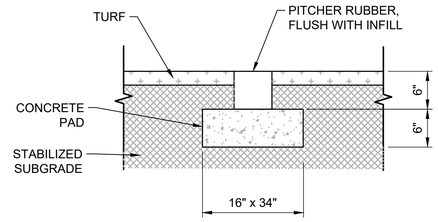


NOTES:

1. CONSTRUCT 1/2" RADIUS AT EDGE OF CONCRETE PAD

B4 HOME PLATE

N.T.S.

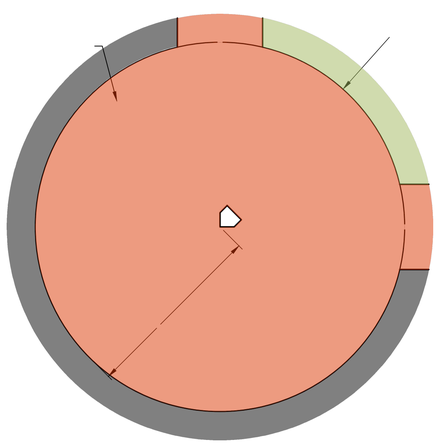


NOTES:

1. CONSTRUCT 1/2" RADIUS AT EDGE OF CONCRETE PAD.

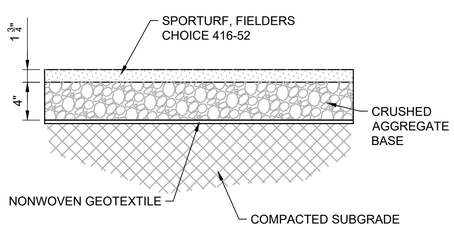
B5 PITCHING RUBBER

N.T.S.



BASEBALL BATTER BOX PLAN

12'

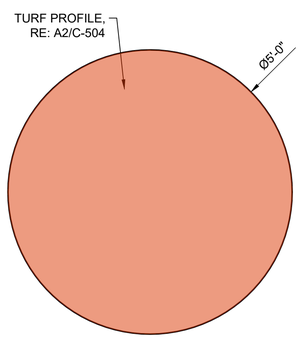


NOTES:

1. SUBGRADE SHALL BE COMPACTED T 90%-95% PRIOR TO PLACEMENT OF CONCRETE.
2. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

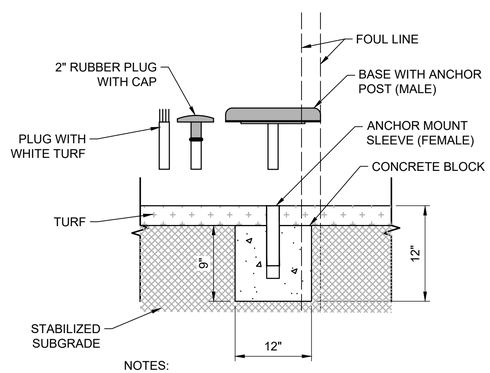
A2 TURF PROFILE

N.T.S.



A3 WARM UP CIRCLE

3/4" = 1'-0"



NOTES:

1. CONSTRUCT 1/2" RADIUS AT EDGE OF CONCRETE PAD.
2. FOR EACH BASE, FURNISH SPECIFIED BASE, RUBBER PLUG CAP, AND PLUG WITH WHITE SYNTHETIC TURF TO OWNER.

A4 STANDARD BASE

N.T.S.

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Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER LICENSED 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

TRUSTED TO BUILD MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

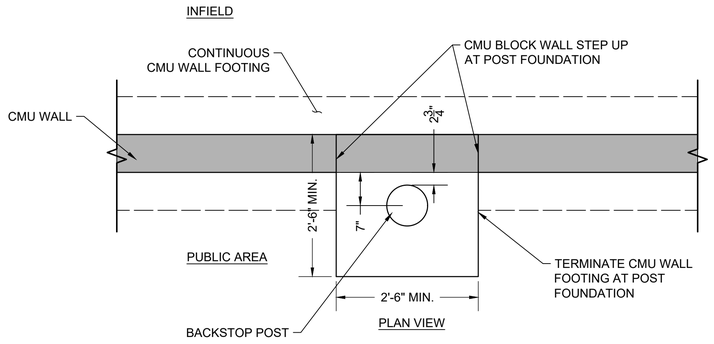
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

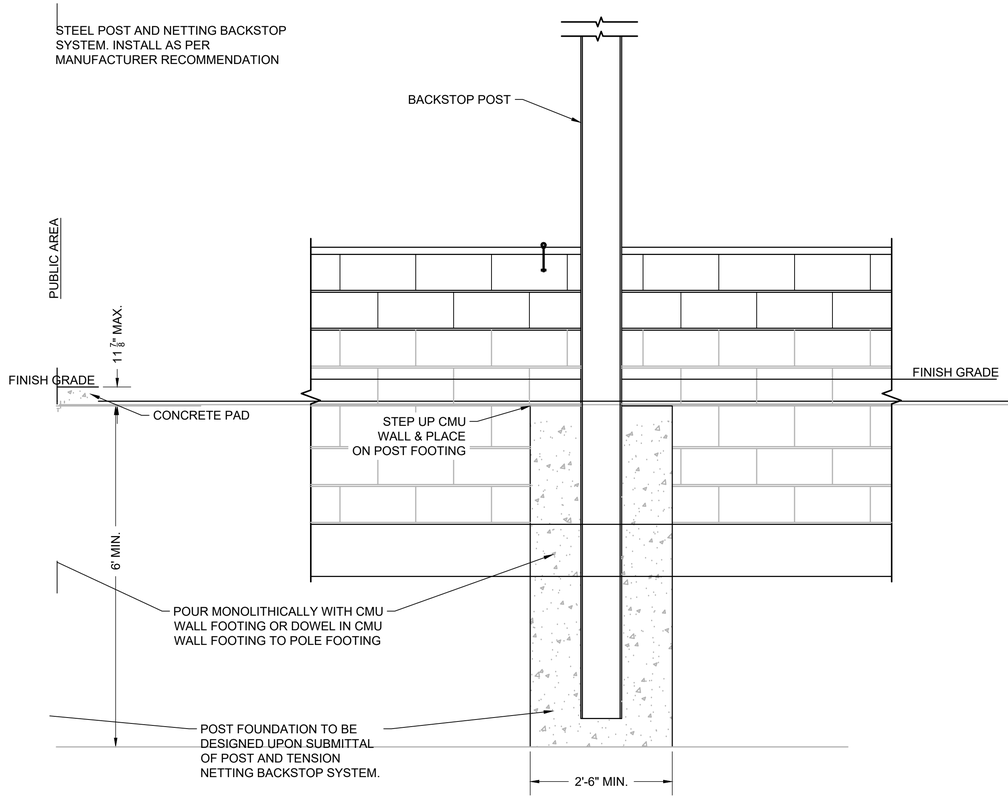
1-1/2 Inches

PROJECT NO. 222011

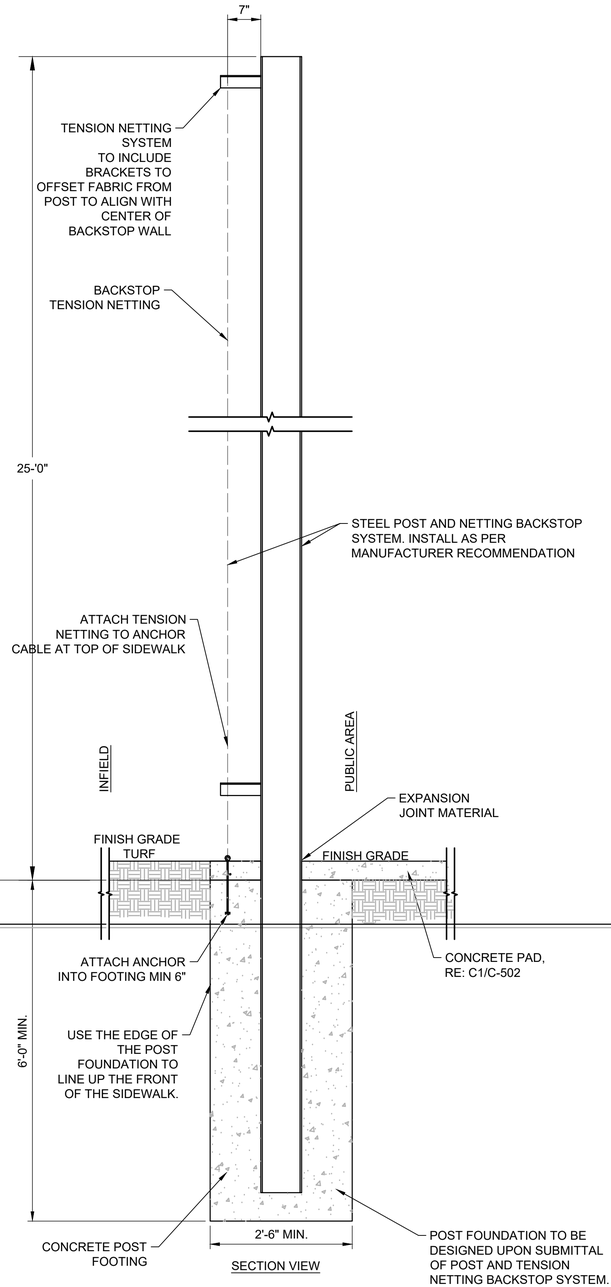
SHEET NO. C-504



STEEL POST AND NETTING BACKSTOP SYSTEM. INSTALL AS PER MANUFACTURER RECOMMENDATION



INSTALL AS PER MANUFACTURER'S DETAILS. SEE SPECIFICATIONS FOR PRODUCT INFORMATION. SEE SHEETS C-506 & C-507 FOR POLE TO POLE TENSION NETTING SYSTEM DETAILS. CONTRACTOR TO PROVIDE FOUNDATION DESIGN AND PLACEMENT. COORDINATE FINAL FOUNDATION



NOTES:

1. INSTALL AS PER MANUFACTURER'S DETAILS. SEE SPECIFICATIONS FOR PRODUCT INFORMATION.
2. SEE SHEETS C-506 & C-507 FOR POLE TO POLE TENSION NETTING SYSTEM DETAILS.
3. SHEET C5/C-501 FOR CONNECTION OF NETTING TO RIBBON CURB BETWEEN POLES.
4. CONTRACTOR TO PROVIDE FOUNDATION DESIGN AND PLACEMENT. COORDINATE FINAL FOUNDATION DESIGN WITH POLE SUPPLIER.

A4 SPECTATOR NETTING
N.T.S.

0 1' 2' 3'

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PROFESSIONAL ENGINEER LICENSED 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK LEARN BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

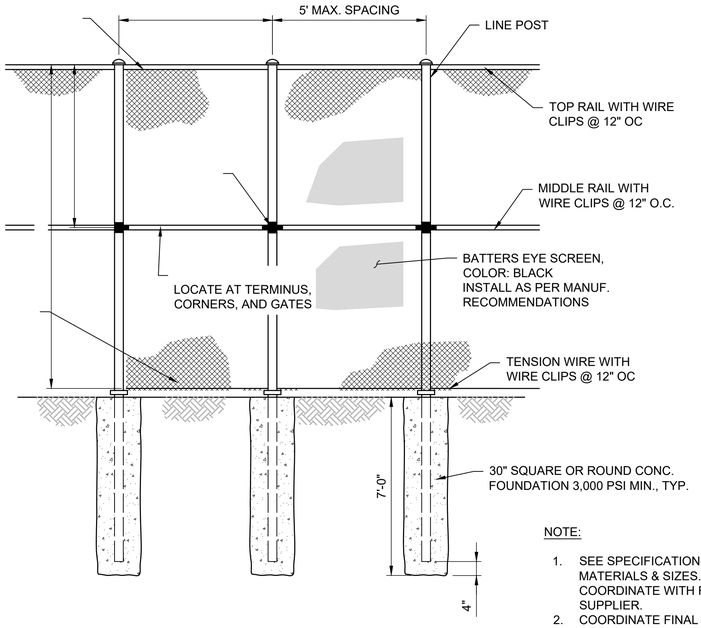
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

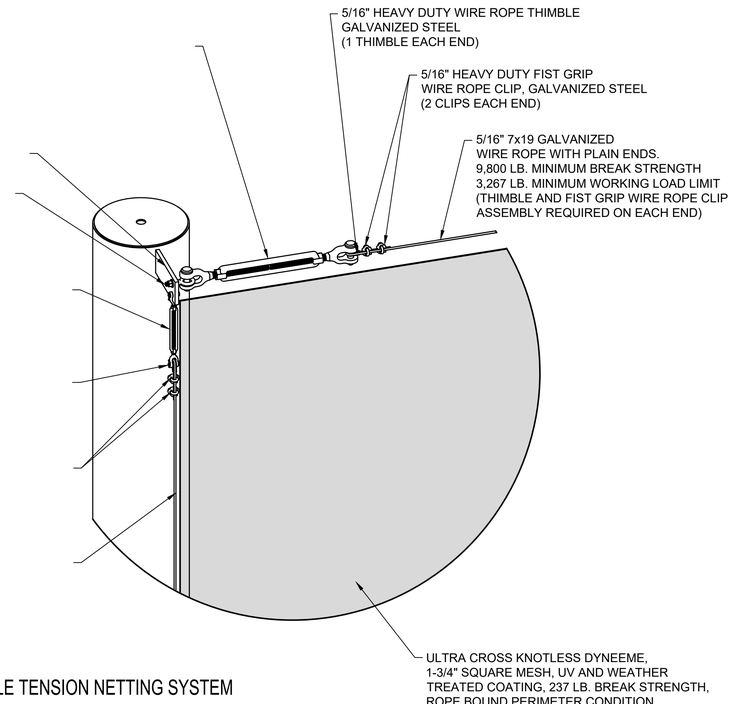
SHEET NO. C-505



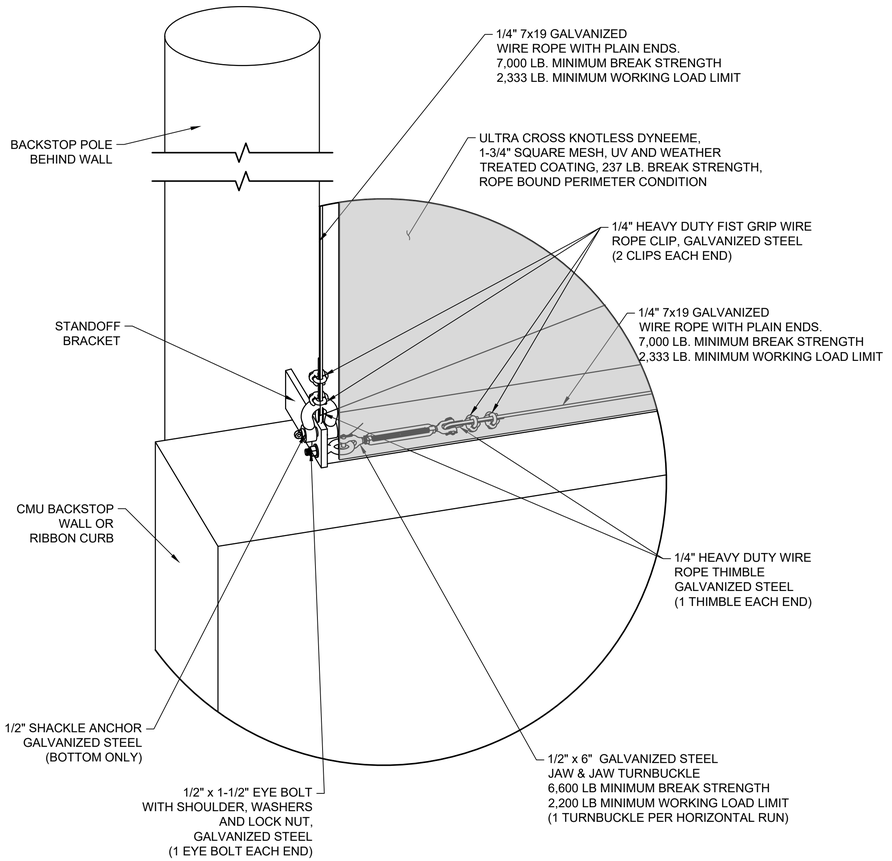
NOTE:

1. SEE SPECIFICATIONS FOR MATERIALS & SIZES. COORDINATE WITH FENCE SUPPLIER.
2. COORDINATE FINAL FOUNDATION DESIGN WITH FENCE SUPPLIER.

12' FENCE - CHAIN LINK WITH BATTERS EYE SCREEN



POLE TO POLE TENSION NETTING SYSTEM
END POST-TOP OF POST DETAIL



A3

POLE TO POLE TENSION NETTING SYSTEM
END POST-BOTTOM OF POST DETAIL

N.T.S.

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PROFESSIONAL ENGINEER LICENSED 15381 6/29/2022 STATE OF IDAHO MATTHEW B. HILL

NO.	REVISIONS	DATE

STRONGER TOGETHER MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

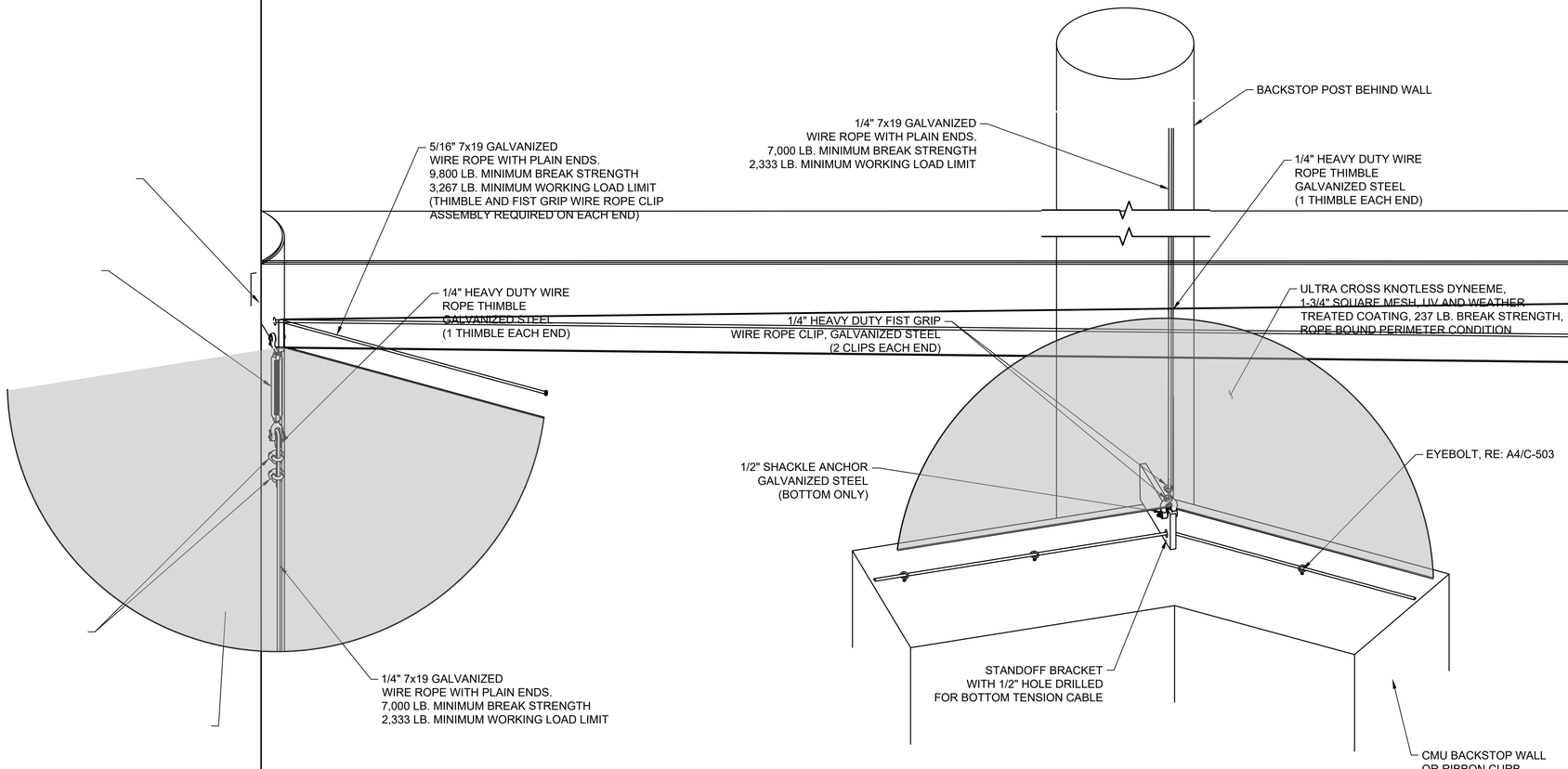
DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. C-506



L T L T I TTI T
I T-T T T IL

A3 POLE TO POLE TENSION NETTING SYSTEM
MID POST-BOTTOM OF POST DETAIL
N.T.S.

KELLER ASSOCIATES
100 East Bower St., Suite 110
Meridian, Idaho 83642
(208) 288-1992

PROFESSIONAL ENGINEER
LICENSED
15381
6/29/2022
STATE OF IDAHO
MATTHEW B. HILL

NO.	REVISIONS	DATE

THINK LEARN BE MORE TOGETHER POCATELLO CHUBBUCK SCHOOL DISTRICT #25

SCHOOL DISTRICT #25

HIGHLAND HIGH SCHOOL

HIGHLAND HIGH SCHOOL BASEBALL FIELD RENOVATION

DETAILS

DRAWN: KJW CHECK: MBH

VERIFY SCALE: Scales based on 22"x34" prints.

1-1/2 Inches

PROJECT NO. 222011

SHEET NO. C-507