adm group
2100 west 15th street
tempe, arizona 85281-6942
tel: 480.285.3800

addendum

Dilley ISD Baseball and Softball Improvements
Phase 2

ADDENDUM NO. 001
August 01, 2023

The following items modify or clarify the contract documents for the above project. In the event of conflict, all information herein shall take precedence over the drawings and specifications.

PRE-BID QUESTIONS:

1. Please provide the geotechnical report for this project.
    a. **Geo-Tech Report Attached.**

2. Is the Owner providing the building permit?
    a. **The contractor will be responsible for the Building Permit from the City of Dilley. The owner will reimburse the cost of the permit.**

3. Please provide Specification Sections for sitework, electrical, security.
    a. **Electrical specifications are included on the Electrical Plan Drawings.**
    b. **Sitework is as noted on the Civil Drawings – there is no mass grading called for, so no additional specifications are needed.**
    c. **The security system is to be provided by Dilley ISD using their current vendor – we are only providing the conduit pathway infrastructure.**

4. The Bid Submittal Checklist, 1.02 Bidders Checklist B4 indicates Bid Supplement Form – Allowances; B5 indicates Bid Supplement Form - Alternates.
    a. **There are no Alternates so no Bid Form B5.**
        i. **Allowance No. 1: Lump-Sum Allowance: Include the sum of $30,000.00 for infrastructure coordination and upgrades and repairs.**
        ii. **Allowance No. 2: Contingency Allowance: Include a contingency allowance of $75,000 for use according to Owner's written instructions.**
        iii. **Allowance No. 3: Testing and Inspection Allowance: Include the sum of $7,000.00 for testing and special inspections to be provided by Contractor**

Please provide these forms.

b. **Form B4 attached.**

5. Confirm that 4" of topsoil and 2" of sod are to be installed.
   a. **Yes, as per plans.**

6. Confirm that the web-based software referenced is provided/furnished by Owner.
   a. **Contractor to provide Web-based Submittal Software – Typically, ProCore or Submittal Exchange. If contractor does not utilize this service then Submittals will be by email.**

7. Please provide the ticket booth rendering.
   a. **Plan Sheet A 6.2; Note 8 - VINYL WALL GRAPHIC IN HATCHED AREA - SEE RENDERING**

8. Provide grades, dimensions, thickness, and subgrade for site concrete.
   a. **4" concrete on 2" sand base.**

9. Provide specifications for home plates and pitching rubbers as shown on Sheet SP2.5
   a. **Existing bases, home plate and pitching rubbers are to be reused and stay in place.**

10. Furnish specifications of the wall pads and details of the custom graphics referenced in Keynotes #3, Sheet SP 2.1.
    a. **Wall pads to be equal to Beacon Woodless Backstop Pads, Graphics to be coordinated with client during construction.**

11. General Structural Notes, item C- Foundations, subparagraph 3. "Contractor to hire Geotech Engineer…. ",. Does the owner hire and pay for Geotech Engineer from the Allowance?
    a. **Geo-Tech is Terracon. The contractor will coordinate and pay from Allowance.**

12. Who are the subs for the existing Fire Alarm and security systems?
    a. **Fire Alarm – Firetrol is the system. TCR Best Alarm Co. is the Vendor (956) 727-1784.**
    b. **Security – Security One San Antonio, TX, is the System Vendor (210) 341-8900.**

13. There are concerns by a sub (see previous email to David Peterson) about the field's drainage.
    a. **We acknowledge and will work with the contractor once the project is awarded.**

14. Is power required for the Lift Station.
    a. **Yes.**

15. Is power required for the field score boards?
    a. **New score boards are to tie-in to existing power.**

16. Is data and communications by the owner?
    a. **Yes. Conduit by contractor and fiber and network equipment by Owner.**

17. How is the sports-lighting to be controlled? Is the contractor to provide a remote control system that allows the lights to be controlled and scheduled from any web enabled device while being monitored for outages by the manufacturer?
    a. **Yes, a new Controller is to be included that allows remote scheduling.**

18. Does the warranty for the sports-lighting guarantee that light levels not drop below the specified level for 10 years since this field hosts UIL functions?
    a. **Light levels should be guaranteed to not drop more than 1% per year for ten years.**

19. Should the warranty also cover all parts and labor?
    a. **Lighting System Parts and Labor Warranty is for one year after acceptance of system.**

20. The existing poles appear to be 20+ years old. Should the drivers be remoted to lower on the pole to help reduce weight/wind loading and for ease of service?
    a. **That is a recommended field installation condition. The successful contractor will coordinate with Architect and Owner on final position of LED Lighting Drivers.**

21. The existing pole locations are not typical for UIL play. Should ball tracking fixtures be included to help follow the flight of the ball?
    a. **No, this is not required.**

ATTACHMENTS:

- Revised Sheets:
  - SP2.0 - Overall Site Plan Phase 2
  - SP2.1 - Overall Site Plan Phase 2
  - SP2.2 - Overall Site Plan Phase 2
  - SP2.3 - Overall Site Plan Phase 2
  - SP2.4 - Overall Site Plan Phase 2
  - SP2.5 – Details
  - A2.1 – Dugout – Floor Plan / Elevations / Sections
  - A2.2 – Concession – Floor Plans

  - A4.1 – Concession – Ceiling Plans
  - A5.1 – Concession – Roof Plan
  - A6.1 – Concession – Exterior Elevations
  - A6.3 – Concession – Door Schedule and Details
  - A7.1 – Concession – Building Sections & Wall Sections
  - A8.1 – Concession – Stair Plans
  - P0.0 – Plumbing Symbols and Specifications
- Geotech Report
- Bid Supplemental Form (B4) - Allowances

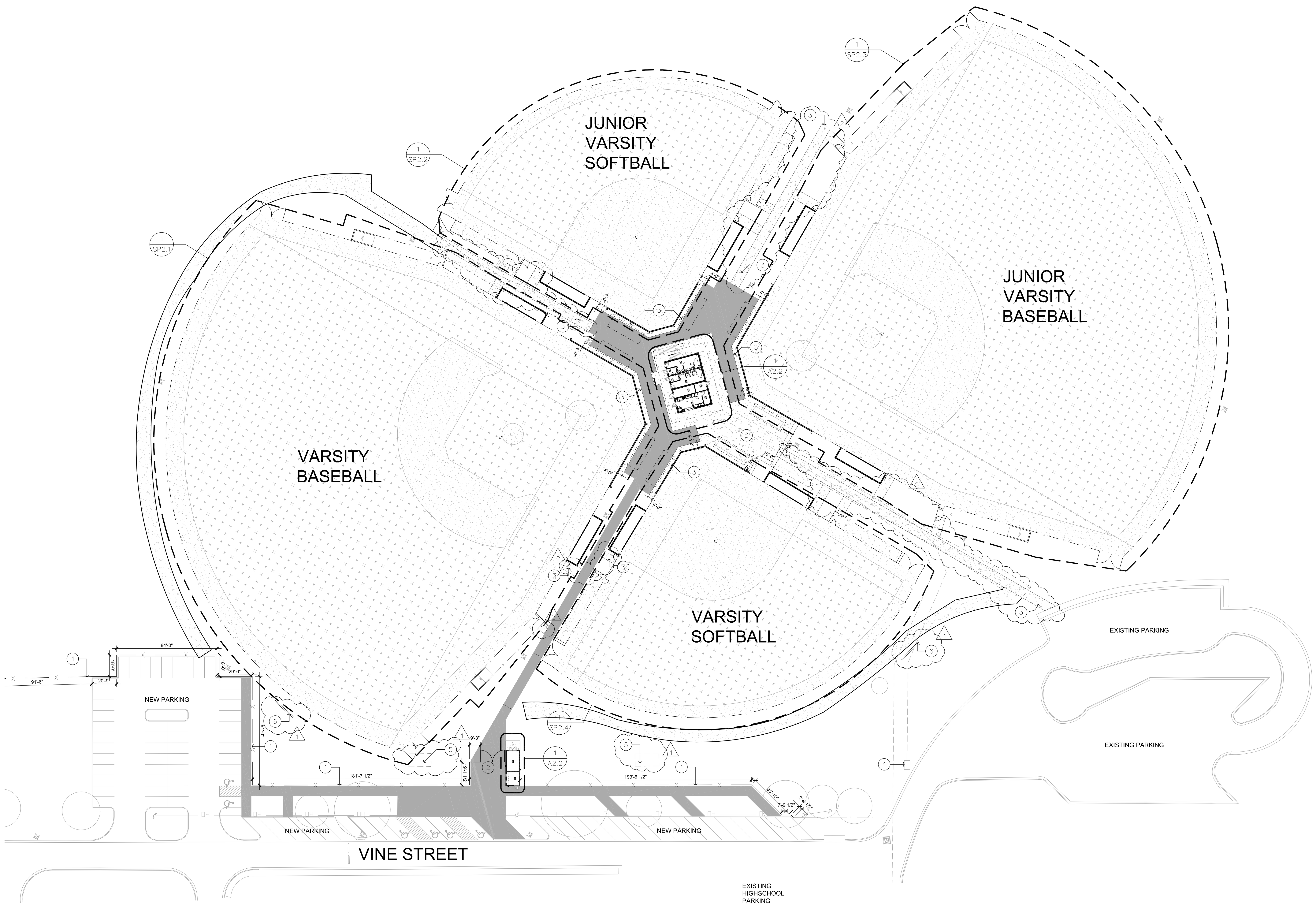
REVISED SHEETS NOTED WITH DELTA ONE & TWO:

A summary of the changes is as follows:

1. Sidewalks leading to dugouts, bullpens, and existing ADA parking have been provided.
2. Hollow metal door provided at dugouts.
3. Additional chain-link gate provided at bullpens.
4. Site plan updated to reflect demolition of existing buildings.
5. Wheelchair lift provided at concession building.
6. Keynotes updated for stainless steel tables with shelf storage.
7. Hose bibbs provided at concession building.
8. Second floor balcony at concession building modified to accommodate wheelchair lift.
9. Overhead clearance railing provided beneath staircase.
10. Second floor height lowered two feet.
11. Plumbing specifications updated to reflect contractor provided fixtures.

Glenn Patterson, Director

Date: August 01, 2023



OVERALL SITE PLAN

SCALE: 1" = 40'-0"

TRUE NORTH

KEYNOTES:

1. 6'-0" TALL VINYL COATED CHAIN LINK FENCE WITH 9 GAUGE X 2" MESH.
2. PAIR OF 10'-0" WIDE X 6'-0" TALL CHAIN LINK GATES WITH 9 GAUGE X 2" VINYL COATED MESH. PROVIDE CANE BOLT FOR EACH LEAF. DRILL CONCRETE TO RECEIVE CANE BOLT.
3. NEW CONCRETE SIDEWALK - SEE CIVIL DRAWINGS
4. BACKFLOW PREVENTOR - SEE CIVIL DRAWINGS
5. EXISTING BUILDING TO BE DEMOLISHED IN ITS ENTIRETY.
6. NEW SCOREBOARD TO BE TIED INTO EXISTING ELECTRICAL.

GENERAL NOTES:

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C. FIELDS SHALL NOT BE USED TO STORE TEMPORARY CONSTRUCTION SPOILS, EXCESS MATERIAL, DEMOLISHED ITEMS, ETC.

D. FINISH GRADE SHALL BE WITHIN 1" OF ALL CONCRETE SIDEWALKS, IRRIGATION BOXES, DRAINAGE INLETS, ETC.

E. ALL REMOVED FENCING POST SHALL BE DEMOLISHED TO BELOW GRADE OR GROUND FLUSH WITH THE ADJACENT SURFACE AND FILLED WITH CONCRETE.

F. ALL GATES TO BE INSTALLED WITH A MAXIMUM OF 4" CLEARANCE FROM BOTTOM PICKET TO FINISHED GRADE.

G. ALL GATES THAT ARE PART OF THE EGRESS PATH SHALL OPEN 180 DEGREES.

H. CONTRACTOR IS RESPONSIBLE FOR REPAINTING ANY FIRELANE CURBS THAT ARE WORN OUT OR DAMAGED DURING CONSTRUCTION.

I. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY CONCRETE THAT IS DAMAGED FROM EQUIPMENT ENTERING AND EXITING THE CONSTRUCTION SITE.

J. CONTRACTOR TO ENSURE THAT ALL EXISTING IRRIGATION SYSTEMS REMAIN OPERATIONAL DURING CONSTRUCTION.

K. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGED IRRIGATION LINES, SPRINKLER HEADS, ETC.

L. ALL TRENCHES NEED TO BE FULLY COMPACTED PRIOR TO INSTALLING NEW FINISHES.

M. ALL AREAS TO RECEIVE DG/INFILL MIX SHALL BE TREATED WITH PREEMERGENT AT THE START OF CONSTRUCTION TO ENSURE VEGETATION IS DEAD AT THE TIME OF DG INSTALL.

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REGISTERED ARCHITECT · STATE OF TEXAS · 25426
6-8-2023

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 17
DILLEY, TX 7017
BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

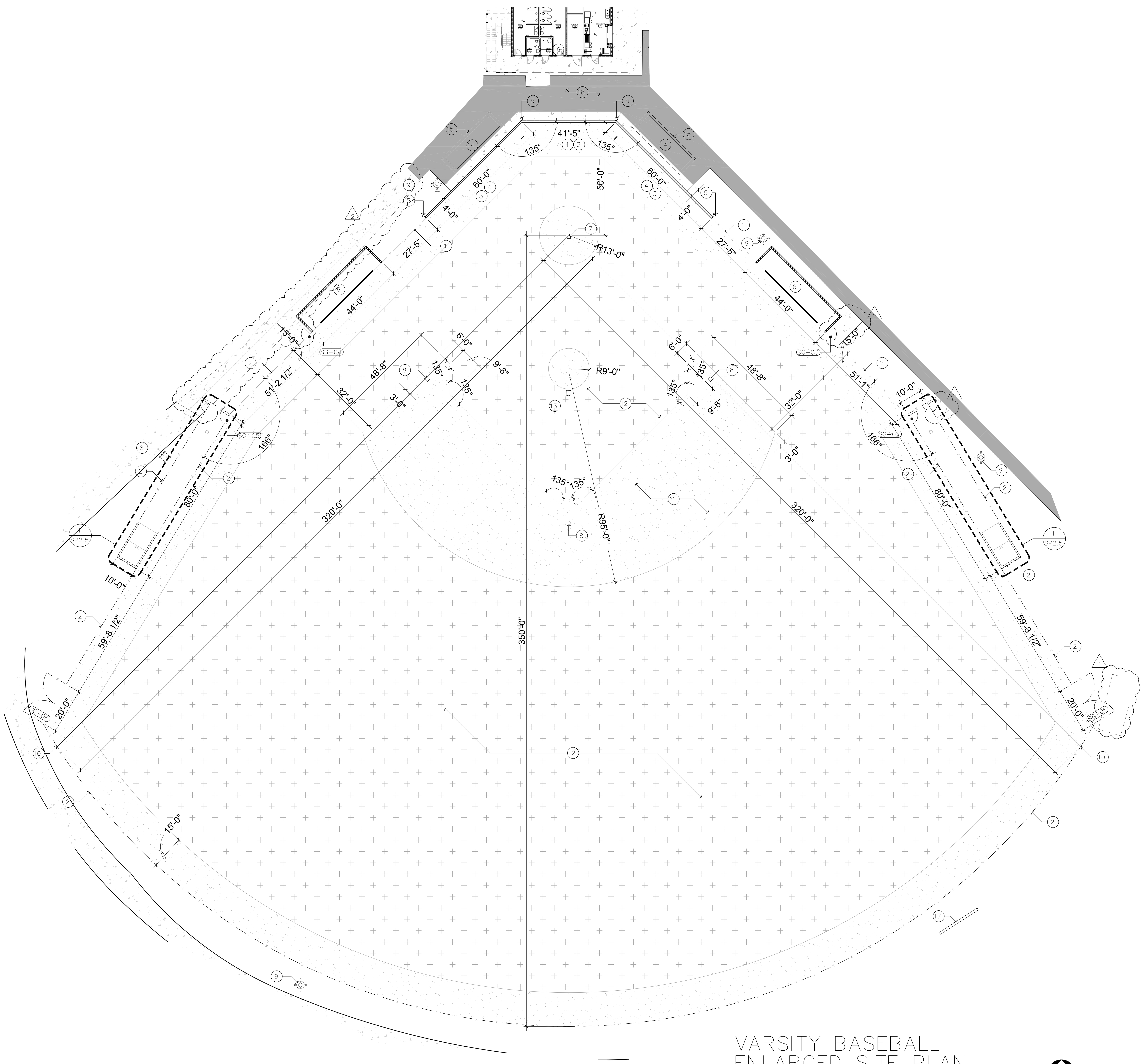
DILLEY INDEPENDENT SCHOOL DISTRICT

Revisions	Date
1	07/31/2023
2	07/31/2023

Project Number	7131-101
Date	12.01.2022
Drawn By	GP
Checked By	GP

OVERALL SITE PLAN
PHASE 2

SP2.0



VARSITY BASEBALL
ENLARGED SITE PLAN

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NORTH

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3. 3" THICK 18 OZ. UV PROTECTED VINYL WALL PAD WITH CUSTOM GRAPHICS - MOUNTED TO CMU WALL WITH Z-CLIPS.
4. NEW BACKSTOP NETTING SYSTEM (40'-0" HIGH) - EQUAL TO DYNNAMA STANDARD BACKSTOP CABLE SYSTEM
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6. NEW DUGOUT - SEE FLOOR PLAN ON A2.1
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GENERAL NOTES:

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DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 17
DILLEY, TX 7017
BASEBALL AND SOFTBALL
COMPLEX RENOVATIONS

DILLEY INDEPENDENT SCHOOL DISTRICT

Revisions	Date
1	07/31/2023
2	07/31/2023

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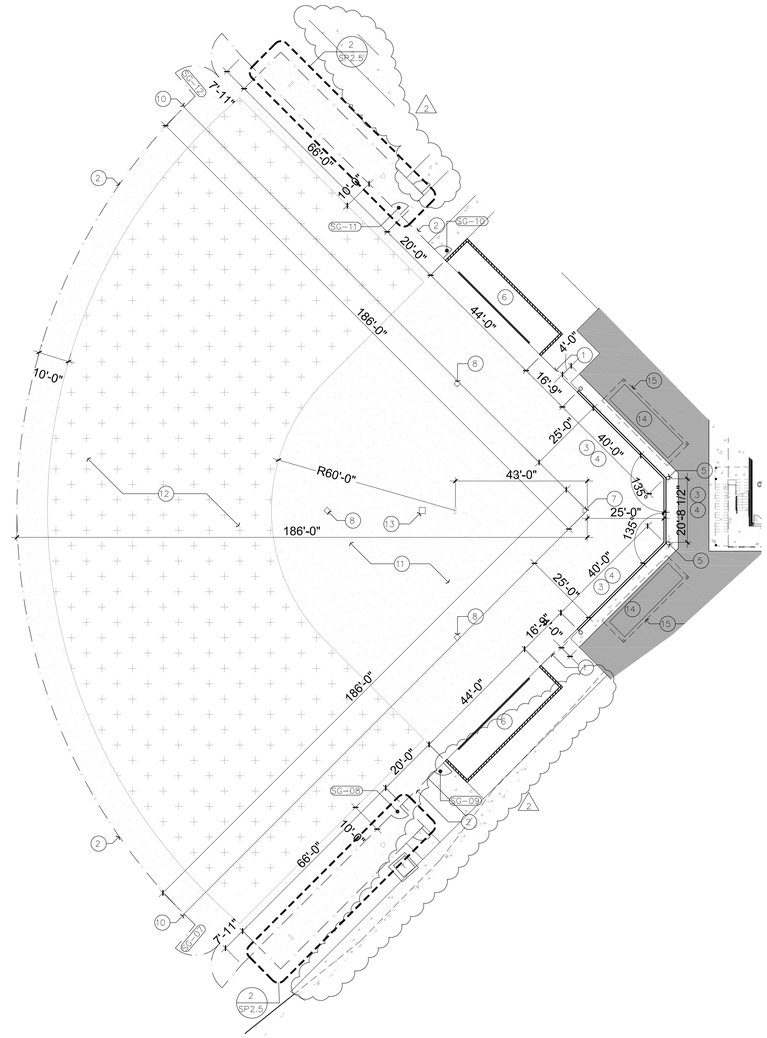
OVERALL SITE PLAN
PHASE 2
SP2.1



JV SOFTBALL ENLARGED SITE PLAN

SCALE: 1" = 20'-0"

NORTH

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REGISTERED ARCHITECT
JENNIFER WESTMORELAND
25426
STATE OF TEXAS

6-8-2023

DILLEY INDEPENDENT SCHOOL DISTRICT

245 W. FM 17
DILLEY, TX 7017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

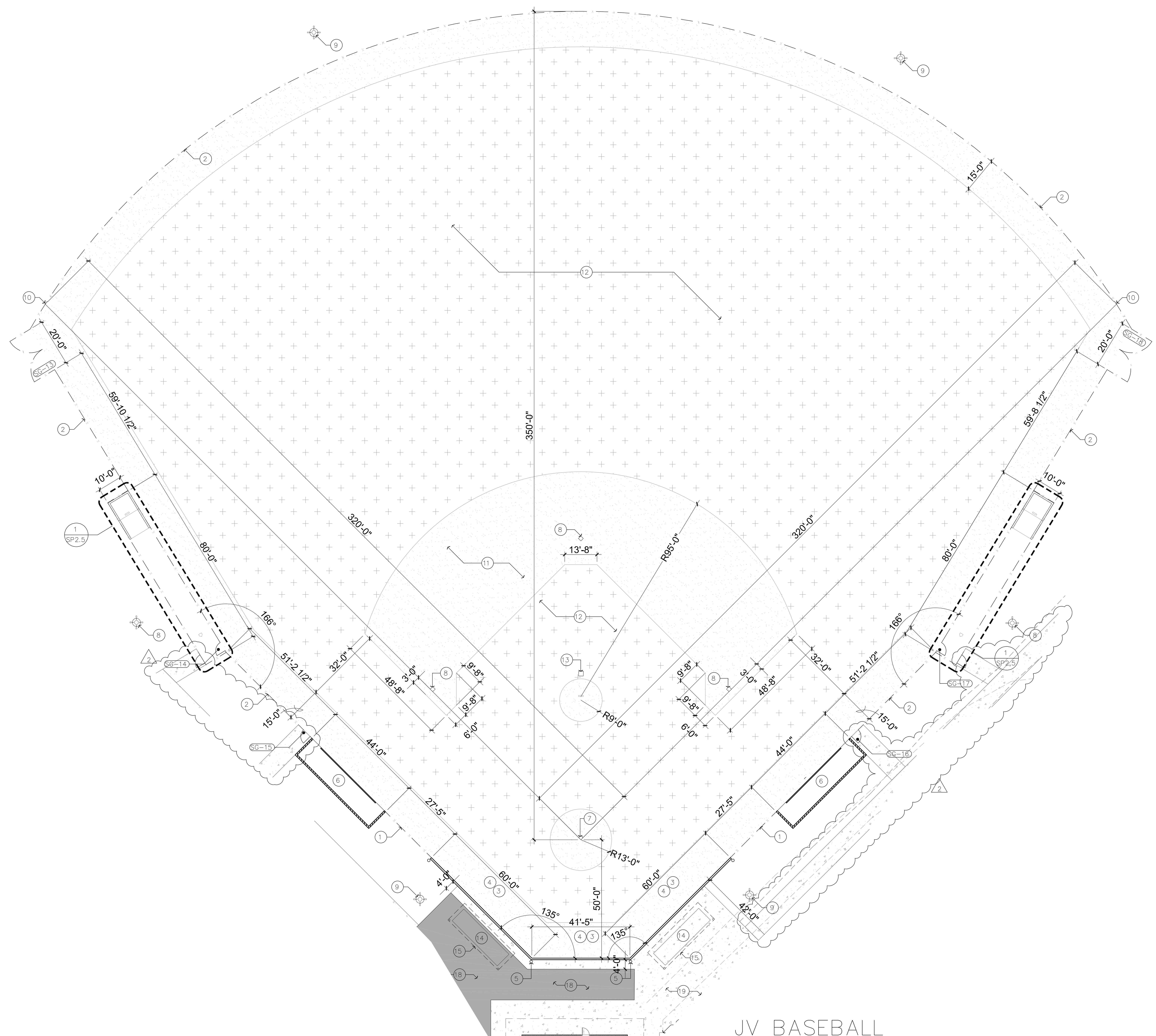
DILLEY INDEPENDENT SCHOOL DISTRICT

Revisions	Date
2	07/31/2023

Project Number	Date	Drawn By	Checked By
7131-101	12.01.2022	GP	GP

OVERALL SITE PLAN
PHASE 2

SP2.2



JV BASEBALL
ENLARGED SITE PLAN

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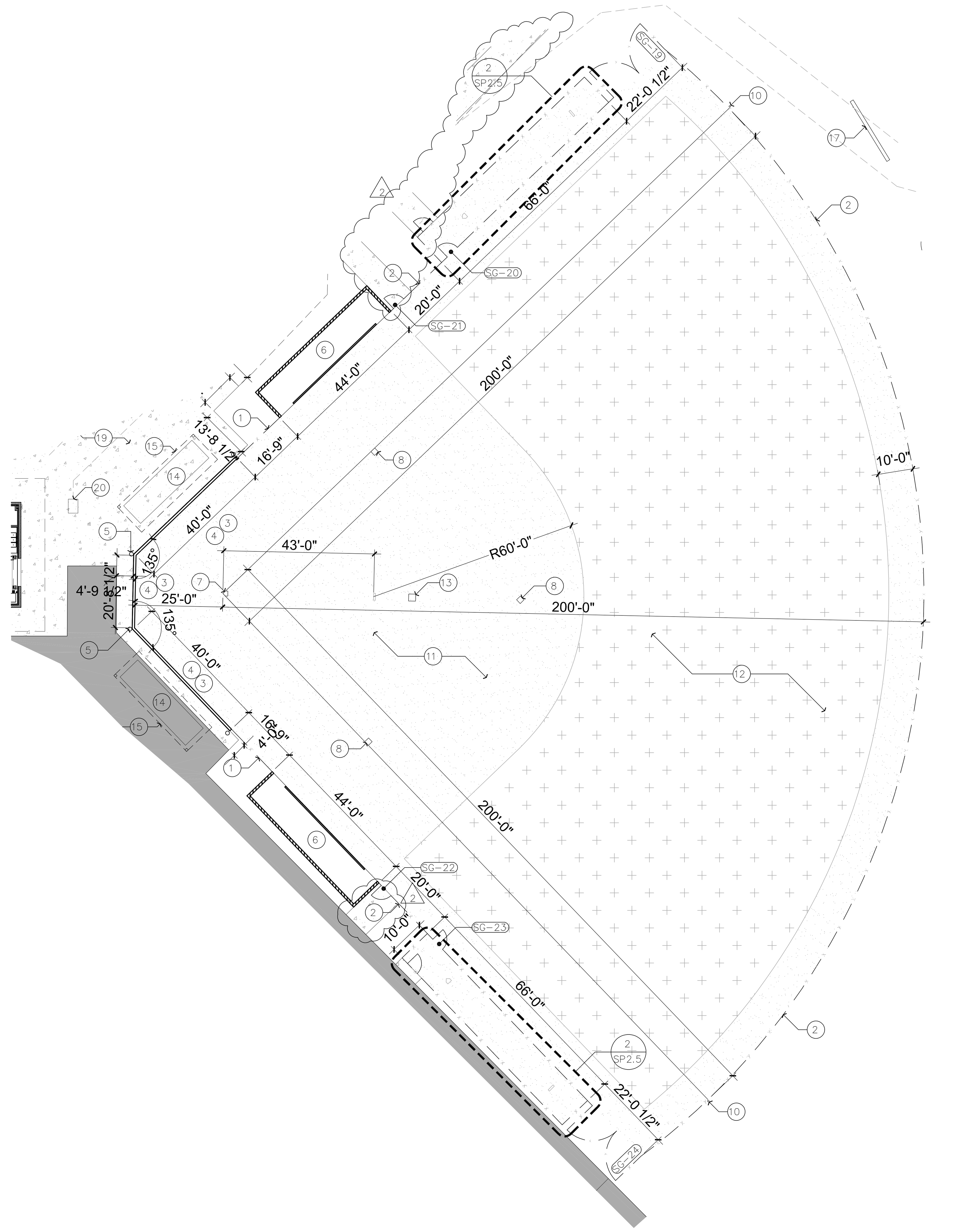
PHASE 2
SP2.3



VARSITY SOFTBALL ENLARGED SITE PLAN

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18. EXISTING CONCRETE SIDEWALK - PROTECT IN PLACE
19. NEW CONCRETE SIDEWALK - SEE CIVIL DRAWINGS
20. GREASE TRAP - SEE PLUMBING DRAWINGS

GENERAL NOTES:

A. CONTRACTOR TO REMOVE ALL ROCKS 1/2" OR LARGER FROM FIELD THAT ARE UNEARTHED DURING DEMOLITION, IRRIGATION SYSTEM REMOVAL, TRENCHING, BERM REMOVAL, VALVE RELOCATION, ETC.

B. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL RUTS IN FIELDS CAUSED BY CONSTRUCTION EQUIPMENT.

C. FIELDS SHALL NOT BE USED TO STORE TEMPORARY CONSTRUCTION SPOILS, EXCESS MATERIAL, DEMOLISHED ITEMS, ETC.

D. FINISH GRADE SHALL BE WITHIN 1" OF ALL CONCRETE SIDEWALKS, IRRIGATION BOXES, DRAINAGE INLETS, ETC.

E. ALL REMOVED FENCING POST SHALL BE DEMOLISHED TO BELOW GRADE OR GROUND FLUSH WITH THE ADJACENT SURFACE AND FILLED WITH CONCRETE.

F. ALL GATES TO BE INSTALLED WITH A MAXIMUM OF 4" CLEARANCE FROM BOTTOM PICKET TO FINISHED GRADE.

G. ALL GATES THAT ARE PART OF THE EGRESS PATH SHALL OPEN 180 DEGREES.

H. CONTRACTOR IS RESPONSIBLE FOR REPAINTING ANY FIRELANE CURBS THAT ARE WORN OUT OR DAMAGED DURING CONSTRUCTION.

I. CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY CONCRETE THAT IS DAMAGED FROM EQUIPMENT ENTERING AND EXITING THE CONSTRUCTION SITE.

J. CONTRACTOR TO ENSURE THAT ALL EXISTING IRRIGATION SYSTEMS REMAIN OPERATIONAL DURING CONSTRUCTION.

K. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGED IRRIGATION LINES, SPRINKLER HEADS, ETC.

L. ALL TRENCHES NEED TO BE FULLY COMPACTED PRIOR TO INSTALLING NEW FINISHES.

M. ALL AREAS TO RECEIVE DG/INFILL MIX SHALL BE TREATED WITH PREEMERGENT AT THE START OF CONSTRUCTION TO ENSURE VEGETATION IS DEAD AT THE TIME OF DG INSTALL.

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REGISTERED ARCHITECT — STATE OF TEXAS — 25426
6-8-2023

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 17
DILLEY, TX 7017
BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

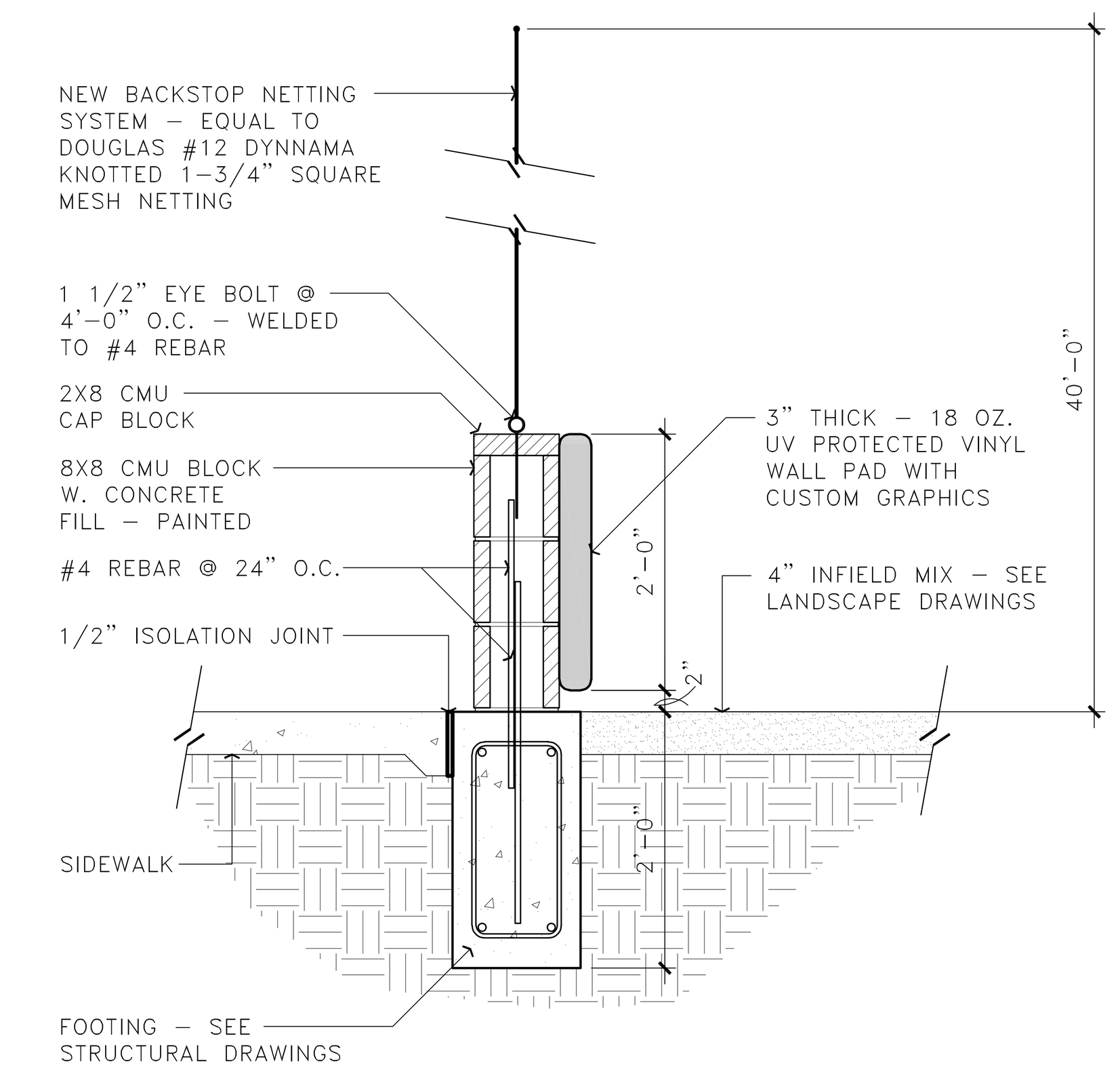
DILLEY INDEPENDENT SCHOOL DISTRICT

Revisions	Date
2	07/31/2023

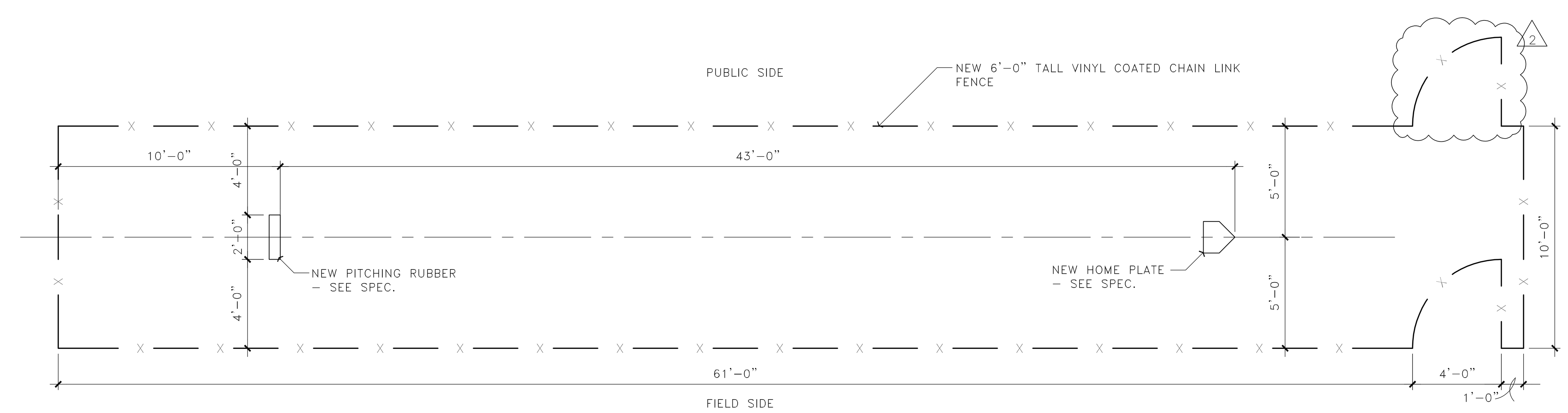
Project Number	7131-101
Date	12.01.2022
Drawn By	GP
Checked By	GP

OVERALL SITE PLAN
PHASE 2

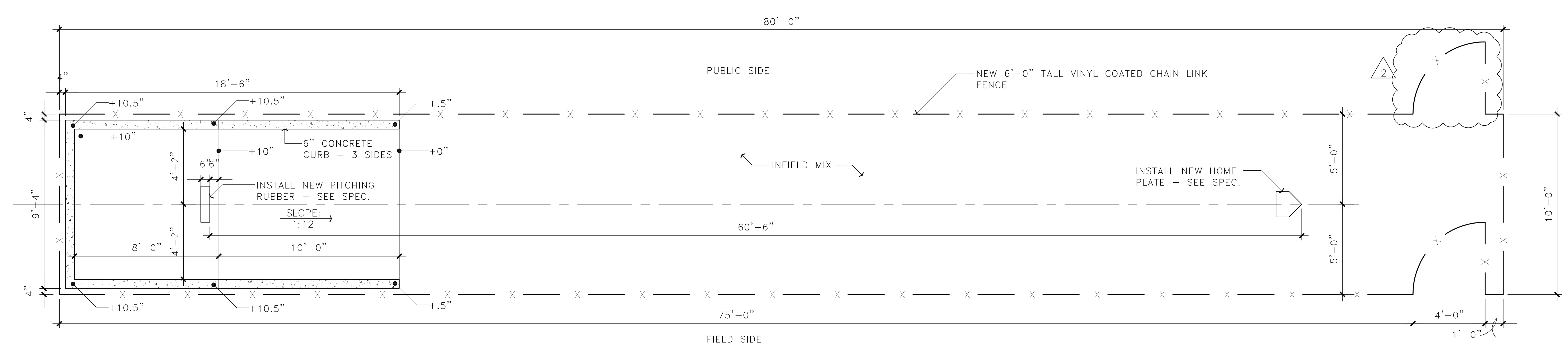
SP2.4



3 BACKSTOP WALL
SCALE: 3/4" = 1'-0"



2 SOFTBALL BULLPEN
SCALE: 1/4" = 1'-0"



1 BASEBALL BULLPEN
SCALE: 1/4" = 1'-0"

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REGISTERED ARCHITECT
25426
STATE OF TEXAS
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245 W. FM 17
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BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

Revisions	Date
2	07/31/2023

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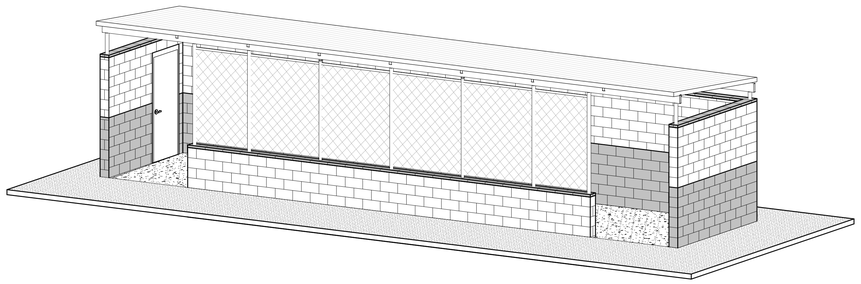
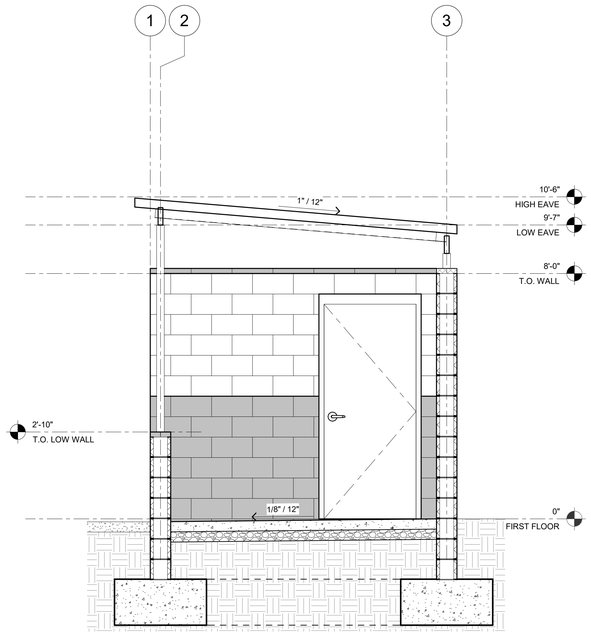
Checked By	GP

DETAILS
SP2.5



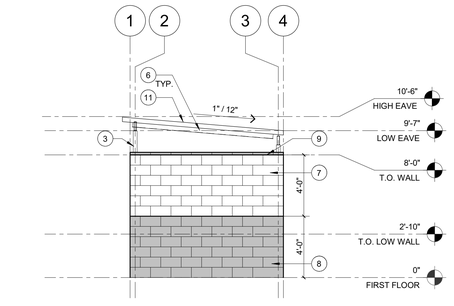
7 DUGOUT - ISOMETRIC
SCALE:



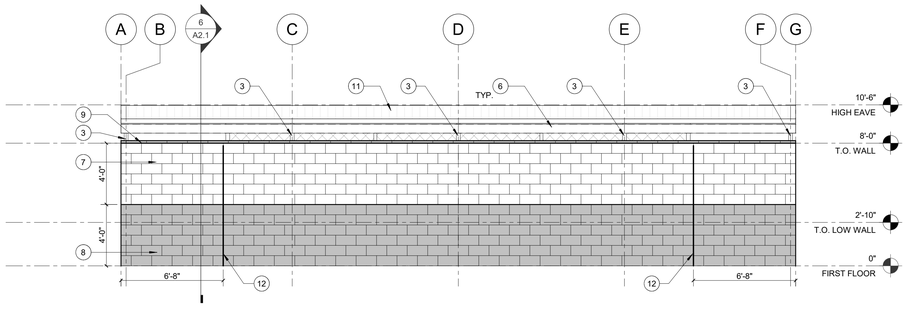
6 DUGOUT - CROSS SECTION
SCALE: 1/2" = 1'-0"

1 KEYNOTES:

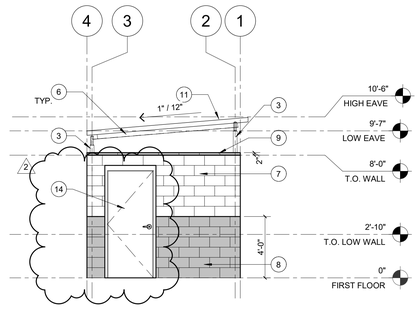
1 4" CONCRETE SLAB ON ABC FILL - SLOPE TO FIELD SIDE - SEE STRUCTURAL AND CIVIL DRAWINGS
2 8X8X16 CMU WALL, PAINTED - SEE STRUCTURAL DRAWINGS
3 3" DIAMETER POST, PAINTED P-2 - SEE STRUCTURAL DRAWINGS
4 PARTIAL HEIGHT 8X8X16 CMU WALL WITH 2" SOLID CAP, PAINTED - SEE STRUCTURAL DRAWINGS
5 VINYL COATED 2" X 6 GAUGE CHAIN LINK FENCE CONNECTED TO VERTICAL COLUMNS - SEE ELEVATIONS
6 STRUCTURAL STEEL PAINTED P-2 - SEE STRUCTURAL DRAWINGS
7 8X8X16 CMU WALL, PAINTED P-1 - SEE STRUCTURAL DRAWINGS
8 8X8X16 CMU WALL, PAINTED P-2 - SEE STRUCTURAL DRAWINGS
9 2" SOLID CAP, PAINTED P-2 - SEE STRUCTURAL DRAWINGS
10 VINYL COATED 2" X 6 GAUGE CHAIN LINK FENCE - SEE ELEVATIONS
11 B-DECK ON STRUCTURAL STEEL, PAINTED P-1 - SEE STRUCTURAL DRAWINGS
12 MASONRY CONTROL JOINT - SEE STRUCTURAL DRAWINGS
13 CMU WEEP HOLE
14 H.M. DOOR AND FRAME - PAINTED. SEE DOOR AND FINISH SCHEDULE. CONFIRM LOCATION WITH ARCHITECT.



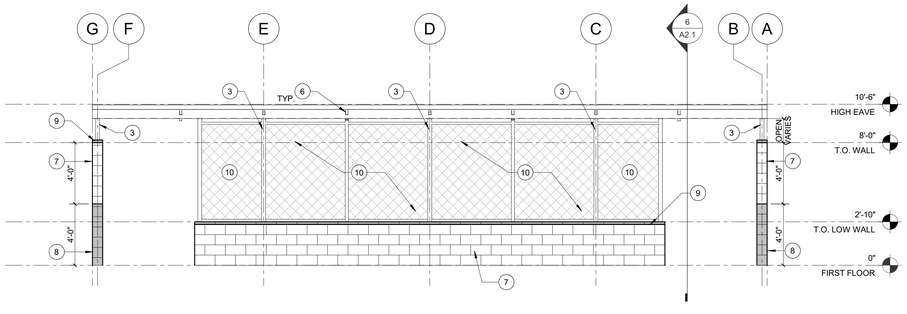
5 DUGOUT - LEFT ELEVATION
SCALE: 1/4" = 1'-0"



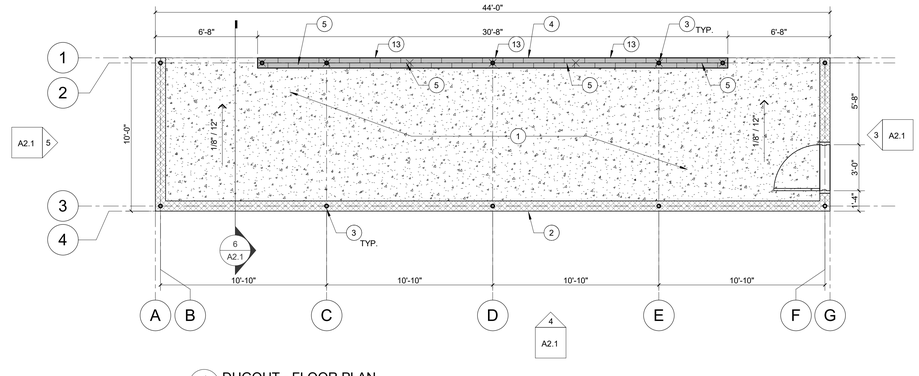
4 DUGOUT - REAR ELEVATION
SCALE: 1/4" = 1'-0"



3 DUGOUT - RIGHT ELEVATION
SCALE: 1/4" = 1'-0"



2 DUGOUT - FRONT ELEVATION
SCALE: 1/4" = 1'-0"



1 DUGOUT - FLOOR PLAN
SCALE: 1/4" = 1'-0"

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JENNIFER WEAKLEY 25426 REGISTERED ARCHITECT STATE OF TEXAS
06.08.23

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017

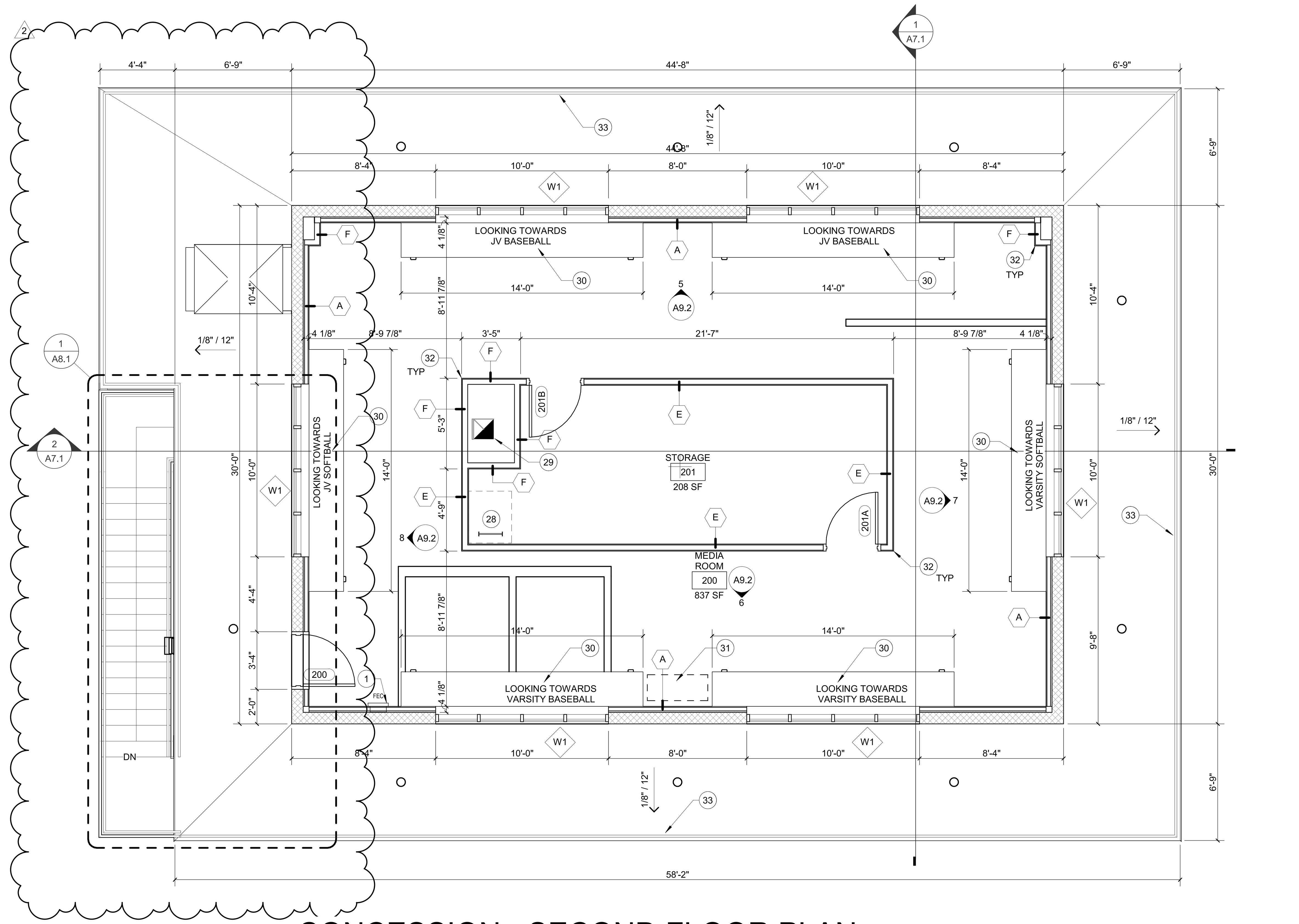
BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

DILLEY INDEPENDENT SCHOOL DISTRICT

REVISION	DATE	DESCRIPTION
2	07/31/23	TDLR COMMENTS

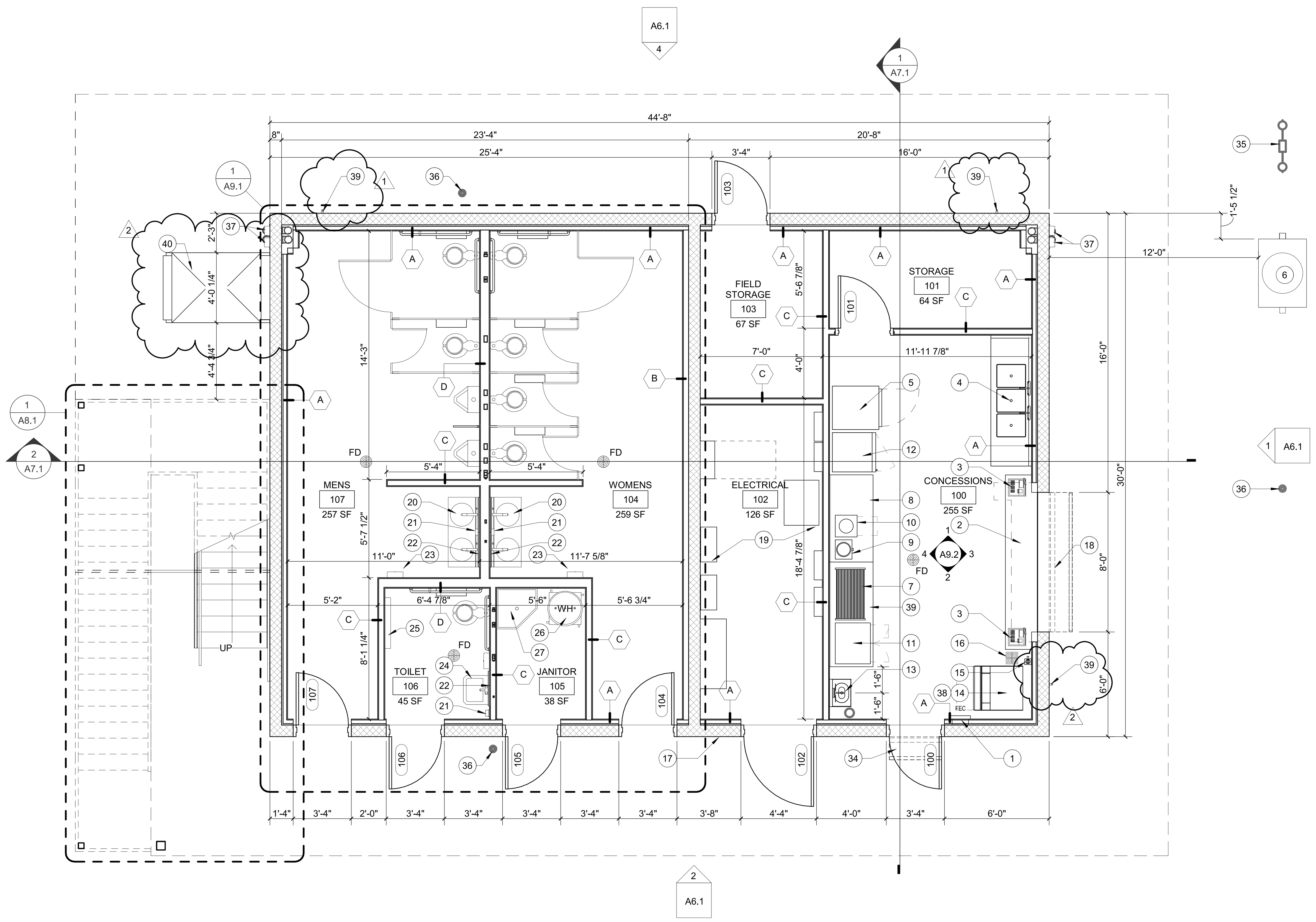
Project Number 7131-100
Date 06.08.23
Drawn By GMP
Checked By JW

DUGOUT - FLOOR PLAN / ELEVATIONS / SECTIONS
A2.1



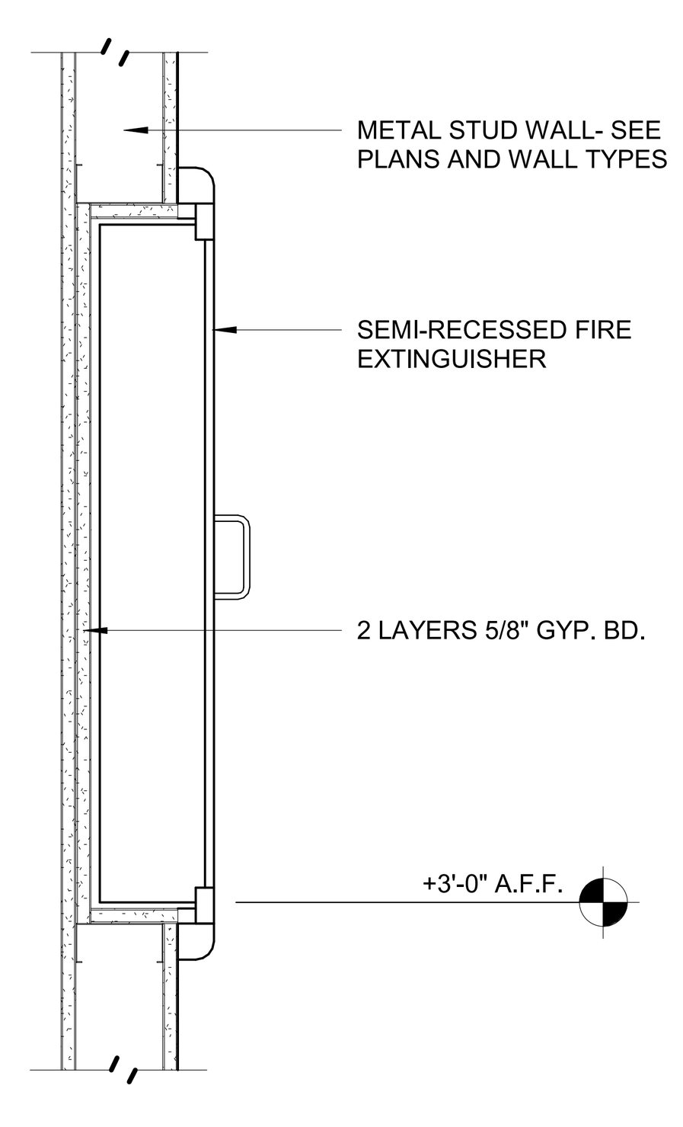
CONCESSION - SECOND FLOOR PLAN

1/4" = 1'-0"



CONCESSION - FIRST FLOOR PLAN

1/4" = 1'-0"



1 FEC - SEMI-RECESSED
SCALE: 1 1/2" = 1'-0"

1 KEYNOTES:

1 FIRE EXTINGUISHER CABINET - SEE DETAIL 1/A2.2
2 STAINLESS STEEL COUNTERTOP
3 POINT OF SALES - BY OWNER N.I.C.
4 STAINLESS STEEL 3-COMPARTMENT SINK - SEE PLUMBING DRAWINGS
5 COMMERCIAL REFRIGERATOR - BY OWNER N.I.C.
6 GREASE TRAP - SEE PLUMBING DRAWINGS
7 COUNTERTOP HOT DOG ROLLER - BY OWNER N.I.C.
8 60" X 30" STAINLESS STEEL TABLE WITH SHELF STORAGE BELOW
9 CHEESE WARMER - BY OWNER N.I.C.
10 CHIP HOLDER - BY OWNER N.I.C.
11 COUNTERTOP POPCORN MAKER - BY OWNER N.I.C.
12 DRINKS REFRIGERATOR - BY OWNER N.IC.
13 HAND WASH SINK - SEE PLUMBING DRAWINGS
14 ICE MAKER - EQUAL TO SCOTSMAN C0530SA-1 PRODIGY SERIES
15 WATER FILTRATION - EQUAL TO SCOTSMAN SSM1-P
16 FLOOR SINK - SEE PLUMBING DRAWINGS
17 PROVIDE AUDIO HOOK UPS FOR PA/SOUND SYSTEM - SEE ELECTRICAL DRAWINGS
18 EXTERIOR FLY FAN - EQUAL TO CHD10-2096A BY BERNER WITH DOOR ACTIVIATION SWITCH
19 ELECTRICAL EQUIPMENT - SEE ELECTRICAL DRAWINGS
20 SINK - SEE PLUMBING DRAWINGS
21 SOAP DISPENSER - SEE SPECIFICATIONS
22 WALL MIRROR - SEE SPECIFICATIONS
23 HAND DRYER - SEE SPECIFICATIONS
24 WALL MOUNTED SINK - SEE PLUMBING DRAWINGS
25 DIAPER CHANGING STATION
26 WATER HEATER - SEE PLUMBING AND ELECTRICAL DRAWINGS
27 MOP SINK WITH 8'-0" HIGH FRP ON TWO SIDES - EXTEND 24" PAST EDGE OF SINK, TYP. SEE FINISH SCHEDULE AND PLUMBING DRAWINGS
28 ROOF LADDER AND ROOF HATCH - SEE DETAIL 6/A5.2
29 EXHAUST DUCT FROM FIRST FLOOR - SEE MECHANICAL DRAWINGS
30 PLASTIC LAMINATE COUNTERTOP - SEE INTERIOR ELEVATIONS
31 MULTIFIELD OUTDOOR BASEBALL FIELD SOUND SYSTEM WITH 4 S10 OUTDOOR STADIUM SPEAKERS, 4-ZONE BLUETOOTH MIXER AMPLIFIER AND PAGING MICROPHONE - EQUAL TO STSS-4R353896RZMA240BT BY PRO ACOUSTICS
32 4'-0" HIGH STAINLESS STEEL CORNER GUARD OR END WALL PROTECTOR MOUNT 4" A.F.F, TY - TYPICAL THOUGHOUT ON EXPOSED OUTSIDE CORNERS - SEE SPECIFICATIONS
33 GUARDRAIL - SEE STAIR PLANS AND DETAILS
34 EXTERIOR FLY FAN - EQUAL TO CHD10-1042A BY BERNER WITH DOOR ACTIVIATION SWITCH
35 TWO WAY CLEANOUT - SEE PLUMBING DRAWINGS
36 CLEANOUT - SEE PLUMBING DRAWINGS
37 BRASS DOWNSPOUT NOZZLE
38 ICE STORAGE BIN - EQUAL TO SCOTSMAN B530S
39 72" X 30" STAINLESS STEEL TABLE WITH SHELF STORAGE BELOW
39 HOSE BIBB REF. PLUMBING DRAWINGS
40 WHEELCHAIR LIFT - ASCENSION CLARITY 16C OR SIMILAR

GENERAL NOTES:

A. CONTRACTOR SHALL PROVIDE CONTINUOUS FINISH MATERIALS WITHOUT JOINTS OR SEAMS - TYPICAL
B. ALL INTERIOR DIMENSIONS ARE MEASURED FROM FINISHED WALL TO FINISHED WALL - TYPICAL
C. PROVIDE TACTILE EXIT SIGNAGE THROUGHOUT BLDG. PER I.B.C. 1011.4 - TYPICAL.
D. POST ELECTRIC ROOM SIGN AT ALL ELECTRIC ROOMS
E. ALL CONSTRUCTION MATERIAL SHALL BE ASBESTOS FREE. CONTRACTOR TO PROVIDE MATERIALS SPECIFICATIONS AND SAMPLES UPON REQUEST FOR SCHOOL DISTRICT TO REVIEW AND TEST. ANY ASBESTOS CONTAINING MATERIAL FOUND SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER - TYPICAL
F. ON ALL OWNER PROVIDED ITEMS, CONTRACTOR SHALL COORDINATE AND PROVIDE ALL BACKING, BLOCKING ETC. EXACT DESIGNATION OF FURNISHED AND INSTALLED ITEMS, WHERE APPLIES, TO BE DETERMINED BY THE SCHOOL DISTRICT
G. PROVIDE ADA COMPLIANT SIGNAGE THROUGHOUT BUILDINGS PER A.D.A. 4.3.0.
H. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
I. REFER TO SHEET A2.3 AND FOR WALL TYPES
J. ELECTRICAL FACE PLATES SHALL BE S.S. WITH GRAY ELECTRICAL DEVICES
K. GYPSUM BOARD TO BE TYPE "X" U.N.O. AT CEILINGS, SOFFITS AND BOTH SIDES OF WALLS
L. ALL GLASS SHALL BE CLEAR TEMPERED GLASS U.N.O. GLAZING TAG MARKS SHALL BE VISIBLE. CLEAN AND POLISH GLASS PRIOR TO PROJECT DELIVERY AND AFTER INSTALLATION.
M. SAFETY GLAZING: GLASS IN DOORS WITHIN 24" OF DOORS AND WITHIN 18" OF FLOORS SHALL BE TEMPERED GLASS (IBC 2406)
N. PROVIDE METAL STRAPPING AT ALL PARTITIONS REQUIRED TO SUPPORT ANY WALL MOUNTED MILLWORK OR FURNITURE

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REGISTERED ARCHITECT JENIFERE WESKALNIES 25426 STATE OF TEXAS
06.01.23

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017
BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

DILLEY INDEPENDENT SCHOOL DISTRICT

REVISION	DATE	DESCRIPTION
1	07/31/23	QA/QC COMMENTS
2	07/31/23	TDLR COMMENTS

Project Number 7131-101
Date 03.13.2023
Drawn By CB
Checked By GP

CONCESSION - FLOOR PLANS

A2.2

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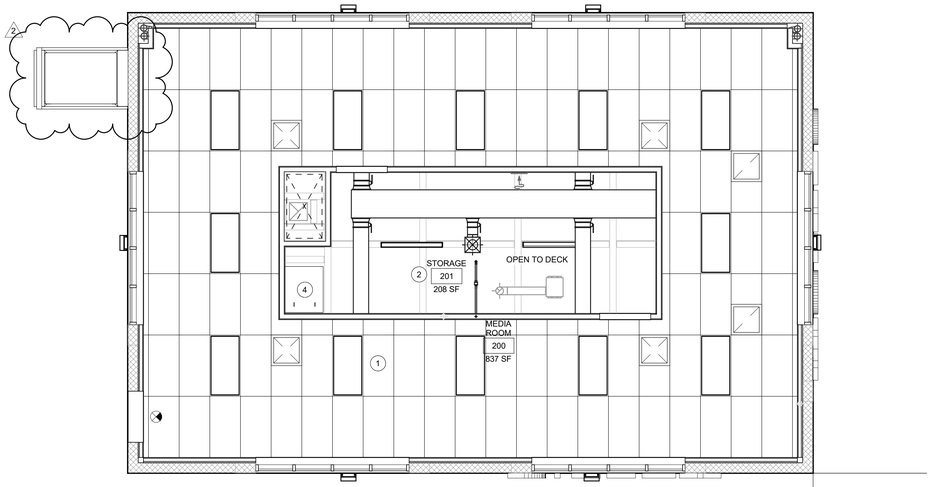

CONCESSION - SECOND FLOOR CEILING PLAN

1/4" = 1'-0"

CONCESSION - FIRST FLOOR CEILING PLAN

1/4" = 1'-0"

1 KEYNOTES:

1. CLEANABLE ACOUSTICAL CEILING TILE IN LAY-IN GRID, SEE DETAILS 1/A4.3 AND 2/A4.3 AND THE ROOM FINISH SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
2. EXPOSED CEILING THIS AREA
3. GYPSUM BOARD CEILING - PAINT PER THE ROOM FINISH SCHEDULE OR FINISH DESIGNATION PER PLAN, USE MOISTURE REISTANT GYP IN RESTROOMS
4. ROOF LADDER, LADDER UP SAFETY POST AND ROOF HATCH - SEE DETAIL 6/A5.2 AND SPECIFICATIONS
5. METAL PANEL SOFFIT ON 3 5/8" METAL STUD FRAMING
6. EXTERIOR FLY FAN - EQUAL TO CHD10-2096A BY BERNER WITH DOOR ACTIVIATION SWITCH
7. EXTERIOR FLY FAN - EQUAL TO CHD10-1042A BY BERNER WITH DOOR ACTIVIATION SWITCH
8. CONTINUOUS SOFFIT VENT - FULL PERIMATER

GENERAL NOTES:

A. FOR CEILING DETAILS, SEE SHEET A4.2
B. SEE THE SPECIFICATIONS AND THE MATERIAL FINISH LEGEND ON A9.1 FOR ALL PRODUCT INFORMATION
C. SEE THE ROOM FINISH SCHEDULE ON A9.1 FOR ADDITIONAL INFORMATION ON CEILING MATERIAL LOCATIONS
D. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR LIGHT FIXTURES, FIXTURE AND EQUIPMENT LOCATIONS AND ADDITIONAL INFORMATION, COORDINATE TO PROVIDE DISTRIBUTION AS SHOWN ON THE PLANS
E. THERE SHALL BE NO EXPOSED PIPING OR CONDUIT OTHER THAN WHAT IS NOTED ON THE PLANS WITHOUT ARCHITECT'S APPROVAL (NO EXCEPTIONS)
F. ALL GYPSUM BOARD SHALL BE 5/8" TYPE "X" AT CEILINGS, SOFFITS AND BOTH SIDES OF WALLS
G. ALL GYPSUM BOARD CEILINGS AT KITCHENS AND RESTROOMS SHALL BE MOISTURE RESISTANT
H. ALL ROOMS ARE TO BE FIRE SPRINKLED PER FIRE SPRINKLER DRAWINGS APPROVED BY THE ARIZONA STATE FIRE MARSHALL
I. ALL FIRE SPRINKLER HEADS TO BE CENTERED IN THE CEILING TILE PER DETAIL 1 & 2 A4.2
J. ALL SUSPENDED CEILINGS AND MATERIALS SHALL BE ATTACHED TO THE STRUCTURE BY SHEAR TYPE CONNECTIONS, NO PULL-OUT CONNECTIONS ARE TO BE USED
K. CENTER ALL CEILING GRIDS WITHIN THE ROOM SUCH THAT THE CUT TILE ON EACH EDGE IS LARGER THAN ONE HALF THE ORIGINAL TILE SIZE UNLESS NOTED OTHERWISE ON PLANS
L. CENTER ALL RECESSED LIGHT FIXTURES IN THE ACOUSTICAL CEILING TILE
M. SEE THE CEILING PLANS FOR ALL CEILING HEIGHT DESIGNATIONS
N. WHERE MULTIPLE CEILING TYPES AND/OR FINISHES OCCUR IN THE SAME ROOM, THE CEILING FINISHES ARE CLARIFIED ON THE CEILING PLAN. FOR ALL OTHER CEILING FINISH DESIGNATIONS, SEE THE ROOM FINISH SCHEDULE ON A9.1

LEGEND:

- SUSPENDED LINEAR LIGHT FIXTURES
- SURFACE MOUNTED LIGHT FIXTURE
- 2' X 4' RECESSED LIGHT FIXTURE
- 1' X 4 ' SURFACE MOUNTED LINERAR LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE

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JENNIFER E. WEEKLEY 25426 REGISTERED ARCHITECT STATE OF TEXAS

06.01.23

REVISION	DATE	DESCRIPTION
2	07/31/23	TDLR COMMENTS

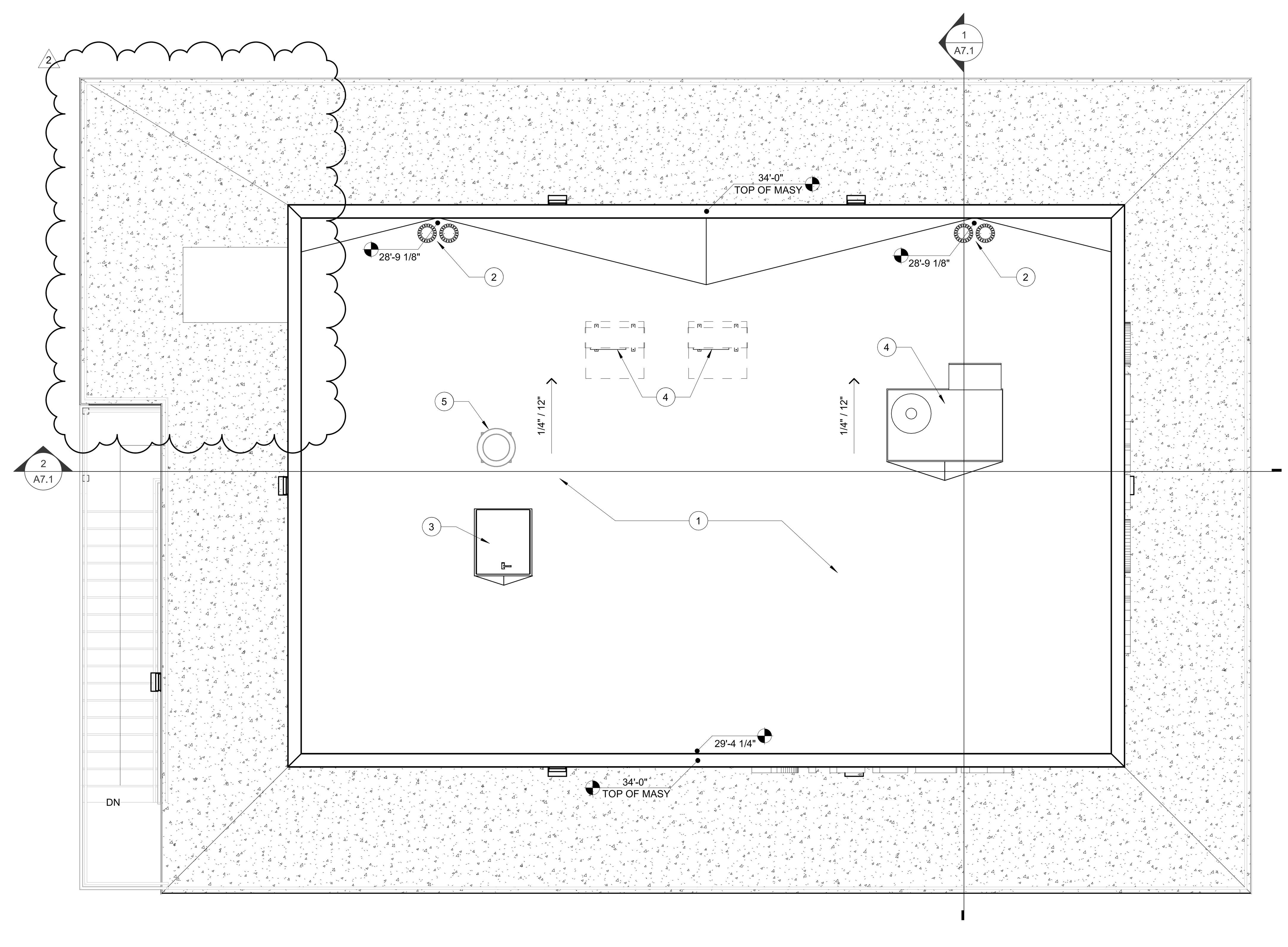
DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

Project Number 7131-101
Date 03.13.2023
Drawn By CB/ BP
Checked By GP

CONCESSION - CEILING PLANS

A4.1



CONCESSION - ROOF PLAN

1/4" = 1'-0"

1 KEYNOTES:

1 SINGLE PLY ROOFING SYSTEM ON R-30 RIGID INSULATION - SEE SPECIFICATIONS
2 ROOF DRAIN AND OVERFLOW DRAIN - SEE DETAILS 3 & 4 ON SHEET A5.2 AND PLUMBING DRAWINGS
3 ROOF HATCH - SEE DETAIL 6/A5.2
4 MECHANICAL EQUIPMENT - SEE MECHANICAL DRAWINGS
5 EXHAUST FAN - SEE MECHANICAL DRAWINGS

GENERAL NOTES:

A. NOT ALL ROOF PENETRATIONS MAY BE SHOWN. CONTRACTOR TO COORDINATE ALL PENETRATIONS WITH SUBCONTRACTOR PRIOR TO APPLYING ROOF. FOR PLUMBING VENT FLASHING SEE DETAIL 10/A5.2
B. CONTRACTOR SHALL PROVIDE A 100% WATER TIGHT ROOFING SYSTEM PRIOR TO INSTALLING ANY INTERIOR FINISH WORK - TYPICAL

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REGISTERED ARCHITECT JENIFERE.WESKALNIES 25426 STATE OF TEXAS
06.01.23

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

DILLEY INDEPENDENT SCHOOL DISTRICT

REVISION	DATE	DESCRIPTION
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Date 03.13.2023
Drawn By CB / GP
Checked By GP / JW

CONCESSION - ROOF PLAN

A5.1

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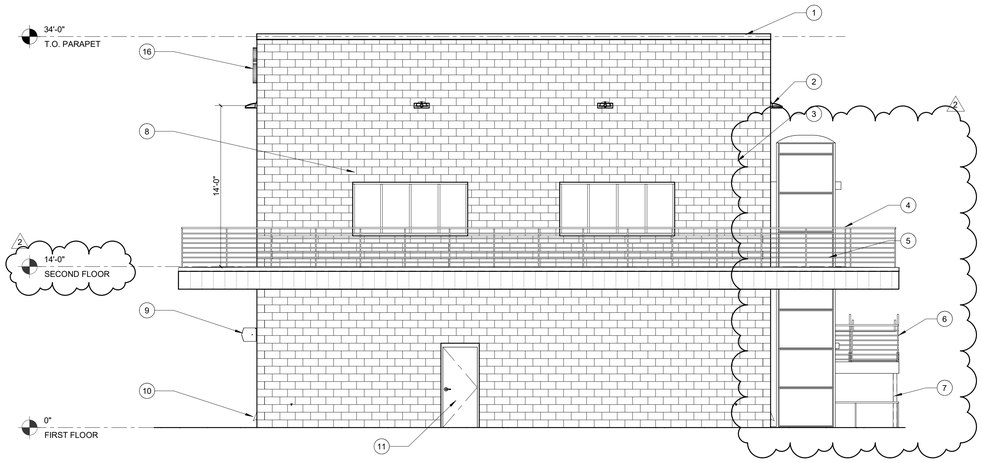
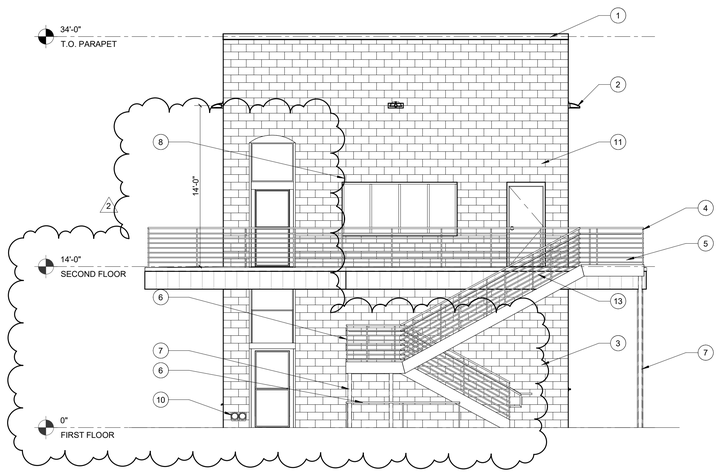
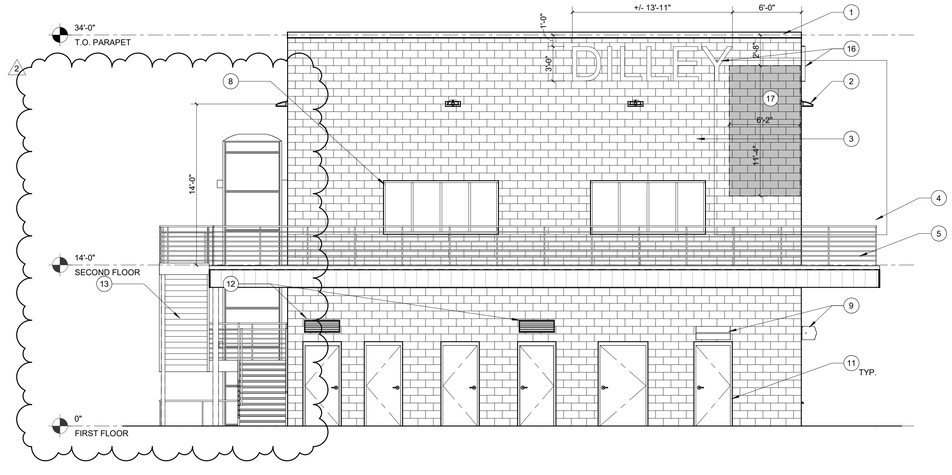
CONCEPT RENDERING - CONCESSIONS BUILDING



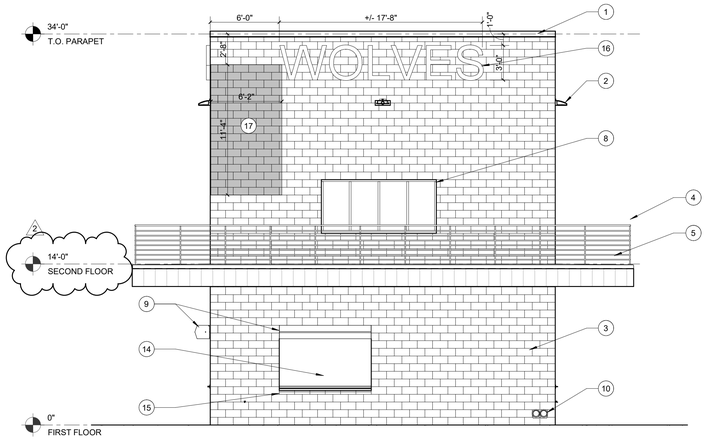
4 NORTH ELEVATION
SCALE: 3/16" = 1'-0"



3 EAST ELEVATION
SCALE: 3/16" = 1'-0"



2 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



1 WEST ELEVATION
SCALE: 3/16" = 1'-0"

1 KEYNOTES:

1. CONTINUOUS SHEET METAL PARAPET CAP FLASHING
2. WALL MOUNTED LIGHT FIXTURE - SEE ELECTRICAL
3. 8X8X16 CMU WALL - PAINTED P-1
4. BALCONY GUARDRAIL - SEE STAIR PLANS AND DETAILS
5. 12" WIDE GALVANIZED METAL FASCIA PANELS - PAINTED. SEE FINISH SCHEDULE
6. GUARDRAIL - SEE STAIR PLANS AND DETAILS
7. STAIR SUPPORT - SEE STRUCTURAL DRAWINGS
8. H.M. WINDOW FRAME - PAINTED. SEE FINISH SCHEDULE
9. FLY FAN OVER OPENING - SEE SPECIFICATIONS
10. LAMBS TONGUE SCUPPER AT ROOF DRAIN AND OVERFLOW DRAIN - SEE PLUMBING FOR SIZE
11. H.M. DOOR AND FRAME - PAINTED. SEE DOOR AND FINISH SCHEDULE
12. GALVANIZED METAL WALL VENT - PAINTED. SEE FINISH SCHEDULE AND MECHANICAL DRAWINGS
13. STEEL STAIR WITH METAL PAN AND CONCRETE TREADS AND LANDINGS - SEE STAIR PLANS AND ELEVATIONS
14. CONCESSION WINDOW OPENING, WITH STAINLESS STEEL ROLL-DOWN SHUTTER - SEE SPECIFICATIONS
15. STAINLESS STEEL COUNTERTOP AT CONCESSION WINDOW OPENING
16. 36" TALL X 4" DEEP HALO LIT SIGNAGE - SEE ELECTRICAL DRAWINGS
17. VINYL WALL GRAPHIC IN HATCHED AREA - SEE RENDERING

GENERAL NOTES:

A. SEE FINISH SCHEDULE ON SHEET A9.1 FOR ADDITIONAL INFORMATION ON CONCESSION BUILDING.
B. COORDINATE WALL MOUNTED LIGHTING FIXTURES WITH ELECTRICAL DRAWINGS.
C. EXPOSED STEEL SHALL BE PAINTED

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REGISTERED ARCHITECT
JENNIFER WEEKLEY
25426
STATE OF TEXAS
06.01.23

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

REVISION	DATE	DESCRIPTION
2	07/31/23	TDLR COMMENTS

Project Number 7131-101
Date 03.13.2023
Drawn By CB
Checked By GP

CONCESSION - EXTERIOR ELEVATIONS
A6.1

DOOR SCHEDULE

DOOR #	FROM ROOM:	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR MATERIAL	DOOR FINISH	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME DETAILS (SEE SHEET A6.13) HEAD	JAMB	SILL	FIRE RATING LABEL	HARDWARE	COMMENTS
100	CONCESSIONS	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	C205	CARD READER
100A	CONCESSIONS	B	8'-0"	4'-6"	STL	S/S	-	-	STL	8	9	-	-	-	
101	STORAGE	A	3'-0"	7'-0"	HM	PTD	-	1	HM	4	4	-		203	
102	ELECTRICAL	A	4'-0"	7'-0"	HM	PTD	-	1	HM	4	5	3	-	715W	
103	FIELD STORAGE	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	205	
104	WOMENS	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	805SDL	
105	JANITOR	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	205	
106	TOILET	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	345SDL	
107	MENS	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	805SDL	
200	MEDIA ROOM	A	3'-0"	7'-0"	HM	PNT	-	2	HM	6	5	3	-	205I	
201A	STORAGE	A	3'-0"	7'-0"	HM	PTD	-	1	HM	4	4	-	-	203	
201B	STORAGE	A	3'-0"	7'-0"	HM	PTD	-	1	HM	4	4	-	-	C205	
300	TICKETS	A	3'-0"	7'-0"	HM	PNT	-	1	HM	6	5	3		C205	CARD SWIPE
301	STORAGE	A	6'-0"	7'-0"	HM	PNT	-	1	HM	6	5	3		204	

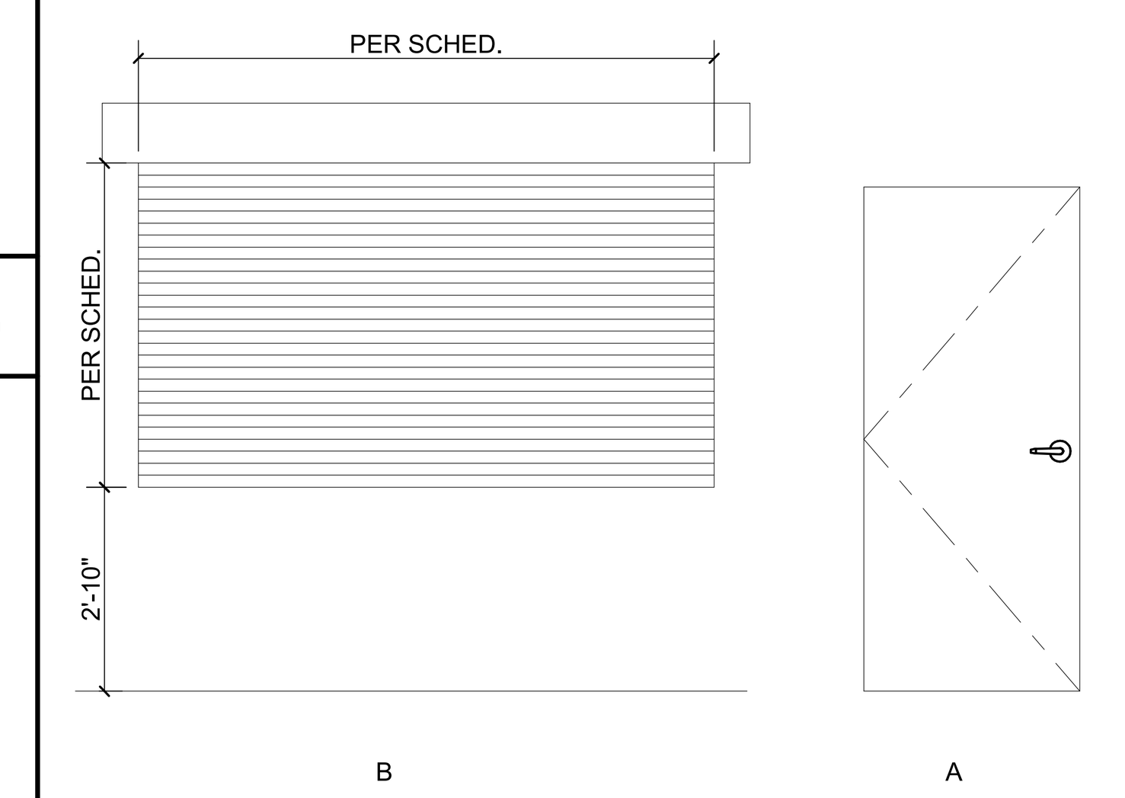
DOOR REMARKS

1. ALL EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT USE OF KEY OR SPECIAL KNOWLEDGE.

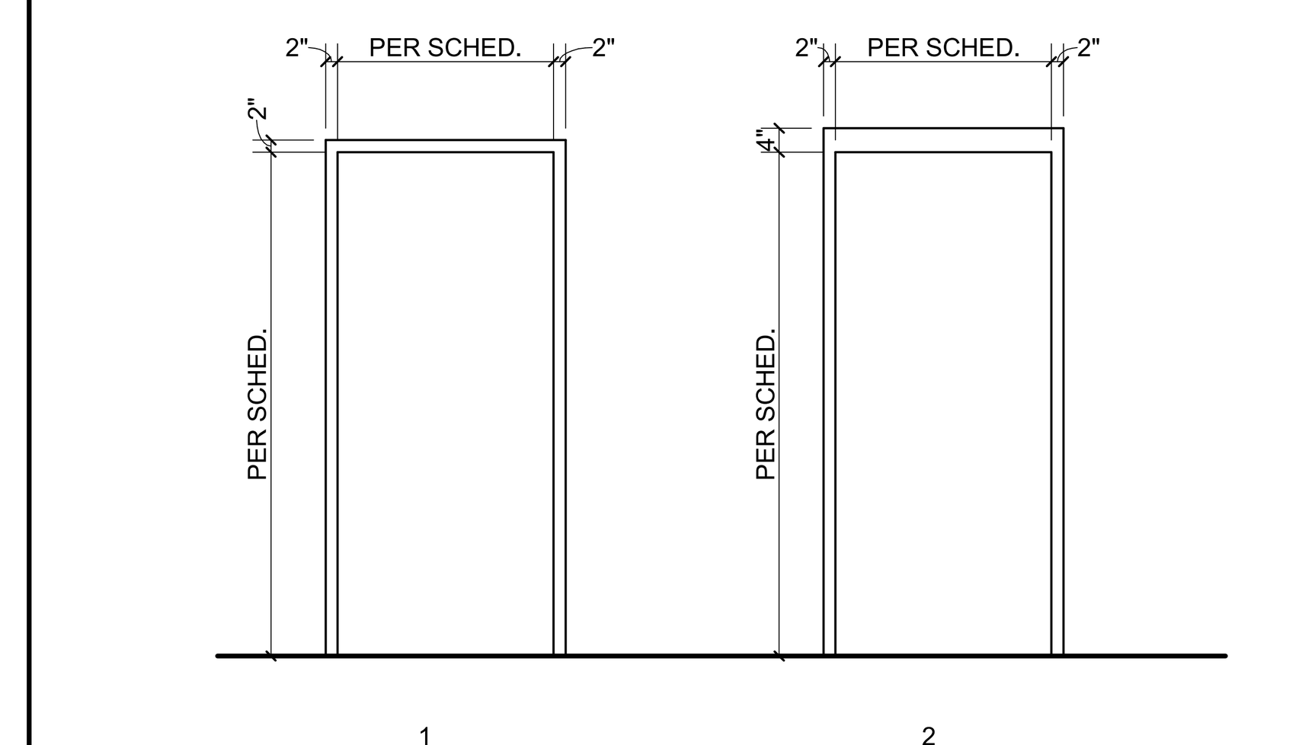
DOOR ABBREVIATIONS

ANO	ANNODIZED
HM	HOLLOW METAL
HW	HARDWARE
PTD	PAINTED
WD	WOOD
T	TEMPERED GLASS CLEAR 1/4" THICK MINIMUM
STN	STAINED
ALUM	ALUMINUM
M	MIRRORED

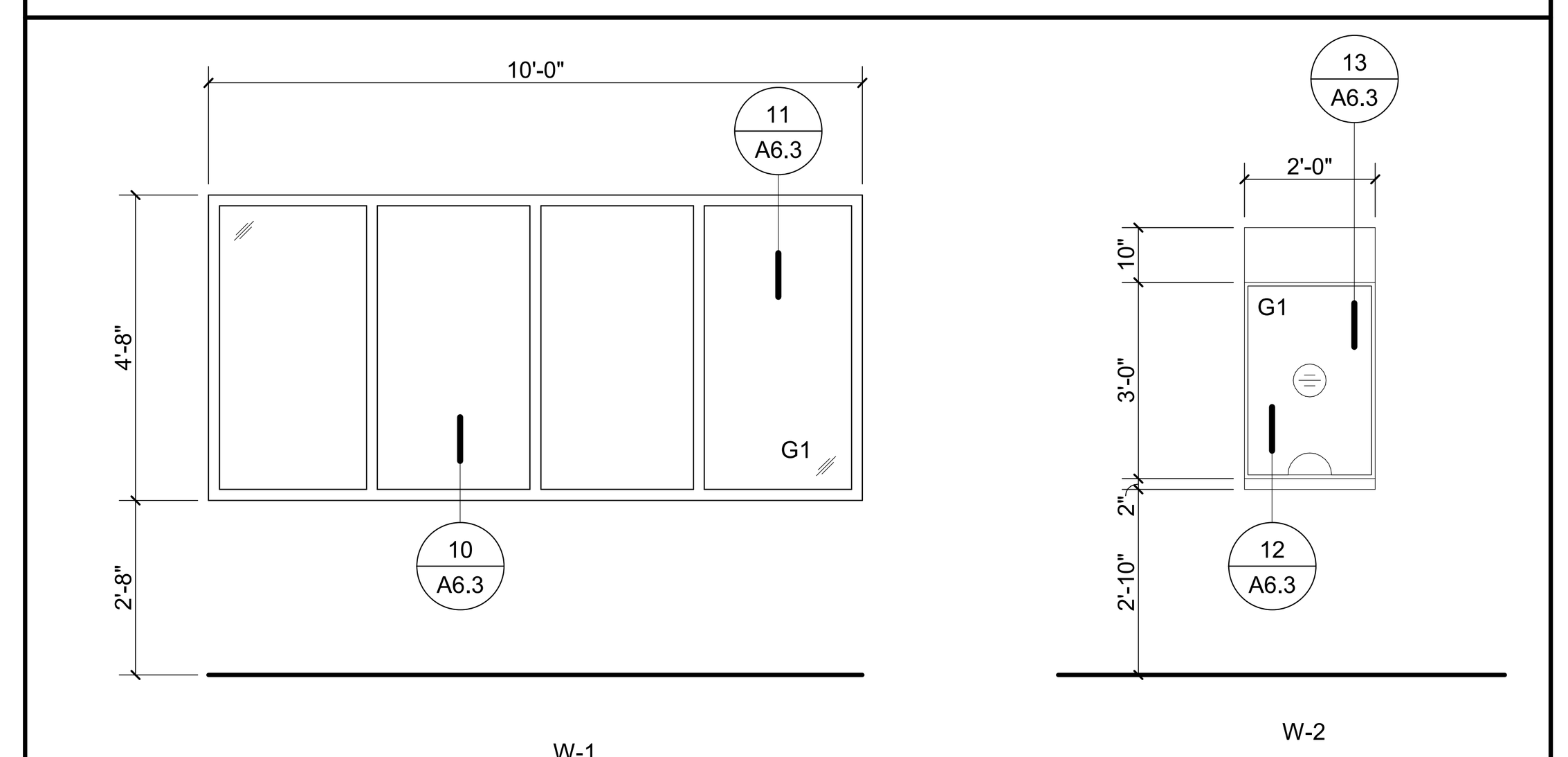
DOOR TYPES

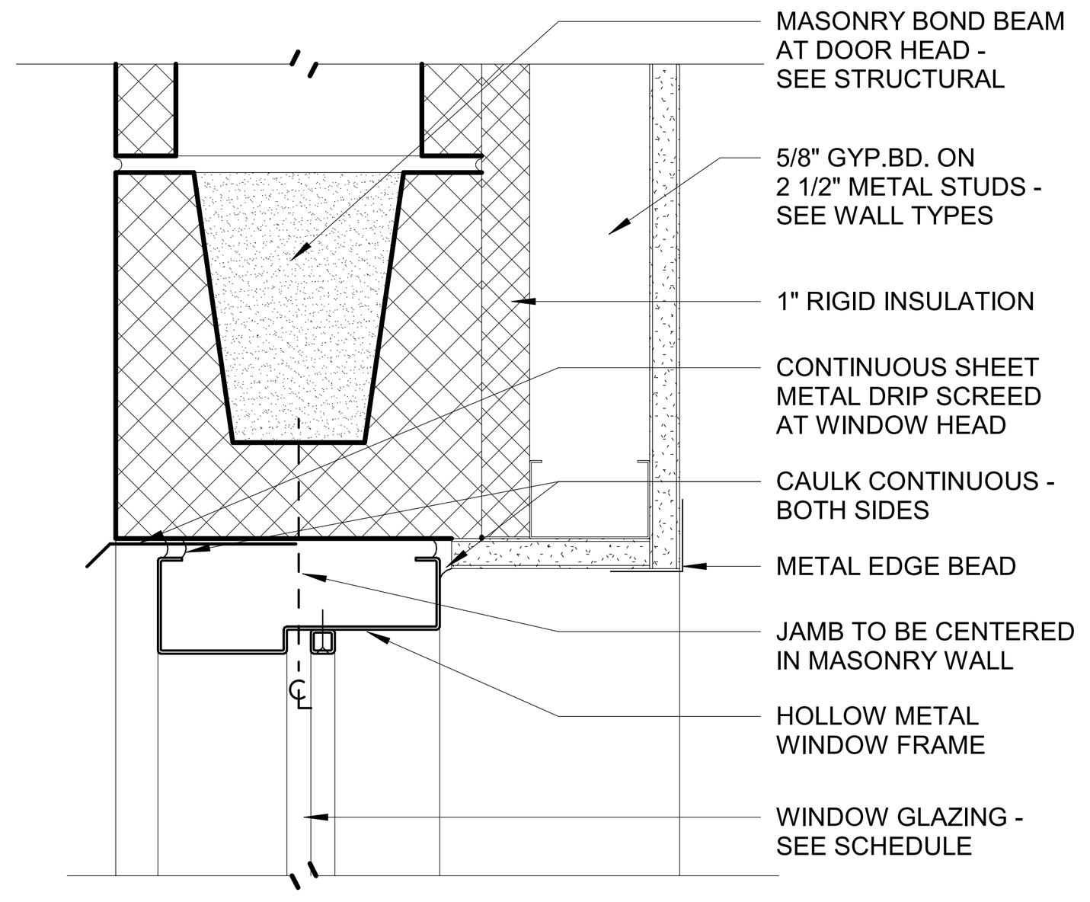


DOOR FRAMES

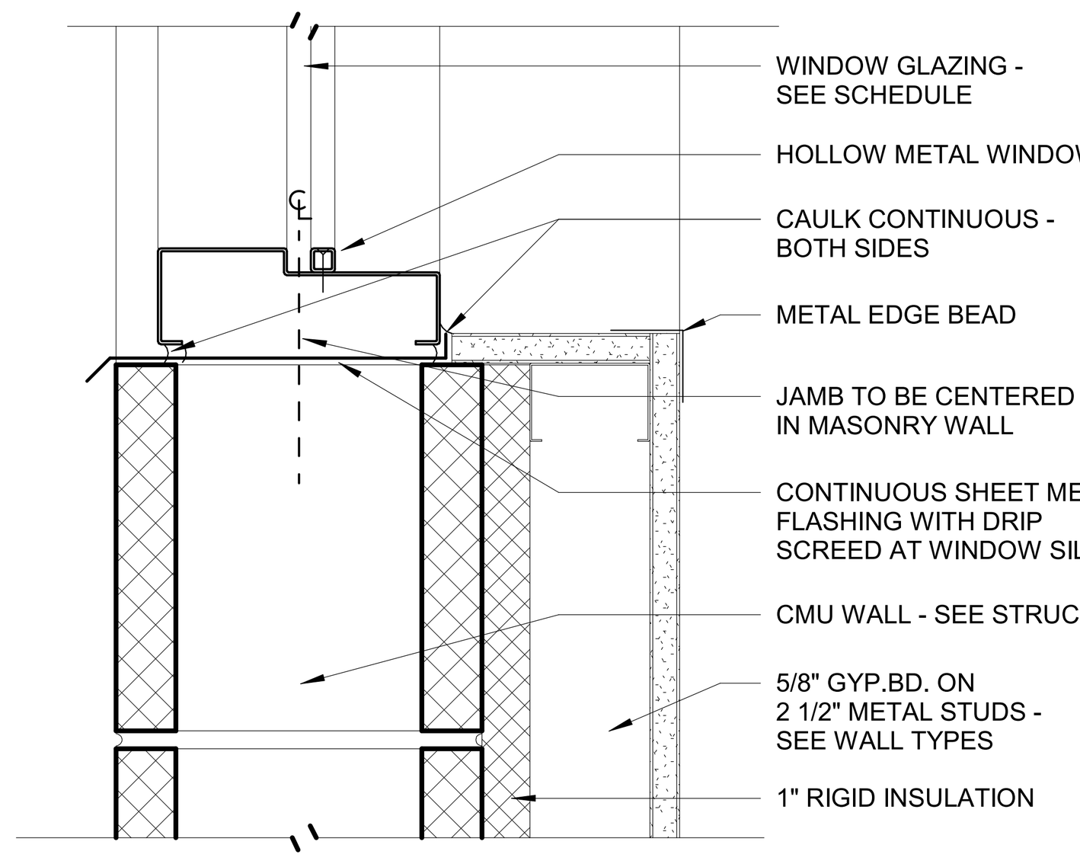


WINDOW TYPES

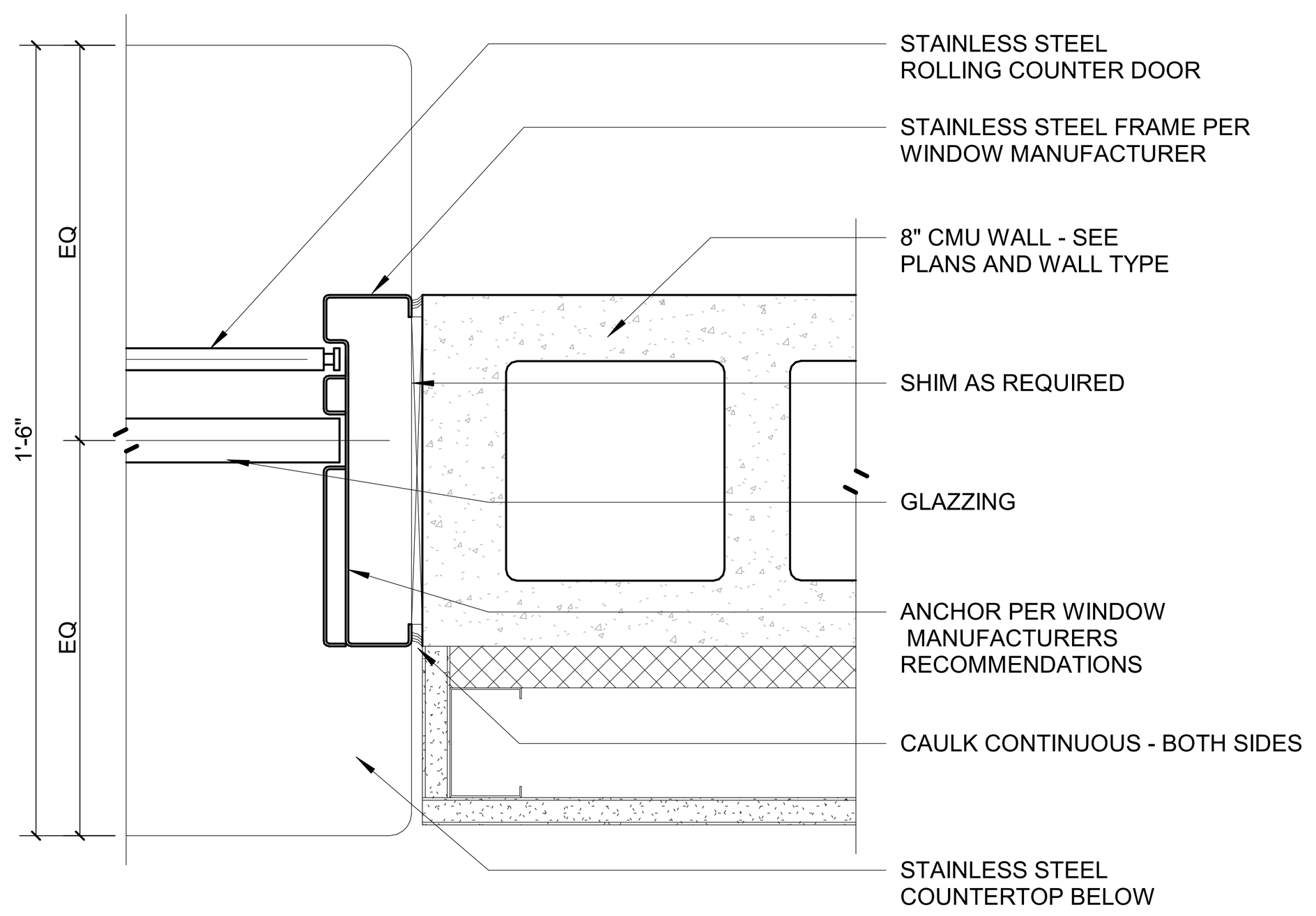




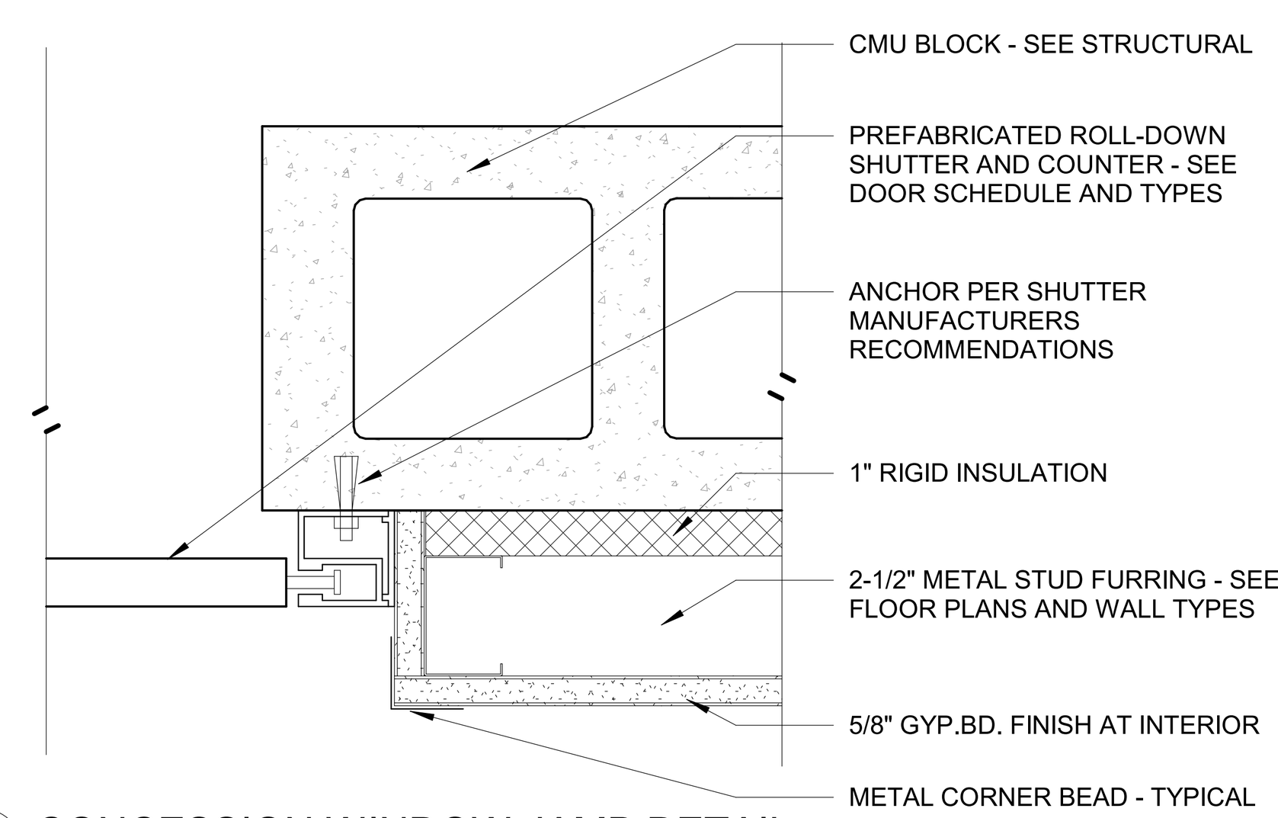
11 WINDOW HEAD IN CMU
SCALE: 3" = 1'-0"



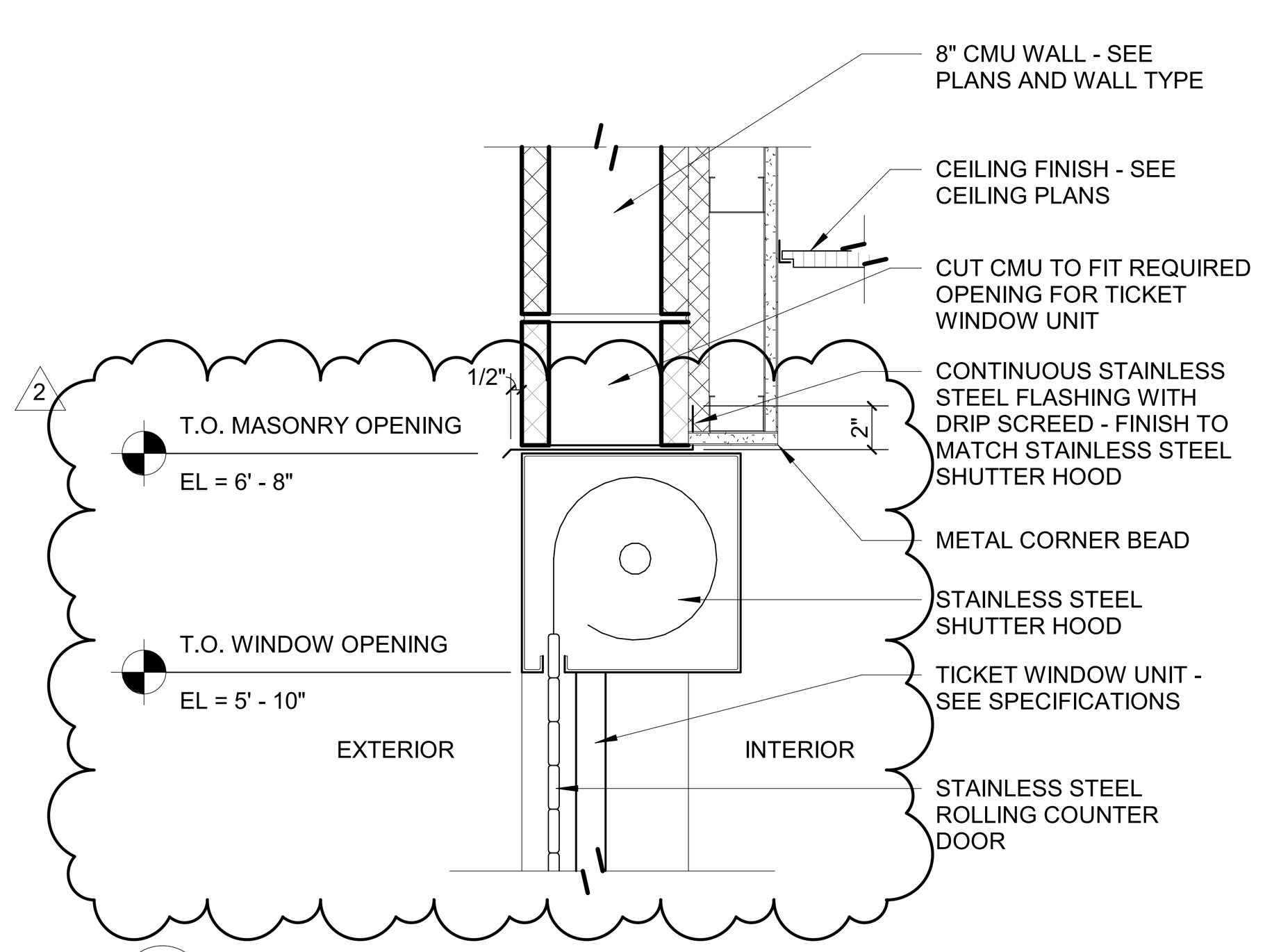
10 WINDOW SILL IN CMU
SCALE: 3" = 1'-0"



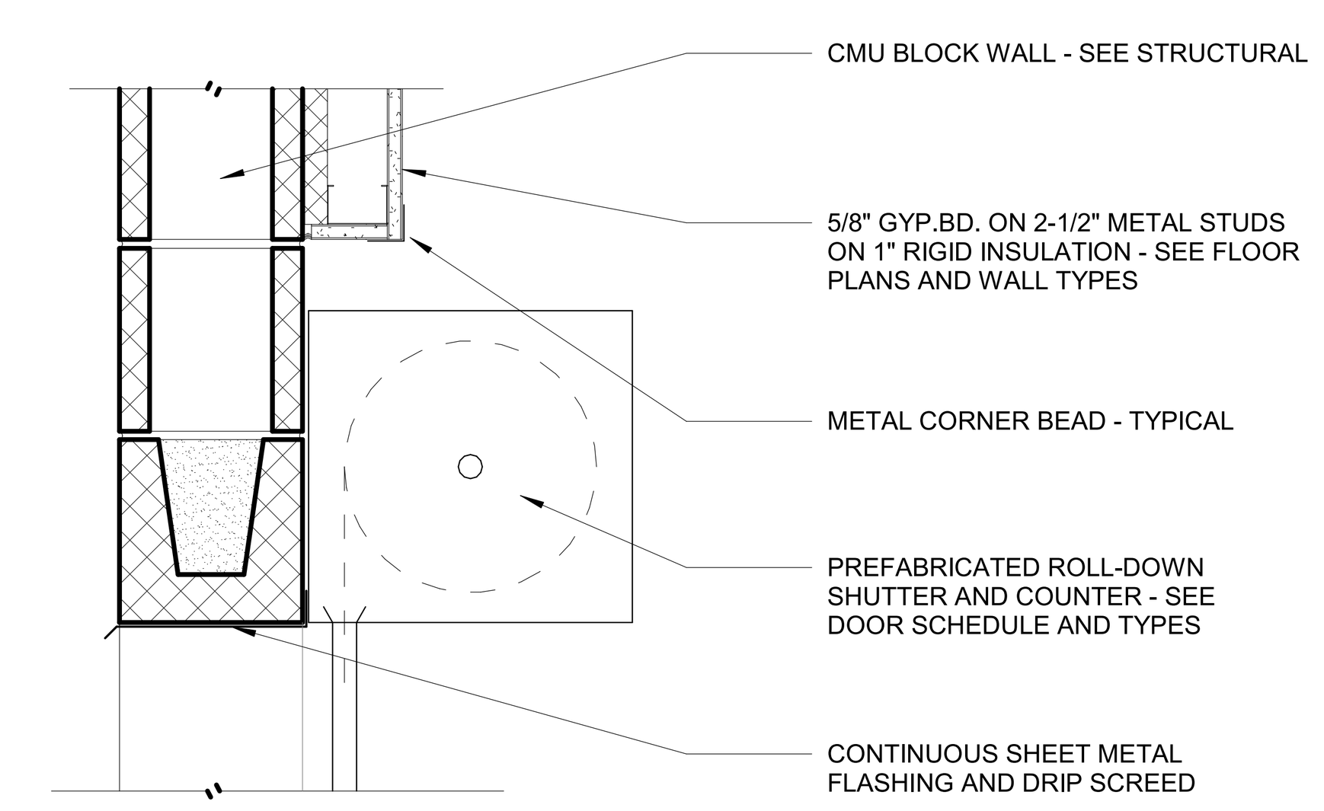
14 TICKET WINDOW JAMB DETAIL
SCALE: 3" = 1'-0"



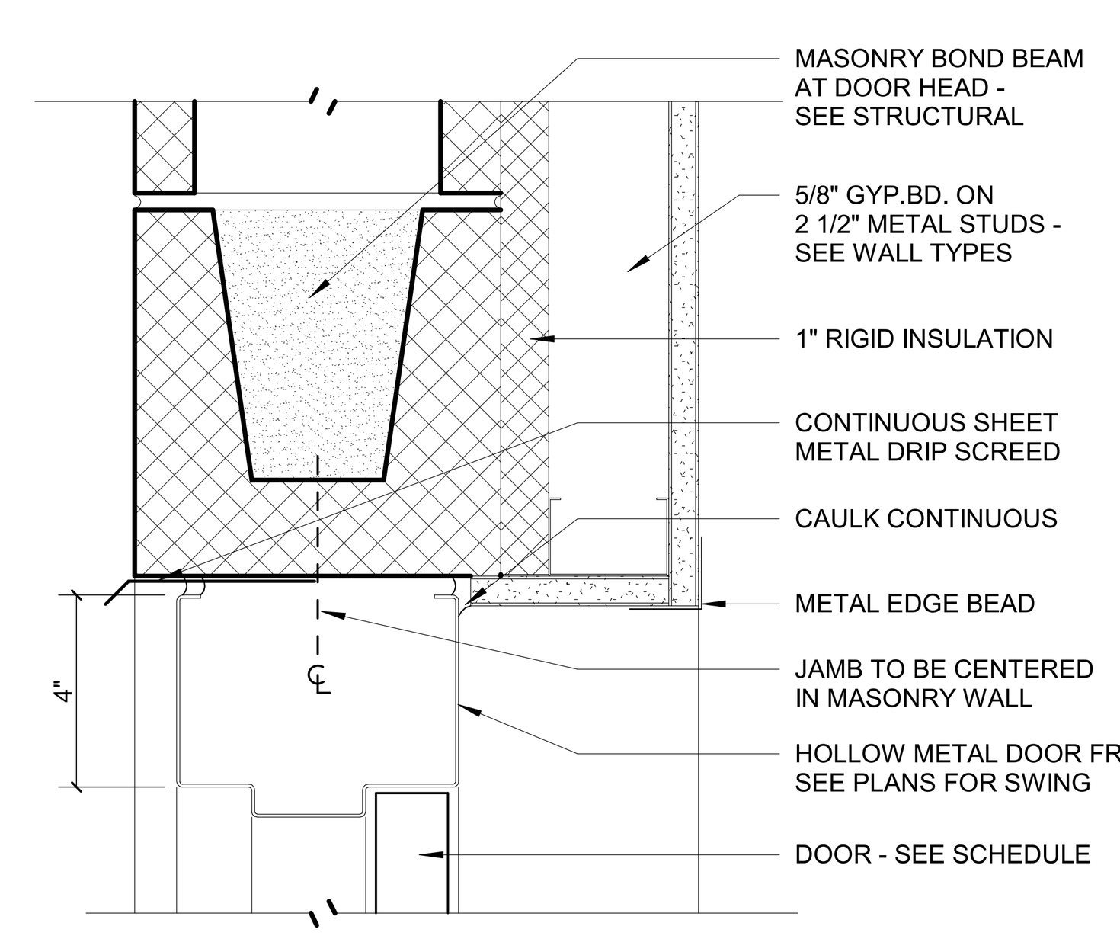
9 CONCESSION WINDOW JAMB DETAIL
SCALE: 3" = 1'-0"



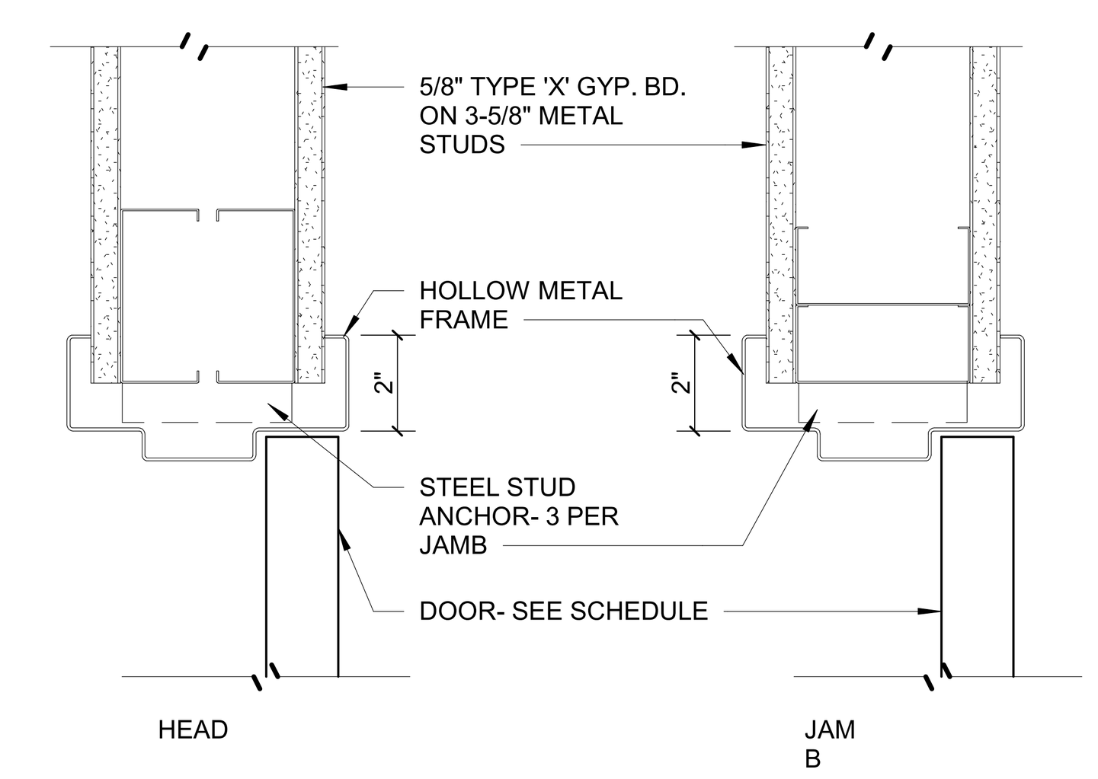
13 TICKET WINDOW HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



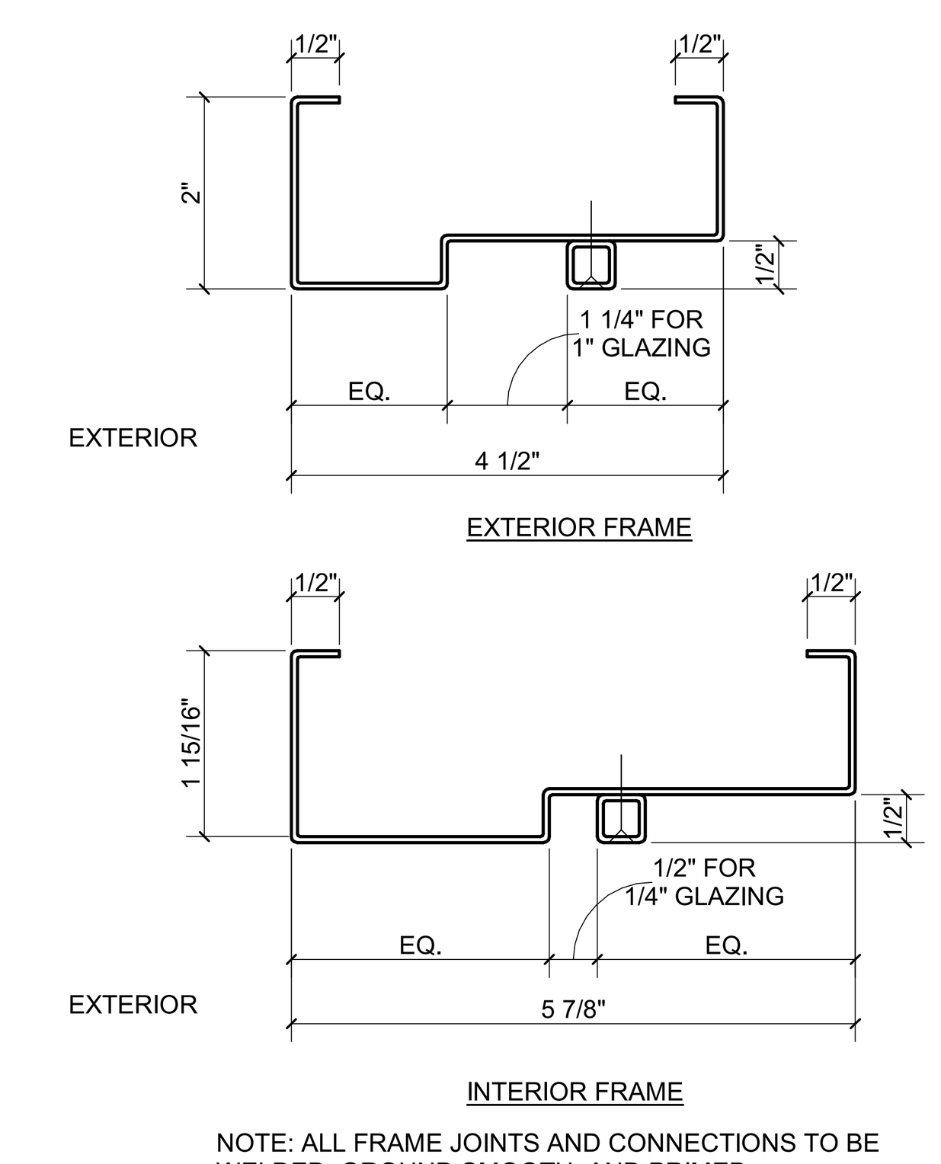
8 CONCESSION WINDOW HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



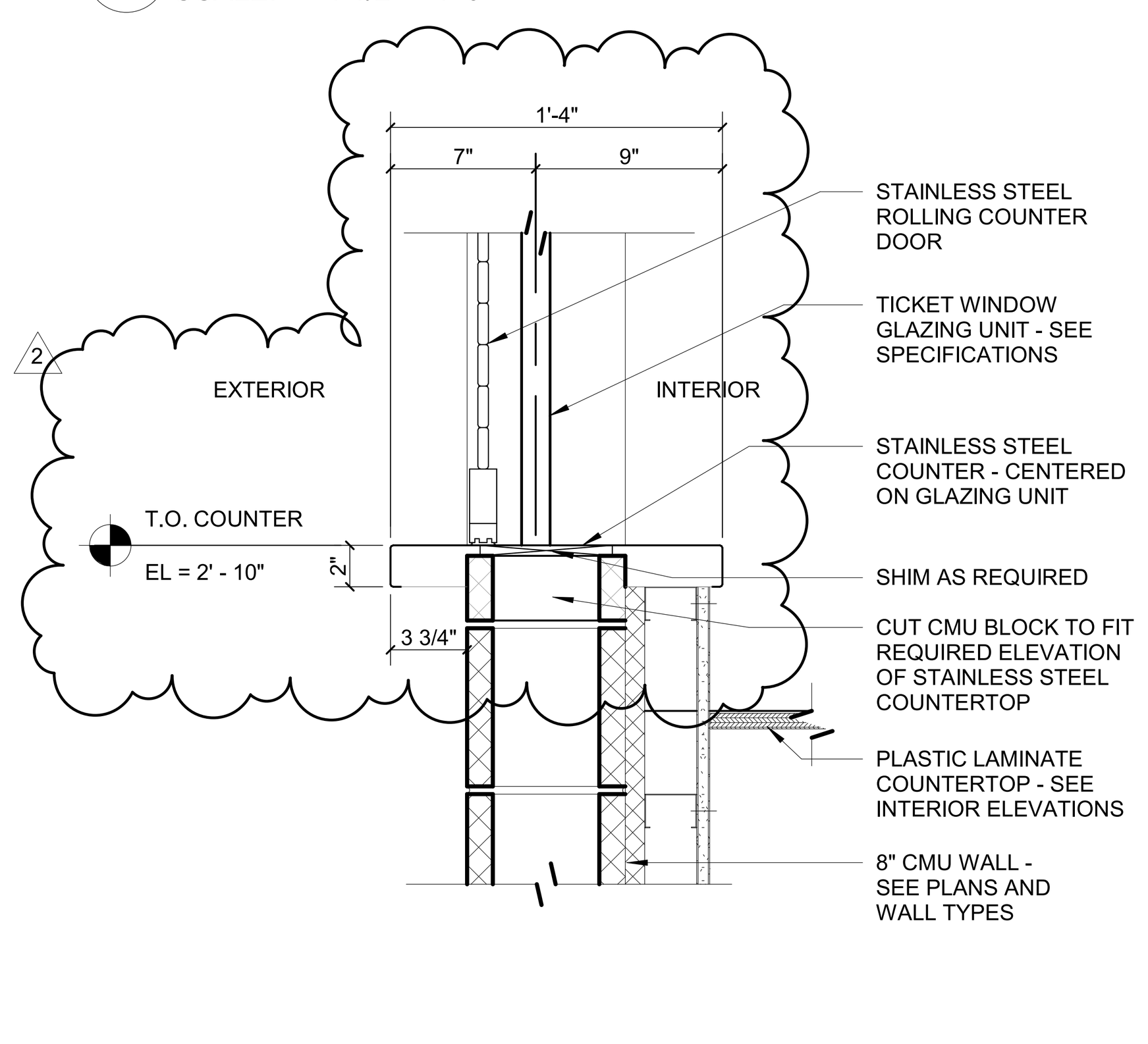
6 DOOR HEAD IN CMU
SCALE: 3" = 1'-0"



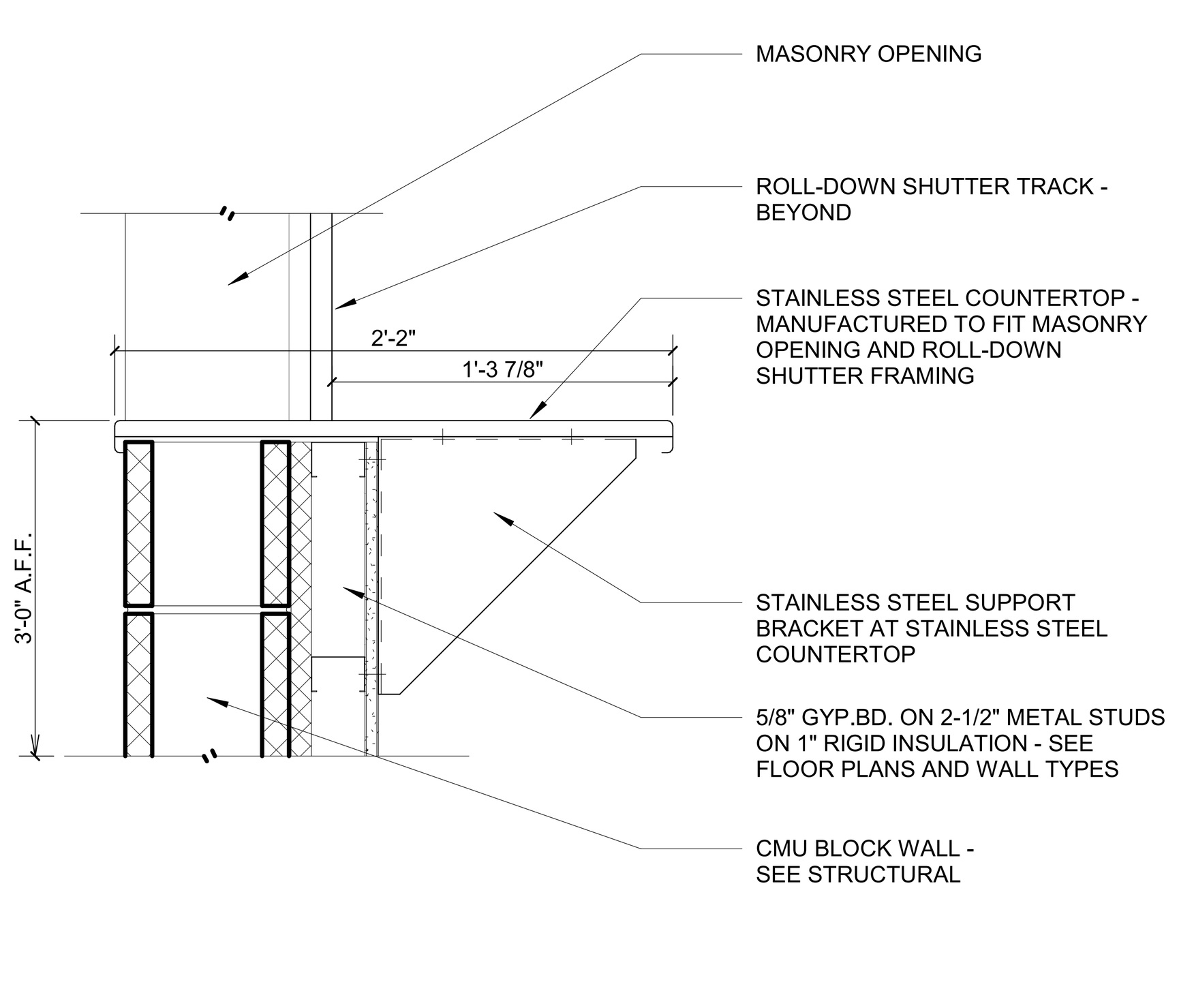
4 DOOR HEAD AND JAMB IN GYPSUM BOARD
SCALE: 3" = 1'-0"



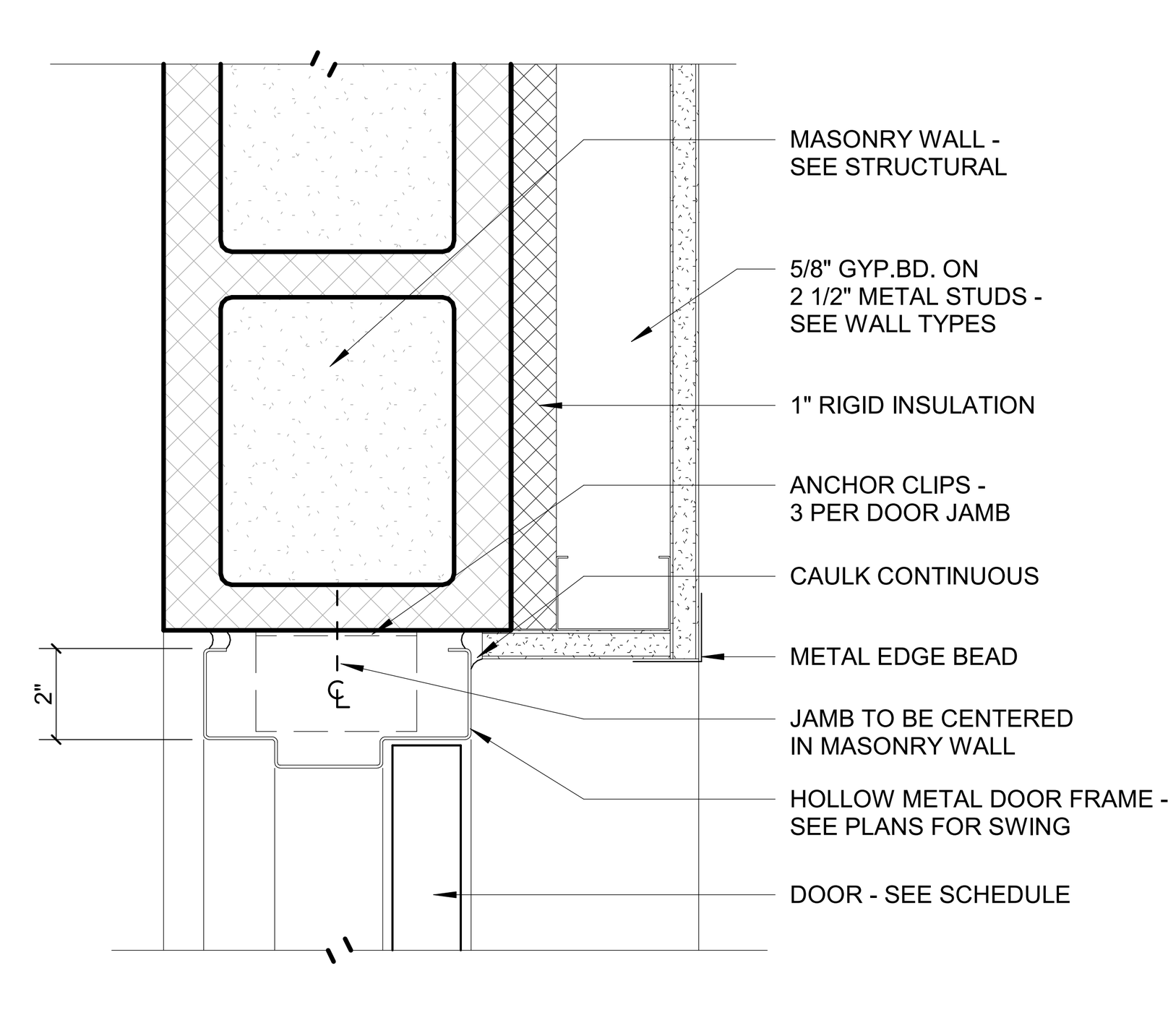
2 WINDOW H.M. FRAME TYPICAL
SCALE: 6" = 1'-0"



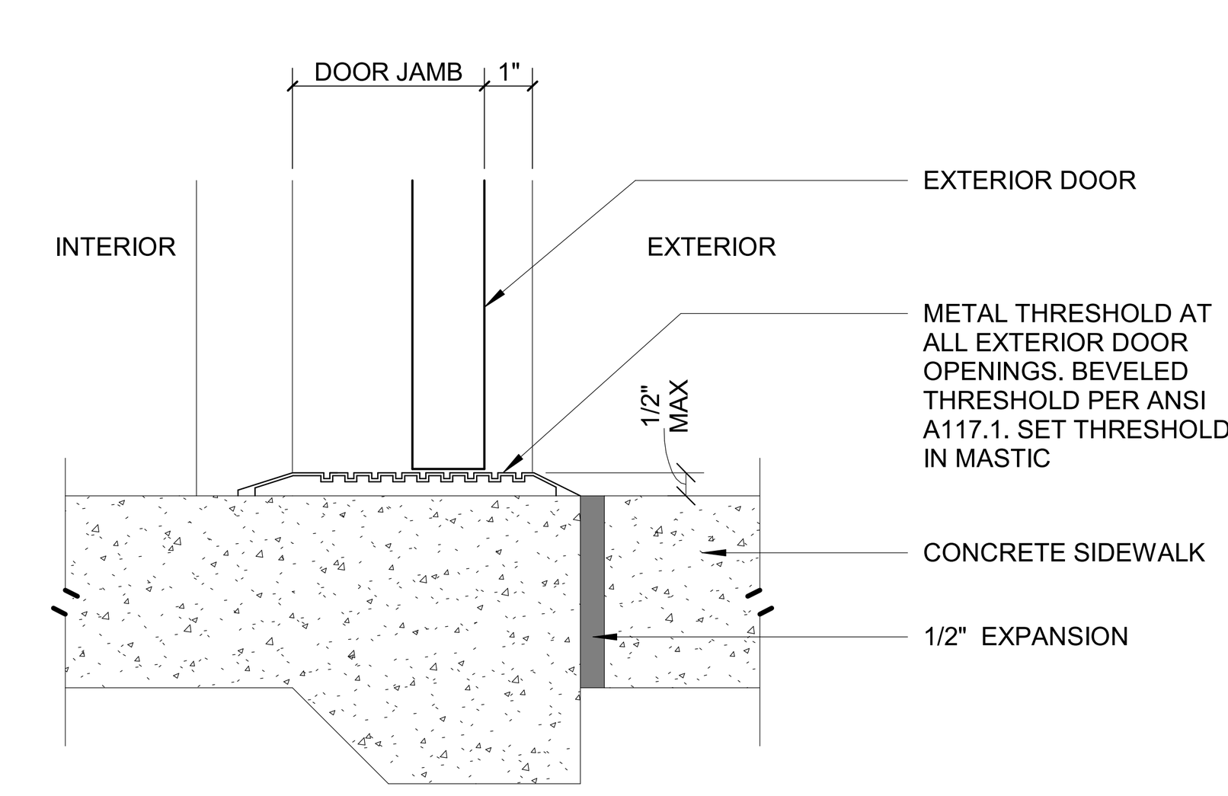
12 TICKET WINDOW SILL DETAIL
SCALE: 1 1/2" = 1'-0"



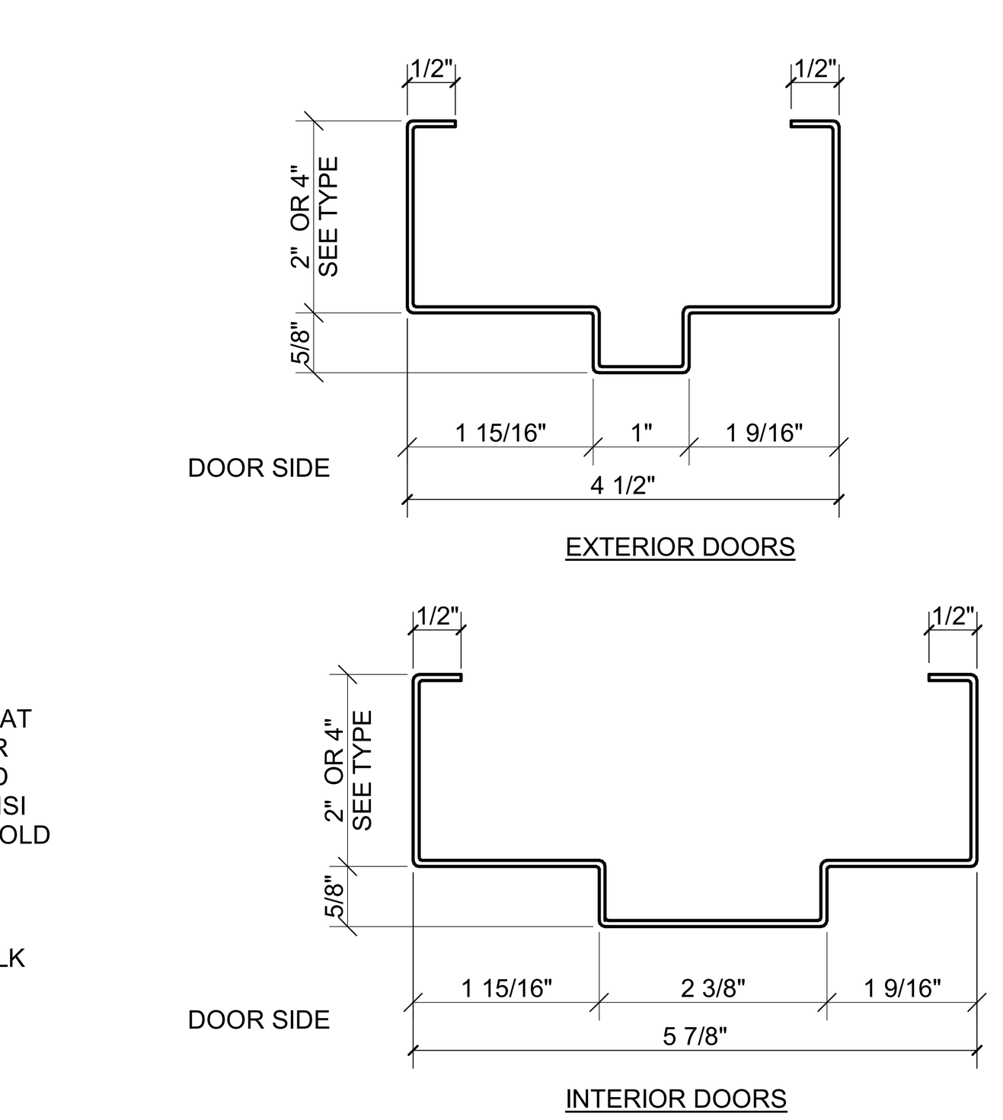
7 CONCESSION WINDOW SILL DETAIL
SCALE: 1 1/2" = 1'-0"



5 DOOR JAMB IN CMU
SCALE: 3" = 1'-0"



3 DOOR THRESHOLD EXTERIOR
SCALE: 3" = 1'-0"



NOTE: ALL FRAME JOINGS AND CONNECTIONS TO BE WELDED, GROUND SMOOTH AND PRIMED

NOTE: PROVIDE STEEL ANCHORS- 3 PER JAMB

1 DOOR H.M. FRAME TYPICAL
SCALE: 6" = 1'-0"

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111 CONGRESS AVENUE, SUITE 500 | AUSTIN, TX 78701 | 737.228.0444

REGISTERED ARCHITECT
JENIFER WESKALNIES
25426
STATE OF TEXAS
06.01.23

DILLEY INDEPENDENT SCHOOL DISTRICT

245 W. FM 117
DILLEY, TX 78017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

DILLEY INDEPENDENT SCHOOL DISTRICT

REVISION	DATE	DESCRIPTION
2	07/31/23	TDLR COMMENTS

Project Number	7131-101
Date	03.13.2023
Drawn By	CB / GP
Checked By	GP / JW

CONCESSION - DOOR SCHEDULE AND DETAILS

A6.3

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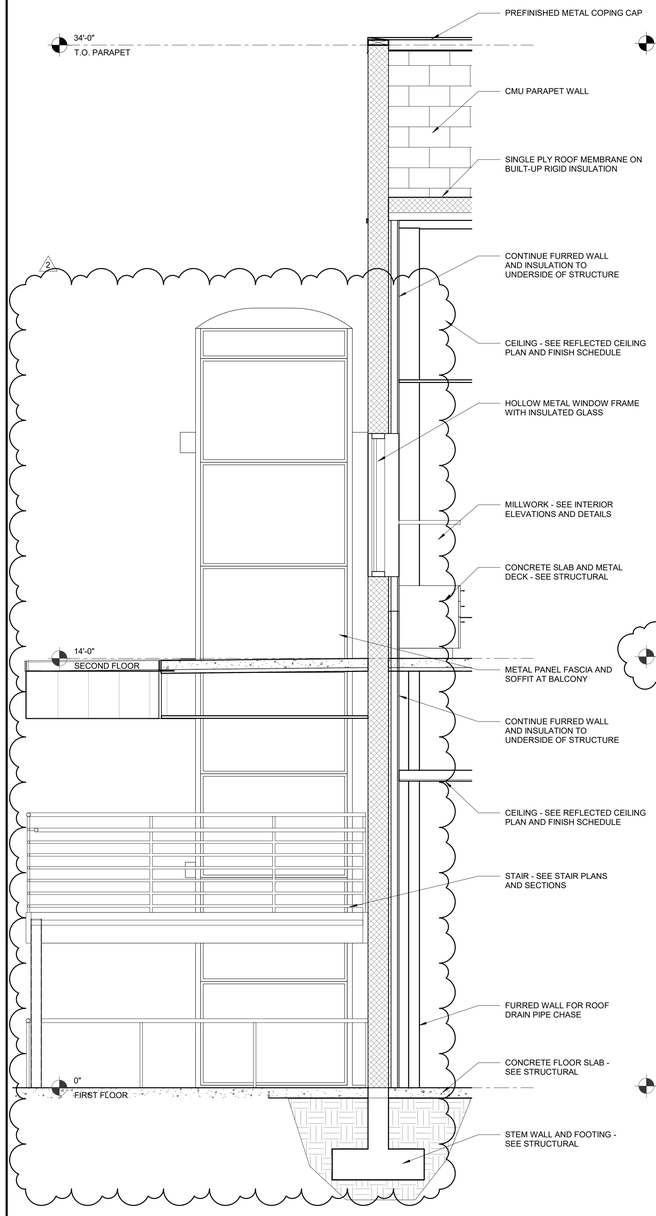
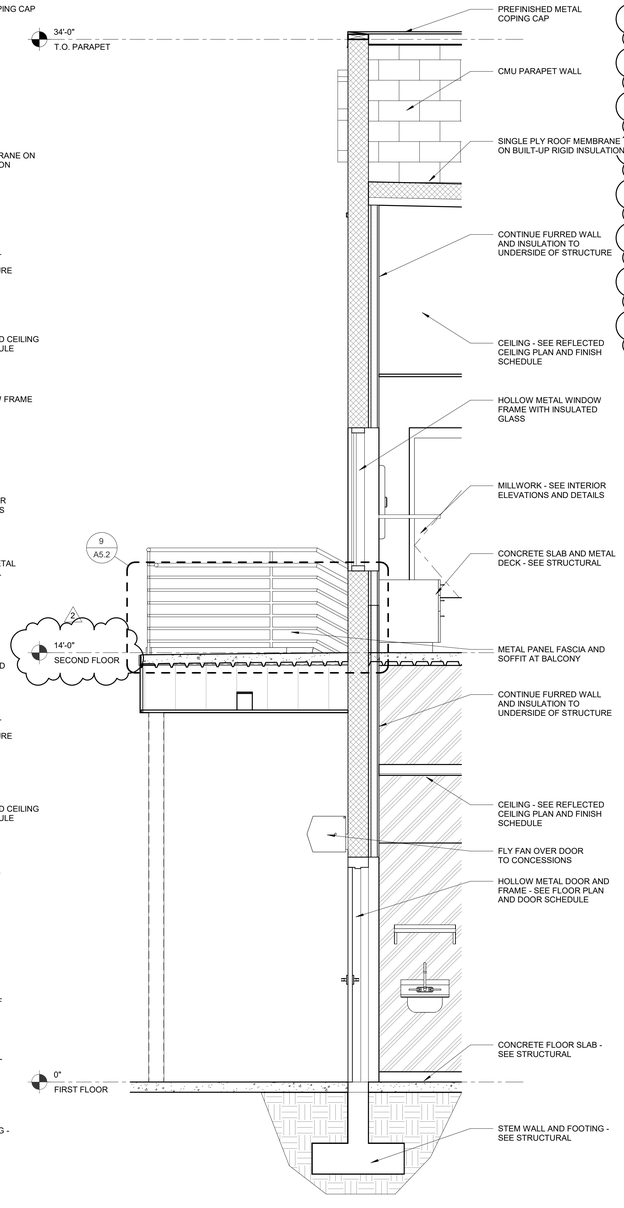
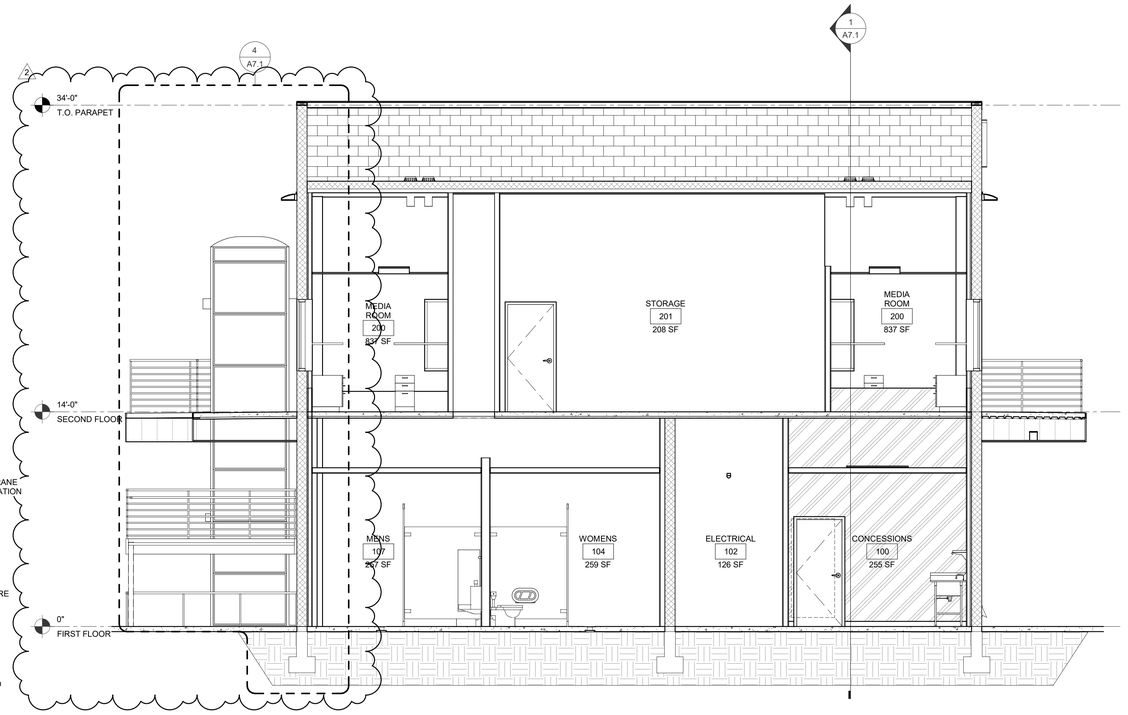


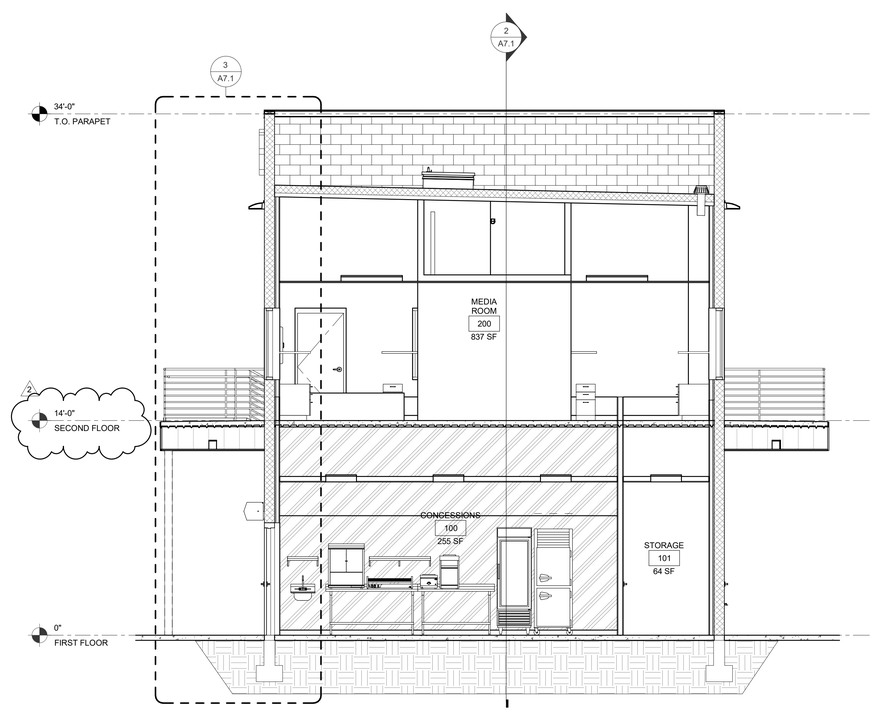
4 CONCESSION - WALL SECTION 2
SCALE: 1/2" = 1'-0"



3 CONCESSION - WALL SECTION 1
SCALE: 1/2" = 1'-0"



2 CONCESSION - LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"



1 CONCESSION - CROSS SECTION
SCALE: 1/4" = 1'-0"

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111 CONGRESS AVENUE, SUITE 500 | AUSTIN, TX 78701 | 737.228.0444

JENNIFER WEIKART KING
REGISTERED ARCHITECT
25426
STATE OF TEXAS
06.01.23

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 117
DILLEY, TX 78017

BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

REVISION	DATE	DESCRIPTION
2	07/31/23	TDLR COMMENTS

Project Number 7131-101
Date 03.13.2023
Drawn By CB / GP
Checked By GP / JW

CONCESSION - BUILDING SECTIONS & WALL SECTIONS
A7.1

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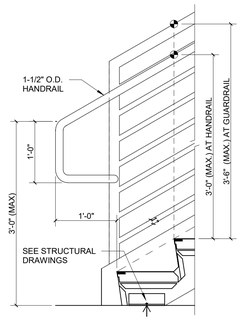
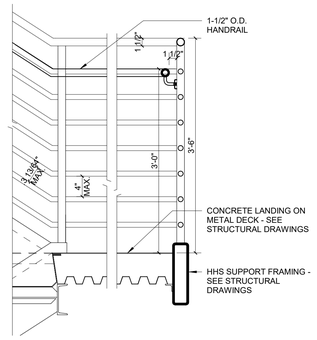
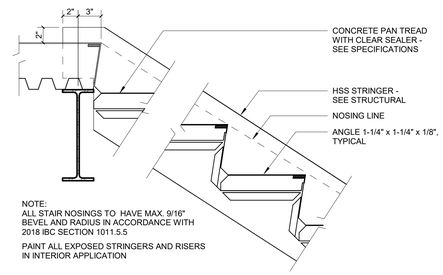


10 STAIR-4
SCALE: 1" = 1'-0"



9 STAIR-5
SCALE: 1" = 1'-0"



7 STAIR-3
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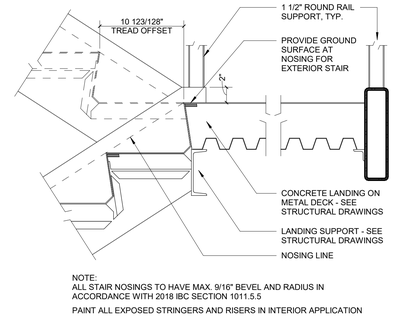
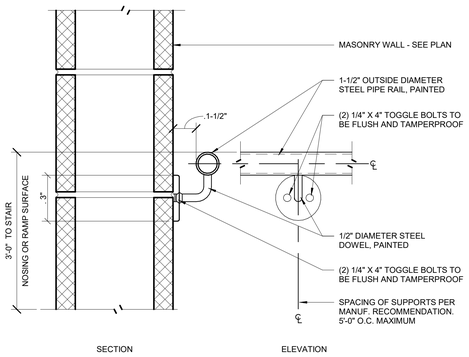
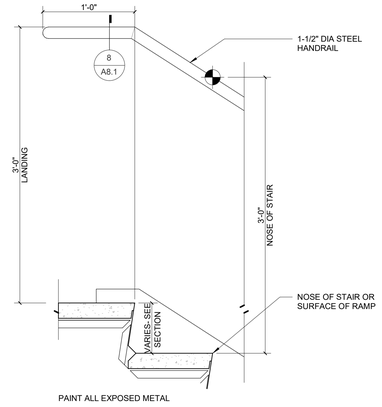


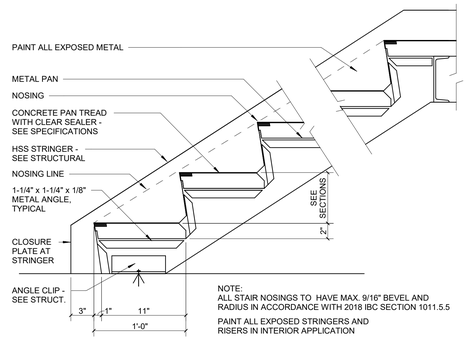
5 STAIR-2
SCALE: 1 1/2" = 1'-0"



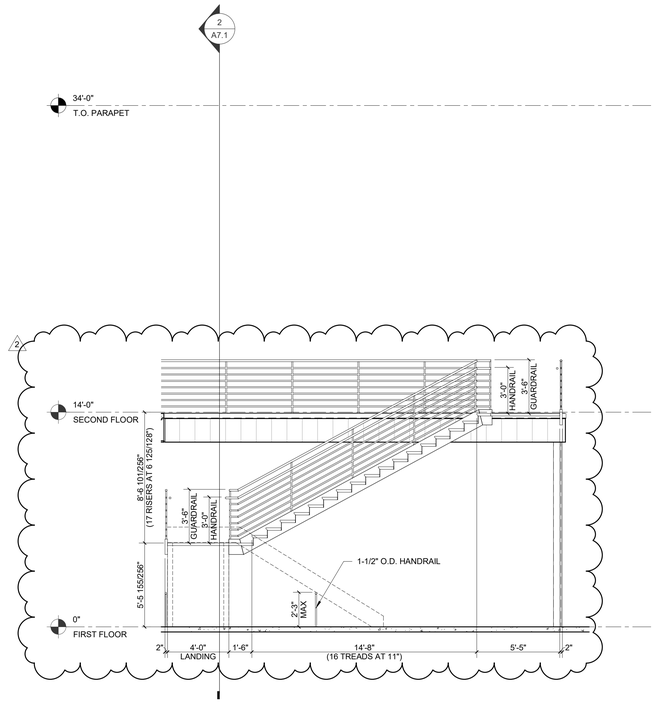
8 HANDRAIL AT CMU WALL
SCALE: 3" = 1'-0"



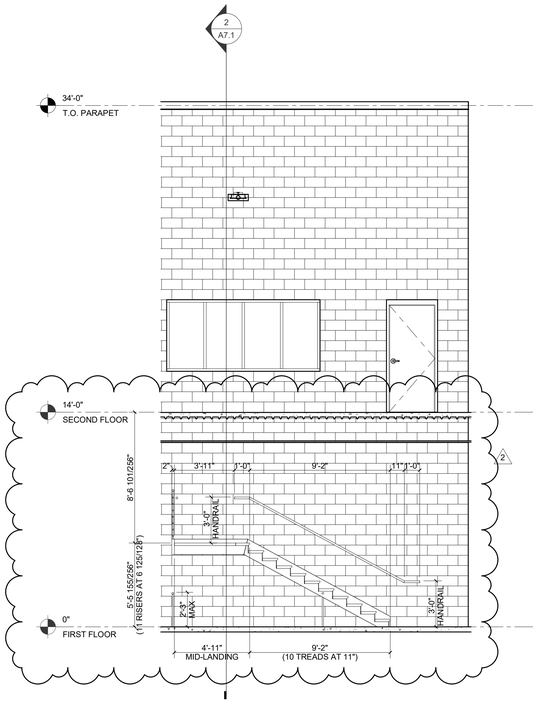
6 HANDRAIL ELEVATION AT WALL
SCALE: 1 1/2" = 1'-0"



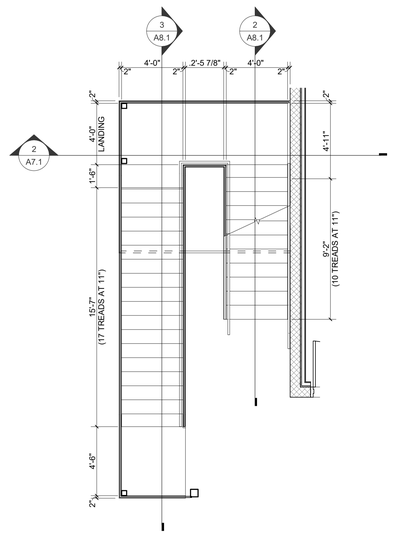
4 STAIR-1
SCALE: 1 1/2" = 1'-0"



3 STAIR SECTION - UPPER LEVEL
SCALE: 1/4" = 1'-0"



2 STAIR SECTION - LOWER LEVEL
SCALE: 1/4" = 1'-0"



1 STAIR PLAN - FIRST FLOOR
SCALE: 1/4" = 1'-0"

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111 CONGRESS AVENUE, SUITE 500 | AUSTIN, TX 78701 | 737.228.0444

REGISTERED ARCHITECT
JENNIFER L. WEEKLEY
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BASEBALL AND SOFTBALL COMPLEX RENOVATIONS

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CONCESSION - STAIR PLANS

A8.1

PLUMBING SPECIFICATIONS

USE POLISHED CHROME PLATED, ADJUSTABLE BRASS P-TRAPS AND WASTE ARMS WITH WALL ESCUTCHEONS AT ALL EXPOSED LOCATIONS. USE POLISHED CHROME PLATED FAUCETS WITH REMOVABLE TRIM, BRASS BODY AND BRASS HANDLES. FIXTURES AND SUPPLY FITTING SHALL BE AS SPECIFIED. PROVIDE DIAPHRAGM TYPE POLISHED CHROME PLATED FLUSH VALVES WITH INTEGRAL VACUUM BREAKERS AND SCREW DRIVER STOPS. PROVIDE FIXTURE STOPS AND VALVES AHEAD OF ALL EQUIPMENT OR FIXTURES. AFTER FIXTURES ARE SET IN PLACE AND ARE SECURED, CAULK ALL AROUND BETWEEN FIXTURES AND WALL/FLOOR WITH EITHER "DOW CORNING N. 780" OR "G.E. CONSTRUCTION SEALANT" WHITE SILICONE CAULKING COMPOUND. ALL FIXTURES THAT ARE WHEELCHAIR ACCESSIBLE SHALL BE MOUNTED PER A.D.A. (AMERICAN DISABILITIES ACT) STANDARDS. ALL PLUMBING FIXTURES SHALL BE LOW FLOW TYPE FIXTURES AS REQUIRED BY THE IPC.

GENERAL REQUIREMENTS
GENERAL PROVISIONS WHICH MAKE SPECIFIC REFERENCE TO ELECTRICAL DIVISION ONLY ARE INCLUDED HEREIN FOR CLARITY AND SIMPLIFICATION OF SPECIFICATIONS WRITING AND ARE NOT PART OF THE PLUMBING WORK. THE WORK OF PLUMBING IS SUBJECT TO THE CONDITIONS OF THE CONTRACT, DIVISION 1, GENERAL REQUIREMENTS, AND APPLICABLE REQUIREMENTS OF OTHER PORTIONS OF THE CONTRACT DOCUMENTS. EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS AND COORDINATE THE PLUMBING WORK ACCORDINGLY. ALL MATERIALS ABOVE CEILING SHALL HAVE COMPOSITE FIRE/SMOKE RATINGS MAXIMUM 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED

INTENT
IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THE SPECIFICATIONS OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE PROVIDED WITHOUT ADDITIONAL EXPENSE TO THE OWNER. SHALL THERE APPEAR TO BE DISCREPANCIES OR QUESTIONS OF INTENT IN THE CONTRACT DOCUMENTS, REFER THE MATTER TO THE ARCHITECT FOR THEIR DECISION BEFORE ORDERING ANY MATERIALS OR EQUIPMENT OR BEFORE THE START OF ANY RELATED WORK. THE DECISION OF THE ARCHITECT SHALL BE FINAL, CONCLUSIVE AND BINDING.

DRAWINGS AND DATA
DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE OF WORK AND TO INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, PIPING AND FIXTURE. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET OR FITTINGS OR EVERY STRUCTURAL DIFFICULTY THAT MAY BE ENCOUNTERED DURING INSTALLATION OF THE WORK. LOCATION OF ALL ITEMS NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. EXACT LOCATIONS NECESSARY TO SECURE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT PROJECT AND SHALL HAVE THE APPROVAL OF ARCHITECT BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS. IF SO DIRECTED BY ARCHITECT, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS IN LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF WORK. INCLUDE MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER INSTALLATION AND OPERATION OF A SYSTEM OR PIECE OF EQUIPMENT IN BID PRICE.

CODES
INCLUDE IN WORK, WITHOUT EXTRA COST TO OWNER, LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS) REQUIRED TO COMPLY WITH APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS. DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT THAN CODES, ORDINANCES, STANDARDS AND STATUTES. CODES, ORDINANCES, STANDARDS AND STATUES TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH DRAWINGS OR SPECIFICATIONS. SEE CODE INFORMATION ON COVER SHEET.

SHOP DRAWINGS TO BE SUBMITTED IN ONE COMPLETE PACKAGE. INDIVIDUAL SHOP DRAWINGS WILL NOT BE ACCEPTED. PROVIDE DETAILED SHOP DRAWINGS TAILORED TO THIS SPECIFIC PROJECT. GENERAL SHOP DRAWINGS WILL NOT BE APPROVED. PROVIDE SEPARATE SECTION FOR EACH EQUIPMENT/COMPONENT, INDICATE MARK NUMBER AS SHOWN ON THESE DRAWINGS. COMMENCE NO WORK REQUIRING A SHOP DRAWING UNTIL SUBMISSION HAS BEEN APPROVED. SUBMIT LAYOUTS/SECTIONS OF AREAS WHERE ALTERNATE EQUIPMENT IS PROPOSED, SHOWING CONFIGURATION AND CLEARANCES.

PLUMBING:

SCOPE:
WORK UNDER THIS SECTION INCLUDES FURNISHING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE REMODELING, INSTALLATION AND PLACING INTO OPERATION THE PLUMBING WORK AS SPECIFIED HEREIN AND INDICATED ON THE DRAWINGS. CONTRACTOR SHALL PAY FOR ALL PERMITS, METERS, FEES, CITY INSPECTIONS, LEGAL NOTICES, ETC., AS REQUIRED.

VERIFICATION OF DIMENSIONS:
SCALED AND FIGURED DIMENSIONS ARE APPROXIMATE ONLY. BEFORE PROCEEDING WITH WORK, CAREFULLY CHECK AND VERIFY AT THE SITE EQUIPMENT AND MATERIALS TO ENSURE THEY WILL FIT. STUDY DRAWINGS AND PREMISES IN ORDER TO DETERMINE BEST METHODS, EXACT LOCATIONS, ROUTES AND BUILDING OBSTRUCTIONS, PRESERVE HEADROOM, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR.

EXISTING CONDITIONS:
CONTRACTOR TO VISIT SITE PRIOR TO BID AND SHALL RELOCATE AS NECESSARY ALL EXISTING ITEMS SUCH AS DUCTWORK, SPRINKLER, PLUMBING, CONDUITS, ETC TO MAINTAIN ALL EQUIPMENT CLEARANCES. CONTRACTOR TO PROVIDE NEAT SKETCH TO ENGINEER SHOWING ANY DEVIATION TO THE CONSTRUCTION DOCUMENTS REQUIRED DUE TO FIELD CONDITIONS. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.

ALL REFERENCE ON THESE DRAWINGS TO EXISTING EQUIPMENT, PIPING, FIXTURES ARE FOR REFERENCE ONLY. CONTRACTOR HAS THE RESPONSIBILITY OF FIELD VERIFYING ALL ITEMS PRIOR TO BID AND INCLUDE IN BID ALL AMOUNT REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.

CUT AND PATCH EXISTING WORK AS NECESSARY TO PROPERLY INSTALL NEW WORK. COORDINATE WITH ALL TRADES/ARCHITECT TO PROVIDE ALL REQUIRED OPENINGS/PATCHES AT NO COST TO THE OWNER. AVOID EXCESSIVE CUTTING AND DO NOT CUT STRUCTURAL MEMBERS WITHOUT CONSENT OF ARCHITECT/ENGINEER. PATCH AROUND ALL OPENINGS TO MATCH EXISTING CONSTRUCTION.

MATERIALS AND EQUIPMENT:
SHALL BE STANDARD PRODUCTS OF A REPUTABLE MANUFACTURER REGULARLY ENGAGED IN MANUFACTURE OF THE SPECIFIED ITEMS. WHERE MORE THAN ONE UNIT IS REQUIRED OF ANY ITEM, FURNISH BY THE SAME MANUFACTURER, EXCEPT WHERE SPECIFIED OTHERWISE. INSTALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SHOULD VARIANCE BETWEEN PLANS AND SPECIFICATIONS OCCUR, CONTACT ARCHITECT IMMEDIATELY SO THAT VARIATIONS IN INSTALLATION CAN BE KNOWN BY ALL PARTIES CONCERNED.
PROVIDE EQUIPMENT FROM MANUFACTURER WHOSE PRODUCTS HAVE LOCAL REPRESENTATION.

PIPING:
DOMESTIC WATER PIPING:
ALL COMPONENTS OF THE POTABLE DOMESTIC WATER SYSTEM MUST MEET NSF 61 AND/OR NSF 372 TEST STANDARDS AND FEDERAL ACT S.3874 KNOWN AS "REDUCTION OF LEAD IN DRINKING WATER ACT".
USE OF FERROUS NIPPLE BUSHINGS, UNIONS, ETC. IS NOT PERMITTED WITH COPPER PIPING. DIELECTRIC INSULATING FITTINGS SHALL BE INSTALLED AT ALL WATER CONNECTIONS BETWEEN FERROUS AND COPPER PIPING. INSTALL PIPING TO ALLOW EXPANSION AND CONTRACTION WITHOUT STRESSING PIPING.

- BELOW GRADE, OUTSIDE BUILDING:
  TYPE "K" HARD TEMPER SEAMLESS COPPER TUBING PER ASTM B-88. WROUGHT SOLDER JOINT FITTINGS PER ANSI B16.22, OR CAST BRONZE SOLDER JOINT FITTINGS PER ANSI B16.8. USE 1000 DEGREE F SILVER SOLDER.
- INSIDE BUILDING, BELOW FLOOR SLAB ON GRADE (1-1/2" AND SMALLER):
  TYPE "K", ASTM B-88 SOFT TEMPER WITH NO JOINTS BELOW FLOOR.
- ABOVE FLOOR:
  TYPE "L" HARD TEMPER SEAMLESS COPPER TUBING PER ASTM B-88. WROUGHT SOLDER JOINT FITTINGS PER ANSI B16.22, OR CAST BRONZE SOLDER JOINT FITTINGS PER ANSI B16.8. USE 95-5 TIN-ANTIMONY SOLDER W/ LESS THAN .2% LEAD CONTENT.
- INSULATION:
  PROVIDE PRE-MOLDED FIBERGLASS INSULATION WITH ALL PURPOSE JACKET. FOR OUTDOOR APPLICATIONS PROVIDE ALUMINUM METAL JACKET - 0.016" THICK WITH 3 MIL THICK POLYFILM FACTORY HEAT LAMINATED ON INTERIOR SURFACE. ENTIRE ASSEMBLY TO BE U.L. LISTED WITH FLAME SMOKE 25/50. THERMAL CONDUCTIVITY "K" VALUE TO EXCEED 0.24 AT 100°F MEAN. MINIMUM DENSITY OF 4 PCF.
  INSTALL PIPE SHIELDS AT ALL HANGERS AND PIPE SUPPORT POINTS. DO NOT INSTALL PIPE INSULATION PRIOR TO COMPLETION OF PIPE PRESSURE TESTING. LABEL ALL PIPING.

- COLD WATER = 1" THICK INSULATION
- HOT WATER LESS THAN 1.5" PIPE = 1" THICK INSULATION
- HOT WATER GREATER OR EQUAL 1.5" PIPE = 1.5" THICK INSULATION

INSULATE WATER AND DRAIN LINES BELOW PUBLIC LAVATORIES PER ADA AND ANSI STANDARDS.

SANITARY WASTE, VENT AND RAINWATER PIPING:
- SANITARY DRAIN PIPING 3" AND SMALLER SHALL SLOPE AT 1/4" PER FT. MINIMUM.
- SANITARY DRAIN PIPING 4" AND LARGER SHALL SLOPE AT 1/8" PER FT. UNLESS OTHERWISE NOTED.

CLEAN-OUTS SHALL BE SAME SIZE AS PIPE INSTALLED IN, 4" MAXIMUM AND SHALL BE PROVIDED ON RUNS OF PIPING EXCEEDING 30' IN LENGTH. PROVIDE ADDITIONAL CLEAN-OUT IN EACH LINE EXCEEDING 135-DEGREES CHANGE OF DIRECTION. PROVIDE CLEANOUTS AT ALL SINKS AND URINALS. CLEANOUTS TO BE BRONZE NO PLASTIC ALLOWED. DO NOT LOCATE UNDER OR BEHIND ANY FIXTURES, OR EQUIPMENT. ALL CLEANOUTS TO BE INSTALLED FLUSH TO WALLS. PROVIDE COMBINATION WYE AND EIGHTH BEND OR BENDS OF EQUIVALENT SWEEP WHERE REQUIRED. CLEANOUTS SHALL NOT BE CONCEALED.

ALL WASTE LINES SHALL BE JETTED AFTER COMPLETION PRIOR TO HANDOVER. VIDEO OF WASTE LINES TO BE PROVIDED TO OWNER AT END OF WORK.

- ABOVE FLOOR - ALL SIZES:
  CAST IRON SOIL PIPE AND FITTINGS, BEARING THE SEAL OF THE CAST IRON SOIL PIPE INSTITUTE, IN CONFORMANCE WITH CISPI 301-00 AND ASTM 888 STANDARDS FOR HUBLESS PIPE AND FITTINGS. COUPLINGS: STAINLESS STEEL COUPLINGS CONFORMING TO CISPI 310-97 WITH NEOPRENE SEALING GASKETS CONFORMING TO ASTM STANDARD C564.

INSULATION: ABOVE FLOOR RAIN WATER PIPING AND DRAIN BODY SHOULD BE PROVIDED WITH 1" THICK INSULATION - REFER TO COLD WATER INSULATION. LABEL ALL PIPING. PROVIDE PVC JACKET (COLOR BY ARCH) WHERE EXPOSED TO VIEW.

- BELOW FLOOR - ALL SIZES:
  SCH 40 PVC SOLID WALL PIPE AND PVC DWV FITTINGS IN ACCORDANCE WITH ASTM D-2665 AND ASTM D-1785. INSTALLATION OF PIPING, AND ALL BEDDING AND BACKFILL SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321 AND ASTM F-1668. SOLVENT WELDED JOINTS SHALL BE MADE PER ASTM F-656 WITH SOLVENT CEMENT IN ACCORDANCE WITH ASTM D-2564 ALL PVC PIPING AND FITTINGS SHALL BE STORED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDED HANDLING INSTRUCTIONS. NO PVC PIPING SHALL BE STORED IN A MANNER WHERE IT IS EXPOSED TO DIRECT SUNLIGHT, OR AMBIENT TEMPERATURES EXCEEDING 120 DEGREES. BELOW FLOOR PVC PIPING MATERIAL SPECIFICATION BASED ON MAXIMUM EXPECTED DRAINAGE TEMPERATURE OF 140°F. INSTALLATION TO CONFORM TO THE REQUIREMENTS OF THE PLUMING CODE.

TRENCHING, EXCAVATION AND BACKFILL SHALL BE PREPARED IN ACCORDANCE WITH THE PLUMBING CODE.

EQUIPMENT DRAINS AND INDIRECT WASTE PIPING:
3/4" THRU 1": TYPE M COPPER AND WROT COPPER FITTINGS WITH SOLDERED JOINTS.
1-1/4" THRU 2": DWV COPPER WITH DWV COPPER DRAINAGE PATTERN FITTINGS WITH SOLDERED JOINTS.

IDENTIFICATION FOR PIPING AND EQUIPMENT:
CONTRACTOR SHALL PROVIDE IDENTIFICATION FOR PIPING AND EQUIPMENT. IDENTIFICATIONS SHALL INCLUDE EQUIPMENT LABELS, WARNING SIGNS, PIPE LABELS AND VALVE TAGS. LOCATE EQUIPMENT LABELS WHERE ACCESSIBLE AND VISIBLE. INSTALL TAGS ON VALVES AND CONTROL DEVICES IN PIPING SYSTEMS.

EQUIPMENT LABELS:
SHALL BE PLASTIC, MULTILAYER, MULTICOLOR, FOR MECHANICAL ENGRAVING, 1/8 INCH THICK, AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE. LETTER COLOR TO BE WHITE. BACKGROUND COLOR TO BE BLACK. ABLE TO WITHSTAND TEMPERATURES UP TO 160 DEG F. LENGTH AND WIDTH VARY FOR REQUIRED LABEL CONTENT, BUT NOT LESS THAN 2-1/2 BY 3/4 INCH. MINIMUM LETTER SIZE TO BE 1/4 INCH.
THE OBJECTIVE OF LABELING EQUIPMENT IS TO COORDINATE WITH DRAWINGS, INCLUDING PLANS, DETAILS, AND SCHEDULES. INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER AS COORDINATED WITH CONTROLS CONTRACTOR.

- PIPE LABELS:
  PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION. LABELS SHALL INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION. LETTERING SIZE AT LEAST 1-1/2 INCHES HIGH.
- VALVE TAGS:
  STAMPED OR ENGRAVED WITH 1/4-INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2-INCH NUMBERS. BRASS, 0.032-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE. FASTENERS TO BE BRASS BEADED CHAIN.

VALVES:
SHUT-OFF VALVES:
SHALL BE EQUAL TO NIBCO NO. 585-66-LF, 150 PSI WSP, 600 PSI CWP, FULL-PORT, SOLDER END, BRONZE BODY, STAINLESS BALL, 1/2" THRU 2", 595-66-LF: 2-1/2". PROVIDE EXTENDED HANDLE FOR VALVES WITH INSULATION.

BALANCING VALVES:
SHALL BE EQUAL TO ARMSTRONG "CBV", LEAD FREE, 300 PSI WSP, SOLDER JOINT CONNECTION. BRASS BODY AND STEM, INSTALL 5 PIPE DIAMETERS DOWNSTREAM OF A FITTING AND 2 PIPE DIAMETERS UPSTREAM, 10 DIAMETERS FROM PUMP. VALVE BODY TO BE OPEN ONE FULL TURN PRIOR TO SOLDERED.

SLEEVES
PROVIDE SLEEVES IN LOCATIONS WHERE PIPES OR CONDUITS PASS THROUGH FLOORS, WALLS, PARTITIONS, CONCRETE BEAMS, AND ROOF.

- EXTERIOR CONCRETE WALLS ABOVE GRADE:
  CAST IRON OR GALVANIZED-STEEL PIPE, WITH PLAIN ENDS AND INTEGRAL WATER STOP. PROVIDE WITH SLEEVE-SEAL SYSTEM. PROVIDE 1" ANNUAL CLEAR SPACE BETWEEN PIPING AND SLEEVE.
- EXTERIOR CONCRETE WALLS BELOW GRADE:
  CAST IRON WITH PLAIN ENDS AND INTEGRAL WATER STOP. PROVIDE WITH SLEEVE-SEAL SYSTEM. PROVIDE 1" ANNUAL CLEAR SPACE BETWEEN PIPING AND SLEEVE.
- CONCRETE SLAB ON GRADE:
  CAST IRON WITH PLAIN ENDS AND INTEGRAL WATER STOP. PROVIDE WITH SLEEVE-SEAL SYSTEM. PROVIDE 1" ANNUAL CLEAR SPACE BETWEEN PIPING AND SLEEVE.
- CONCRETE SLAB ABOVE GRADE:
  GALVANIZED-STEEL-PIPE SLEEVES WITH STACK-SEAL OR SLEEVE-SEAL SYSTEM. PROVIDE 1" ANNUAL CLEAR SPACE BETWEEN PIPING AND SLEEVE.
- INTERIOR PARTITIONS:
  GALVANIZED-STEEL PIPE SLEEVES.

SLEEVE-SEAL SYSTEM IS MODULAR SEALING ELEMENT FOR FILLING ANNUAL SPACE. USE EPDM RUBBER INTERLOCKING LINKS SHAPED TO FIT PIPE WITH STAINLESS NUTS/BOLTS

PIPE EXPANSION AND CONTRACTION: VIBRATION
INSTALL PIPE CONNECTIONS TO ALLOW FOR FREEDOM OF MOVEMENT OF PIPING DURING EXPANSION, CONTRACTION OR VIBRATION. PROVIDE SWING JOINTS WITH PROPER ANCHORS AND GUIDES AS REQUIRED OR WHERE SHOWN ON DRAWINGS. PROVIDE POWER DRIVEN EQUIPMENT OF QUIET OPERATION AND FREE OF VIBRATION. DESIGN AND CONSTRUCT CONNECTIONS TO EQUIPMENT SO THAT NOISE AND VIBRATION WILL NOT REACH THE CONDITIONED AREAS THROUGH DUCTS, PIPING, AND SHEET METAL TO THE BUILDING CONSTRUCTION.

HANGERS, INSERTS, SUPPORTS AND BASES:
PROVIDE REQUIRED STRUCTURAL MEMBERS, HANGERS, SUPPORTS AND INSERTS TO KEEP PIPING AND EQUIPMENT IN PROPER ALIGNMENT AND PREVENT TRANSMISSION OF INJURIOUS THRUSTS AND VIBRATION. DO NOT WEAKEN CONCRETE OR PENETRATE WATERPROOFING. HANGERS TO BE GALVANIZED. PRIME COAT EXPOSED HANGERS. HANGERS TO BE SPACED PER CODE AND MSS SP-80. PROVIDE HANGER WITHIN 12" OF EACH HORIZONTAL ELBOW. HANGERS TO HAVE A MINIMUM OF 1.5" VERTICAL ADJUSTMENT.

ACCESS PANELS:
VALVES, TRAPS, UNIONS, CLEANOUTS, EXPANSION JOINTS, ETC., SHALL NOT BE LOCATED INACCESSIBLE AREA AFTER CONSTRUCTION IS COMPLETED. GROUP CONCEALED EQUIPMENT AND VALVES REQUIRING ACCESS FOR OPERATION, MAINTENANCE AND REPAIR, TO REDUCE NUMBER OF ACCESS DOORS REQUIRED. PROVIDE 12 INCH BY 12 INCH FOR EASILY ACCESSIBLE ITEMS, 18 INCH BY 18 INCH WHERE PARTIAL BODY ACCESS IS REQUIRED.

TESTS AND ADJUSTMENTS:
TESTS SHALL BE PERFORMED TO SATISFACTION OF ARCHITECT AND REGULATING AUTHORITY HAVING JURISDICTION. PRESSURE TEST PIPING BEFORE PIPE INSULATION IS APPLIED AND BEFORE CONNECTION TO EQUIPMENT. NO PIPING IN ANY LOCATION SHALL BE CLOSED UP, FURRED IN, OR COVERED BEFORE TESTING. TEST ALL SYSTEMS AS SPECIFIED. DRAIN WATER USED FOR TESTING FROM THE SYSTEM AFTER TESTS ARE COMPLETE.

CLEANING:
DURING CONSTRUCTION, CAP ALL PIPE AND EQUIPMENT IN AN APPROVED MANNER TO INSURE ADEQUATE PROTECTION AGAINST ENTRANCE OF FOREIGN SUBSTANCES. REMOVE ALL TOOLS, SCAFFOLDS AND SCRAP UPON COMPLETION OF WORK. KEEP ALL AREAS CLEAN AND FREE OF DEBRIS. AFTER CONSTRUCTION ALL AREAS SHALL BE CLEANED AND LEFT AS NEW.

GUARANTEE:
EACH COMPLETE SYSTEM GUARANTEED BY CONTRACTOR FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE OF WORK BY OWNER IN WRITING, TO BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP, AND TO PERFORM SATISFACTORILY UNDER ALL CONDITIONS OF LOAD OR SERVICE.

PLUMBING FIXTURE SPECIFICATIONS

MARK	SPECIFICATION
FD1	FD – 2" (FLOOR DRAIN): FIXTURE: "J.R. SMITH" #2005 2" FLOOR DRAIN WITH NICKEL BRONZE 5" DIAMETER STRAINER HEAD, AND VANDAL PROOF SCREWS. PROVIDE WITH SURE SEAL #SS2009V TRAP SEALER.
FS1	2" (FLOOR SINK): FIXTURE: "J.R. SMITH" #9694 STAINLESS STEEL FLOOR SINK 10"x10"x10" with 12"x12" SQUARE TOP. PROVIDE WITH DOME BOTTOM STRAINER, AND STAINLESS STEEL GRATE (FIELD COORDINATE GRATE CONFIGURATION). PROVIDE WITH 2" DRAIN AND SURE SEAL #SS2009V TRAP SEALER.
FS2	4" (FLOOR SINK): FIXTURE: "J.R. SMITH" #9694 STAINLESS STEEL FLOOR SINK 10"x10"x10" with 12"x12" SQUARE TOP. PROVIDE WITH DOME BOTTOM STRAINER, AND STAINLESS STEEL GRATE (FIELD COORDINATE GRATE CONFIGURATION). PROVIDE WITH 4" DRAIN AND SURE SEAL #SS4009V TRAP SEALER.
HB1	(ROOF HYDRANT - FREEZELESS): FIXTURE: WOODFORD RHY1-MS, FREEZELESS ROOF HYDRANT. PROVIDE WITH MOUNTING SYSTEM INCLUDING CAST IRON HYDRANT SUPPORT, CAST IRON UNDER DECK FLANGE, WELL SEAL, EPM BOOT AND 2-DEGREE SHIM. PROVIDE 3/4" BRASS HOSE NOZZLE AND HOSE CONNECTION WITH VACUUM BREAKER. DRAIN: PROVIDE 1/8" DRAIN PIPING AND TERMINATE AT NEAREST MOP SINK LOCATION.
HB2	(WALL HYDRANT - FREEZELESS): FIXTURE: WOODFORD B65 AUTOMATIC DRAINING, FREEZELESS, ANTI-SIPHON, VACUUM BREAKER PROTECTED CONCEALED BOX TYPE, ASSE 1019-B APPROVED. PROVIDE WITH LOOSE TEE KEY OPERATION. WALL THICKNESS PER ARCHITECTURAL DRAWINGS. EXTERIOR FINISH SELECTED BY ARCHITECT.
LV1	(LAVATORY – WALL HUNG ADA): FIXTURE: KOHLER "PINOIR" K-2028-4 WALL HUNG, VITREOUS CHINA, WITH FRONT OVERFLOW, 4" CENTER SET FAUCET HOLES, WITH FAUCET LEDGE, OVAL SHAPED BOWL AND WITH WALL HANGER FOR CONCEALED ARMS SUPPORT. ADA COMPLIANT. FAUCET: T&S BRASS B-2760-H DECK MOUNTED, METERING SINK FAUCET FOR 4-INCH CENTER, 3-HOLE INSTALLATION, TEMPERED WATER SUPPLY, WITH SLOW SELF CLOSING, TEMPERATURE ADJUSTING PUSH BUTTON METERING CARTRIDGE, ADJUSTABLE WITH MINIMUM OF 10 SECONDS RUN TIME. 0.08 GPC @ 10 SECONDS, 0.5 GPM MAX FLOW RATE . ADA COMPLIANT. SUPPLIES: 1/2" CP BRASS 1/4 TURN ANGLE STOP (McGUIRE OR EQUAL). MIXING VALVE: WATTS #LFUSG-B ASSE 1070 LISTED MIXING VALVE TO BE INSTALLED ON HOT AND CW SUPPLY TO EACH LAVATORY FAUCET. CONCEAL ALL SUPPLIES, AND TUBING BELOW LAVATORY. DRAIN: PERFORATED CHROME PLATED GRID STRAINER WITH 1-1/4" OFFSET TAILPIECE. P-TRAP: 1-1/4" X 1-1/2" ADJUSTABLE CAST BRASS, CHROME PLATED P-TRAP WITH CLEANOUT PLUG, ESCUTCHEON (MCGUIRE OR EQUAL). INSULATION: P-TRAP AND ANGLE VALVE ASSEMBLIES SHALL BE COVERED WITH TRUEBRO, INC. LAV GUARD PROTECTIVE PIPE COVERS AS REQUIRED.
LV2	(2 STATION WASH FOUNTAIN): FIXTURE: ACORN 3712-1-H MERIDIAN 304 STAINLESS STEEL STRAIGHT FRONT DUAL-BASIN (15-3/4" DIAMETER x 5" DEEP), OFF FLOOR WASH STATION, WITH HAND OPERATION BACKSPLASH MOUNTED SPOUT. FIXTURE TO INCLUDE THERMOSTATIC MIXING (ASSE 1070) COMPLIANT, GRID STRAINERS WITH CLOSE ELBOW, WASTE PIPING, 1-1/2" P-TRAP, TRAP ENCLOSURE, ENCLOSE BOTTOM, BACKSPLASH MOUNTED PUSHBUTTONS AND STAINLESS STEEL TUBULAR SPOUTS WITH 0.5 GPM FLOW. SUPPLIES: EASTMAN 1/2" X 3/8" CHROME PLATED QUARTER-TURN, BALL-TYPE ANGLE STOPS WITH LOOSE KEY FLEXIBLE STAINLESS STEEL BRAIDED RISERS.
MS1	(MOP SINK): FIXTURE: FIAT #TSBCR1000 TERRAZZO MOP SERVICE BASIN WITH CURVED FRONT 28"x28"x12", WITH INTEGRAL STAINLESS STEEL DRAIN. PROVIDE WITH STAINLESS STEEL STRAINER AND WITH STAINLESS STEEL CAPS ON ALL CURBS. FAUCET: T&S BRASS B-0665-BSTR, 8" WALL MOUNT MIXING FAUCET WITH VACUUM BREAKER, PAIL HOOK AND GARDEN HOSE MALE OUTLET, COMPRESSION CARTRIDGES WITH SPRING CHECKS, LEVER HANDLES, 1/2" NPT FEMALE INLETS, BUILT-IN SERVICE STOPS IN BODY AND UPPER SUPPORT ROD. ROUGH PLATED CHROME BRASS FINISH. PROVIDE FIAT #832-AA 30" HEAVY DUTY FLEXIBLE RUBBER HOSE AND HOSE BRACKET. PROVIDE FIAT #833-AA SILICONE SEALANT INSTALLED IN ACCORDANCE WITH MANUFACTURE'S INSTRUCTIONS. PROVIDE MODEL MSG2828 STAINLESS STEEL WALL GUARD AT EACH MS1 FIXTURE. CHEMICAL DISPENSER CONNECTION: PROVIDE SEPARATE 1/2" WATER CONNECTION FOR CHEMICAL DISPENSER. PROVIDE WITH BACKFLOW PREVENTION DEVICE.
OD1	(OVERFLOW ROOF DRAIN): FIXTURE: J.R SMITH # 1070, CAST IRON WITH GRAVEL STOP, CAST-IRON DOME, CAST-IRON STANDPIPE CUT TO 2" ABOVE LEVEL OF PRIMARY DRAIN, UNDER-DECK CLAMP. EXTENSION SLEEVE AND SUMP RECEIVER WHERE REQUIRED.
RD1	(ROOF DRAIN): FIXTURE: J.R SMITH #1010, CAST IRON WITH GRAVEL STOP, CAST-IRON DOME AND UNDER-DECK CLAMP, EXTENSION SLEEVE AND SUMP RECEIVER WHERE REQUIRED.
SK1	(HAND SINK – CONTRACTOR PROVIDED, CONTRACTOR INSTALLED): FIXTURE: WALL HUNG HAND SINK EAGLE GROUP MODEL # HAS-10-FAW. 304 STAINLESS STEEL, ALL WELDED CONSTRUCTION. PROVIDE WITH WALL CARRIER/HANGER. PROVIDED BY CONTRACTOR. CONTRACTOR TO INSTALL. FAUCET: BACKSPLASH MOUNTED GOOSENECK FAUCET WITH WRIST HANDLES TO BE PROVIDED BY CONTRACTOR WITH SINK. CONTRACTOR TO PROVIDE ASSE 1070 THERMOSTATIC MIXING VALVE, WATTS LFUSG-B. SUPPLIES: 1/2" ALL BRASS, QUARTER TURN BALL TYPE ANGLE STOPS WITH BRAIDED STAINLESS STEEL RISERS. CONTRACTOR PROVIDED. DRAIN: BASKET DRAIN TO BE PROVIDED BY CONTRACTOR WITH SINK. TRAP: 1-1/2" X 1-1/2" P-TRAP AND TAILPIECE INCLUDED WITH SINK BY CONTRACTOR. CONTRACTOR TO PROVIDE ESCUTCHEON AND ANY ACCESSORY REQUIRED FOR INSTALLATION.
SK2	(3-COMPARTMENT SINK – CONTRACTOR PROVIDED, CONTRACTOR INSTALLED): FIXTURE: KRATOS MODEL # 29N-002. THREE COMPARTMENT SINK MADE OF 16 GAUGE TYPE 304 STAINLESS STEEL WITH STAINLESS STEEL LEGS WITH BULLET FEET, 10" BACKSPLASH, TWO 18" DRAINBOARDS, AND 1-1/2" DRAIN CONNECTIONS WITH 3-1/2" BASKET STRAINERS. NSF CERTIFIED. PROVIDED BY CONTRACTOR. CONTRACTOR TO INSTALL. FAUCET: T&S BRASS MODEL # B-0231-CC, POLISHED CHROMED, PLATED BRASS BODY, 12" SWING NOZZLE WITH STREAM REGULATOR OUTLET, COMPRESSION CARTRIGES WITH SPRING CHECKS, LEVER HANDLES, AND ½" NPT MALE INLETS. PROVIDE WITH 2.2 GPM (LAMINAR) OUTLET. PROVIDED BY CONTRACTOR. SUPPLIES: 1/2" ALL BRASS, QUARTER TURN BALL TYPE ANGLE STOPS WITH BRAIDED STAINLESS STEEL RISERS. CONTRACTOR PROVIDED AND INSTALLED. DRAIN: CONTRACTOR TO PROVIDE A 2-1/2" COMMON DRAIN PIPE AND CONNECT TO ALL SINK COMPARTMENT DRAIN CONNECTIONS. CONTRACTOR TO ROUTE PIPE TO FLOOR SINK AND TERMINATE WITH A CODE COMPLIANT AIRGAP.
UR1	(URINAL – WALL MOUNTED - MANUAL FLUSH VALVE): FIXTURE: KOHLER K-4991-ET "BARDON", VITREOUS CHINA, WALL HUNG, HIGH EFFICIENCY, LOW CONSUMPTION, WASHOUT URINAL WITH 14" EXTENDED RIM, 3/4" TOP INLET AND 2" OUTLET. 0.125 - 1.0 GPF. REFER TO MFR'S RECOMMENDED INSTALLATION INSTRUCTIONS AND ARCHITECTURAL PLANS FOR INSTALLATION DIMENSIONS. FLUSH VALVE: SLOAN "ROYAL" 186-0.125-DBP, EXPOSED, MANUAL FLUSH VALVE, DIAPHRAGM TYPE, 0.125 GPF CONSUMPTION, WITH 3/4" ANGLE STOP, VACUUM BREAKER, WITH SPUD COUPLING AND FLANGE FOR 3/4" TOP SPUD CONNECTION, CHROME FINISH.
UR2	(URINAL - ADA): SIMILAR TO UR1. INSTALL TO MEET ALL ADA GUIDELINES. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT AND INSTALLATION DIMENSIONS.
WC1	(WATER CLOSET – FLOOR MOUNTED – STANDARD HEIGHT – MANUAL FLUSH VALVE): FIXTURE: KOHLER K-96053 "WELLCOMME FLOOR MOUNTED, VITREOUS CHINA, SIPHON JET, ELONGATED BOWL, 1-1/2" TOP SPUD, 1.1-1.6 GPF, 15-1/4" RIM HEIGHT, COLOR TO BE WHITE, REFER TO MFR'S RECCOMENDED INSTALLATION INSTRUCTIONS AND ARCHITECTURAL PLANS FOR INSTALLATION DIMENSIONS. FLUSH VALVE: SLOAN "ROYAL" 111-1.28, EXPOSED, MANUAL FLUSH VALVE, DIAPHRAGM TYPE, 1.28 GPF CONSUMPTION, WITH 1" ANGLE STOP, VACUUM BREAKER, WITH SPUD COUPLING AND FLANGE FOR 1-1/2" TOP SPUD CONNECTION, CHROME FINISH. SEAT: BEMIS 1955SS-C WHITE OPEN FRONT SEAT WITH SELF-SUSTAINING CHECK HINGE AND WITHOUT COVER.
WC2	(WATER CLOSET - FLOOR MOUNTED – ADA – AUTOMATIC FLUSH VALVE): FIXTURE: KOHLER K-96057 "HIGHCLIFF" FLOOR MOUNTED, VITREOUS CHINA, ADA COMPLIANT, SIPHON JET, ELONGATED BOWL, 1-1/2" TOP SPUD, 1.1-1.6 GPF, 16-5/8" RIM HEIGHT, COLOR TO BE WHITE, REFER TO MFR'S RECOMENDED INSTALLATION INSTRUCTIONS AND ARCHITECTURAL PLANS FOR INSTALLATION DIMENSIONS. INSTALL TO MEET ALL ADA GUIDELINES. FLUSH VALVE: SLOAN "ROYAL" # 111 SMO-1.28, TOP SPUD, SENSOR-OPERATED, BATTERY POWERED, EXPOSED FLUSH VALVE, 1.28 GPF. SEAT: BEMIS 1955SS-C WHITE OPEN FRONT SEAT WITH SELF-SUSTAINING CHECK HINGE AND WITHOUT COVER.

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MISCELLANEOUS PLUMBING FIXTURE SPECIFICATIONS

S.C.O AND F.C.O: (SURFACE AND FLOOR CLEANOUT):
FIXTURE: "J.R. SMITH" FIG. NO. 4023 CAST IRON BODY AND FRAME WITH ROUND ADJUSTABLE NICKEL BRONZE TAP, TAPER THREAD BRONZE PLUG SECURED WITH VANDAL PROOF SCREWS. SAME AS PIPE IN WHICH INSTALLED, 4' MAXIMUM.

W.C.O WALL CLEANOUT:
FIXTURE: "J. R. SMITH" FIG. NO. 4532 CAST IRON BRANCH CLEANOUT TEE WITH BRONZE COUNTERSINK PLUG, ROUND STAINLESS STEEL ACCESS COVER. SAME SIZE AS PIPE IN WHICH INSTALLED, 4" MAXIMUM.

WHA1 (WATER HAMMER ARRESTER):
FIXTURE: "J.R. SMITH" "HYDROTROL" WATER HAMMER ARRESTERS SIZED IN ACCORDANCE WITH PDI STANDARD WH-201. PROVIDE ACCESS PANEL. PROVIDE AT EACH FLUSH VALVE FIXTURE OR GROUP OF FIXTURES. PROVIDE WITH SHUT OFF VALVE.

DN1 (DOWNSPOUT NOZZLE):
FIXTURE: J.R. SMITH #1771-NB, CAST BRONZE NOZZLE ND FLANGE. MACHINED NOZZLE SLIDES OVER PVC AND CAST IRON PIPE.

BP1 (BACKFLOW PREVENTER):
FIXTURE: WATTS LF009, 1/2" REDUCED PRESSURE BACKFLOW PREVENTER.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION
	W	WASTE LINE		FCO/SCO	FLOOR CLEANOUT/SURFACE CLEANOUT
	V	VENT		HB	HOSE BIBB
	CW	COLD WATER		U	UNION
SCW	SCW	SOFT COLD WATER			BALANCING VALVE
	HW	HOT WATER		PRV	PRESSURE REDUCING VALVE
	HWR	HOT WATER RETURN		GC	GAS COCK
140°	140°HW	140° HOT WATER		FD	FLOOR DRAIN
140°	140°HWR	140 DEGREE HOT WATER RETURN		FS	FLOOR SINK
G	G	NATURAL GAS		I.E.	INVERT ELEVATION
RW	RW	RAINWATER PIPING		TP	TRAP PRIMER
RW(OF)	RW(OF)	RAINWATER OVERFLOW PIPING		VTR	VENT THRU ROOF
	WCO	WALL CLEANOUT		WHA	WATER HAMMER ARRESTER
	SOV	SHUT OFF VALVE	(TYP.)	TYP	TYPICAL
	BV	BALL VALVE		POC	POINT OF CONNECTION
	CV	CHECK VALVE		AFF	ABOVE FINISH FLOOR
	DN	PIPE DOWN		BFF	BELOW FINISH FLOOR
	UP	PIPE UP			

PLUMBING SHEET INDEX

architecture. design. management.
adm group
2100 WEST 15TH STREET I TEMPE, AZ 85281 I 480.285.3800

STATE OF TEXAS
HENRY MELCHER
133848
LICENSED
PROFESSIONAL ENGINEER
07/26/2023
EXPIRES 12/31/23

ENERGY SYSTEMS DESIGN
5910 Courtyard Drive
Suite 100
Austin TX 78731
P: 512.721.1099
www.esdengineers.com
231042
Design Contact:
RODYN COLLERA

DILLEY INDEPENDENT SCHOOL DISTRICT
245 W. FM 17
DILLEY, TX. 7017
BASEBALL AND SOFTBALL COMPLEX ADDITIONS AND RENOVATIONS

REVISION	DATE	DESCRIPTION
1	7/26/2023	QA/QA COORDINATION

Project Number 7131-101
Date 5/15/23
Drawn By RODYN COLLERA
Checked By MATT KLEM

PLUMBING SYMBOLS AND SPECIFICATIONS
P0.0

Dilley ISD Baseball and Softball Renovations

Bid Supplemental Form (B4) - Allowances

The Contractor acknowledges that their bid for the Dilley ISD Baseball and Softball Renovations includes the following Allowances as a part of their TOTAL bid amount

Allowances are:

A. Allowance No. 1: Lump-Sum Allowance: Include the sum of $30,000.00 for infrastructure coordination and upgrades and repairs.

B. Allowance No. 2: Contingency Allowance: Include a contingency allowance of $75,000 for use according to Owner's written instructions.

C. Allowance No. 3: Testing and Inspection Allowance: Include the sum of $7,000.00 for testing and special inspections to be provided by Contractor.

Submitted By:_____ (Name of Bidding Company)

Authorized Signature:_____ (Handwritten Signature)

Title of Signer:_____

Date Signed:_____

Geotechnical Engineering Report

Dilley High School Expansion

245 Highway 117

Dilley, Texas

March 27, 2014

Terracon Project No.: 89145007

Prepared for:

Dilley Independent School District
Dilley, Texas

Prepared by:

Terracon Consultants, Inc.
Laredo, Texas

Terracon

March 27, 2014

Dilley Independent School District
245 Highway 117
Dilley, Texas 78017

Attn: Dr. Clint McLain, Superintendent
P: [830] 965 1912
E: clint.mclain@dilleyisd.net

Re: Geotechnical Engineering Report
Dilley High School Expansion
245 Highway 117
Dilley, Texas
Terracon Project No.: 89145007

Dear Dr. McLain:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Geotechnical Engineering Report for the proposed Dilley Elementary School Expansion in Dilley, Texas. We trust that this report is responsive to your project needs. Please contact us if you have any questions or if we can be of further assistance.

We appreciate the opportunity to work with you on this project and look forward to providing additional Geotechnical Engineering and Materials Testing services in the future.

Sincerely,
Terracon Consultants, Inc.
(Firm Registration: TX F-3272)

Martin Reyes, E.I.T.
Staff Geotechnical Engineer
Geotechnical Engineering Division

Mike T. Ghazawi, P.E.
Senior Principal

STATE OF TEXAS
M. GHAZAWI
90139
LICENSED
PROFESSIONAL ENGINEER
3/27/14

APR review by Mike T. Ghazawi, P.E. – 89145007

Copies To: Addressee: (2) Bound & (1) Electronic
Sledge Engineering, LLC; Mr. Stephen P. Dorman, P.E. stephen@sledge.biz; (1) Electronic

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EXECUTIVE SUMMARY

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

A geotechnical investigation has been performed for the proposed Dilley High School Expansion located at 245 Highway in Dilley, Texas. A total of 13 borings were drilled to depths of approximately 20 to 30 feet below the existing grade within the proposed development area

Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. The following geotechnical considerations were identified:

- The subsurface soils at this site generally consist of Clayey Sand (SC), Sandy Fat Clay (CH) underlain by Clayey Sand (CL).
- The estimated Potential Vertical Rise (PVR) at this site is about 1 inch in its present conditions.
- Groundwater was not observed at the boring locations during and upon completion of the drilling operations.
- A shallow foundation system would be appropriate to support the structural loads of the proposed school campus expansion, provided the building pads are prepared as recommended in this report.
- Drilled pier foundation system may also be used to support the proposed buildings.
- The subsurface conditions within the site are consistent with the characteristics of Site Class D as defined in the 2012 International Building Code (IBC) Site Classification.
- Flexible and rigid pavement systems may be considered for this project. We anticipate traffic will consist primarily of passenger cars and school buses.

GEOTECHNICAL ENGINEERING REPORT
DILLEY HIGH SCHOOL EXPANSION
245 HIGHWAY 117
DILLEY, TEXAS
TERRACON PROJECT NO.: 89145007
MARCH 27, 2014

1.0 INTRODUCTION

Terracon is pleased to submit this Geotechnical Engineering Report for the proposed Dilley High School Expansion in Dilley, Texas. This project was authorized by Dr. Clint McLain, Superintendent of Dilley Independent School District through signature of our "Agreement for Services" on December 18, 2013. The project scope was performed in general accordance with Terracon Proposal No. P89130167 dated December 6, 2013.

The purpose of this report is to describe the subsurface conditions observed at boring locations drilled for this study, analyze and evaluate the test data, and provide recommendations with respect to:

- subsurface soil conditions
- earthwork
- seismic considerations
- groundwater conditions
- floor slab design and construction
- foundation design and construction
- pavements

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Site Layout	See Appendix A, Exhibit A-3, Bore Location Plan.
Structure/Pavements	Based on schematic drawing provided to us, the development will have a single-story building expansion and a new field house building. The new high school building will have a total footprint area of approximately 100,000 square feet and the field house will be approximately 10,000 square feet. New pavement areas will be considered for this project.
Construction Type	We understand that the buildings will consist of exterior brick walls and pre-engineered metal structure supported by shallow or deep foundation system.
Finished Floor Elevation (FFE)	Information not provided at this time.

2.2 Site Location and Description

Item	Description
Location	The project is located within the existing Dilley High School campus located at 245 Highway 117 in Dilley, Texas.
Existing Improvements	Typical high school campus, which includes buildings, football stadium and pavement areas. Some of the existing buildings will be demolished prior to the construction of the new building.
Current Ground Cover	Grass, bare soils and asphalt pavements.
Existing Topography	The site appears to be relatively flat and level.

3.0 SUBSURFACE CONDITIONS

3.1 Geology

The Geologic Atlas of Texas (1976) published by the Bureau of Economic Geology of the University of Texas at Austin has mapped the Laredo Formation (El) in the Eocene of Tertiary Geological age at or near this site. As mapped in the project area, the Laredo Formation (El) includes sandstone and clay; thick sandstone members in upper and lower part, very fine to fine grained, in part glauconitic, micaceous, ferruginous, crossbedded, dominantly red and brown; clay in middle, weathers orange-yellow; dark gray limestone concretions common, some fossiliferous; marine mega fossils abundant; thickness about 620 feet. The borings drilled at this site encountered the sand and clay part of this formation.

3.2 Typical Profile

We were provided with a schematic drawing of the proposed Dilley High School Expansion by Mr. Stephen P. Dorman, P.E. of Sledge Engineering, LLC. Our field personnel used the drawing to identify approximate boring locations. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Approximate Depth of Stratum, feet	Material Encountered	Consistency/Density
0 to 0.5	Asphalt Pavement	---
0 to 23.5	CLAYEY SAND [1] ; reddish brown and yellowish brown	Loose to very dense
13.5 to 25	SANDY FAT CLAY [2]; light olive gray, yellowish brown and grayish brown,	Hard
20 to 30	CLAYEY SAND [1] ; grayish brown and yellowish brown	Dense to very dense

[1] The CLAYEY SAND (SC) materials could undergo low volumetric changes (shrink/swell) should they experience changes in their in-place moisture content. Due to their granular nature may transmit water easily during rainfall seasons.

[2] The SANDY FAT CLAY (CH) materials could undergo moderate to high volumetric changes (shrink/swell) should they experience changes in their in-place moisture content. However, the depth at which this stratum was encountered will lessen its potential for volumetric changes.

Conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs in Appendix A of this report.

3.3 Groundwater

The boreholes were drilled to their full depths using dry drilling techniques to aid in the observation of groundwater. Groundwater was not observed in the borings while drilling, or for the short duration that the borings were allowed to remain open. However, this does not necessarily mean these borings terminated above groundwater.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project. Therefore, the contractor should check the groundwater conditions prior to foundation excavation activities.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

The following recommendations are based upon the data obtained from our field and laboratory programs, project information provided to us and on our experience with similar subsurface and site conditions in the area.

4.1 Geotechnical Considerations

Shallow foundation system may be considered to support the buildings at this site. The foundation type that is chosen will depend on the expected performance of the structures and their foundation, type of construction, loads imposed by the foundation on the soils, and economics. The desired foundation system may be used at this site provided the building pads and foundations are designed and constructed as recommended in this report. Terracon would be pleased to discuss other foundation alternatives with you upon request.

The foundation being considered to provide support for the planned structure must satisfy two independent engineering criteria with respect to the subsurface conditions encountered at this site. One criterion is the foundation system must be designed with an appropriate factor of safety to reduce the possibility of a bearing capacity failure of the soils underlying the foundation. The other criterion is movement of the foundation system due to compression

(consolidation or shrinkage) or expansion (swell) of the underlying soils must be within tolerable limits for the structures. The field and laboratory data acquired during this study indicate that the soils at this site have competent strength and low to moderate swell characteristics.

Based on our findings, the subsurface soils in the upper 13 feet at this site generally exhibit a low to moderate expansion potential. Based on the information developed from our field and laboratory programs and on method TEX-124-E in the Texas Department of Transportation (TxDOT) Manual of Testing Procedures, we estimate that the subgrade soils at this site exhibit a Potential Vertical Rise (PVR) of about 1 inch in their present conditions. The actual movements could be greater if inadequate drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structures after construction.

4.1.1 Demolition Considerations

We understand that some of the existing structures at this site will be demolished prior to construction. As a result, abandoned underground utilities may be present within the footprint area of the planned structures. Utilities and associated backfill and granular bedding material can provide avenues for groundwater to enter under the structure subgrade. We recommend that all abandoned utility lines be completely removed from the proposed structure areas. Abandoned pipes which remain underground should be grouted.

Any structures removed during demolition will likely create large subsurface voids. It is very important that all subsurface voids formed from the removal of the foundation system be backfill completely with moisture conditioned, compacted, engineered fill as described in the **"Earthwork"** section of this report. It is our experience that improperly backfilled excavations can cause significant settlement under and around the proposed structures.

As an alternative to compacted soil backfill, a flowable fill material may be considered. Flowable fill, or slurry, when properly designed provides a competent subgrade and can still be readily excavated if the utilities require repair or maintenance. In addition, flowable fill does not need to be placed in lifts, compacted, or tested.

4.2 Earthwork

The following presents recommendations for site preparation, building pad preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations and slabs are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, building pad preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 General Site Preparation

Construction operations may encounter difficulties due to the wet or soft surface soils becoming a general hindrance to equipment due to rutting and pumping of the soil surface, especially during and soon after periods of wet weather. If the subgrade cannot be adequately compacted to minimum densities as described in the **"Compaction Requirements"** section of this report, one of the following measures may be required:

- Removal and replacement with select fill; and
- Drying by natural means if the schedule allows.

Prior to placing any fill, all loose material and any otherwise unsuitable materials should be removed from the construction area. Wet or dry material should either be removed or moisture conditioned and recompacted. After stripping and grubbing, the subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Soft, dry and low-density soil should be removed or compacted in place prior to placing fill.

4.2.2 Building Pad Preparation for Main Building and Field House

Existing grades and Finished Floor Elevations (FFE) were not available at the time this report was prepared. Due to the loose sand and the low moisture content of the upper 2 to 3 feet of existing soil, we have provided the following subgrade preparation that is intended to maintain the magnitude of soil movements to 1 inch or less, and improve its strength and load carrying capacity beneath for grade supported floor slab.

- Remove any existing structures or any deleterious material from the structure area. The building pad area is defined as the area that extends at least 3 feet beyond the perimeter of the building, including any movement sensitive flatwork that abuts the structure such as sidewalks.

- After stripping operations, excavate 2 feet of on-site soil and stockpile for later reuse.

- The exposed subgrade in the building area should be proofrolled with at least a 15-ton roller, or equivalent equipment, to evidence any weak yielding zones. A Terracon geotechnical engineer or his/her representative should be present to observe proofrolling operations.

- Over excavate any confirmed weak yielding zones, both vertically and horizontally, to expose competent soil. The excavated soil maybe used to restore grade provided that the material is relatively free and clean of deleterious material or materials exceeding 3 inches in maximum dimension. The soil should be placed in 8 inches loose lifts and no more than 6 inches compacted measure; moisture conditioned to between -2 to +3 percentage points of the optimum moisture content and compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698.

- After proofrolling and the replacement of weak yielding zones, scarify and moisture condition the top 8 inches of subgrade to between -2 and +3 percentage points of the optimum moisture content. Compact the subgrade to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698.

- Use the stockpiled on-site soils to restore grade provided that the material is relatively free and clean of deleterious material or materials exceeding 3 inches in maximum dimension. If additional fill is needed to achieve the desired Finished Building Pad Elevation (FBPE) or if grades are to be raised further, then select fill or on-site soils meeting the select fill criteria may be used. Lift thickness should not exceed 8 inches loose measure or 6 inches compacted measure. Each lift of on-site soils or imported select fill should be moisture conditioned to between -2 and +3 percentage points of optimum and compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698. Recommendations for select fill are included in the **"Fill Materials and Placement"** section of this report. This should result in about 24 to 30 inches of moisture conditioned and compacted soil below the existing grade elevation.

- To provide a more uniform slab support and create a more all-weather working surface, we recommend constructing the final 6 inches of the building pad with granular select fill material meeting the requirements for select fill as presented in the **"Fill Materials and Placement"** section of this report. Lift thickness for select fill should not exceed 8 inches loose, to achieve about 6 inches compacted measure. Granular select fill material will be less prone to damage by rain, and thus, less weather related delays should be expected.

4.2.3 Fill Materials and Placement

Select fill and on-site soils should meet the following criteria.

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Granular Select Fill [2]	Varies	All locations and elevations.
Select fill	CL and/or SC (LL≤40) and (5≤PI≤20)	Can be used to construct the building pad under the floor slab and all grade adjustments within the building and pavement areas.
On-site soils	Varies	The on-site soils appear suitable for use as fill within the landscape and pavement areas, provided they are free of organics and debris. Fat Clay (CH) on-site soils are not suitable for use as select fill.
Flowable Fill [3]	---	Confined areas.

1	Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained.
2	Granular select fill should consist of a well graded crushed limestone or gravel base material having maximum size of 3 inches and Plasticity Index (PI) between 5 and 20. Type A or B Grade 1 or 2 granular base course material meeting the criteria specified in the 2004 TxDOT Item 247 may also be used.
3	Flowable fill should have a 28 day strength between 80 and 150 psi and meet the requirements for 2004 TXDOT Item 401. Although usually more costly, flowable fill does not require placement in lifts or mechanical compaction.

4.2.4 Compaction Requirements

Item	Description
Fill Lift Thickness	All fill should be placed in thin, loose lifts not to exceed 8 inches, with compacted thickness of about exceed 6 inches.
Compaction of Cohesive Soil and Granular Materials	95% of the material's standard Proctor maximum dry density (ASTM D 698).
Moisture Content of On-site Soils, Select Fill and Granular Soils	The materials should be moisture conditioned between -2 and +3 percentage points of the optimum moisture content.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the buildings should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structures, we recommend that protective slopes be provided with a minimum grade of approximately 2 to 3 percent for at least 10 feet from perimeter walls. Backfill against exterior walls, and in utility and sprinkler line trenches, should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Downspouts, roof drains or scuppers should discharge into extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Consideration should be given to extending drainage piping to day light at the face of curbs then empty onto pavement surfaces. Sprinkler systems should not be installed within 5 feet of foundation walls. Landscaped irrigation adjacent to the foundation systems should be minimized or eliminated.

4.2.6 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Overexcavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping.

The individual contractor is responsible for designing and constructing stable, temporary excavations as required maintaining stability of both the excavation sides and bottoming. Excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Design recommendations for slab-on-grade, isolated spread footing and drilled pier foundation systems for the proposed buildings are presented in the following paragraphs.

4.4 Slab-On-Grade Foundation

A slab and grade beam foundation may be considered for this project, provided the risk of some movement is acceptable. As mentioned earlier, earthwork measures will be required to reduce potential post-construction movements to a tolerable level as recommended in **"Building Pad Preparation"** section of this report.

Parameters commonly used to design this type of foundation are provided in the Slab Foundation Design Parameters table shown below. The Slab Foundation Design Parameters presented are based on the criteria published by the Building Research Advisory Board (BRAB), the Post-Tensioning Institute (PTI 3rd Edition) and by using Conventional design method. These are essentially empirical design methods and the recommended design parameters are based on our understanding of the proposed project, our interpretation of the information and data collected as a part of this study, our area experience, and the criteria published in the BRAB and PTI design manuals.

Conventional Method	Prepared Subgrade[1]
Net Allowable Bearing Pressures[2]	
Total Load	3,000 psf
Dead Load	2,000 psf
Subgrade Modulus (k)	80 pci
Potential Vertical Rise (PVR)	about 1 inch

BRAB Method:	
Design Plasticity Index (PI)[3]	19
Climatic Rating (C_w)	17
Unconfined Compressive Strength	1.0 tsf
Soil Support Index (C)	0.97
PTI Method 3rd Edition:	
Thornthwaite Moisture Index (I_m)	-32
Depth of Constant Soil Suction	9 feet
Constant Soil Suction	4.2 pF
Edge Moisture Variation Distance (e_m):	
Center Lift	9.0 feet
Edge Lift	5.0 feet
Differential Soil Movement (y_m):	
Center Lift	0.9 inches
Edge Lift	1.2 inches
Coefficient of Slab-Subgrade Friction (μ):	0.75 to 1.00

1	Based on preparing the building pad as discussed in the "Building Pad Preparation" section of this report.
2	The net allowable bearing pressures provided above include a factor of safety of at least 2 and 3, respectively
3	The BRAB effective PI is equal to the near surface PI if that PI is greater than all of the PI values in the upper 15 feet.

We recommend that the grade beams be at least 30 inches below Finished Floor Elevation (FFE) (at least 24 inches below the bottom of floor slab). These recommendations are for proper development of bearing capacity for the continuous beam sections of the foundation system and to reduce the potential for water to migrate beneath the slab foundation. These recommendations are not based on structural considerations. Grade beam depths may need to be greater than recommended herein for structural considerations and should be properly evaluated and designed by the Structural Engineer. The grade beams or slab portions may be thickened and widened at concentrated load areas.

Settlement Considerations – For a slab foundation system designed and constructed as recommended in this report, post construction settlements should be less than 1 inch. Settlement response of a select fill supported slab is influenced more by the quality of construction than by soil-structure interaction. Therefore, it is essential that the recommendations for foundation construction be strictly followed during the construction phases of the building pad and foundation.

4.4.1 Construction Considerations

Grade beams for the slab foundation should preferably be neat excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with

this bucket should be stopped 6 inches above final grade and the grade beam excavation completed with a smooth-mouthed bucket or by hand labor. Debris in the bottom of the excavation should be removed prior to reinforcing steel placement. Due to the presence of sandy soils, caving of grade beam excavation may occur. Therefore, the contractor should be prepared to use forms.

The foundation excavations should be sloped sufficiently to create internal sumps for runoff collection and removal of water. If surface runoff water or groundwater seepage in excess of 1 inch accumulates at the bottom of the foundation excavation, it should be collected and removed and not allowed to adversely affect the quality of the bearing surface. Special care should be taken to protect the exposed soils from being disturbed or drying out prior to placement of the concrete.

4.5 Spread Footings

Spread footings may be used to support the column loads of the proposed buildings. The interior spread footings should be at least 24 inches below Finished Floor Elevation (FFE). The perimeter footings should be at least 36 inches below final exterior grade. Spread footings may be designed for an allowable bearing pressure of 3,000 psf based on total load or 2,000 psf, based on dead load condition. The above bearing pressures include factors of safety of approximately 2 and 3, respectively.

The spread footings can provide some uplift resistance for those structures subjected to wind or other induced structural loading. The uplift resistance of a spread footing may be computed using the effective weight of the soil above the spread footing along with the weight of the spread footing and structure. A soil unit weight of 120 pcf may be assumed for the on-site soils placed above the footing, provided the fill is properly compacted.

Settlement Considerations – Total settlements should be on the order of 1 inch or less for properly designed and installed spread footing foundations. Settlement of footings will be more sensitive to installation techniques than to soil-structure interaction.

4.5.1 Construction Considerations

Footing foundations should preferably be neat excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with this bucket should be stopped 6 inches above the final excavation surface and the excavation completed with a smooth-mouthed bucket or by hand labor. Due to the presence of sandy soils, caving of grade beam excavation may occur. Therefore, the contractor should be prepared to use forms.

If the footing foundations are overexcavated and formed, the backfill around the foundation sides should be achieved with compacted select fill, lean concrete, compacted cement stabilized sand (two sacks cement to one cubic yard of sand) or flowable fill. Compaction of select fill should be as described later in this section of the report.

The bearing surface should be excavated with a slight slope to create an internal sump for runoff water collection and removal. If surface runoff water in excess of 2 inches accumulates at the bottom of the excavation, it should be pumped out prior to concrete placement. Under no circumstances should water be allowed to adversely affect the quality of the bearing surface.

If the spread footing is buried, backfill above the foundation maybe the excavated on-site soils or select fill soils. Backfill soils should be compacted to at least 95 percent of the maximum dry density as determined by the standard moisture/density relationship test (ASTM D 698). Moisture contents for on-site soils ranging from -2 to +3 and imported select fill soils should range from -2 to +3 percentage points of the optimum moisture content. The backfill should be placed in thin, loose lifts not to exceed 8 inches, with compacted thickness not to exceed 6 inches.

4.6 Drilled Pier Foundation

Principal column loads for the buildings may be supported by a deep foundation system, which consist of straight-sided piers. Due to the sandy nature of much of the existing soils, underreamed piers may be difficult to construct at this site. Therefore, only recommendations for straight-sided (non-underreamed) piers are provided in this report.

4.6.1 Straight-Sided Piers

The buildings may be supported on straight-sided piers bearing at a minimum depth of 20 feet below existing grade. Depths are based on the grades at the time of our field operations. This depth was chosen to bear the piers below the active soil movement zone and should allow adequate development of bearing capacity and resisting lateral loading conditions.

The piers may be designed for a net allowable bearing pressure of 15,000 psf based on total load or 10,000 psf based on dead load plus long-term live load whichever results in a larger bearing surface. These bearing pressures include a factor of safety against a bearing capacity failure of approximately 2 and 3, respectively. Piers should not extend deeper than 28 feet without contacting our office.

An average allowable side shear value of 700 psf can be used to aid in resisting axial compressive loads on the piers. The allowable values include a factor of safety of 2.

In addition to the axial compressive loads on the piers, these piers will also be subjected to axial tension loads due to swelling of the near surface clay soils and possibly due to other induced structural loading conditions. To compute the axial tension force due to the swelling soils along the pier shaft, the following equation may be used.

$$Q_u = 30 \bullet d$$

Where: Q_u = Uplift force due to expansive soil conditions in kips (k)
d = Diameter of pier shaft in feet (ft)

This calculated force can be used to compute the longitudinal reinforcing steel required in the pier to resist the uplift force induced by the swelling clays. However, the cross-sectional area of the reinforcing steel should not be less than ½ percent of the gross cross-sectional area of the drilled pier shaft. The reinforcing steel should extend from the top to the bottom of the shaft to resist this potential uplift force.

The ultimate uplift resistance of the non-underreamed drilled piers can be evaluated using the following equation:

$$Q_r = 3.5 \bullet d \bullet D_p + W_p + P_{DL}$$

Where:
Q_r = Ultimate uplift resistance of pier in kips (k)
d = Diameter of pier shaft in feet (ft)
D_p = Length of pier shaft in contact with natural soil minus 3 feet (ft)
W_p = Weight of the drilled pier in kips (k)
P_{DL} = Dead Load acting on the drilled pier in kips (k)

We recommend that a factor of safety of at least 2 be applied to the computed ultimate pile uplift resistance capacity.

Other design considerations:

- The side shear should be neglected for the upper 3 feet below Finished Building Pad Elevation (FBPE) in contact with the pier shaft and within 1 pier diameter of the bottom of the shaft.

- Clearance of at least of 3 diameters of the drilled pier, center to center, should be provided between the drilled piers to develop the recommended bearing pressures and to control settlements. If a clearance of 3 diameters cannot be maintained in every case, the above bearing capacities should be reduced by 20 percent. Drilled piers closer than a clearance of 2 diameters, center to center, are not recommended.

Settlements – For piers, total settlements, based on the indicated bearing pressures, should be about 1 inch or less for properly designed and constructed drilled piers. Settlement beneath individual piers will be primarily elastic with most of the settlement occurring during construction. Differential settlement may also occur between adjacent piers. The amount of differential settlement could approach 50 to 75 percent of the total pier settlement. For properly designed and constructed piers, differential settlement between adjacent piers is estimated to be less than 1 inch. Settlement response of drilled piers is impacted more by the quality of construction than by soil-structure interaction.

Improper pier installation could result in differential settlements significantly greater than we have estimated. In addition, larger magnitudes of settlement should be expected if the soil is subjected to bearing pressures higher than the allowable values presented in this report.

4.6.2 Foundation Installation

Groundwater was not encountered in the borings either during or upon completion of the drilling operations. Even though we do not expect the groundwater to be a problem, the contractor should be prepared to utilize casing techniques to control sloughing of the soil during excavation if they occur. Prior to any excavation, the contractor should verify the groundwater levels. The contractor should consider performing a "test" pier excavation to determine the constructability of a drilled pier with the dry auger process. The casing method of pier construction is presented below. High torque drilling and excavation equipment may be required at the site.

> Casing Method - Casing will provide stability of the excavation walls but may not completely eliminate groundwater influx potential or stability of the pier excavation bottom unless the casing penetrates below any pervious soils. Casing that terminates in pervious soils may generate "boils" due to the head differential between the inside and outside of the casing and require that the casing be extended until the excess seepage or boils are eliminated. The actual casing depth should be chosen by the drilling subcontractor. If this operation is not successful or to the satisfaction of the engineer, the pier excavation should be flooded with fresh water to offset the differential water pressure caused by the unbalanced water levels inside and outside of the casing. When the pier excavation depth is achieved and the bearing area has been cleaned, reinforcing steel and concrete should then be placed immediately in the excavation. If more than 6 inches of water is present in the excavation, water should be removed by pumping or the concrete should be tremied completely to the bottom of the excavation with a closed-end tremie.
>
> Removal of casing should be performed with extreme care and under proper supervision to minimize mixing of the surrounding soil and water with the fresh concrete. Rapid withdrawal of casing or the auger may develop suction that could cause the soil to intrude into the excavation. An insufficient head of concrete in the casing during its withdrawal could also allow the soils to intrude into the wet concrete. Both of these conditions may induce "necking", a section of reduced diameter, in the pier.

The foundation excavations should be augered and constructed in a continuous manner. The reinforcing steel and concrete should be placed in the excavations immediately following drilling and evaluation for proper bearing stratum, embedment, and cleanliness. Under no circumstances should the foundation excavations remain open overnight.

All aspects of concrete design and placement should comply with the American Concrete Institute (ACI) 318-08 Code Building Code Requirements for Structural Concrete; ACI 336.1-01 entitled Reference Specification for the Construction of Drilled Piers, and ACI 336.3R-93 (Reapproved 2006) entitled Design and Construction of Drilled Piers. Concrete should be designed to achieve the specified 28-day strength when placed at a 7 inch slump with a ±1 inch tolerance. Adding water to a mix that has been designed for a lower slump does not meet the intent of this recommendation. If a high range water reducer is used to achieve this slump, the span of slump retention for the specific admixture under consideration should be thoroughly investigated. Compatibility with other concrete admixtures should also be considered. A technical representative of the admixture supplier should be consulted on these matters.

Concrete aggregates in the area could have a history of problems associated with Alkali Silica Reactivity (ASR). If aggregates are known to have a history of ASR, then one of the following should be incorporated in the concrete used for the foundations:

Option 1: Replace 20% to 35% of the cement with Class C or Class F fly ash. However, if sulfate resistant concrete is required, do not use a Class C fly ash and do not use Type I Portland cement.

Option 2: Use a lithium nitrate admixture at a minimum dosage of 0.55 gallons of 30% lithium nitrate solution per pound of alkalies present in the portland cement. Coordinate with admixture supplier.

Option 3: When using portland cement only, ensure that the total alkali contribution from the cement in the concrete does not exceed 4.00 lb. per cubic yard of concrete when calculated as follows:

Pounds of alkali per cu. yd. = (pounds of cement per cu. yd.) x (%Na_2O equivalent in cement)/100.

In the above calculation, use the maximum cement alkali content reported on the cement mill certificate.

Option 4: Test both coarse and fine aggregate separately, in accordance with ASTM C 1260, using 440g of the proposed cementitious material in the same proportions of portland cement to supplementary cementing material to be used in the mix. Before use of the mix, provide the certified test report, signed and sealed by a licensed professional engineer, demonstrating that the ASTM C 1260 test result for each aggregate does not exceed 0.10% expansion.

Successful installation of drilled piers is a coordinated effort involving the general contractor, design consultants, subcontractors and suppliers. Each must be properly equipped and prepared to provide their services in a timely fashion. Several key items of major concern are:

- Proper drilling rig with proper equipment (including casing and augers); High torque drilling equipment may be required;
- Reinforcing steel cages tied to meet project specifications;
- Proper scheduling and ordering of concrete for the piers; and
- Observation of the installation by design professionals.

Pier construction should be carefully monitored to assure compliance of construction activities with the appropriate specifications. A number of items of concern for foundation installation include those listed below.

- Pier locations
- Vertical alignment
- Competent bearing
- Reinforcing steel placement
- Concrete properties and placement
- Proper casing seal for groundwater control
- Casing removal (if required)

If the contractor has to deviate from the recommended foundations, Terracon should be notified immediately so additional engineering recommendations can be provided for an appropriate foundation type.

4.6.3 Vapor Retarder/Barrier

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder/barrier, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.7 Interaction with Existing Structure

The construction of additions to an existing structure can often create a situation that leads to the formation of distress in both structures if both structures are connected to each other. Typically, such distress occurs due to the use of different foundations and as a result of the structures having different framing stiffness. These differences often lead to dissimilar performances between the additions and existing structure. Such performance dissimilarities typically manifest themselves as differential movements and can cause significant amounts of distress. The risks associated with dissimilar performances between the additions and existing structure may be reduced by the following:

- Design the foundation of the building expansion using the type and geometry similar to the existing foundation system (when appropriate);

- Dowel the building expansion and existing foundations/floor slabs together to prevent differential vertical movements across the joint; and

- Construct an expansion joint between the new and existing structure to allow for differential horizontal movement between the building expansion and existing structure.

Excavating adjacent to the existing foundation should be performed with care. Excavations adjacent to the existing structure could cause the foundation to become undermined and the foundation or structure could suffer damages. We recommended that the contractor monitor the existing foundation carefully during construction and be prepared to brace the existing foundation if necessary.

4.8 Seismic Considerations

Description	Value
2012 International Building Code Site Classification (IBC) [1]	D [2]
Maximum Considered Earthquake 0.2 second Spectral Acceleration (S_S) [3]	0.096 g
Maximum Considered Earthquake 1.0 second Spectral Acceleration (S_1) [3]	0.023 g

1	The site class definition was determined using SPT N-values in conjunction with section 1613.3.2 in the 2012 IBC and Table 20.3-1, Chapter 20 of the 2010 ASCE-7.
2	Section 20.1 in the 2010 ASCE-7 requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The current scope does not include the required 100 foot soil profile determination. Borings extended to a maximum depth of 30 feet, and this seismic site class definition considers that competent soil continues below the maximum depth of the subsurface exploration. Additional exploration to deeper depths would be needed to confirm the conditions below the current depth of exploration.
3	The Spectral Acceleration values were determined using publicly available information provided on the United States Geological Survey (USGS) website. The spectral acceleration values can be used to determine the site coefficients using Tables 1613.3.3 (1) and 1613.3.3 (2) in the 2012 IBC.

4.9 Pavements

Both flexible and rigid pavements will be considered for main access lanes, heavy and light parking areas. Pavement subgrade preparations are included in this section to limit changes in soil moisture conditions to help mitigate the effects of soil movement. However, even if these recommendations are followed some pavement distress could still occur.

4.9.1 Pavement Subgrade Preparation

Prior to placing any fill, any vegetation, loose topsoil and any otherwise unsuitable materials should be removed from the new pavement areas. After stripping, the subgrade should be proof rolled where possible to aid in locating loose or soft areas. Proof rolling can be performed with a

15-ton roller or fully loaded dump truck. Wet, soft, low density or dry material should be removed or moisture conditioned and compacted as described in **"Compaction Requirements"** section of this report prior to placing fill.

If the pavement subgrade cannot be adequately compacted as described in the **"Compaction Requirements"** section of this report, cement treatment or subbase layer may be required to increase the supporting value of wet and weak pavement subgrade. Laboratory test results indicated that sulfate effect at this site is considered to be moderate and cement treatment may be used for pavement subgrade.

4.9.2 Design Considerations

Traffic patterns and anticipated loading conditions were not available. For this project light and heavy pavement section alternatives have been provided. Light is for areas expected to receive only car traffic. The main access, bus and dumpster areas should be designed as a heavy pavement section.

The flexible pavement section was designed in general accordance with the National Asphalt Pavement Association (NAPA) Information Series (IS-109) method (Class 1 for light; Class 2 for heavy). The rigid pavement section was designed using the American Concrete Institute (ACI 330-01) method [Traffic Category A (ADTT=0) for light; A-1 (ADTT=10) for heavy]. If specific traffic data is expected, Terracon should be provided with such information and allowed to review these pavement sections.

Minimum Recommended Flexible Pavement Section Thickness, inches [3]

Component	Without Modified Subgrade		Modified Subgrade	
	Light	Heavy	Light	Heavy
Hot Mix Asphaltic Concrete	2	2.5	2	2.5
Granular Base Course [1]	10	14	6	10
Modified Subgrade [2]	---	---	6	6
Moisture Conditioned Subgrade	6	6	---	---

[1] Asphaltic base material may be used in place of granular base course material. Every 2.5 inches of granular base course material may be replaced with 1 inch of asphaltic base material. However, the minimum thickness of the asphaltic base material is 4 inches.

[2] The modified subgrade consists of 6 inches soil-cement treated subgrade, moisture conditioned and compacted layer. A geogrid may be used instead of 6 inches of modified subgrade. If used, the geogrid should be Tensar TX-140 or TX-5 material and should be placed on top of the moisture conditioned and compacted subgrade.

[3] We do not recommend flexible pavement for dumpster areas.

Minimum Recommended Rigid Pavement Section Thickness, inches [1]				
Component	**Without Modified Subgrade**		**Modified Subgrade**	
	Light	**Heavy [2]**	**Light**	**Heavy [2]**
Reinforced Concrete	6	7	5.5	6.5
Modified Subgrade	---	---	6	6
Moisture Conditioned Subgrade	6	6	---	---

[1] The thickness design analysis used for concrete pavement is not highly sensitive to the type of subgrade supporting the concrete pavement. As indicated, the subbase (treated subgrade) only reduces the concrete pavement thickness by one-half (½) to one (1) inch. However, the performance of the concrete while in service is highly dependent on uniform support from the underlying layer. A treated subgrade and/or 4-inch layer of crushed limestone base material immediately beneath the concrete will be less affected by water and traffic loads and should provide improved long term, uniform support for the concrete pavement. As a result, the life and performance of the pavement should be improved. We highly recommend that this be considered for concrete pavement.

[2] Dumpster areas may have the same pavement thickness as the heavy traffic areas.

The pavement subgrade is expected to consist of natural undisturbed cohesive soils or fill material in cut areas, and cohesive fill utilizing soils taken from the cut to raise grades where required. Proper perimeter drainage is very important and should be provided so infiltration of surface water from unpaved areas surrounding the pavement is minimized. We do not recommend installation of landscape beds or islands in the pavement areas. Such features provide an avenue for water to enter into the pavement section and underlying soil subgrade. Water penetration usually results in degradation of the pavement section with time as vehicular traffic traverses the affected area. Above grade planter boxes, with drainage discharge onto the top of the pavement or directed into sewers, should be considered if landscape features are desired.

Curbs should extend through the base and at least 3 inches into the soil subgrade below the base course. This will help reduce migration of groundwater into the pavement base course from adjacent areas. A crack sealant compatible to both asphalt and concrete should be provided at all concrete-asphalt interfaces.

Pavement areas that will be subjected to heavy wheel and traffic volumes, such as waste bin or "dumpster" areas, entrance/exit ramps, and delivery areas, should be a rigid pavement section constructed of reinforced concrete. The concrete pavement areas should be large enough to properly accommodate the vehicular traffic and loads. For example:

- The dumpster pad should be large enough so that the wheels of the collection truck are entirely supported on the concrete pavement during lifting of the waste bin; and

- The concrete pavement should extend beyond any areas that require extensive turning, stopping, and maneuvering.

The pavement design engineer should consider these and other similar situations when planning and designing pavement areas. Waste bin and other areas that are not designed to accommodate these situations often result in localized pavement failures.

The pavement section has been designed using generally recognized structural coefficients for the pavement materials. These structural coefficients reflect the relative strength of the pavement materials and their contribution to the structural integrity of the pavement. If the pavement does not drain properly, it is likely that ponded water will infiltrate the pavement materials resulting in a weakening of the materials. As a result, the structural coefficients of the pavement materials will be reduced and the life and performance of the pavement will be shortened. The Asphalt Institute recommends a minimum of 2 percent slope for asphalt pavements. The importance of proper drainage cannot be overemphasized and should be thoroughly considered by the project team.

4.9.3 Pavement Section Materials

Presented below are selection and preparation guidelines for various materials that may be used to construct the pavement sections. Submittals should be made for each pavement material. The submittals should be reviewed by the geotechnical engineer and appropriate members of the design team and should provide test information necessary to verify full compliance with the recommended or specified material properties.

Hot Mix Asphaltic Concrete Surface Course - The asphaltic concrete surface course should be plant mixed, hot laid Type C or D surface meeting the master specifications requirements of 2004 TxDOT Standard Specifications Item 341 and Item SS 3224 (2011) and specific criteria for the job mix formula. The mix should be compacted between 91 and 95 percent of the maximum theoretical density as measured by TEX-227-F. The grade of the asphalt cement should be PG 70-22. However, this requirement may be waived at the engineer's discretion if the asphalt supplier warrants that the asphalt cement can meet all applicable safety, environmental and constructability requirements. Aggregates known to be prone to stripping should not be used in the hot mix.

Pavement specimens, which should be either cores or sections of asphaltic pavement, should be tested according to Test Method TEX-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project pavement specimens may be used when approved by the engineer. Unless otherwise shown on the plans, the contractor should be responsible for obtaining the required pavement specimens at their expense and in a manner and at locations selected by the engineer.

Concrete: Concrete should have a minimum 28-day design compressive strength of 4,000 psi. ASTM C150, Type I/II cement is commonly used in the local area and is appropriate for this project according to ACI standards.

Granular Base Course: The base material should be composed of crushed limestone base materials meeting the requirements of 2004 TxDOT Standard Specification Manual Item 247, Type A, Grade 1 or 2. As an alternate to the Type A base, "caliche" material meeting the requirement of 2004 TxDOT Standard Specification Manual Item 247, Type B, Grade 1 or 2 may be used.

The base should be compacted to at least 95 percent of the maximum dry density as determined by the modified moisture-density relationship (ASTM D 1557) at moisture contents ranging between -2 and +3 percentage points of the optimum moisture content.

Modified Subgrade - The clayey subgrade may be treated with cement in accordance with 2004 TxDOT Item 275 in order to improve its strength and improve its load carrying capacity. If used the quantity of cement required should be determined after the site is stripped and the subgrade soils are exposed. We anticipate that approximately 4 percent cement will be required, which is about 22 pound per square yard for the design thickness of 6 inches. However, the actual percentage should be determined by laboratory tests on samples of the clayey subgrade prior to construction.

Moisture Conditioned Subgrade: The subgrade should be scarified to a depth of 8 inches and moisture conditioned between -2 and +3 percentage points of the optimum moisture content. The subgrade should then be compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698. This should result in moisture conditioned and compacted layer about 6 inches thick.

4.9.4 Pavement Joints and Reinforcement

The following is recommended for all concrete pavement sections in this report. Refer to ACI 330 "Guide for Design and Construction of Concrete Parking Lots" and "TxDOT Standard Specifications" for additional information.

Item	Description
Reinforcing Steel	Nº 3 reinforcing steel bars at 12 inches on-center-each-way, Grade 60. Nº 4 reinforcing steel bars at 18 inches on-center-each-way, Grade 60.
Contraction Joint Spacing	15 feet each way for pavement thickness of 6 inches or greater. Saw cut control joints should be cut within 6 to 12 hours of concrete placement.
Contraction Joint Depth	At least ¼ of pavement thickness.

Item	Description
Contraction Joint Width	One-fourth inch or as required by joint sealant manufacturer.
Construction Joint Spacing	To attempt to limit the quantity of joints in the pavement, consideration can be given to installing construction joints at contraction joint locations, where it is applicable.
Construction Joint Depth/Width	Full depth of pavement thickness. Construct sealant reservoir along one edge of the joint. Width of reservoir to be ¼ inch or as required by joint sealant manufacturer. Depth of reservoir to be at least ¼ of pavement thickness.
Isolation Joint Spacing	As required to isolate pavement from structures, etc.
Isolation Joint Depth	Full depth of pavement thickness.
Isolation Joint Width	One-half to 1 inch or as required by the joint sealant manufacturer.
Expansion Joint	In this locale, drying shrinkage of concrete typically significantly exceeds anticipated expansion due to thermal effects. As a result, the need for expansion joints is eliminated provided all joints (including saw cuts) are sealed. Construction of an unnecessary joint may be also become a maintenance problem. All joints should be sealed. If all joints, including sawcuts, are not sealed then expansion joints should be installed.

All construction joints have dowels. Dowel information varies with pavement thickness as presented as follows:

Pavement Thickness, inches	**6**	**7**
Dowels diameter, inches	5/8	7/8
Dowel Spacing on Center, inches	12	12
Dowel Length, inches	12	14
Dowel Embedment, inches	5	6

4.10 Sulfate Considerations

Sulfate tests were performed on selected samples collected from the borings to check for a possible adverse reaction with lime or cement treatment. Test locations and depths were chosen to provide a range of test locations regards to depth and across the site. Tests were not performed in all borings nor at all depths. Sulfate content concentrations for the borings along with their approximate depth and nearest boring number are as follow:

Boring No.	Approximate Depth, feet	Sulfate Content, ppm
B-4	13.5 - 15	252
B-5	2.5 - 4	394
B-9	2.5 - 4	260

The test results indicate sulfate values in the range of 252 ppm to 394 ppm. The sulfate effect at this site is considered to be moderate. Using the criteria from ACI 201.2R, the test results were classify Class 1 exposure.

The test results indicate that the sulfate concentrations in the soils are below levels deemed to be of a high risk for adverse reactions when mixed with a calcium-based additive TxDOT (>3,000 ppm), the National Lime Association (>3,000 ppm) and AASHTO (>5,000 ppm).

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

FIELD EXPLORATION

FIELD EXPLORATION DESCRIPTION

Terracon personnel used the site plan provided by the client to establish the bore locations in the field. A copy of the Bore Location Plan indicating the approximate boring locations is included in Appendix A. The location of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

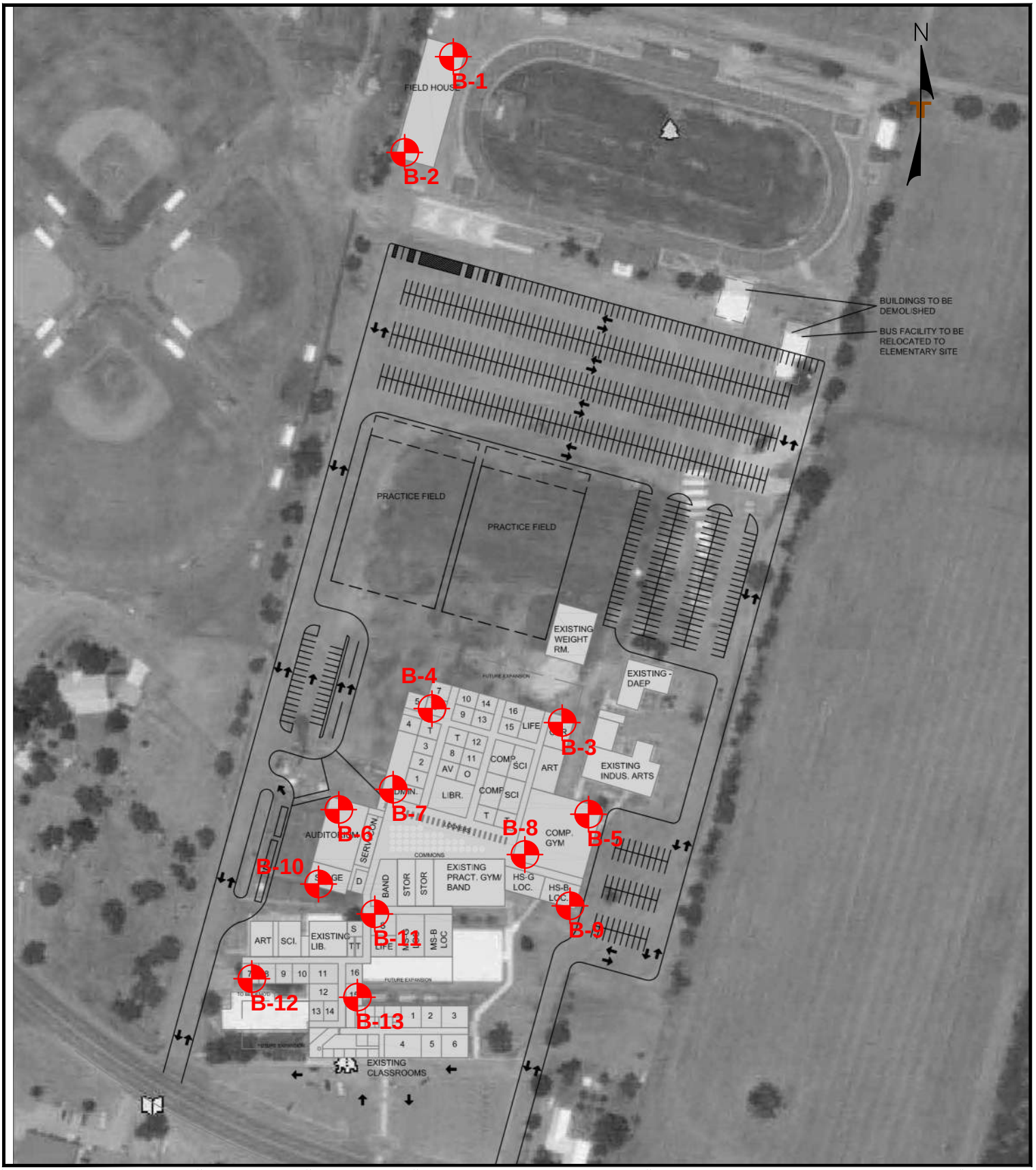
A truck-mounted, rotary drill rig equipped with continuous flight augers was used to advance the boreholes. Soil samples were obtained by the split-barrel sampling procedure. In the split-barrel sampling procedure, a standard 2-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer falling a height of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the standard penetration resistance value. These values are indicated on the boring logs at the depth of occurrence. The samples were sealed and transported to our laboratory for testing and classification.

Our field representative prepared the field logs as part of the drilling operations. The field logs included visual classifications of the materials encountered during drilling and our field representative interpretation of the subsurface conditions between samples. The boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on visual observations and testing of the samples in the laboratory.

The scope of services for our geotechnical engineering services does not include addressing any environmental issues pertinent to the site.

Source: Google Earth, 2009

N	Project Mngr: MR Drawn By: LC Checked By: MR Approved By: MR	Project No. 89145007 Scale: N.T.S. File No. 89145007 Date: 03.07.2014	Terracon Consulting Engineers and Scientists 615 GALE STREET, BUILDING B LAREDO, TX 78041 PH. (956) 729-1100 FAX. (956) 791-1071	SITE LOCATION PLAN Dilley High School Expansion 245 Highway 117 Dilley, Texas	EXHIBIT A-2



LEGEND:

- APPROXIMATE BORE LOCATION

Project Mngr:	MR
Drawn By:	LC
Checked By:	MR
Approved By:	MR

Project No.	89145007
Scale:	N.T.S.
File No.	89145007
Date:	03.07.2014

Terracon
Consulting Engineers and Scientists
615 GALE STREET, BUILDING B LAREDO, TX 78041
PH. (956) 729-1100 FAX. (956) 791-1071

BORE LOCATION PLAN

Dilley High School Expansion
245 Highway 117
Dilley, Texas

EXHIBIT

A-3

BORING LOG NO. B-1

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67926° Longitude: -99.17255°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	**ASPHALT**, 3" Asphalt								
	CLAYEY SAND (SC), reddish brown, medium dense to very dense		8-7-5 N=12			7		26-16-10	
			6-11-12 N=23			13			48
	- yellowish brown below 4.5 feet	5	8-10-20 N=30			8		35-19-16	
			7-14-22 N=36			7			
	- strong cementation below 8.5 feet		N=ref/5"			11		32-22-10	
		10							
			22-50/5" N=50/5"			16			48
		15							
			21-50/4" N=50/4"			15		38-21-17	
20.0		20							
	Boring Terminated at 20 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 20 feet.

Abandonment Method:
Boring backfilled with sand upon completion and surface capped with asphalt.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014	Boring Completed: 2/25/2014
Drill Rig: CME 75	Driller: Ramco
Project No.: 89145007	Exhibit: A-4

BORING LOG NO. B-2

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.679° Longitude: -99.17263°

DEPTH	ELEVATION (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), reddish brown, medium dense to very dense	8-8-9 N=17	6		
		7-12-22 N=34	12	36-19-17	
5		10-16-14 N=30	12		
	- yellowish brown below 6.5 feet	12-29-44 N=73	11	35-23-12	
	- strong cementation below 8.5 feet	17-50/5" N=50/5"	10		
10					
		11-33-46 N=79	16	48-23-25	
15					
20.0		N=ref/3"	12		
20	***Boring Terminated at 20 Feet***				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 20 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014 Boring Completed: 2/25/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-5

BORING LOG NO. B-3

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67666° Longitude: -99.17193°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), reddish brown, loose to very dense				2-2-2 N=4			16		26-16-10	
					1-3-6 N=9			17			24
	- Silt (ML) at 4.5 feet	5			1-3-4 N=7			15		25-20-5	
	- yellowish brown below 6.5 feet				4-50/4" N=50/4"			21			
					19-29-47 N=76			19		41-30-11	
13.5		10									
	SANDY FAT CLAY (CH), light olive gray, hard				10-18-20 N=38			25			
		15									
20.0					10-12-18 N=30			28		52-26-26	
	CLAYEY SAND (SC), light olive gray, very dense, strong cementation	20									
25.0					13-50/5" N=50/5"			16			47
	Boring Terminated at 25 Feet	25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014 Boring Completed: 2/25/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-6

BORING LOG NO. B-4

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67673° Longitude: -99.17249°

DEPTH / ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), reddish brown, medium dense to very dense					3-5-7 N=12			9			41
					12-12-14 N=26			10		34-19-15	
- yellowish brown below 4.5 feet		5			10-8-16 N=24			12			
-Silt (ML) at 6.5 feet					30-22-28 N=50			16		35-30-5	
					16-37-45 N=82			20			
13.5		10									
SANDY FAT CLAY (CH), light olive gray, hard					12-18-19 N=37	252		21		55-26-29	
		15									
- sand layer at 18.5 feet					12-18-21 N=39			21			47
20.0		20									
CLAYEY SAND (SC), grayish brown, dense to very dense											
- strong cementation at 23.5 feet					28-50/4" N=50/4"			13		31-21-10	
25.0		25									
Boring Terminated at 25 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014 Boring Completed: 2/25/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-7

BORING LOG NO. B-5

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67625° Longitude: -99.17165°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), reddish brown, medium dense to very dense				5-7-6 N=13			9		29-16-13	
					7-7-13 N=20	394		12			
	- yellowish brown, Silt (ML) below 4.5 feet	5			10-13-22 N=35			10		27-23-4	
					7-12-18 N=30			13			25
					12-25-31 N=56			20			
13.5		10									
	SANDY FAT CLAY (CH), light olive gray, hard	15			14-20-24 N=44			24		57-24-33	
20.0					10-16-23 N=39			21			
	CLAYEY SAND (SC), yellowish brown, dense to very dense	20									
	- strong cementation below 23.5 feet	25			14-29-50/5" N=79/11"			17		38-20-18	
30.0					26-50/5" N=50/5"			18			48
	Boring Terminated at 30 Feet	30									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 30 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014 Boring Completed: 2/27/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-8

BORING LOG NO. B-6

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67641° Longitude: -99.17294°

DEPTH	ELEVATION (Ft.)	Description	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0		**CLAYEY SAND (SC)**, reddish brown, loose to very dense	7-6-7 N=13			7			
			4-3-2 N=5			11		31-18-13	
5			3-3-3 N=6			12			42
		- yellowish brown below 6.5 feet	5-11-18 N=29			14		35-23-12	
		- strong cementation at 8.5 feet	14-45-50/5" N=95/11"			20			36
10									
	13.5	**SANDY FAT CLAY (CH)**, yellowish brown, hard	11-20-27 N=47			28		51-26-25	
15									
	20.0		8-14-26 N=40			24			
20		**CLAYEY SAND (SC)**, yellowish brown, dense to very dense							
			10-17-28 N=45			20		47-20-27	
25									
		- strong cementation at 28.5 feet	28-50/4" N=50/4"			13			43
30	30.0	***Boring Terminated at 30 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 30 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014	Boring Completed: 2/25/2014
Drill Rig: CME 75	Driller: Ramco
Project No.: 89145007	Exhibit: A-9

BORING LOG NO. B-7

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67634° Longitude: -99.17262°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), reddish brown, medium dense to very dense					7-7-4 N=11			7			33
					7-12-17 N=29			10		38-20-18	
- yellowish brown below 4.5 feet		5			11-14-15 N=29			11			
					12-30-39 N=69			14		38-24-14	
- strong cementation at 8.5 feet					20-50/5" N=50/5"			17			29
		10									
	15.0				14-24-26 N=50			21		47-24-23	
SANDY FAT CLAY (CH), yellowish brown, hard		15									
	20.0				12-14-17 N=31			23			
CLAYEY SAND (SC), yellowish brown, very dense		20									
	25.0				8-23-30 N=53			14		46-20-26	
Boring Terminated at 25 Feet		25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/25/2014 Boring Completed: 2/25/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-10

BORING LOG NO. B-8

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67616° Longitude: -99.17206°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), reddish brown, medium dense to very dense, Silt to 8 feet				5-8-6 N=14			6		19-13-6	
					5-4-8 N=12			6			
		5			5-5-8 N=13			6		22-16-6	
					8-11-21 N=32			5			35
	- yellowish brown below 8.5 feet				10-50/3" N=50/3"			10		32-19-13	
15.0		10									
	SANDY FAT CLAY (CH), yellowish brown, hard	15			11-28-36 N=64			15			
	- grayish brown at 18.5 feet	20			10-18-22 N=40			25		50-27-23	
23.5											
	CLAYEY SAND (SC), yellowish brown, dense to very dense	25			12-18-25 N=43			17			50
	- Sandstone at 28.5 feet				N=ref/5"						
30.0		30									
	Boring Terminated at 30 Feet										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 30 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014	Boring Completed: 2/27/2014
Drill Rig: CME 75	Driller: Ramco
Project No.: 89145007	Exhibit: A-11

BORING LOG NO. B-9

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67607° Longitude: -99.1718°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), reddish brown, medium dense to very dense				5-6-6 N=12			11			
					8-8-12 N=20	260		9		34-14-20	
	- yellowish brown below 4.5 feet	5			29-50/1" N=50/1"			6			
					10-28-39 N=67			15		35-24-11	
	- strong cementation at 8.5 feet				14-50/5" N=50/5"			17			32
13.5		10									
	SANDY FAT CLAY (CH), grayish brown, hard				7-10-20 N=30			23		54-24-30	
	- light olive brown below 18.5 feet	15			9-12-22 N=34			26			50
23.5		20									
25.0	**CLAYEY SAND (SC)**, light olive brown, very dense				11-18-42 N=60			18		44-20-24	
	Boring Terminated at 25 Feet	25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014 Boring Completed: 2/27/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-12

BORING LOG NO. B-10

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67595° Longitude: -99.13303°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), reddish brown, loose to very dense					5-10-7 N=17			7		26-15-11	
					2-3-6 N=9			7			32
- yellowish brown below 4.5 feet		5			5-5-8 N=13			7		28-15-13	
					9-7-5 N=12			8			
					12-31-49 N=80			15		37-23-14	
		10									
- strong cementation at 13.5 feet					29-50/5" N=50/5"			22			44
		15									
	18.5										
SANDY FAT CLAY (CH), yellowish brown, hard					12-19-21 N=40			22		53-25-28	
		20									
	25.0				14-17-25 N=42			24			
CLAYEY SAND (SC), grayish brown, dense		25									
	30.0				17-25-24 N=49			19		38-20-18	
Boring Terminated at 30 Feet		30									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 30 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014 Boring Completed: 2/27/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-13

BORING LOG NO. B-11

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67596° Longitude: -99.17282°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), reddish brown, medium dense to very dense					7-9-17 N=26			5			26
					10-11-14 N=25			8		31-17-14	
- yellowish brown below 4.5 feet		5			11-14-18 N=32			6			
					37-22-25 N=47			9		35-20-15	
					17-40-49 N=89			16			42
		10									
- strong cementation at 13.5 feet					N=ref/5"			16		38-24-14	
	18.5	15									
SANDY FAT CLAY (CH), grayish brown, hard					14-17-20 N=37			23			
		20									
	25.0				12-14-16 N=30			20		51-26-25	
Boring Terminated at 25 Feet		25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014 Boring Completed: 2/27/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-14

BORING LOG NO. B-12

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67544° Longitude: -99.17349°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), reddish brown, loose to very dense					4-8-6 N=14			9			
					8-12-15 N=27			13		38-19-19	
		5			5-5-4 N=9			11			41
- yellowish brown below 6.5 feet					8-24-28 N=52			10		37-19-18	
- strong cementation from 8.5 to 15 feet					22-50/5" N=50/5"			13			
		10									
					18-34-50/5" N=84/11"			19		42-24-18	
		15									
					188-27-41 N=68			18			42
		20									
	23.5										
SANDY FAT CLAY (CH), grayish brown, hard					11-20-22 N=42			23		53-25-28	
25.0		25									
Boring Terminated at 25 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014 Boring Completed: 2/27/2014

Drill Rig: CME 75 Driller: Ramco

Project No.: 89145007 Exhibit: A-15

BORING LOG NO. B-13

PROJECT: Dilley High School Expansion

CLIENT: Dilley Independent School District
Dilley, Texas

SITE: 245 Highway 117
Dilley, Texas

LOCATION See Exhibit A-3

Latitude: 28.67529° Longitude: -99.17318°

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	SULFATES, ppm	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.5	**ASPHALT**, 1.5" Asphalt and 5" Granular Base Material										
	CLAYEY SAND (SC), reddish brown, medium dense to very dense			X	5-7-6 N=13			11		27-16-11	
				X	4-6-8 N=14			12			25
	- yellowish brown below 4.5 feet	5		X	7-14-25 N=39			17		38-21-17	
				X	8-21-27 N=48			14			
				X	20-34-40 N=74			16			
		10									
				X	14-22-28 N=50			20		42-24-18	
		15									
				X	20-27-36 N=63			20			44
23.5		20									
	SANDY FAT CLAY (CH), grayish brown, hard			X	11-16-16 N=32			23		56-25-31	
25.0	***Boring Terminated at 25 Feet***	25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered from 0 to 25 feet.

Abandonment Method:
Boring backfilled with sand upon completion and surface capped with asphalt.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

Example: N=ref/2", Sampler could only be driven 2 inches of the 6-inch seating penetration before the 50-blow limit was reached.

WATER LEVEL OBSERVATIONS

Groundwater was not observed.

Terracon
615 Gale Street, Building B
Laredo, Texas

Boring Started: 2/27/2014	Boring Completed: 2/27/2014
Drill Rig: CME 75	Driller: Ramco
Project No.: 89145007	Exhibit: A-16

APPENDIX B

LABORATORY TESTING

LABORATORY TESTING

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in this Appendix. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Water Content
- Atterberg Limits
- Amount of Material In-Soil Finer than the N^{o} 200 Mesh (75-µm) Sieve
- Sulfate concentration (colorimetric method)

Sample Disposal

All samples were returned to our laboratory. The samples not tested in the laboratory will be stored for a period of 30 days subsequent to submittal of this report and will be discarded after this period, unless other arrangements are made prior to the disposal period.

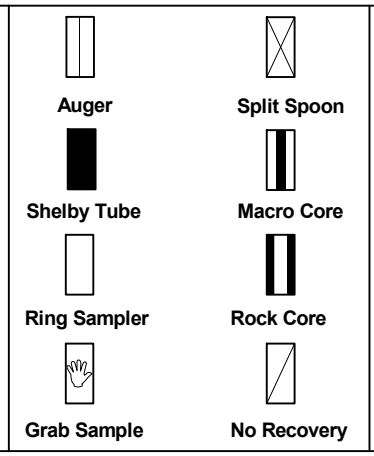
APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance				BEDROCK		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, tsf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**
Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3	< 30	< 20	Weathered
Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4	30 - 49	20 - 29	Firm
Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8	5 - 9	50 - 89	30 - 49	Medium Hard
Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18	90 - 119	50 - 79	Hard
Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42	> 119	>79	Very Hard
			Hard	> 4.00	> 30	> 42			

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.