Think Architecture

+Architecture
+Landscape Architecture
+Land Planning
+Construction Management
+Interior Design

Project Addendum

Date: December 23, 2025

PROJECT: **Bluffdale Parks Admin Addition, Fairgrounds Restroom, Tick Booth**

ADDENDUM #: 25010-01

PROJECT ADDRESS: 2400 W 14400 S
Bluffdale, Utah

BID DATE: Jan 15, 2026

BID TIME: 2:00 PM

BID LOCATION:

THE FOLLOWING ITEMS SHALL BE INCLUDED WITHIN THE CONTRACT DOCUMENTS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO INCORPORATE THESE CHANGES INTO THE CONTRACT DOCUMENTS AND SHALL ALSO BE RESPONSIBLE TO NOTIFY ALL SUB-CONTRACTORS OF THIS ADDENDUM.

DESCRIPTION OF ADDENDUM INFORMATION:

This addendum is to clarify questions that have been posted during the bidding process.

Each question and the response is listed below, with any additional information to respond to each question.

The Bid Date has been moved to accommodate Bidding during the holiday season. The Bid Date is now:

Thursday, January 15, 2026, at 2:00 PM. (Local Time).

The completion date has not changed.

Q. In this project, is low voltage us under GC, owner, or electrical vender ?

Response:

Final Low Voltage requirements have not been finalized with ownership. Low Voltage will need to be a design build with the

7927 High Point Parkway
Suite 300
Sandy, Utah 84094
801-269-0055
www.thinkaec.com

Design Team, Electrical Vendor and ownership for the final scope of work.

For bidding purposes, the electrical contractor shall provide a $50,000.00 line item for Low Voltage Allowance within the bid.

Q. We don't see the plans for Bid Option 3 - Proposed Ticket Building. Please confirm the restroom provided are for both Bid Option 1 and 2.
Response:
See attached drawings for the Rodeo Building Ticket Booth.

Q. Will plans for the proposed Rodeo Ticket Building be provided?
Response:

See attached drawings for the Rodeo Building Ticket Booth

Q. What material size and type is desired for the guardrail?
Response:

Without an exact reference, the assumption has been made that elevation 1/ A201 the image denotes a guardrail at the right side of the elevation.

As noted on the elevations, this is noted on the elevations and on the floor plans on sheet A102, the site fencing that currently exists will have a section removed to allow for construction of the addition. As noted on LP101, fencing will have to fit with new improvements.

Q. The general conditions refer to spec sections 31.2000 & 32.1313 but they are not included in the spec book. Will you be providing these?
Response:

It appears that the site specifications did not get attached to the original bid documents. See attached document of the site specifications.

All site concrete shall be directed within the site specifications.

Q. On plan sheet G-000, it states the building is not to have fire sprinklers installed but on plan sheet G-002 it says the building is fully sprinklered. Which is correct?
Response:

The Project is not required to be sprinklered nor intended to be sprinklered.

The note on Sheet G002 has been removed.

Q. On plan sheet A104, it calls for a pull-down access stair and refers you to detail 21 on plan sheet A502 but if you look at A502 detail 21, there is nothing there. We can't find anything in the specs about the stairs. Please provide what is wanted so we can bid accordingly.
Response:
The intent was to provide a heavy-Duty Commercial folding ladder to access the Mechanical Mezzanine.

The design intent was a “Rainbow” Attic Stair G10 Series.

See attached Specifications for the design Intent. A Comparable Equal would be acceptable if demonstrated to meet equal requirements.

<u>1.ARCHITECTURAL</u>

SPECIFICATIONS:

1. Specification for design intent of Pull-Down Ladder .

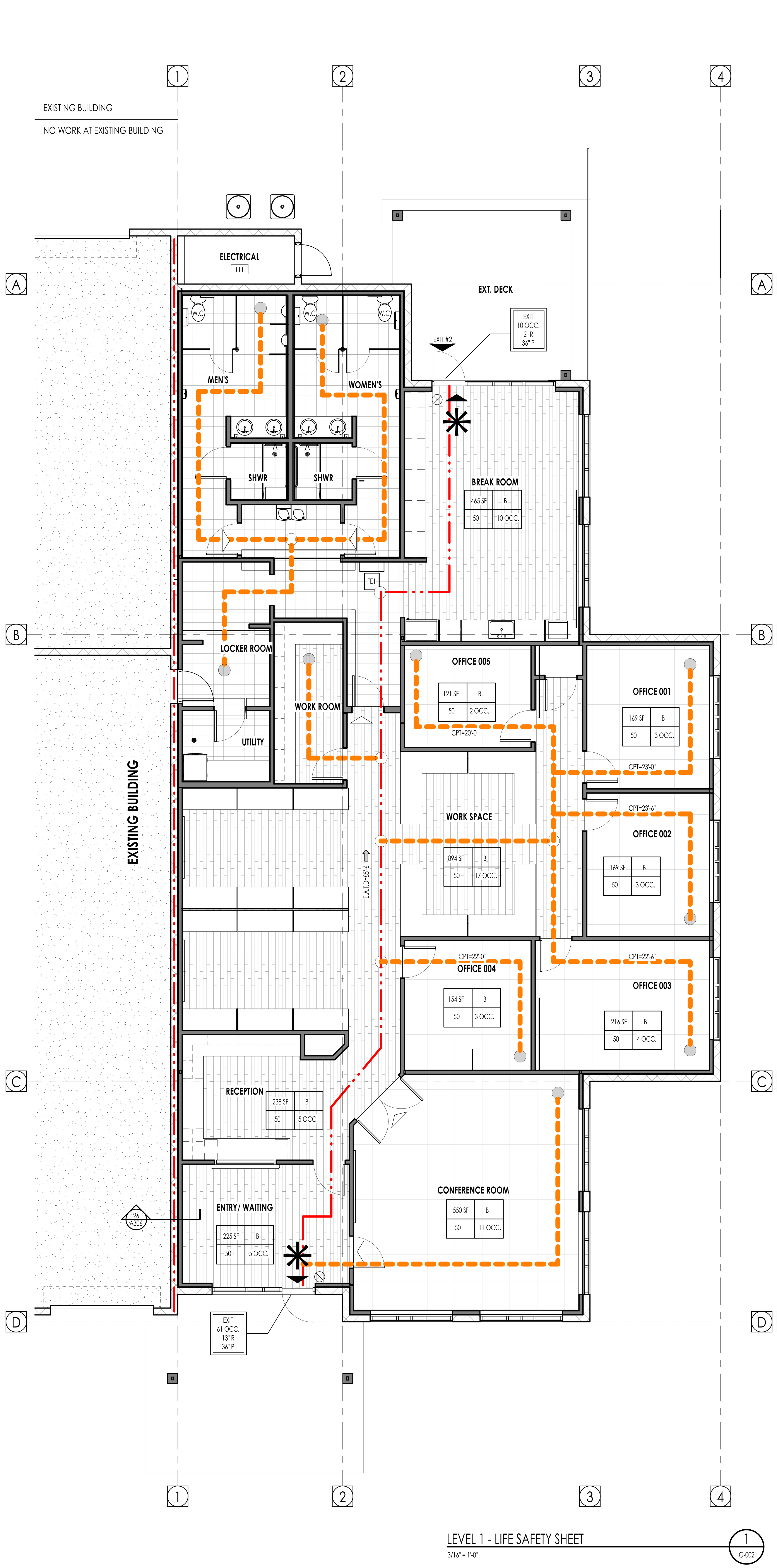
DRAWINGS:

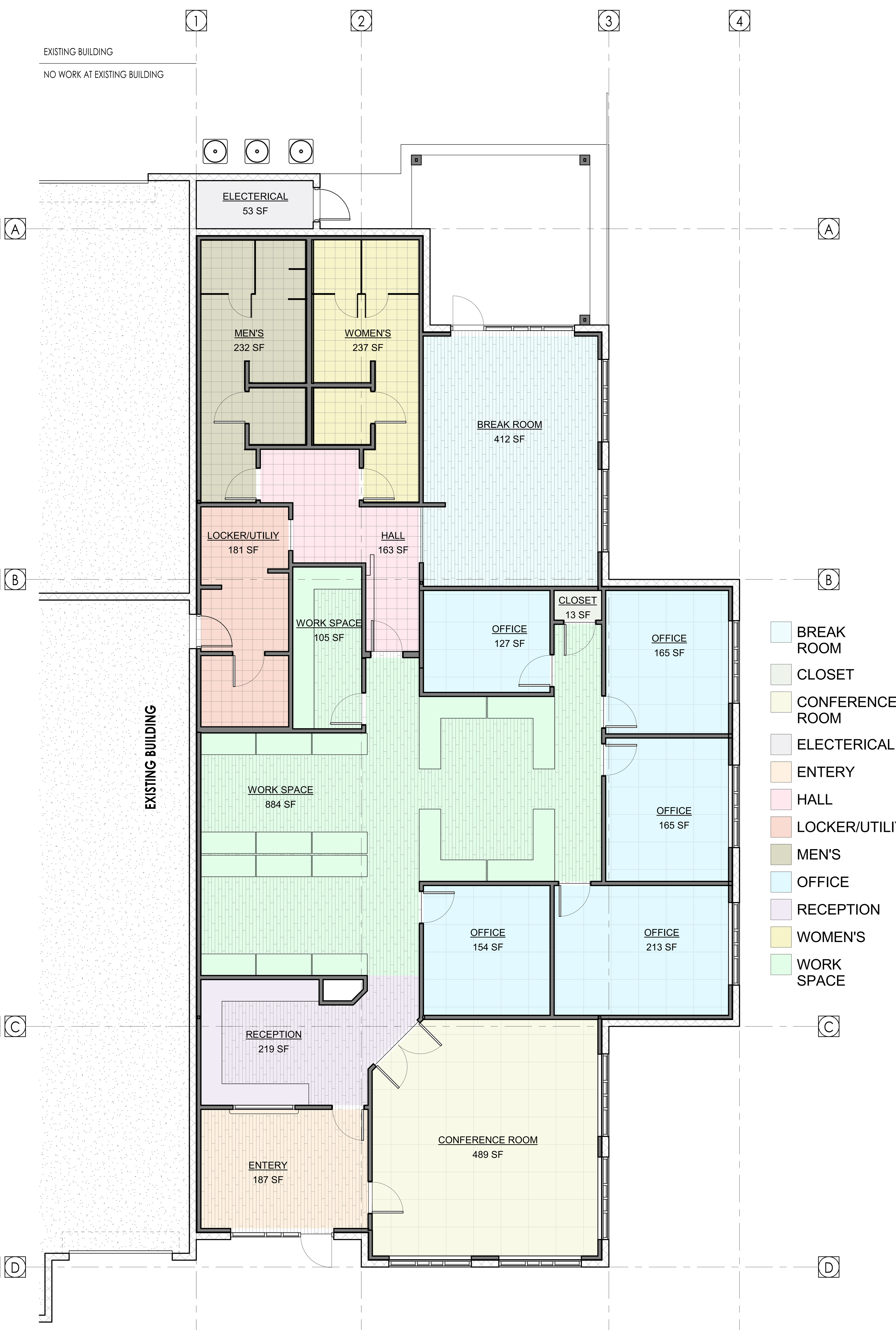
1. Sheet G-002 – Modification to clarify the sprinkler question
2. Ticket Booth Drawings

<u>6. Landscaping</u>

Specifications:

1. Site Specifications have been added to the project and are within the addendum.





CODE ANALYSIS LEGEND

STAIR 166 OCC. 4'-6"R 6'-0"P	MAXIMUM OCCUPANT LOAD THRU EXIT MINIMUM REQUIRED STAIR WIDTH STAIR WIDTH PROVIDED
EXIT 166 OCC. 3'-0"R 3'-0"P	(LOCATION SHOWN BY LARGE ARROW) MAXIMUM OCCUPANT LOAD THRU EXIT MINIMUM REQUIRED EXIT WIDTH EXIT WIDTH PROVIDED
	1 HOUR FIRE BARRIER OR PARTITION. SEE WALL TYPES
	2 HOUR FIRE BARRIER OR PARTITION. SEE WALL TYPES
	3 HOUR FIRE BARRIER OR PARTITION. SEE WALL TYPES
CPT	COMMON PATH OF TRAVEL AS PER IBC 1030.8
	3 HOUR FIRE BARRIER OR PARTITION. SEE WALL TYPES
SF / OCC / OLF / OL	ROOM/AREA SQUARE FOOTAGE OCCUPANCY GROUP OCCUPANT LOAD OCCUPANCY LOAD FACTOR (n=NET sf, g=GROSS SF)
	ROOM/AREA REQUIRED EXIT
	BUILDING REQUIRED EXIT
E.A.T.D.	EXIT ACCESS TRAVEL DISTANCE (SECTION 1017.3.2.3)
ED	EXIT DISCHARGE TO PUBLIC WAY - IBC 1027
	CLASS 1 STAND-PIPE (905.3.1 - EXCEPTION #1)
	FIRE DEPARTMENT CONNECTION (FDC)
	KNOX BOX
FE1	ONE-HOUR FIRE RATED RECESSED FIRE EXTINGUISHER CABINET AND FIRE EXTINGUISHER FIRE EXTINGUISHER - 2A: 10BC
FE2	NON-RATED SURFACE MOUNTED FIRE EXTINGUISHER CABINET AND FIRE EXTINGUISHER FIRE EXTINGUISHER - 4A: 60BC
*	ROOMS WITH AN OCCUPANT LOAD OF 50 OR MORE IN GROUP A OCCUPANCY SHALL HAVE TWO EXITS AND ARE REQUIRED TO HAVE PANIC HARDWARE (IBC 2015 SECTION 1008.1.10)
#	NUMBER OF OCCUPANTS IN EXIT ROUTE
	REQUIRED EXIT LIGHT LOCATIONS. SEE IBC 2015 SECTION 1011. (SHOWN ON ELECTRICAL DRAWINGS)
	ACCESSIBLE ELEMENT
	NON-ACCESSIBLE ELEMENT
	PANIC HARDWARE REQUIRED
	ILLUMINATED EXIT SIGN

GENERAL NOTES

SEE G002 FOR COMPLETE WRITTEN CODE ANALYIS & REVIEW - ALL AREAS SHOWN HERE ARE REFERENCED WITHIN CODE ANALYIS.

1. NOT USED
2. SEE CODE ANALYIS PLANS FOR THE LOCATION OF FIRE EXTINGUISHERS (FE-1).
3. REFER TO PARTITION AND ASSEMBLY SCHEDULE ON WALL TYPES AND FINISH PLANS.
4. PROVIDE TEMPORARY FIRE PROTECTION DURING CONSTRUCTION AS PER REQUIREMENTS OF THE INTERNATIONAL FIRE CODE.
5. 2021 IBC SEISMIC DESIGN CATEGORY D - SEE STRUCTURAL DRAWINGS.
6. THE ROOFING ON THIS BUILDING IS REQUIRED TO HAVE A CLASS B FLAME SPREAD INDEX.
7. WALL AND CEILING FINISHES ARE REQUIRED TO HAVE A CLASS B FLAME SPREAD INDEX.
8. CONCEALED INSULATIONG MATERIALS MUST HAVE A FLAME-SPREAD RATING OF NO MORE THAN 25 AND A SMOKE DEVELOPED INDES OF NOT MORE THAN 450. SEE IBC 2021 SECTION 720.2.
9. REFER TO ELECTRRICAL DRAWINGS FOR EMERGENCY EXIT SIGNS AND LIGHTS.

2025-11-25 PERMIT- BID SET

Think Architecture

Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 So. Highpoint Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
fax 801.269.1425
www.thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc.

These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

BLUFFDALE CITY PARKS BUILDING ADDITION

2400 14400 S.
BLUFFDALE, UT 84065

PROJECT NO. 25-010
DATE: NOV 25, 2025

REVISIONS:
ADDENDUM 001- DEC 23, 2025

SHEET TITLE:
LEVEL 1 - LIFE SAFETY PLAN / AREA PLAN

SHEET NUMBER:
G-002

© 2022 THINK ARCHITECTURE INC.

Plot Date: 10/17/2025 1:47:46 PM

Rainbow Attic Stair
By SP Partners LLC
www.RainbowAtticStair.com

G-Series

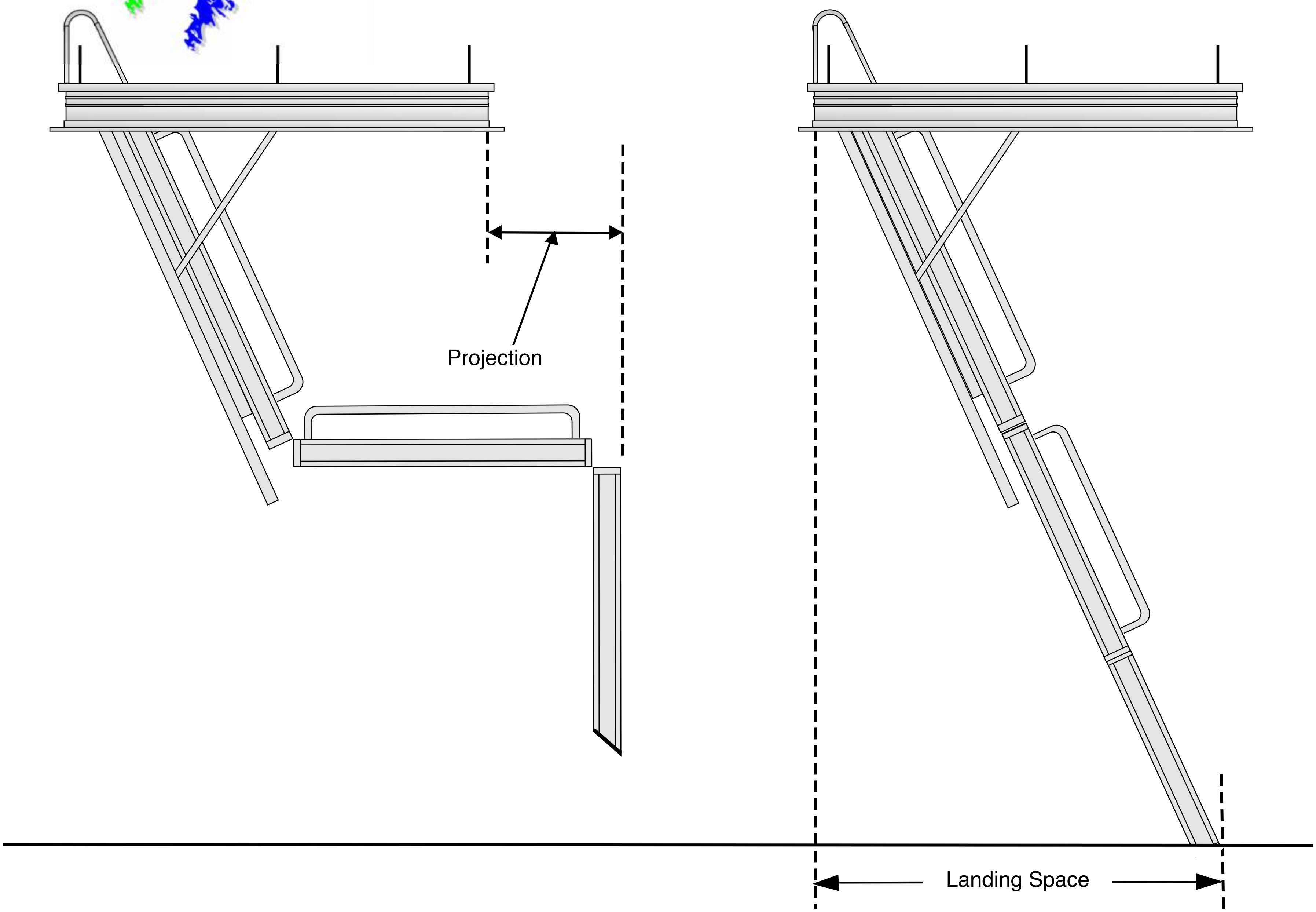
Specifications - Page 1 of 3

Series	Model Number	Rough Opening Dimension	Stair Frame Dimension	Tread Width	Tread Depth	# of Treads	Unit Weight	Floor-to-Ceiling Height Range	Stair Projection (Page 2)	Landing Space (Page 2)
G-8	G-2275-8	22 1/2” X 75”	22” X 74 1/2”	10”	3 1/4”	11	150 lbs.	7’ - 4” to 8’ - 4”	0”	75”
	G-3075-8	30” X 75”	29 1/2” X 74 1/2”	17”			162 lbs.			
G-9	G-2275-9	22 1/2” X 75”	22” X 74 1/2”	10”	3 1/4”	12	154 lbs.	8’ - 2” to 9’ - 4”	8”	83”
	G-3075-9	30” X 75”	29 1/2” X 74 1/2”	17”			174 lbs.			
G-10	G-2275-10	22 1/2” X 75”	22” X 74 1/2”	10”	3 1/4”	13	165 lbs.	9’ - 4” to 10’ - 4”	16”	89”
	G-3075-10	30” X 75”	29 1/2” X 74 1/2”	17”			182 lbs.			

Rainbow Attic Stair
By SP Partners LLC
www.RainbowAtticStair.com

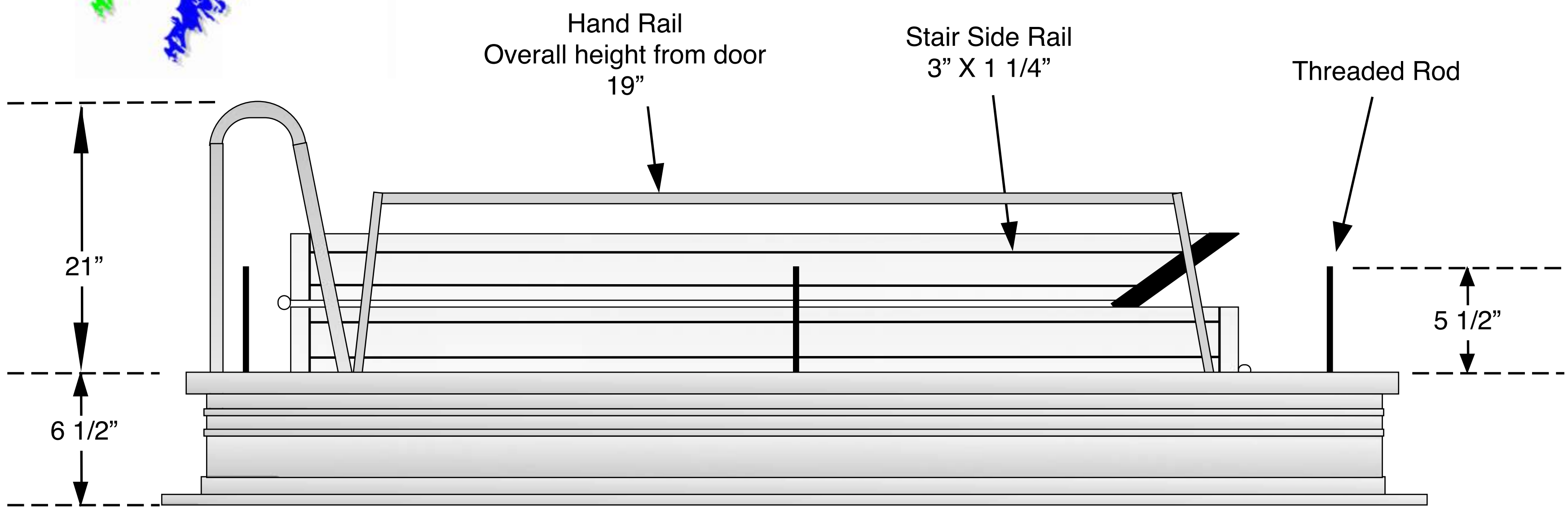
G-Series

Specifications - Page 2 of 3

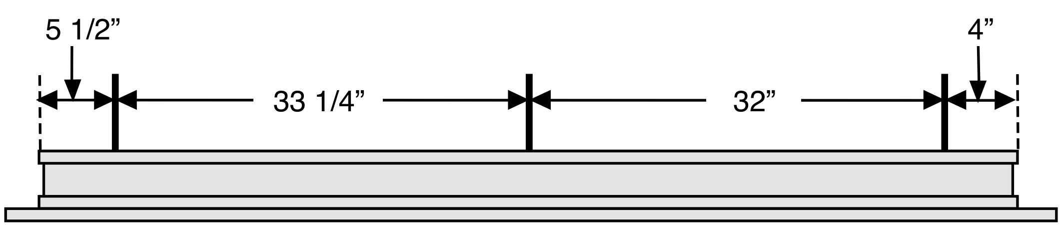


G-Series

Specifications - Page 3 of 3



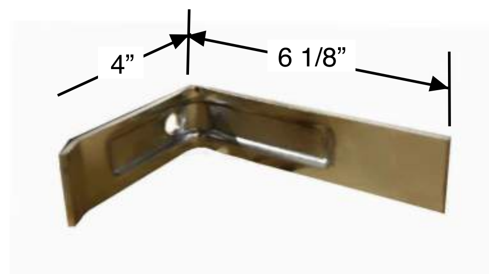
Threaded Rod Placements



Standard installation hangers provided for threaded rods will accommodate beam heights up to a maximum of 12”.

Optional extended threaded rod kits are available for taller beams up to a maximum 15”.

Standard Stair Hanger
Max beam height - 12”



** **Optional Hanger** **
4” X 9 1/2”

BLUFFDALE CITY TICKET BOOTH BUILDING

Think
Architecture
Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 High Point Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc. These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

FAIR GROUNDS
TICKET BOOTH KIOSK
2400 14400 S, BLUFFDALE, UTAH, 84065

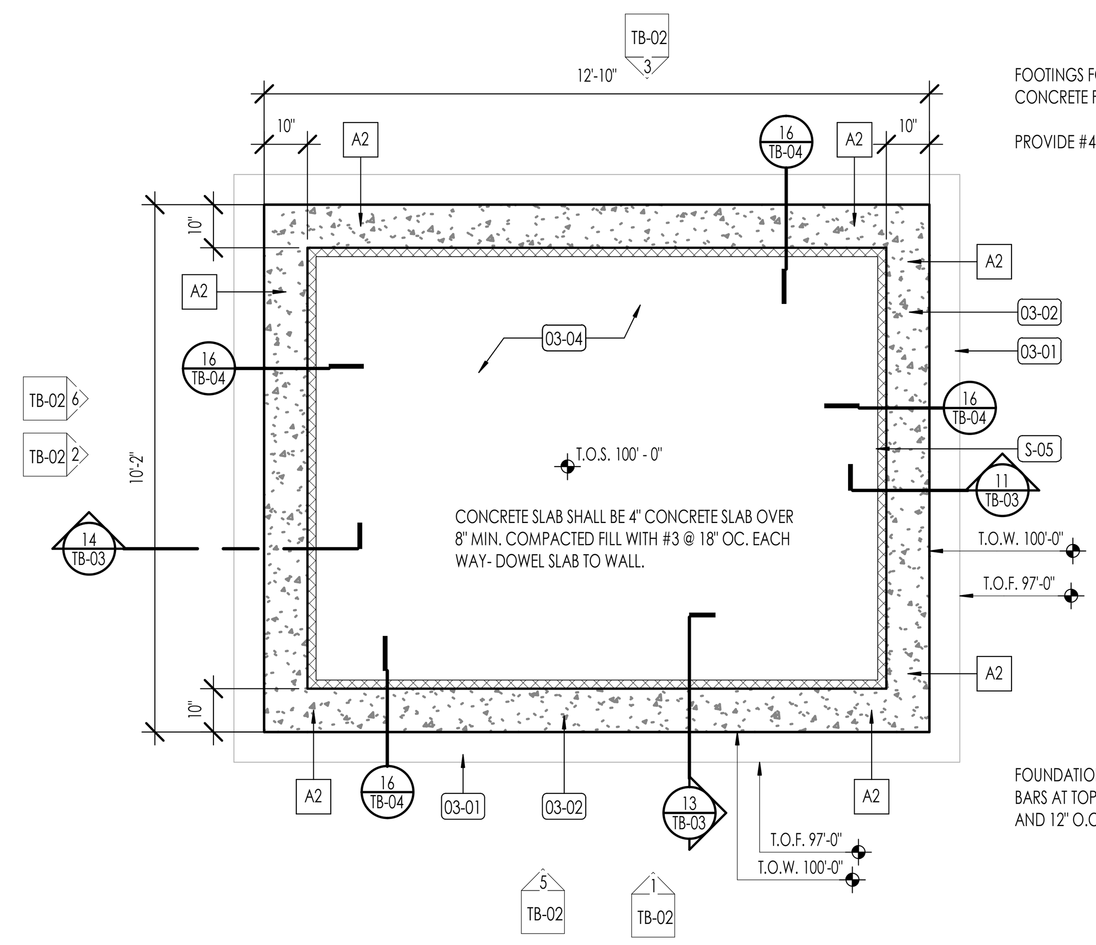
PROJECT NO. 25-011
DATE: DEC 2025
REVISIONS:

SHEET TITLE:
TICKET BOOTH COVER SHEET

SHEET NUMBER:
TB-00

© 2022 THINK ARCHITECTURE INC.

12/23/2025 4:21:29 PM

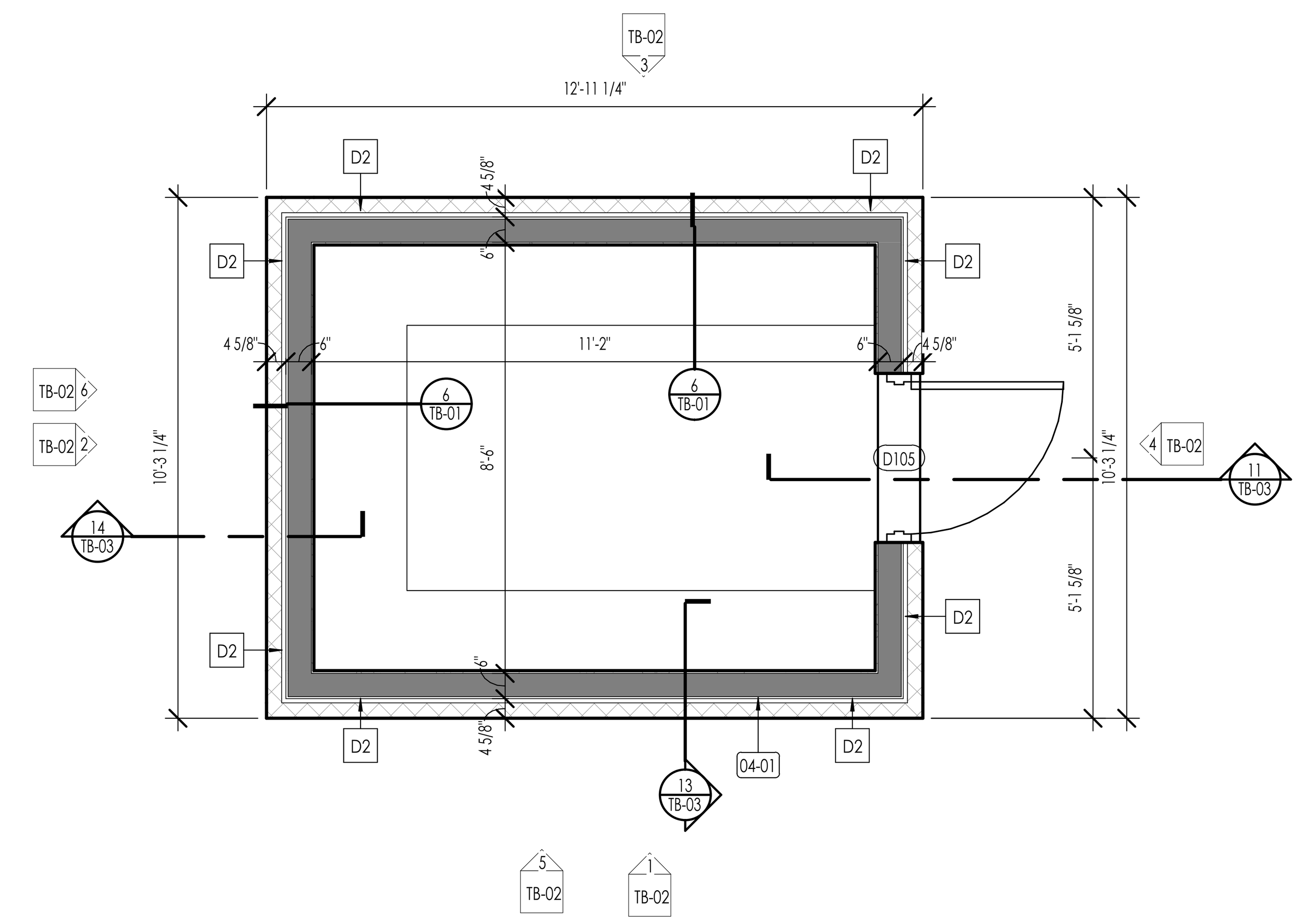


FOOTINGS FOR TICKET BOOTH SHALL BE 24 X 12" CONTINUOUS CONCRETE FOOTINGS WITH 3-#4 BARS CONTINUOUS.

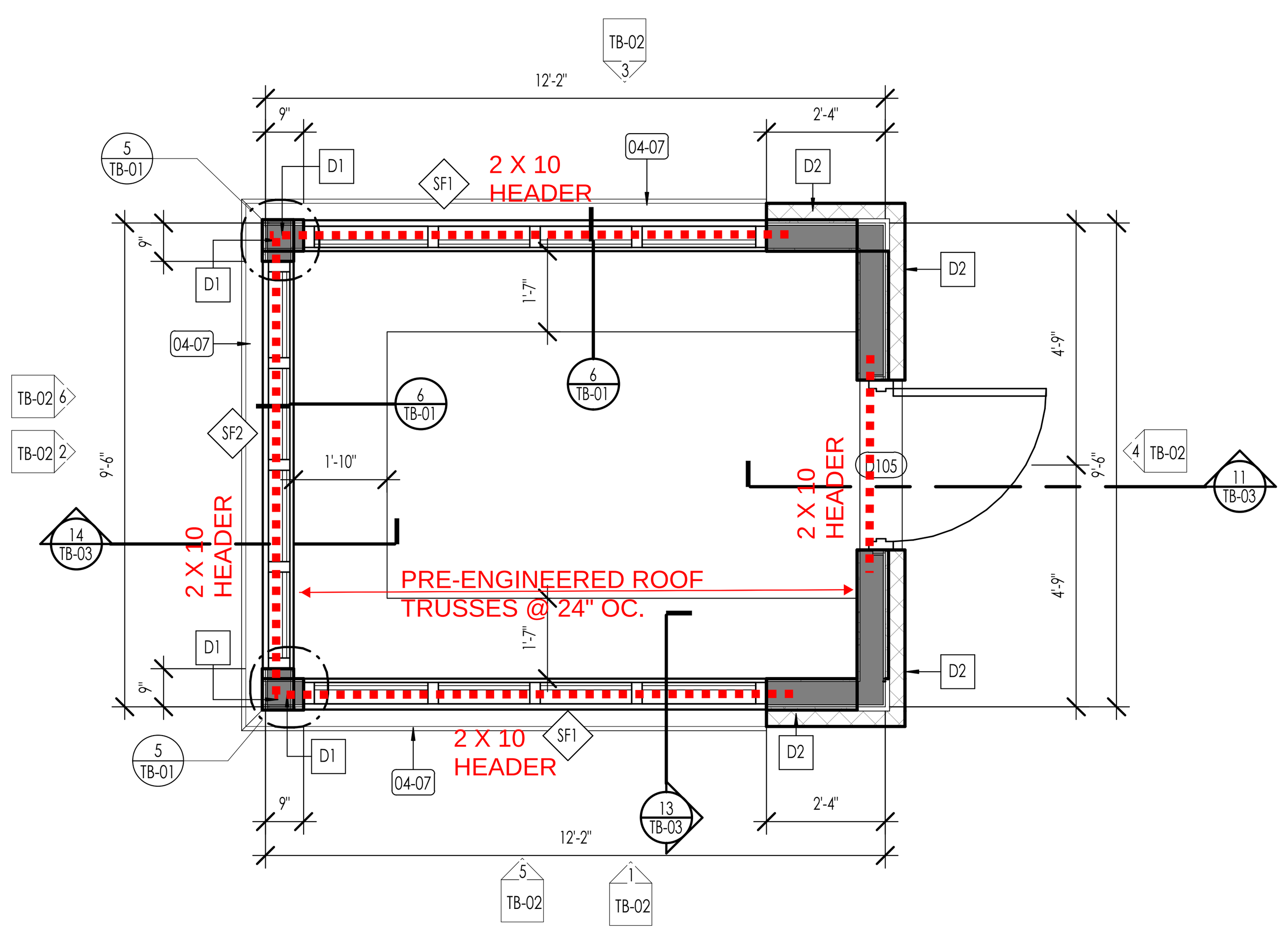
PROVIDE #4 DOWELS AT 16" O.C.

FOUNDATION WALL SHALL BE 10" FOUNDATION WALLS WITH 2- #4 BARS AT TOP AND BOTTOM AND #4 BARS AT 16 " O.C. VERTICALLY, AND 12" O.C. HORIZONTALLY..

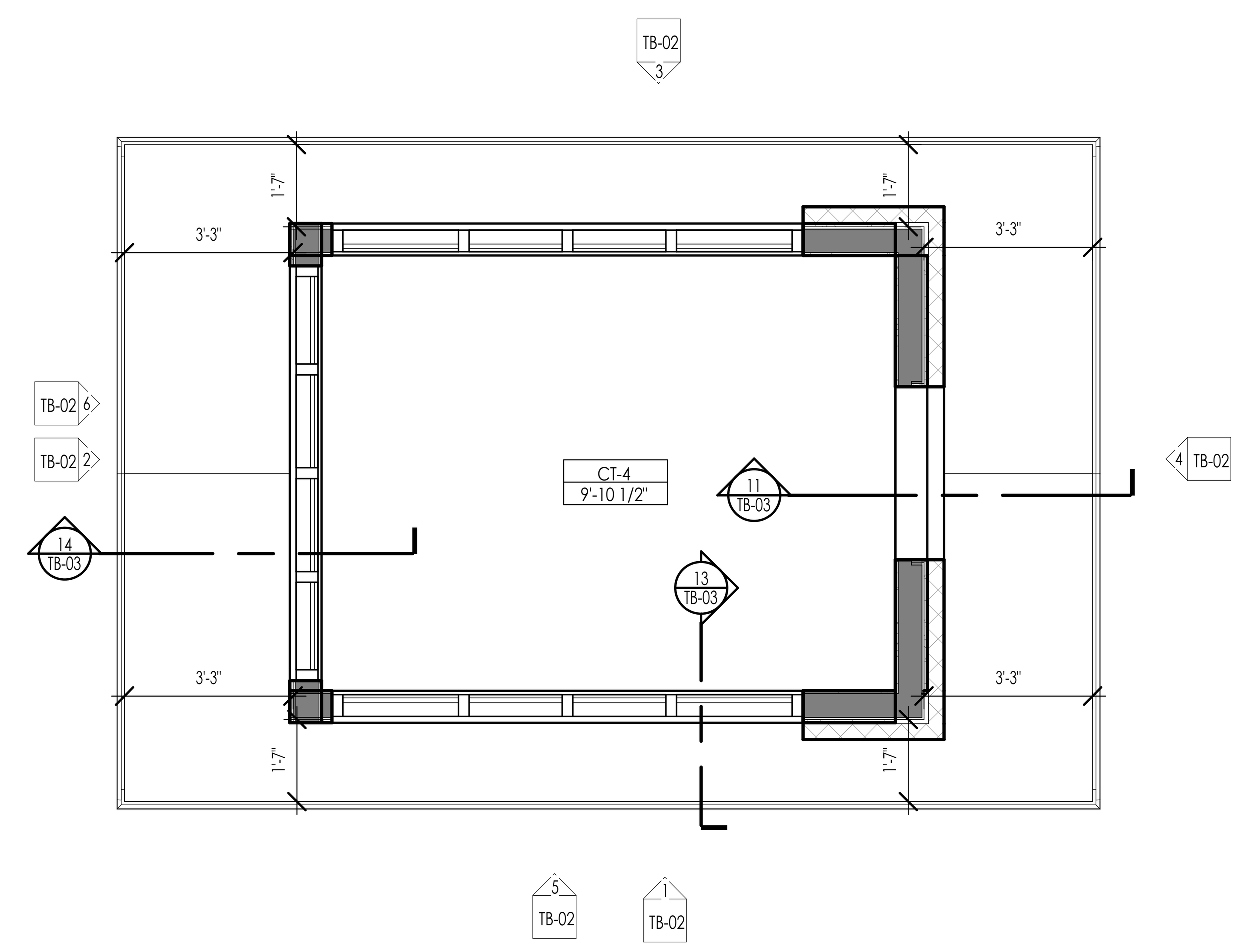
LEVEL 1 - SLAB PLAN - TICKET BOOTH
3/8" = 1'-0"
1 TB-01



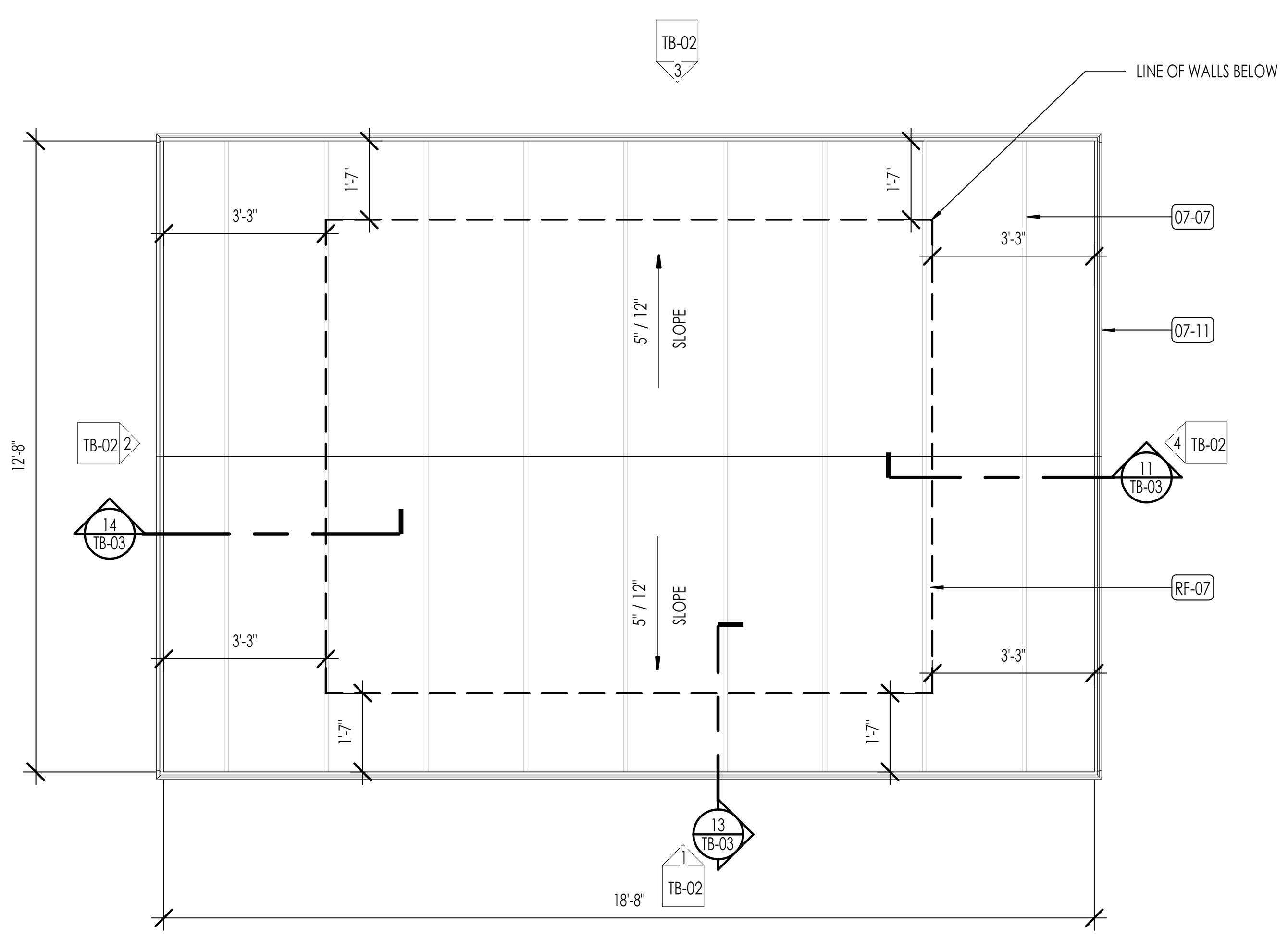
LEVEL 1 - FLOOR PLAN - TICKET BOOTH
3/8" = 1'-0"
2 TB-01



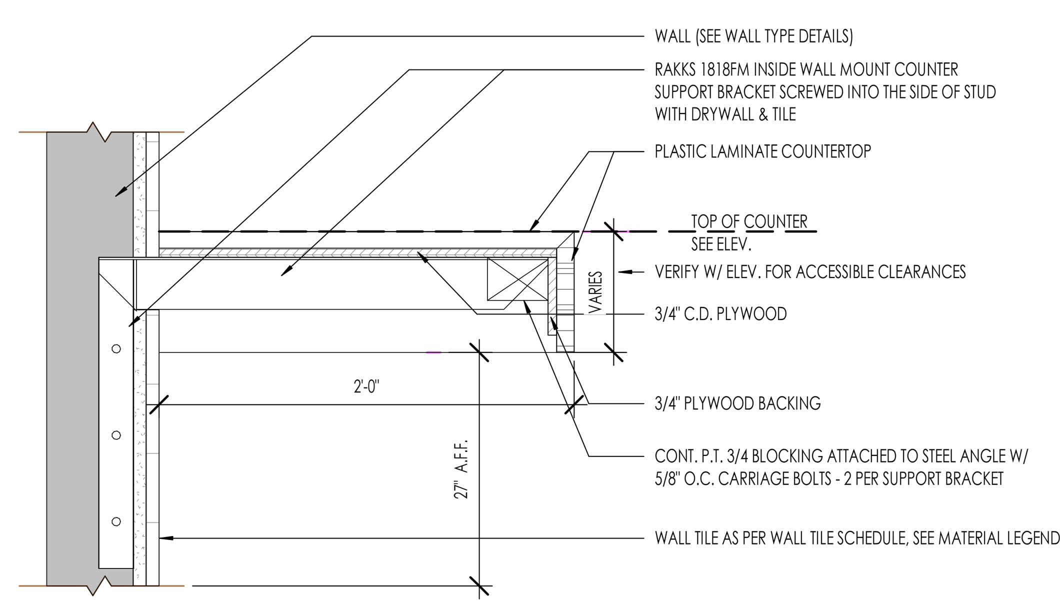
LEVEL 1 - FLOOR PLAN - TICKET BOOTH @ WINDOWS
3/8" = 1'-0"
3 TB-01



LEVEL 1 - REFLECTED CEILING PLAN - TICKET BOOTH
3/8" = 1'-0"
4 TB-01



ROOF PLAN - TICKET BOOTH
3/8" = 1'-0"
5 TB-01



FLOATING VANITY MOUNTING SECTION
1 1/2" = 1'-0"
6 TB-01

FLOOR PLAN LEGEND

HATCH PATTERN	DESCRIPTION	HATCH PATTERN	TYPE	DESCRIPTION
	CMU BLOCK WALL		CT-1	NO CLG. FINISH
			CT-2	PREFINISHED ALUM. SOFFIT
			CT-3	5/8" W.P. TYPE X GYPSUM BOARD SEE CEILING TYPE DETAIL

FLOOR PLAN GENERAL NOTES

1. ALL DIMENSIONS ARE TO INTERIOR FACE-OF-STUD (F.O.S.) UNLESS NOTED OTHERWISE.
2. CEILING HEIGHTS MEASURED FROM PLYWOOD OR CONCRETE - SEE SECTIONS
3. REFER TO ENLARGED PLANS FOR ALL UNIT DIMENSIONS, WINDOW TYPES, DOORS AND WALLS.
4. REFER TO ENLARGED PLANS FOR ALL DECKS/PATIOS.
5. COORDINATE WITH ALL ENLARGED PLANS FOR ADDITIONAL INFORMATION AND DETAILS.
6. ALL TOPPING SLABS MUST BE POURED AFTER ROOF IS COMPLETE AND BUILDING IS DRIED IN.
7. SEE SHEET A002 FOR PROJECT GENERAL NOTES AND SHEET A003 FOR PROJECT KEYNOTES. REVIEW ALL NOTES PRIOR TO CONSTRUCTION.
8. COORDINATE WITH STRUCTURAL FRAMING PLANS AND SHEAR WALL PLANS FOR LOCATIONS OF COLUMNS, BEAMS, SHEAR WALLS, ETC.
9. COORDINATE WITH BUILDER/OWNER FOR ALL INTERIOR FINISHES
10. COORDINATE WITH ELECTRICAL DRAWINGS FOR ALL LIGHTING, POWER AND DATA REQUIREMENTS.
11. ALL EXTERIOR WALLS ARE ASSUMED TO BE 2X6 STUD WALLS UNLESS SHOWN/NOTED OTHERWISE.
12. ALL INTERIOR WALLS ARE ASSUMED TO BE 2X4 STUD WALLS UNLESS SHOWN/NOTED OTHERWISE.
13. ALL ROOF TRUSSES TO HAVE RAISED ENERGY HEEL CONSTRUCTION TO ALLOW FOR FULL DEPTH INSULATION OVER EXTERIOR WALLS (COORDINATE INSULATION REQUIREMENTS WITH RESCHECKS).

FLOOR PLAN KEYNOTES

KEYNOTES	
03-01	CAST IN PLACE CONCRETE FOOTINGS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
03-02	CAST IN PLACE CONCRETE FOUNDATION WALLS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
03-04	CAST IN PLACE INTERIOR CONCRETE SLABS- SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
04-01	CONCRETE MASONRY UNITS (CMU) WALL - INSTALL IN PATTERN AS NOTED ON DRAWINGS AND DETAILS. PROVIDE CONTROL JOINTS AT 20'-0" O.C. IF NOT NOTED ON DRAWINGS. SEE STRUCTURAL DRAWINGS FOR REINFORCING OF WALL.
04-07	CUT STONE CAP SEE DETAILS ON DRAWINGS FOR SIZE OF CAP, LOCATION OF CONTROL AND EXPANSION JOINTS, AND DETAILS FOR INSTALLATION OF CAP.
07-07	STANDING-SEAM METAL ROOFING INSTALL OVER ROOF UNDERLAYMENT AND ICE AND WATER SHIELD WHERE NOTED. COORDINATE WITH SPECIFICAITONS AND MATERIAL BOARD FOR FINAL COLOR SELECTION.
07-11	PRE-FINSIHED 20 GAUGE ALUM FASCIA. SEE DETAILS FOR PROFILE. FASCIA SHALL BE ONE PIECE AS NOTED.
RF-07	LINE OF WALL BELOW ROOF- SEE OVERALL AND ENLARGED PLANS.
S-05	EXTEND RIGID INSULATION AT INTERIOR FACE OF CONCRETE FROM UNDERSIDE OF SLAB TO TOP OF FOOTING

Think Architecture
Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 High Point Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc. These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

FAIR GROUNDS
TICKET BOOTH KIOSK
2400 14400 S. BLUFFDALE, UTAH, 84065

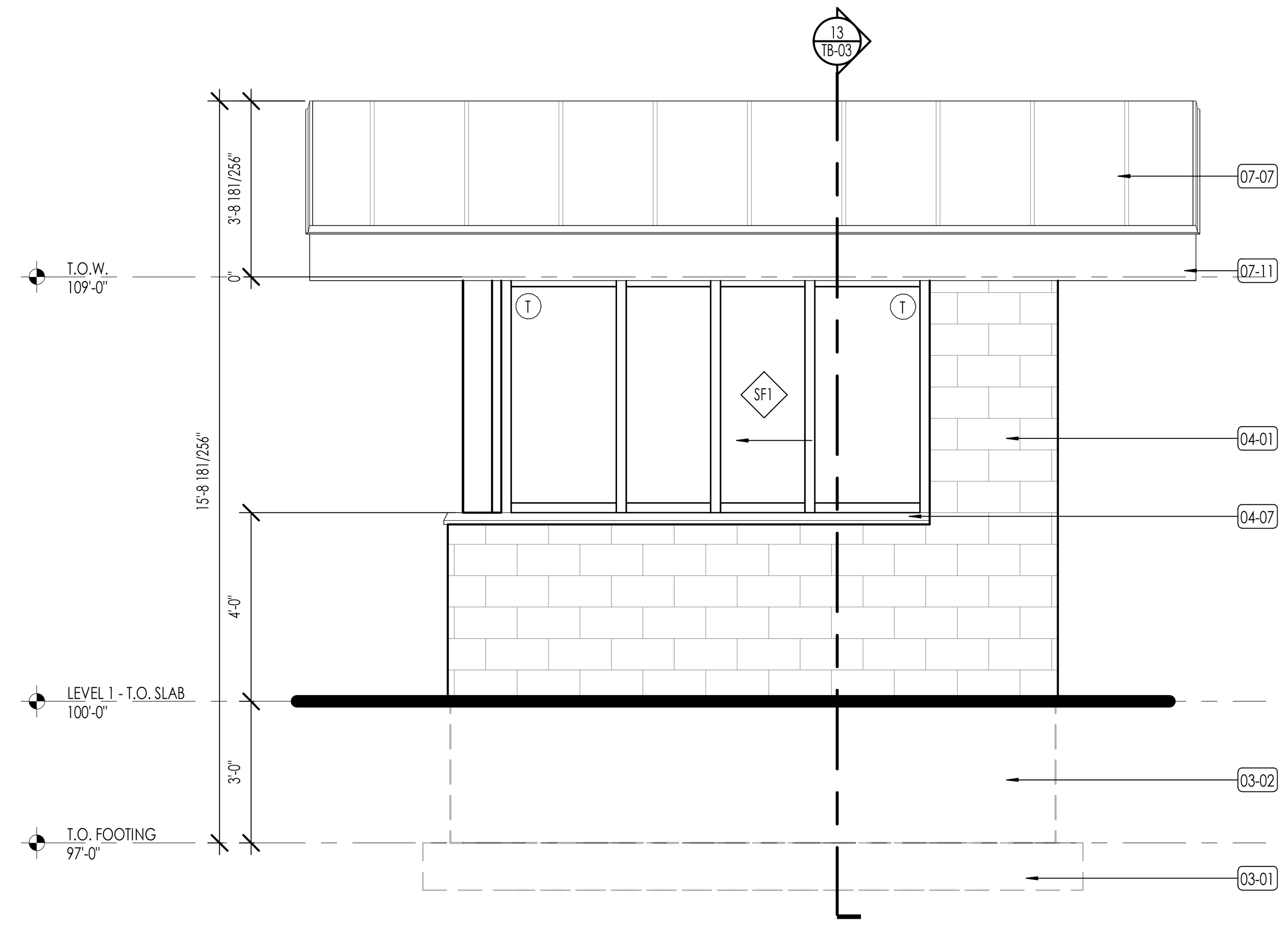
PROJECT NO. 25-011
DATE: DEC 2025
REVISIONS:

SHEET TITLE:
TICKET BOOTH PLANS

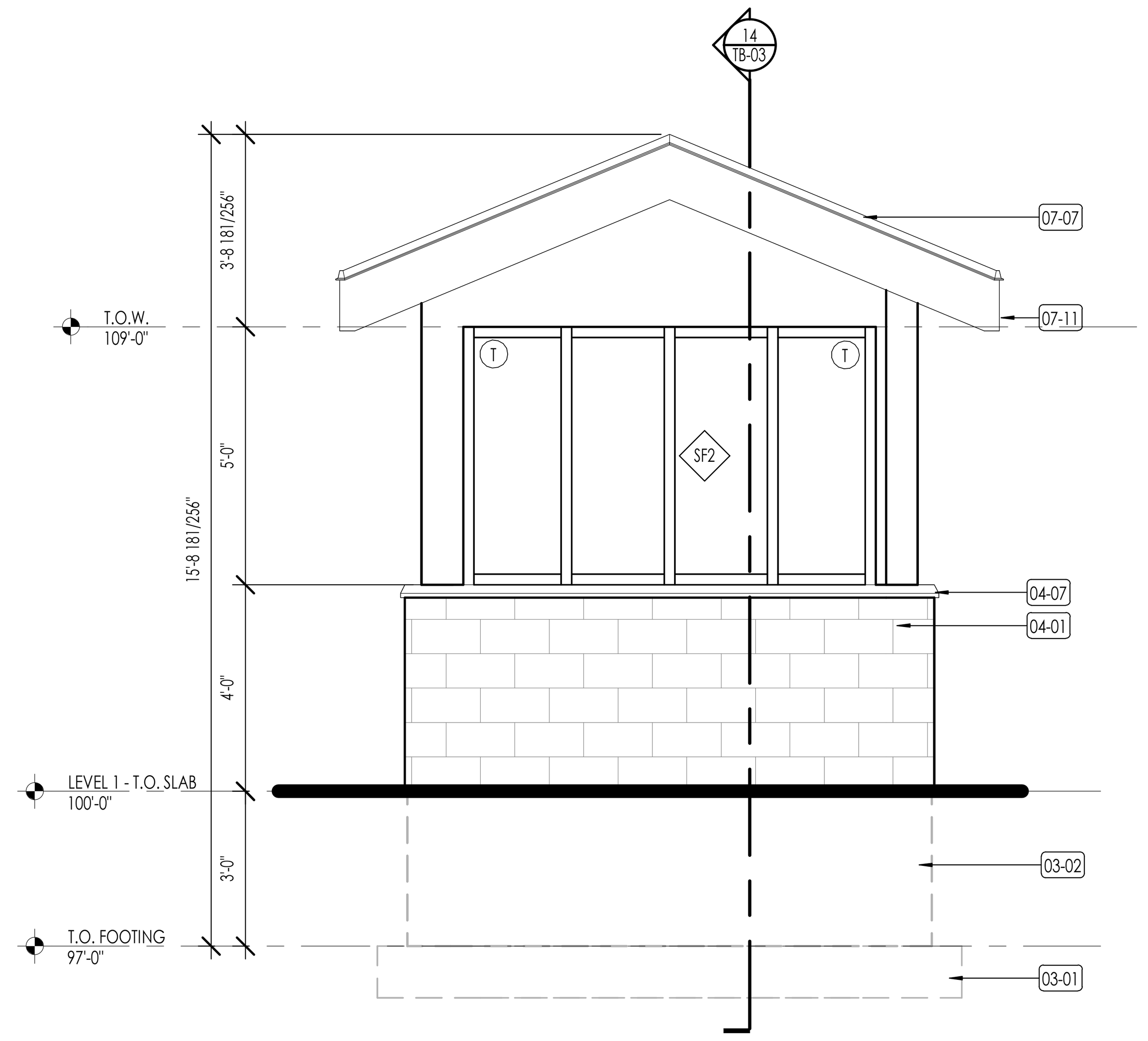
SHEET NUMBER:
TB-01

© 2022 THINK ARCHITECTURE INC.

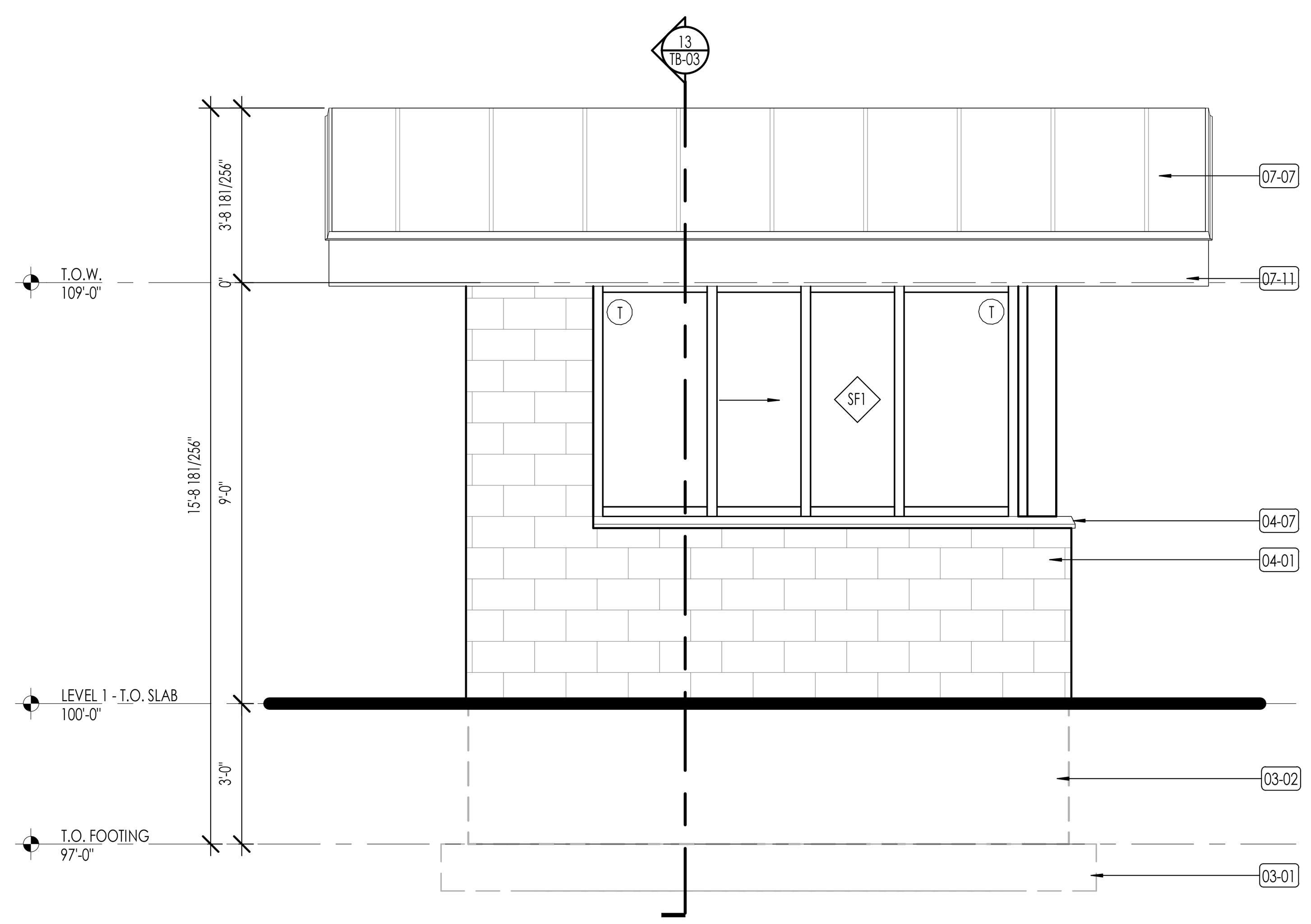
12/23/2025 4:21:30 PM



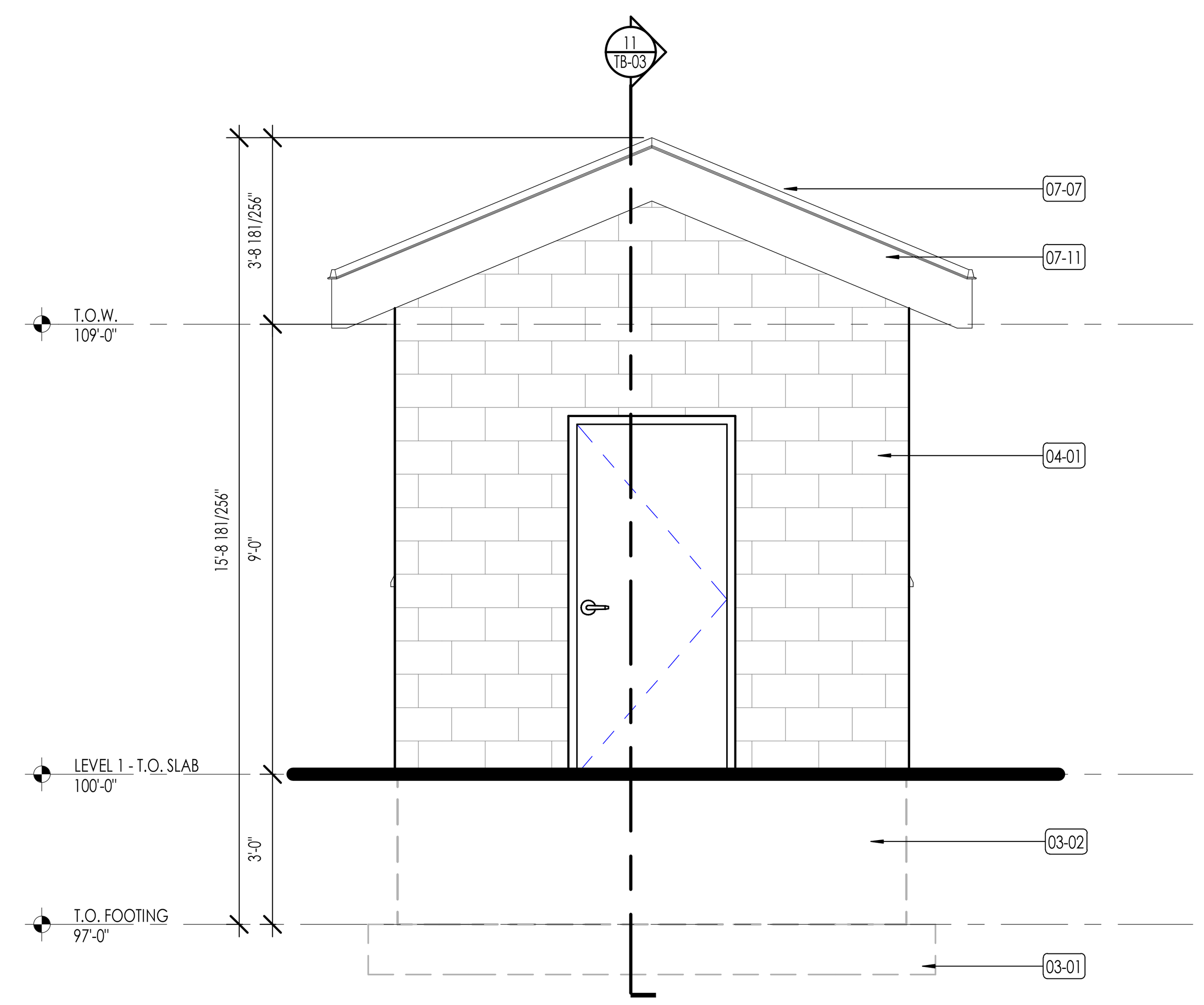
TICKET BOOTH ELEVATION 1
3/8" = 1'-0"
1
TB-02



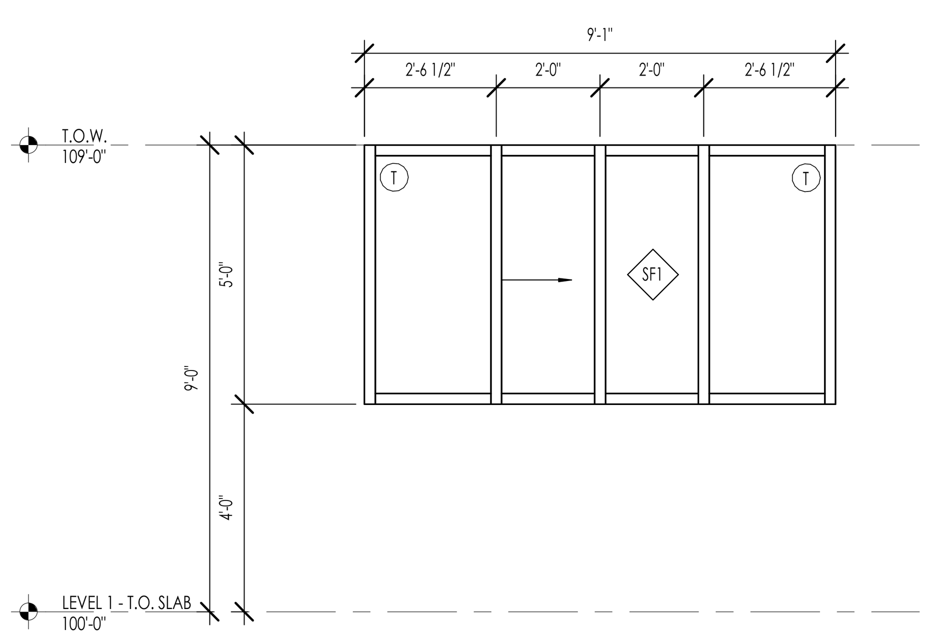
TICKET BOOTH ELEVATION 2
3/8" = 1'-0"
2
TB-02



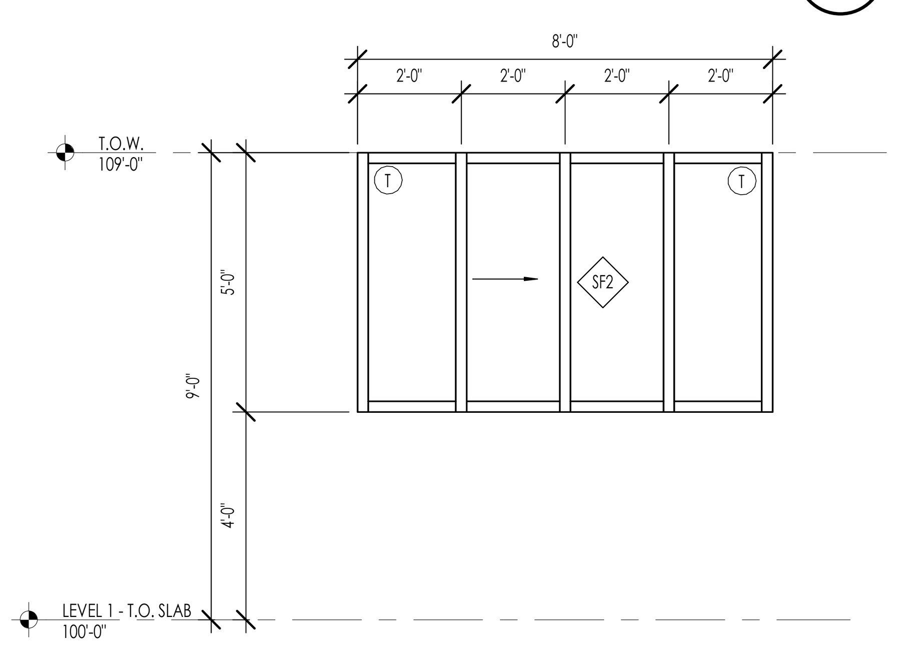
TICKET BOOTH ELEVATION 3
3/8" = 1'-0"
3
TB-02



TICKET BOOTH ELEVATION 4
3/8" = 1'-0"
4
TB-02



TICKET BOOTH STOREFRONT ELEVATION 1
3/8" = 1'-0"
5
TB-02



TICKET BOOTH STOREFRONT ELEVATION 2
3/8" = 1'-0"
6
TB-02

ELEVATION/ SECTION MATERIAL LEGEND

HATCH PATTERN	DESCRIPTION
	CMU-HONED FINISH COLOR 1
	CMU-HONED FINISH COLOR 2

NOTE: REFER TO MATERIAL SPECIFICATIONS DOCUMENT FOR DETAILED INFORMATION REGARDING EACH FINISH MATERIAL

ELEVATION/ SECTION KEYNOTES

KEYNOTES

03-01	CAST IN PLACE CONCRETE FOOTINGS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
03-02	CAST IN PLACE CONCRETE FOUNDATION WALLS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
04-01	CONCRETE MASONRY UNITS (CMU) WALL - INSTALL IN PATTERN AS NOTED ON DRAWINGS AND DETAILS. PROVIDE CONTROL JOINTS AT 20'-0" O.C. IF NOT NOTED ON DRAWINGS. SEE STRUCTURAL DRAWINGS FOR REINFORCING OF WALL.
04-07	CUT STONE CAP SEE DETAILS ON DRAWINGS FOR SIZE OF CAP, LOCATION OF CONTROL AND EXPANSION JOINTS, AND DETAILS FOR INSTALLATION OF CAP.
07-07	STANDING-SEAM METAL ROOFING INSTALL OVER ROOF UNDERLAYMENT AND ICE AND WATER SHIELD WHERE NOTED. COORDINATE WITH SPECIFICAITONS AND MATERIAL BOARD FOR FINAL COLOR SELECTION.
07-11	PRE-FINSIHED 20 GAUGE ALUM FASCIA. SEE DETAILS FOR PROFILE. FASCIA SHALL BE ONE PIECE AS NOTED.

Think ©
Architecture
Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 High Point Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc. These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

FAIR GROUNDS
TICKET BOOTH KIOSK
2400 14400 S, BLUFFDALE, UTAH, 84065

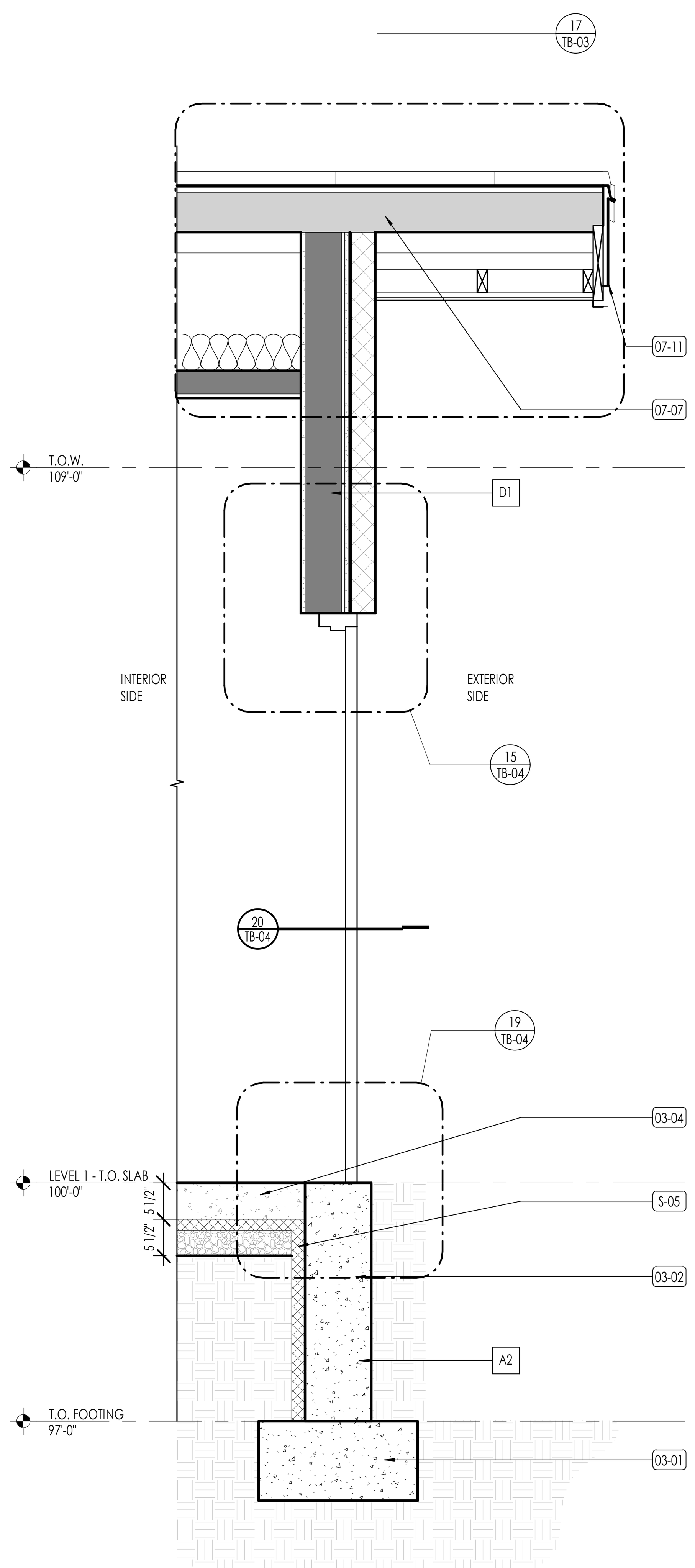
PROJECT NO. 25-011
DATE: DEC 2025
REVISIONS:

SHEET TITLE:
TICKET BOOTH ELEVATIONS

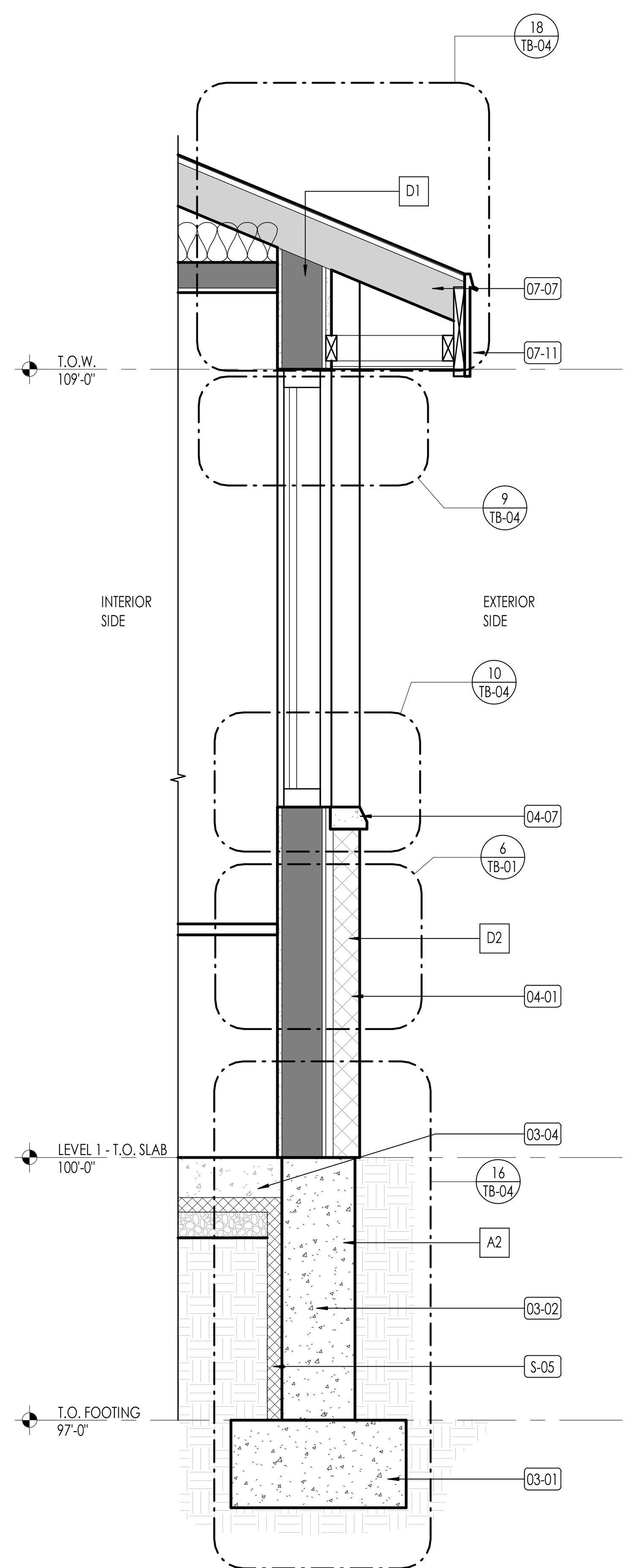
SHEET NUMBER:
TB-02

© 2022 THINK ARCHITECTURE INC.

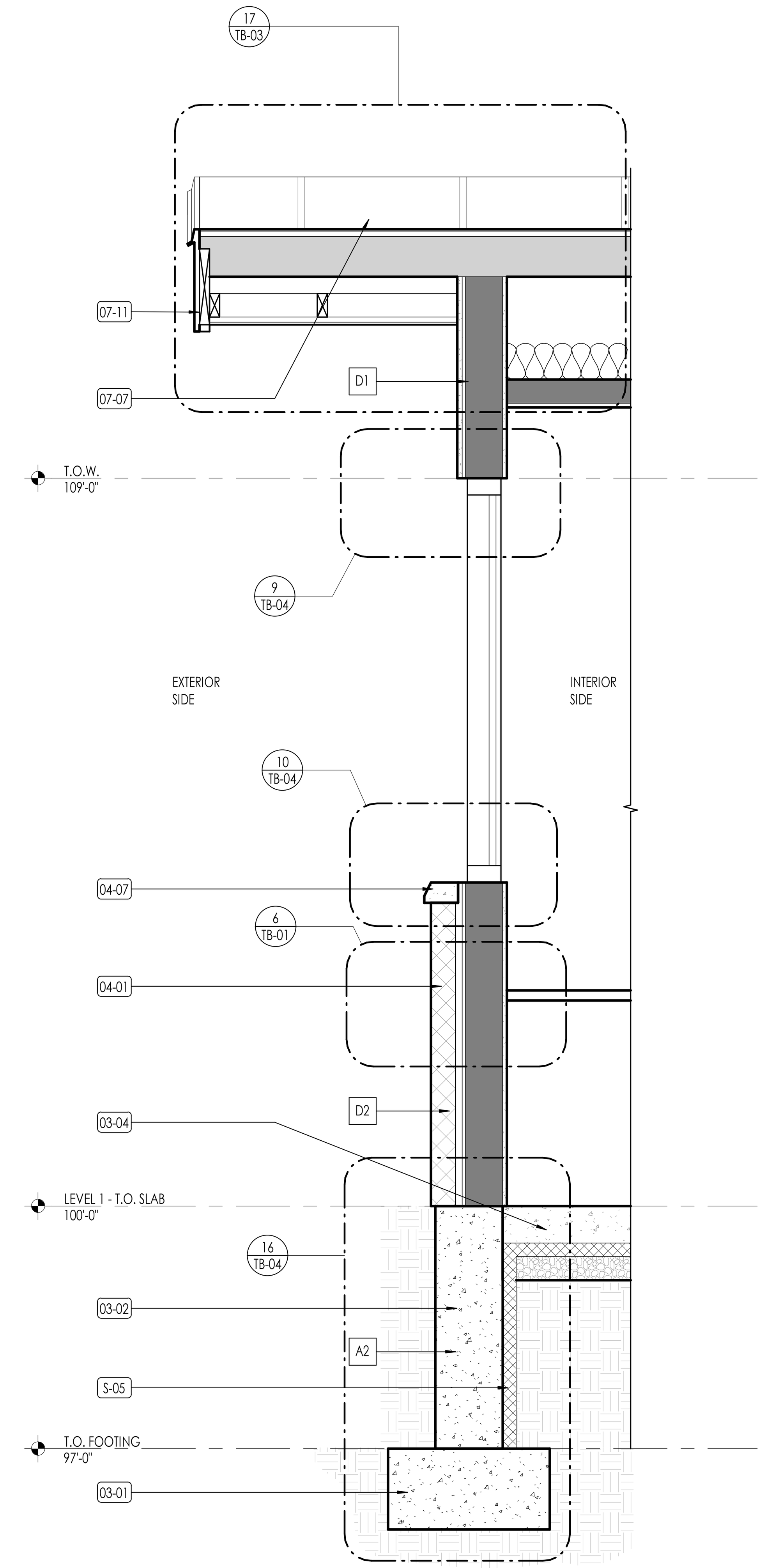
12/23/2025 4:21:30 PM



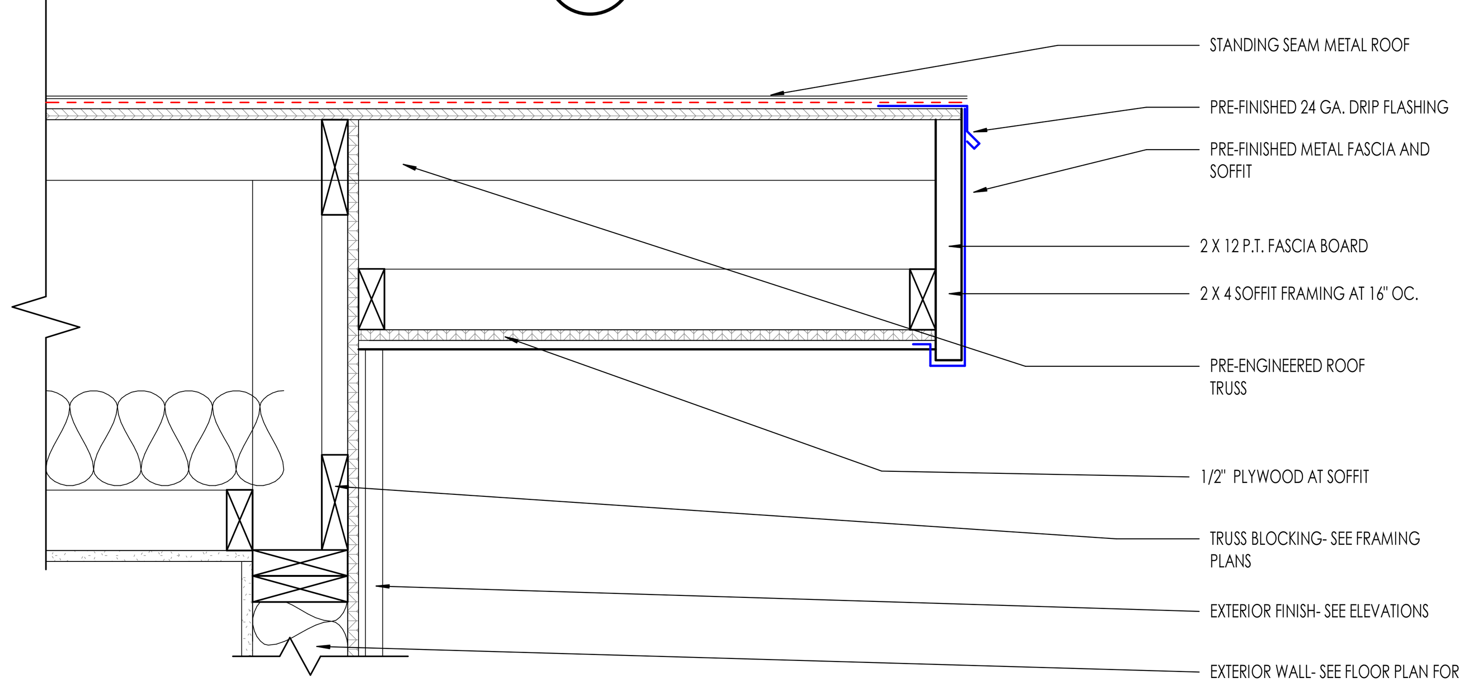
WALL SECTION 1 (11 / TB-03)
3/4" = 1'-0"



WALL SECTION 2 (13 / TB-03)
3/4" = 1'-0"



WALL SECTION 3 (14 / TB-03)
3/4" = 1'-0"



ROOF DETAIL Copy 1 (17 / TB-03)
1 1/2" = 1'-0"

ELEVATION/ SECTION MATERIAL LEGEND

HATCH PATTERN	DESCRIPTION
	CMU-HONED FINISH COLOR 1
	CMU-HONED FINISH COLOR 2

NOTE: REFER TO MATERIAL SPECIFICATIONS DOCUMENT FOR DETAILED INFORMATION REGARDING EACH FINISH MATERIAL

ELEVATION/ SECTION KEYNOTES

KEYNOTES

03-01	CAST IN PLACE CONCRETE FOOTINGS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
03-02	CAST IN PLACE CONCRETE FOUNDATION WALLS SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
03-04	CAST IN PLACE INTERIOR CONCRETE SLABS- SEE STRUCTURAL DRAWINGS FOR SIZE AND REINFORCING.
04-01	CONCRETE MASONRY UNITS (CMU) WALL - INSTALL IN PATTERN AS NOTED ON DRAWINGS AND DETAILS. PROVIDE CONTROL JOINTS AT 20'-0" O.C. IF NOT NOTED ON DRAWINGS. SEE STRUCTURAL DRAWINGS FOR REINFORCING OF WALL.
04-07	CUT STONE CAP SEE DETAILS ON DRAWINGS FOR SIZE OF CAP, LOCATION OF CONTROL AND EXPANSION JOINTS, AND DETAILS FOR INSTALLATION OF CAP.
07-07	STANDING-SEAM METAL ROOFING INSTALL OVER ROOF UNDERLAYMENT AND ICE AND WATER SHIELD WHERE NOTED. COORDINATE WITH SPECIFICAITONS AND MATERIAL BOARD FOR FINAL COLOR SELECTION.
07-11	PRE-FINSIHED 20 GAUGE ALUM FASCIA. SEE DETAILS FOR PROFILE. FASCIA SHALL BE ONE PIECE AS NOTED.
S-05	EXTEND RIGID INSULATION AT INTERIOR FACE OF CONCRETE FROM UNDERSIDE OF SLAB TO TOP OF FOOTING

Think ©
Architecture
Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 High Point Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc. These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

FAIR GROUNDS
TICKET BOOTH KIOSK
2400 14400 S, BLUFFDALE, UTAH, 84065

PROJECT NO. 25-011
DATE: DEC 2025
REVISIONS:

SHEET TITLE:
TICKET BOOTH SECTIONS

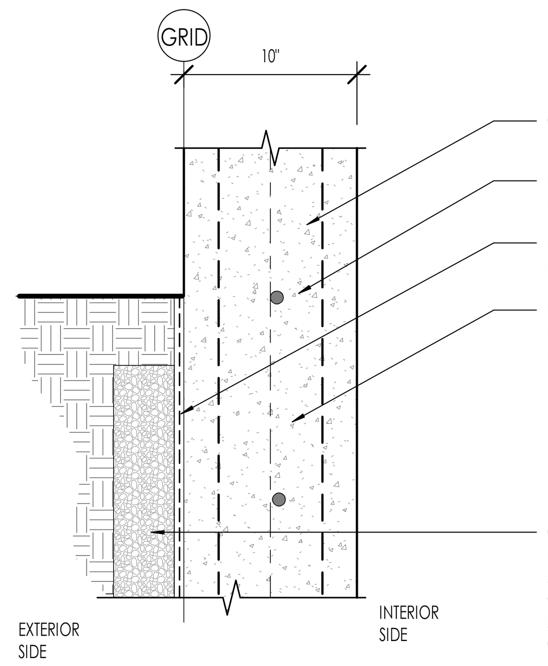
SHEET NUMBER:
TB-03

© 2022 THINK ARCHITECTURE INC.

12/23/2025 4:21:30 PM

PER IBC TABLE 721.1(2) - ANY CONCRETE WALL, 5.0 INCHES AND THICKER, IS 2 HOURS + RATED NON- RATED IS REQUIRED FOR TYPE OF CONSTRUCTION

WALL TYPE A2



SYSTEM DESCRIPTION
CAST IN PLACE CONCRETE WALLS, BOTH LOAD BEARING & NON-LOAD BEARING WALLS, W/ DAMP PROOFING ON EXTERIOR FACE OF WALL WHERE BELOW GRADE. - SEE STRUCTURAL

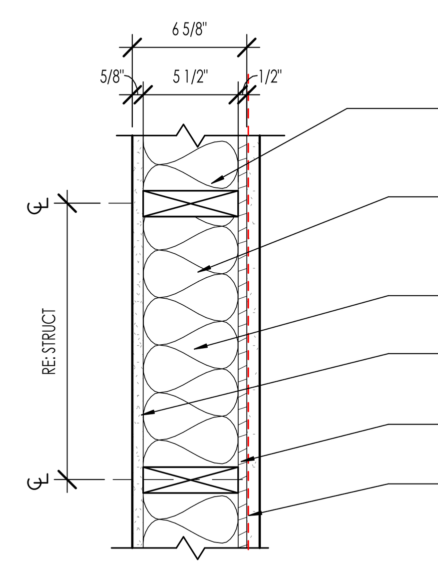
CONCRETE FOUNDATION WALL:
THICKNESS PER STRUCT REINFORCING REQUIREMENTS AS PER STRUCT, PROVIDE 2" MIN COVER OF ALL REBAR, FROM WALL SURFACE. RE: SPECS FOR CONC WALL FINISH

DAMP PROOFING:
SPRAY APPLIED FOUNDATION DAMP PROOFING AT ALL BELOW GRADE AREA OF EXTERIOR WALL SURFACE . SEE SPECS

WALL TYPE A2 - EXTERIOR 10" CONCRETE
1 1/2" = 1'-0"
6
TB-04

WALL TYPE D1

NON-RATED



NOTE: "WALL SHALL EXTEND FROM THE TOP OF THE FOUNDATION OR FLOOR CEILING ASSEMBLY BELOW TO THE UNDERSIDE OF THE FLOOR OR ROOF SHEATHING, SLAB OR DECK ABOVE OR TO THE FIRE-RESISTANCE RATED FLOOR/CEILING OR ROOF/CEILING ASSEMBLY ABOVE AND SHALL BE SECURLY ATTACHED THERETO."

SYSTEM DESCRIPTION
WOOD STUD PARTITION (LOADBEARING/ NON-LOAD BEARING)

WALL TYPE D7- 2X6 WOOD STUDS - NOM 2 BY 6 INCHES, SPACED 16" O.C., EFFECTIVELY FIRESTOPPED. VERIFY SPACING REQUIRED BY STRUCTURAL ENGINEER.

WALL TYPE D7A- 2X4 WOOD STUDS - NOM 2 BY 6 INCHES, SPACED 16" O.C., EFFECTIVELY FIRESTOPPED. VERIFY SPACING REQUIRED BY STRUCTURAL ENGINEER.

THIS ASSEMBLY IS NOTED FOR FIRE RESISTIVE WALL ASSEMBLY REQUIREMENTS, VERIFY THE STRUCTURAL REQUIREMENTS FOR WOOD PANEL SHEATHING AND STUD SPACING WITH STRUCTURAL DRAWINGS. USE THE MOST RESTRICTIVE OR CONSERVATIVE OF THE REQUIREMENTS.

GYPSUM BOARD - 5/8 IN. THICK TYPE "X" GYPSUM BOARD, 4 FEET WIDE, APPLIED EITHER HORIZONTALLY OR VERTICALLY, ATTACHED TO STUDS THROUGH PLYWOOD SHEATHING WITH 8d CEMENT COATED NAILS 2-3/8" LONG, 0.113 IN. SHANK DIA. AND 9/32 IN. DIA. HEAD NAILS SPACE 7 IN. O.C. ALONG STUDS AND AT PERIMETER OF PANELS. WHEN USED IN WIDTHS OTHER THAN 48 IN., WALLBOARD IS TO BE INSTALLED HORIZONTALLY. JOINTS EXPOSED OR COVERED WITH TAPE AND COMPOUND.

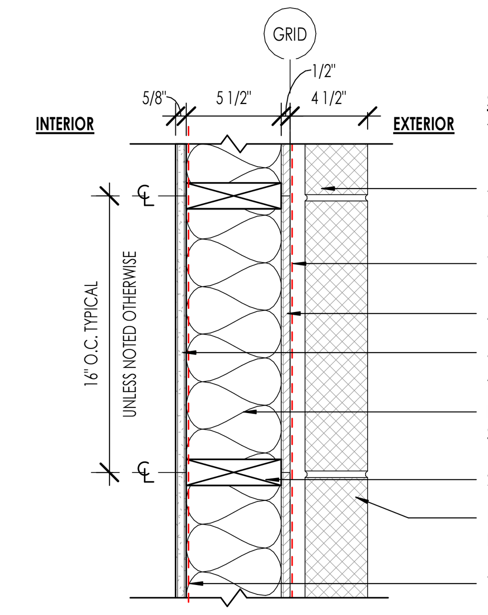
GYPSUM BOARD (GARAGE SIDE) - 5/8 IN. THICK TYPE "X" GYPSUM BOARD, 4 FEET WIDE, APPLIED EITHER HORIZONTALLY OR VERTICALLY, ATTACHED TO STUDS OR BLOCKING AT 7 IN. O.C. WITH 6d CEMENT COATED NAILS, 1-7/8 IN. LONG, 0.915 IN. SHANK DIA. AND 1/4 IN. DIA. HEADS. WHEN USED IN WIDTHS OTHER THAN 48 IN., WALLBOARD TO BE INSTALLED HORIZONTALLY. JOINTS EXPOSED OR COVERED WITH TAPE AND COMPOUND.

JOINTS AND NAILHEADS - WALLBOARD JOINTS COVERED WITH TAPE AND JOINT COMPOUND. NAILHEADS COVERED WITH JOINT COMPOUND. GYPSUM PLASTER NOT MORE THAN 1/8" THICK MAY BE APPLIED OVER THE WALLBOARD IN ADDITION TO THE SPECIFIED JOINT TREATMENT.

WALL TYPE - D1 - 2X6 WOOD STUD - NON-RATED
1 1/2" = 1'-0"
7
TB-04

WALL TYPE D2

2X6 STUD WALL



SYSTEM DESCRIPTION
- WOOD PARTITION (LOAD BEARING)

4 " CMU VENEER AS SELECTED, INSTALL PER MANUF. SPECS.
WEATHER RESISTANT BARRIER
APA RATED SHEATHING
5/8" GYPSUM WALLBOARD - TAPED, SANDED AND PRIMED AS SELECTED.
INSULATION AS PER PROJECT MANUAL AND SCHEDULE.
2X6 STUD WALL @ 16" O.C. TYP.
REINFORCING - SEE STRUCTURAL DRAWING
VAPOR BARRIER

GYPSUM WALLBOARD: 5/8 IN. THICK, 4 FEET WIDE, APPLIED EITHER HORIZONTALLY OR VERTICALLY, ATTACHED TO STUDS THROUGH PLYWOOD SHEATHING WITH 8d CEMENT COATED NAILS 2-3/8" LONG, 0.113 IN. SHANK DIA. AND 9/32 IN. DIA. HEAD NAILS SPACE 7 IN. O.C. ALONG STUDS AND AT PERIMETER OF PANELS. WHEN USED IN WIDTHS OTHER THAN 48 IN., WALLBOARD IS TO BE INSTALLED HORIZONTALLY. JOINTS EXPOSED OR COVERED WITH TAPE AND COMPOUND.

JOINTS AND NAIL HEADS: WALLBOARD JOINTS COVERED WITH TAPE AND JOINT COMPOUND. NAIL HEADS COVERED WITH JOINT COMPOUND. GYPSUM PLASTER NOT MORE THAN 1/8 INCH THICK MAY BE APPLIED OVER WALLBOARD IN ADDITION TO THE SPECIFIED JOINT TREATMENT.

VAPOR BARRIER: TAPED AND SEALED

2X6 WOOD STUDS: NOMINAL 2X6 INCHES SPACED 16 INCHES ON CENTER EFFECTIVELY FIRESTOPPED. VERIFY SPACING REQUIREMENTS WITH STRUCTURAL DRAWINGS.

INSULATION (CAVITY): SEE INSULATION SCHEDULE FOR TYPE AND AMOUNT. INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

APA RATED SHEATHING : MINIMUM 1/2 INCH THICK, 4 FEET WIDE APA RATED SHEATHING 32/16, EXPOSURE 1. PLYWOOD OT ORIENTED STRAND BOARD (OSB) PRP-108. INSTALLED WITH LONG DIMENSION OF SHEET (STRENGTH AXIS) OR FACE GRAIN OF PLYWOOD PARALLEL WITH OR PERPENDICULAR TO STUDS. VERTICAL JOINTS CENTERED ON STUDS. HORIZONTAL JOINTS BACKED WITH NOMINAL 2X4 WOOD BLOCKING. ATTACHED TO STUDS ON EXTERIOR SIDE OF WALL WITH 6d CEMENT COATING BOX NAILS SPACED 6 INCHES ON CENTER AT PERIMETER OF PANELS AND 12 INCHES ON CENTER ALONG INTERIOR STUDS, SEE STRUCTURAL

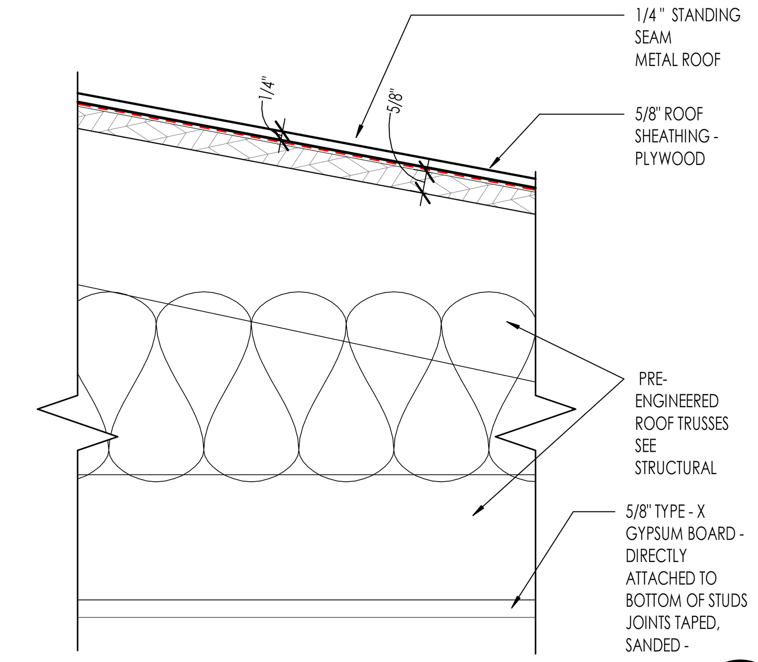
VERIFY WITH STRUCTURAL REQUIREMENTS FOR WOOD PANEL SHEATHING AND STUD SPACING WITH STRUCTURAL DRAWINGS. USE THE MOST RESTRICTIVE OR CONSERVATIVE OF THE TWO REQUIREMENTS.

WEATHER RESISTANT BARRIER: TYVEK OR EQUAL

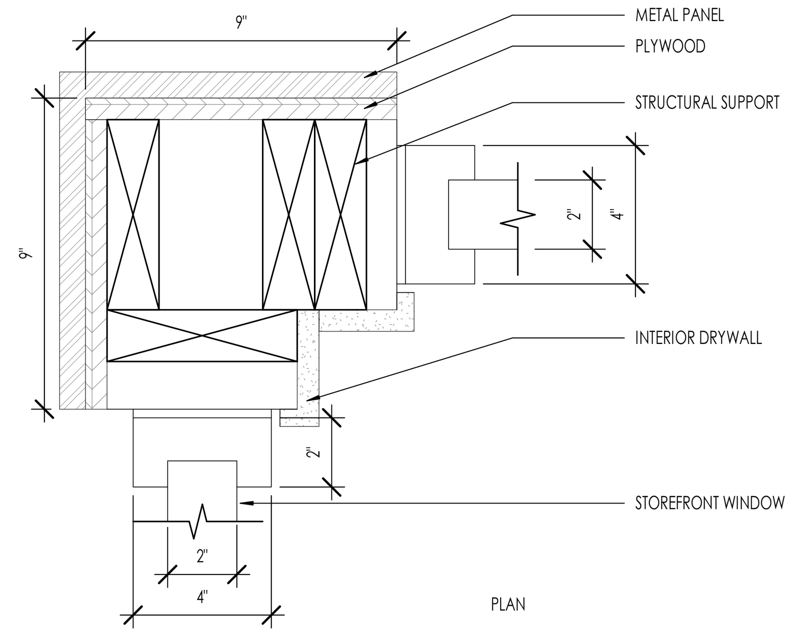
EXTERIOR FINISH: FULL BRICK VENEER: ALL ANCHORS, WEEPS, MORTAR GUARDS, FLASHING, ETC RELATED TO INSTALLATION OF BRICK TO BE PROVIDED BY GENERAL CONTRACTOR

GROUT: ALL JOINTS TO RECEIVE TYPE N PORTLAND CEMENT MORTAR. INSTALL PER MANUFACTURER, SEE SPECIFICATIONS.

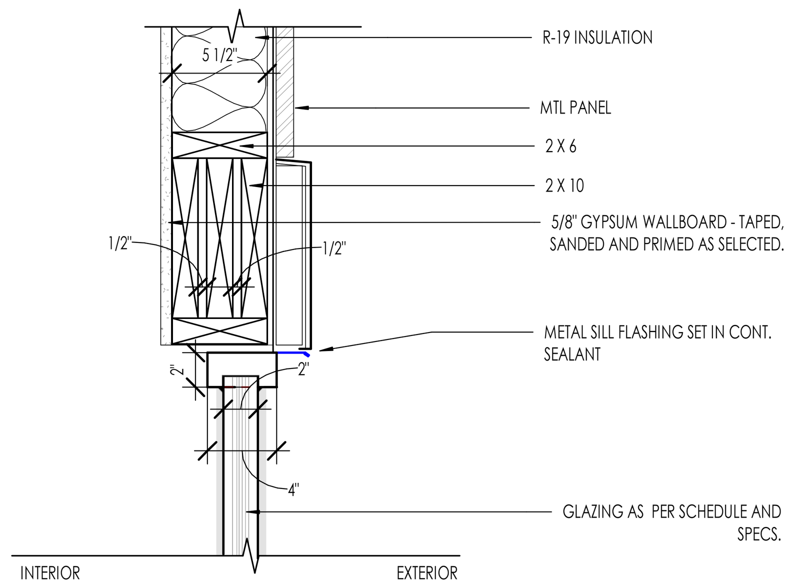
D2 - EXTERIOR CMU VENEER
1 1/2" = 1'-0"
8
TB-04



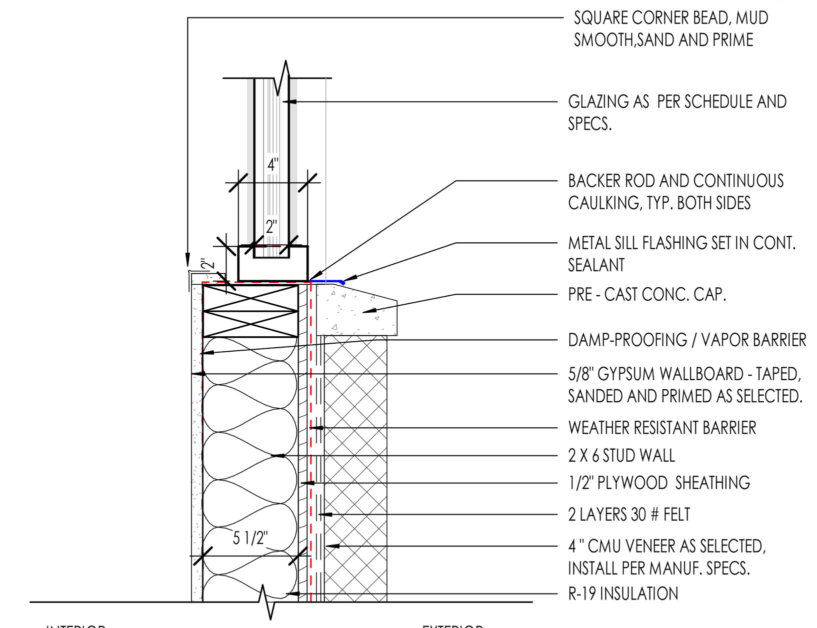
CEILING TYPE 4
3" = 1'-0"
4
TB-04



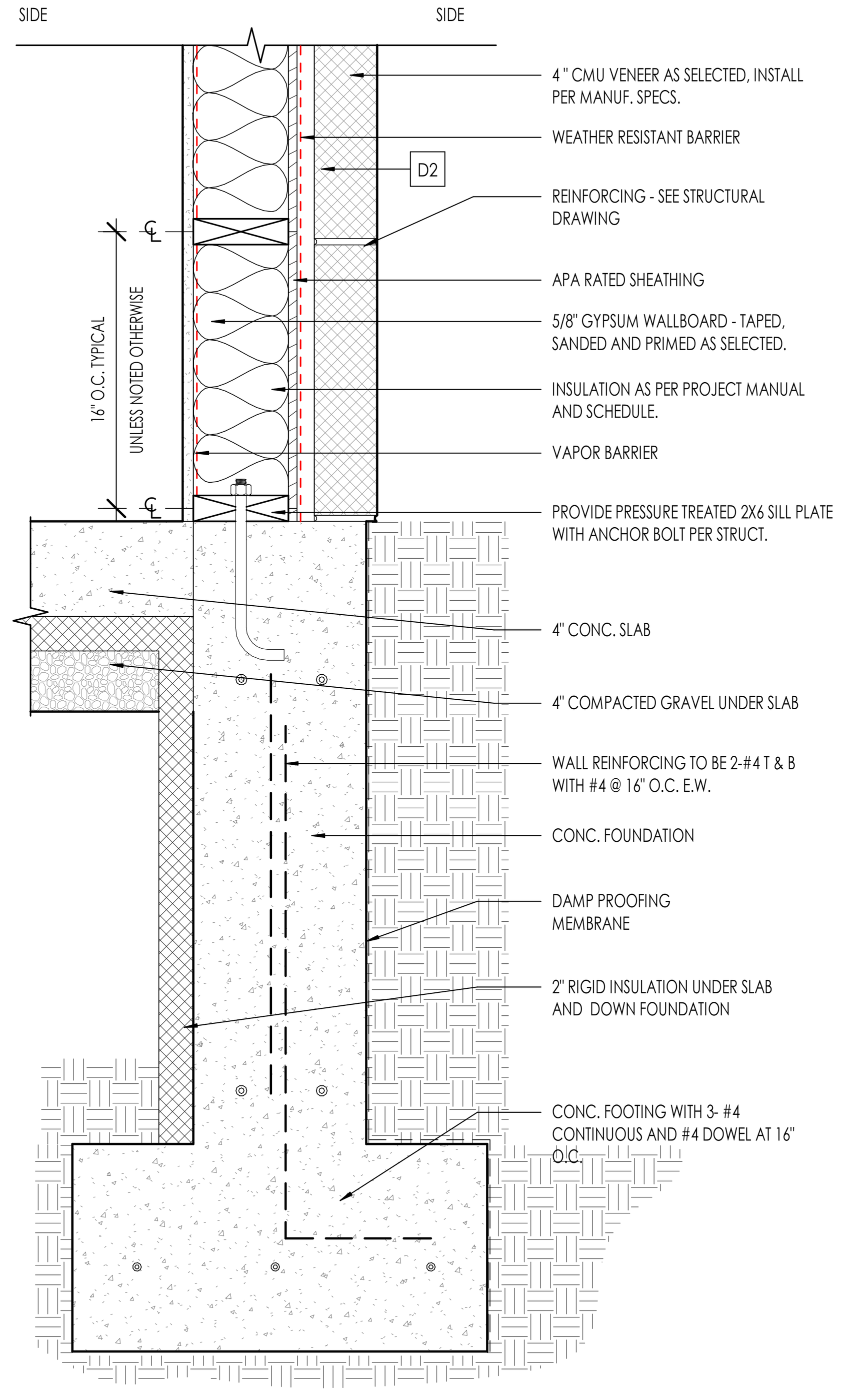
METAL WALL PANEL-INSIDE CORNER DETAIL
3" = 1'-0"
5
TB-04



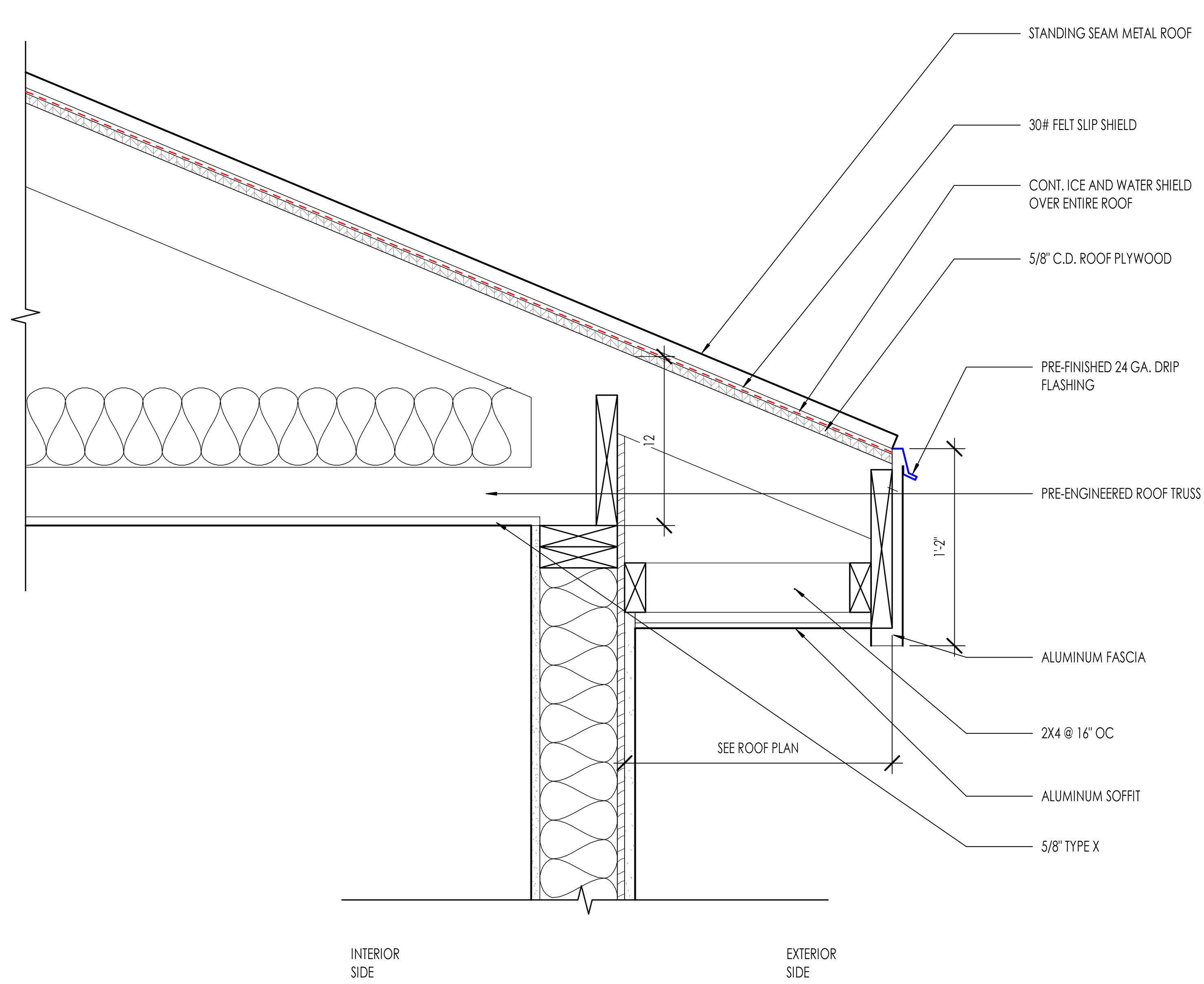
CMU@ WIDOW DETAIL 2
1 1/2" = 1'-0"
9
TB-04



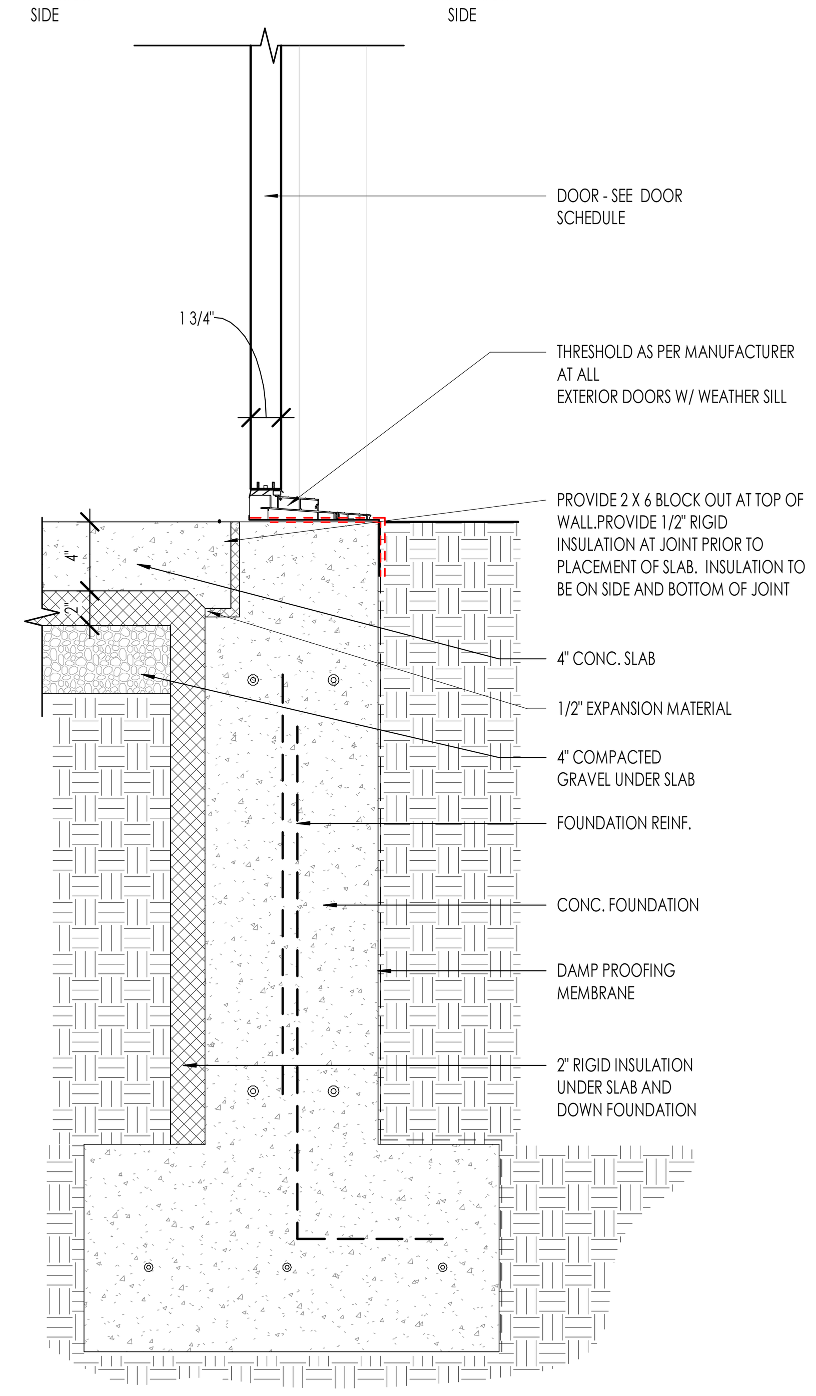
CMU@ WIDOW DETAIL
1 1/2" = 1'-0"
10
TB-04



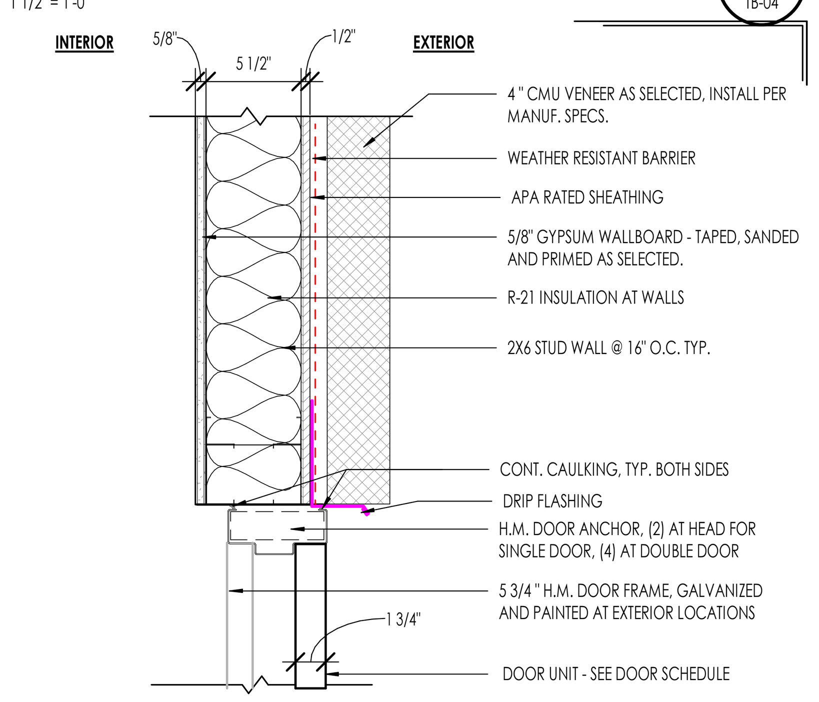
FOUNDATION @ CMU
1 1/2" = 1'-0"
16
TB-04



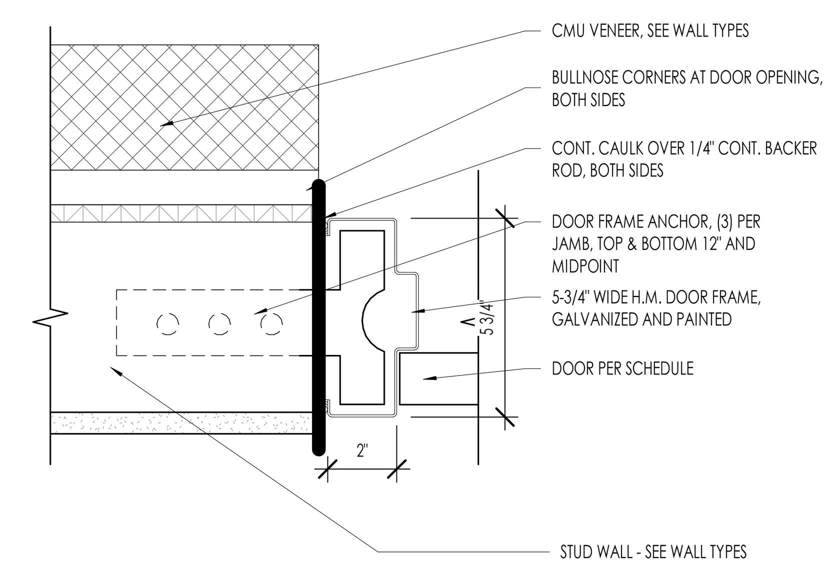
ROOF DETAIL
1 1/2" = 1'-0"
18
TB-04



DOOR @ FOUNDATION
1 1/2" = 1'-0"
19
TB-04



DOOR HEAD @ CMU WALL
1 1/2" = 1'-0"
15
TB-04



DOOR - JAMB DETAIL AT CMU Copy 1
3" = 1'-0"
20
TB-04

12/23/2025 4:21:30 PM

Think
Architecture
Architecture
Interior Design
Landscape Architecture
Land Planning
Construction Management

7927 High Point Parkway, Suite 300
Sandy, Utah 84094
ph. 801.269.0055
thinkaec.com

The designs shown and described herein including all technical drawings, graphic representation & models thereof, are proprietary & can not be copied, duplicated, or commercially exploited in whole or in part without the sole and express written permission from THINK Architecture, inc.
These drawings are available for limited review and evaluation by clients, consultants, contractors, government agencies, vendors, and office personnel only in accordance with this notice.

FAIR GROUNDS
TICKET BOOTH KIOSK

2400 14400 S, BLUFFDALE, UTAH, 84065

PROJECT NO. 25-011
DATE: DEC 2025
REVISIONS:

SHEET TITLE:
TICKET BOOTH DETAILS

SHEET NUMBER:
TB-04

© 2022 THINK ARCHITECTURE INC.

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting and capping or sealing site utilities.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated on the drawings to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site-clearing operations until temporary erosion and sedimentation control measures are in place. See Division 31 Section "Erosion and Sedimentation Control (Includes SWPPP)."

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 Section "Earth Moving."

1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Refer to Division 31 Section "Erosion and Sedimentation Controls."

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by the Owner's Representative.

3.4 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner’s Representative not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without written permission of Owner’s Representative.

3.5 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density of 98 percent standard proctor.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials. See section 329200 Turf Grasses for top soil screening.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Temporarily stabilize per the SWPPP and Division 31 Section "Erosion and Sedimentation Control." No top soil shall be removed from project area.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction. Unless otherwise indicated, remove existing improvements above- and below-grade with-in proposed building, fuel, and future expansion areas. Remove other existing improvements or foundations to a minimum of one foot below the proposed subgrade.

3.8 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

1. Submit schedule for recycling operations (if any) and obtain approval in writing from Owner’s Representative. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to witness filling operations of depressions caused by clearing and grubbing. Coordinate scheduled filling operations with the Owner’s testing agency.

END OF SECTION 311000

SECTION 31 2000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses, and exterior plants.
2. Excavating and backfilling for buildings and structures.
3. Drainage course for slabs-on-grade.
4. Subbase course for concrete walks and pavements.
5. Subbase and base course for asphalt paving.
6. Excavating and backfilling for utility trenches.

1.2 SUBMITTALS

A. Building pad certification.

1.3 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site or on site borrow pit for use as fill or backfill.

E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner’s Representative. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
   2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner’s Representative. Unauthorized excavation, as well as remedial work directed by Owner’s Representative, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 QUALITY ASSURANCE

A. Imported (borrow) soil must be tested and certified, by the Owner's testing agency, as suitable material, free of any environmental contaminates. Coordinate imported materials and their source with Division 31 Section "Erosion and Sedimentation Control" and the Storm Water Pollution Prevention Plan. The Contractor will be liable for any and all clean-up costs associated with unapproved, imported materials.

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by the Owner’s Representative and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Provide ASTM D 2487 or AASHTO M 145 classified soil materials according to geotechnical engineer's written recommendations in Division 00 Section "Geotechnical Data."

C. Satisfactory Soils: Recommended materials free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. Satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction will be considered unsatisfactory soil materials.

D. Provide granular soils materials according to the project soils report, local department of transportation (DOT) regulations or as follows (the project soils report takes precedence):

1. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

2. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

3. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

4. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

5. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility.

PART 3 - EXECUTION

3.1 PREPARATION

A. Comply with geotechnical engineer's written recommendations in Division 00 Section "Geotechnical Data."

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Preparation of subgrade is specified in Division 31 Section "Site Clearing."

D. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Erosion and Sedimentation Control (Includes SWPPP)" during earthwork operations.

3.2 EXCAVATION

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. No changes in the Contract Sum or the Contract Time will be authorized except for rock excavation or removal of obstructions not specifically indicated in the Contract Documents.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

2. Authorized additional excavation and replacement material will be paid for according to Contract provisions as specified in Division 00 Section "General Conditions."

B. Excavation for Structures: Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections

C. Excavation for Walks and Pavements: Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

D. Excavation for Utility Trenches: Excavate trenches to indicated gradients, lines, depths, and elevations or as required by authorities having jurisdiction.

1. Trench Width: Provide a clearance of 12 inches (300 mm) on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.

2. Trench Bottoms: Provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

a. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material, 4 inches (100 mm) deeper elsewhere, to allow for bedding course as required by authorities having jurisdiction.

3.3 SUBGRADE INSPECTION

A. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades. Proof-roll in presence of Owner’s testing agency.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner’s testing agency, without additional compensation.

3.4 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations, wall footings, utility pipe, or other construction as approved by the Owner’s testing agency.

3.5 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover or temporarily stabilize as specified in Division 31 Section "Erosion and Sedimentation Control (Includes SWPPP)."

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.6 UTILITY TRENCH BACKFILL

A. General: Backfill trenches as indicated on Drawings.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

C. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

D. Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Structural Concrete."

E. Provide concrete encasement for piping or conduit less than 24 inches (610 mm) below surface of roadways only when indicated on the Drawings or as required by authorities having jurisdiction.

F. Place and compact initial backfill of subbase material or satisfactory soil.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing and Owner's testing agency.

G. Place and compact final backfill as indicated on Drawings to final subgrade elevation.

H. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.7 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations. Comply geotechnical engineer's written recommendations in Division 00 Section "Geotechnical Data."

3.8 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content or as directed by Owner's Testing Agency.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air dry, at no additional cost to the Owner, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight. See Division 31 Section "Dewatering"

3.9 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698, Standard Proctor:

1. Under structures, building slabs, future expansion areas, steps, walkways, and pavements, scarify and recompact top 8 inches (203 mm) of existing subgrade and each layer of backfill or fill soil material at 98 percent.

2. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.

3.10 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawns, Unpaved Areas, and Walks: Plus or minus 1 inch (25 mm).

2. Pavements: Plus or minus 1/2 inch (13 mm).

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.11 SUBBASE AND BASE COURSES

A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase and base course under pavements and walks as follows:

1. Shape subbase and base course to required crown elevations and cross-slope grades.

2. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D 698, Standard Proctor.

3.12 DRAINAGE COURSE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:

1. Place drainage course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.

2. Compact each layer of drainage course to required cross sections and thicknesses to not less than 98 percent of maximum dry unit weight according to ASTM D 698.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. Coordinate scheduled earth moving work with the Owner's testing agency.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by the Owner's testing agency.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

E. Provide other field tests, such as bearing ratio of subgrades, subbases, and bases for paving, as required by authorities having jurisdiction.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest, at the Contractor’s cost, until specified compaction is obtained.

3.14 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before Project warranty period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 2000

PART 1 - GENERAL

1.1 SUMMARY

Section includes:

1. Temporary erosion and sedimentation control measures.

1.2 QUALITY ASSURANCE

Preinstallation Conference: Conduct conference at Project site as specified by the Storm Water Pollution Prevention Plan (SWPPP) with applicable subcontractors, the civil engineer of record, the Owner's Representative, and any applicable governing officials.

1.3 PROJECT CONDITIONS

Review and certify the SWPPP with the owner prior to beginning onsite work.

Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied facilities when installing erosion controls. Coordinate all measures with applicable government authorities having jurisdiction over the connecting, adjacent, or surrounding roadways.

Utility Locator Service: Notify utility locator service for area where Project is located before installing erosion or sediment control measures.

PART 2 - PRODUCTS

2.1 MATERIALS

Erosion/Sediment control devices or Best Management Practices as indicated in the SWPPP.

PART 3 - EXECUTION

3.1 PREPARATION

Coordinate with the owner to provide for the requirements of the SWPPP and associated permits.

3.2 IMPLEMENTATION AND DOCUMENTATION

Inspect, repair, and maintain erosion and sedimentation control measures, per the SWPPP, during construction until permanent vegetation has been established.

Execute required site inspection checklists, documents, and site logs in the SWPPP.

Update, maintain, alter, or add temporary erosion and sediment controls in conjunction with the SWPPP and ongoing earthwork activities as required for the Project.

Maintain an up-to-date Site Plan in the field office. Continually update the Site Plan with notations that coordinate with the site checklists and logs per the SWPPP.

The Owner's Representative has the right and authority to limit earth-moving activities and to direct the Contractor to immediately provide permanent or temporary pollution control measures.

Install permanent erosion measures such as pavement and lawn areas as soon as practically possible to minimize temporary pollution control measures.

Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

Ensure that a proper Notice of Termination (NOT) is filed with the governing authority.

3.3 CLOSEOUT DOCUMENTS

Before retainage can be released, the Contractor must provide the Owner with a final copy of all documents making up the SWPPP including plans, checklists, and logs.

1. Retain a copy of the above documentation for a minimum of three years from final acceptance.

END OF SECTION 31 2500

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Expansion and contraction joints within pavement, walks and curbs.
2. Joints between cement concrete and asphalt pavement.
3. Joints between concrete or asphalt and building walls, columns or structures.

1.2 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.
B. Samples: For each type and color of joint sealant required.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

1. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

2.2 JOINT SEALANTS

A. Sealant for Expansion and Contraction Joints within Cement Concrete Pavement and Between Concrete Walks, Pads, Paving, and Building Walls, Columns, and Structures: Cold applied two-part pourable urethane joint sealant, Type M, Grade P, Class 25, Use T

1. Products:
   a. Sonneborn, Div. of ChemRex, Inc.; Sonoborn SL 2
   b. Pecora Corporation; Dynatrol II-SG.
   c. Tremco; Vulkem 245
   d. Sika Corporation; Sikaflex - 2c SL

2. Color: Match Concrete.

B. Sealant for Joints Larger Than 1/4 inch (6 mm) Between Cement Concrete and Asphalt Pavement or Within Asphalt Pavement (Including Longitudinal Joints, Cracks or Butt Joints.): Polymeric hot applied single-component formulation complying with ASTM D 3405.

1. Products:
   a. Carlisle Coatings and Waterproofing; CCW MiraSEAL EJS
   b. Meadows, W. R., Inc.; Sealtight Hi-Spec.

2. Color: Black

2.3 JOINT-SEALANT BACKER MATERIALS

A. General: Provide joint-sealant backer materials as required that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.

B. Provide one of the following types of backer materials as applicable:

1. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
2. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
3. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.
C. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
D. Install backer materials to support sealants during application and at position required to produce optimum sealant movement capability. Do not leave gaps between ends of backer materials. Do not stretch, twist, puncture, or tear backer materials. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
E. Install sealants at the same time backings are installed to completely fill recesses provided for each joint configuration and to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
F. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.
G. Protect applied sealant from traffic and other damage until sealants cured enough not to track. Provide temporary barricades or other protective measures recommended by the manufacturer.

END OF SECTION 32 1373

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor and materials to construct a complete working and tested sprinkler irrigation system as per all drawings and specifications, providing head to head coverage on all planting areas on the site.

B. Furnish and install all materials to provide a working automatic sprinkler irrigation system. This includes the installation of electric valves, valve control devices, conduit, junction boxes, and all necessary wiring.

C. Perform all work in accordance with the drawings and specifications, as well as City water and electrical standards.

D. Operate and maintain until acceptance all constructed improvements, and guarantee the new system until all plants planted on this project have become established and have been accepted by the City.

1.2 ELECTRICAL POWER SERVICE

A. Make all arrangements with the local power company including, but not limited to, paying fees, making power connections, providing poles, weatherhead and meter, etc., as specified on the plans.

B. Bury all electrical lines or conduit, entering onto the site at a minimum of 24 inches or as required by applicable codes, whichever is greater.

1.3 SYSTEM PRESSURE

A. Provide a system that delivers the manufacturer's recommended minimum operating pressure or greater to every head while maintaining sufficient pressure to overcome the losses due to friction in the piping, fittings, and all other equipment.

PART 2 - PRODUCTS

2.1 PIPE

A. Provide that all pressure main line pipe and fittings smaller than 1-1/2 inch are Schedule 40 PVC and all pressure main line pipe and fittings 1-1/2 inch or larger are Schedule 80 PVC.
B. Use Schedule 40 PVC for all lateral line pipe and fittings smaller than 1-1/2 inch and use Schedule 80 PVC for all fittings 1-1/2 inch or larger.
C. No bends other than very gradual in pipe shall be permitted. Use elbow fittings of 90 and 45 degrees as the situations demand.
D. Handling and Installation of Pipe: Deliver all materials, pipes and fittings at the job site in a sound, undamaged condition. Remove any pipe found to be damaged or defective in workmanship or materials.
E. Every care shall be taken during installation to prevent dirt and debris (especially rocks) from getting into the pipes.

2.2 FITTINGS

A. Use P-70 primer and 7-11 cement on all solvent weld joints.

B. Use Teflon tape on all threaded fittings of two different types of material.

C. Place all tees coming out of main lines or valves and other fixtures so that no weight or pressure may be exerted through the fixture on the top or bottom of the main line. Tees shall be Schedule 80 SXSXS with SXT Schedule 80 bushing of appropriate size to the valves.

D. Place all tees coming out of the lateral lines for heads and other fixtures so that no direct weight or pressure may be exerted through the head to the top or bottom of the lateral line. Tees on lateral lines shall also be SXSXT to the head swing joints.

2.3 PIPE SLEEVES

A. Provide pipe sleeves when crossing a new pavement (concrete or asphalt). Use at least 2 inch (I.D.) larger than the pipes or wires being sleeved or encased. Sleeve wires separately. Use only Schedule 80 PVC or C900 pipe or as approved by the City for all pipe sleeves.

2.4 THRUST BLOCKS

A. Provide thrust blocks on all main lines 3 inches and larger wherever the main pipe line:
   1. Changes any direction at tees, angles, and crosses vertical and horizontal.
   2. Changes size at reducers.
   3. Stops at a dead-end.
   4. Valves at which thrust develops when closed.

B. The size and type of thrust block depends on pressure, pipe size, kind of soil, and type of fitting. For a 3 inch line at 50 PSI or less use at least one cubic foot of class AA (AE) Type II concrete for each thrust block.

C. Place thrust blocks against undisturbed original earth in the direction of thrust.

2.5 GATE VALVES

A. Furnish and install gate valves that conform to APWA specification C 509.

B. Unless otherwise shown or specified, provide flanged valves for all main line sized 2 inch and larger. Provide threaded end valves for all main line sized 1-1/2 inch and smaller. Use valves with non-rising stem and 2 inch square operating nuts. No handles or wheels are allowed unless valves are installed inside a structure. Install unions on each side of all valves except flanged valves. Use valves with a resilient wedge urethane rubber seat.

2.6 CONTROL VALVES

A. No valve shall be installed more than 12 inches below finished grade. Use Schedule 80 PVC pipe on all control valve manifolds.

2.7 SECONDARY WATER FILTERS

A. Install Amiad filter with 1000 micron (or tandem 500 and 1000 micron) and tamper proof cage on all systems using a secondary water source, or as approved by the City.

2.8 CONTROL VALVE BOXES

A. Use one jumbo valve box for each valve 2 inches and larger. Use one standard valve box for each valve smaller than 2 inches. Do not rest any parts of the valve box directly upon the valve or any fixture associated with it. Center each valve box on the valve it covers. Place 3 inches of clean drain gravel in the bottom underneath the valve and lines to reduce the potential of mud and standing water therein. Place filter fabric at the bottom of each valve box.

B. Connect wires to the valve inside a 3M-DBY connector. Seal each connector completely sealed and water proof with a minimum 24 inch wire loop.

C. Run extra wire and loop at all valve boxes that are at a main line terminus.

2.9 CONTROLLER SYSTEM

A. Provide and install only WeatherTRAK Series controllers or approved equal. Install according to the City and the manufacturer's standards and specifications.

B. Install all controllers inside a stainless steel enclosure.

C. Provide conduit, wiring, materials, and all labor to make the controller operational and in compliance with local electrical codes.

D. Provide and install a master valve on each system.

E. Provide and install a flow sensor on each system.

2.10 HEADS

A. Install all heads above grade so as to minimize washing of the topsoil and seed during the landscaping establishment period. Install all heads which border paving or flat work of any kind at the finished grade of the adjacent paving or flat work. Raise or lower all heads to final planting grade prior to final acceptance of the project.

B. Flush thoroughly all pipes, lines, and risers with water before installation of any heads. Remove all debris and rocks found at that time from the area.

PART 3 - EXECUTION

3.1 EXCAVATION AND TRENCHING

A. Excavate trenches that are as deep and as wide as required to safely perform the work, such as making mainline connections or forming vaults.

B. Excavate trenches that are as deep and wide as required to provide working space for placing 2 inches of rock free sand or topsoil bedding underneath all new mainline pipe and fittings where the soil is rocky or gravelly. Place a minimum of 18 inches cover over the top of all pipe and fittings on main lines (lines which maintain a constant water pressure).

3.2 BACKFILL

A. Do not backfill any trenches until the system has been inspected for proper trench depths, installation of equipment, control wire, and location of heads by the Owner’s Representative or the City Inspector.

B. Do not backfill any trenches until the Owner’s Representative or the City Inspector verifies the redlined "as built" drawings showing that changes and corresponding dimensions have been recorded where changes have been made.

C. Pressurize the system to test for leaks and general operation of the equipment and system. Correct all defects and deficiencies.

D. Layer and backfill trenches at 6 inch lifts.

E. Use special care to assure complete compaction under the haunches of the pipe. Compacted and backfill under the haunches of the pipe to the original density.

F. Do not use backfill with rocks larger than 1 inch in diameter or any other debris. Backfill all trenches and then saturate trenches with water sufficiently to insure no settling of the surface after lawn is planted or sod is placed.

3.3 AS BUILT DRAWINGS OR PLANS

A. Keep an accurate record of exact dimensioned locations, grades, elevations, color of hot and spare wires - splice boxes and the size of all underground piping, valves, and drains. Show distances from columns, buildings, curbs, and similar permanent features on the site. Provide coordinates in state plane for each of the following items: point of connection, isolation valve, control valves, and any other pertinent component of the irrigation system.

3.4 OPERATIONAL TEST AND MAJOR INSPECTIONS

A. Call the City Inspector for an operational test and major inspection of the sprinkler irrigation system. Give a minimum three day advance notice to the City Inspector so that proper scheduling can be done for those who are to attend.

3.5 GUARANTEE AND MAINTENANCE

A. Warrant all the completed and accepted items for a full year after the acceptance date by the City. Repair or replace any items that are defective or do not perform according to standards.

END OF SECTION 32 8400

PART 1 - GENERAL

1.1 SUMMARY

A. This Section Includes:
1. Plants.
2. Planting soils.
3. Top soil stripping, stockpiling, screening and placement.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.

B. Samples for Verification: For each of the following:

1. Trees and Shrubs: Three samples of each variety and size delivered to the site for review. Maintain approved samples on-site as a standard for comparison.
2. Organic Mulch: 1-pint volume of organic mulch required; in sealed plastic bag labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.

C. Qualification Data: For qualified landscape Installer, include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.

1. Installer's Field Supervision: Have an experienced full-time supervisor on Project site when work is in progress.

B. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper

measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.

C. Plant Material Observation: Owner’s Representative may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Owner’s Representative retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

   1. Notify Owner’s Representative of sources of planting materials a minimum of seven days in advance of delivery to site.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

C. Handle planting stock by root ball.

D. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

   1. Do not remove container-grown stock from containers before time of planting.
   2. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Planting Restrictions: Plant during the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Fall Planting (Optimal): September 15- December 1.
   2. Spring Planting: Not later than May 31.
   3. Alternate Planting: As approved by the City.

C. Season Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

D. Coordination with Seeded Areas: Plant trees, shrubs, and other plants after finish grades are established and before planting seeded areas unless otherwise indicated.
   1. When planting trees, shrubs, and other plants after planting seeded areas, protect seed areas and promptly repair damage caused by planting operations.

1.6 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

   1. Failures include, but are not limited to, the following:
      a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
      b. Structural failures including plantings falling or blowing over.

   2. Warranty Periods from Date of Substantial Completion:
      a. Trees, Shrubs and perennials: 12 months.

   3. Include the following remedial actions as a minimum:
      a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
      b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
      c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
      d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Owner's Representative, with a proportionate increase in size of roots or balls. Tree size shall be a minimum of 2 inch caliper.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

2.2 PLANTING SOILS

A. Planting Soil: Use on site existing top soil that has been stripped and screened . Verify suitability of existing surface soil to produce viable planting soil. Remove any of the following items that are over ½" in any dimension including stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
B. Place topsoil at 12 inch minimum thickness to all planting areas and 6" minimum thickness to all turf areas.
C. Planting soil and topsoil shall have a PH of 6.0 to 8.0 and organic matter of 1 to 2 percent.

2.3 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Ground or shredded bark.
2. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Natural.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Owner's Representative and replace with new planting soil.
D. A City Representative shall inspect and approve all tree planting pits before the backfill material is placed around the root ball.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and existing plants from damage caused by planting operations.
B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
C. Lay out plants at locations directed by Owner's Representative. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

3.3 PLANTING AREA ESTABLISHMENT

A. Loosen subgrade of planting areas to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
C. Before planting, obtain Owner’s Representative's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

    1. Excavate approximately three times as wide as ball diameter for container-grown stock.
    2. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
    3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
    4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
    5. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
    6. Maintain supervision of excavations during working hours.
    7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

B. Subsoil and topsoil removed from excavations may be used as planting soil.

C. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, AND SHRUB PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the topmost root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

C. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

   1. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
   2. Continue backfilling process. Water again after placing and tamping final layer of soil.

3.6 TREE AND SHRUB PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Owner’s Representative.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Owner’s Representative, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.7 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.

   1. Trees and Shrubs: Apply organic mulch ring of 3-inch minimum thickness, with 24-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.

3.8 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

C. After installation and before Substantial Completion remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

3.9 DISPOSAL

A. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 32 9300

PART 1 - GENERAL

1.1 Summary

A. Includes But Not Limited To –
   1. Provide maintenance for landscaping as described in Contract Documents.

B. Related Sections –
   1. General Conditions and Division 01 apply to this Section.

1.2 Maintenance

A. General
1. Maintain landscaping from completion of landscape installation a minimum of 30 days after Substantial Completion. Seeded lawn shall be maintained 30 days after uniform stand of grass is achieved as stated in Section B below.
   a. If Substantial Completion occurs between October 31st and March 31st, then maintenance period and plant guarantee period shall extend to May 1st.
   b. Lawn which does not live and has to be replaced shall be guaranteed and maintained an additional 30 days from date of replacement.
2. Replace landscaping that is dead or appears dead as directed by Architect at end of maintenance period. Make replacements within 10 days of notification.

B. Sodded Lawn
   1. Maintain seeded lawn areas until lawn complies with specified requirements and throughout maintenance period.
   2. Water seeded areas in sufficient quantities and at required frequency to maintain sub-soil immediately under sod continuously moist 3 to 4 inches deep.
   3. Cut grass first time when it reaches 3 inches high. Continue to mow at least once a week throughout the maintenance period. Remove clippings.
   4. Apply weed killer when broadleaf weeds start developing in competition with grass. Apply weed killer in accordance with manufacturer's instructions during calm weather when air temperature is above 50 deg. F.
   5. At the end of 30 days maintenance period, fertilize lawns with 16-18-8 at a rate recommended by Fertilizer Manufacturer and every 45 days thereafter.

C. Trees, Shrubs, & Plants
   1. Maintain by pruning, cultivating, and weeding as required for healthy growth.
   2. Restore planting basins.
   3. Install if necessary, tighten and/ or repair stake and guy supports and reset trees and shrubs to proper grades or vertical positions as required.
   4. Spray as required to keep trees and shrubs free of insects and disease.
   5. Provide supplemental water by hand as needed in addition to water from sprinkling system.

END OF SECTION 32 9700

PART 1 - GENERAL

1.1 The work to be performed under this section shall consist of furnishing all labor, materials, and equipment to form, pour, finish, and cure concrete walks, curbs and gutters, flat work, retaining walls, footings, mow strips, and other concrete as per the plans and specifications. The work may include but not be limited to excavation, forming, pouring, finishing, jointing, curing, protecting, removing forms, restoring earth or sod around the edges, and guaranteeing the work.

PART 2 - MATERIALS

2.1 CEMENT

A. The cement shall be Portland Type II cement meeting current AASHTO Designation M-85 Specifications. The supplier and mix of concrete shall not be changed during the complete concrete phase of the project. All concrete shall be Class AA (AE) Type II. A 6.5 bag cement mix shall be used with a slump of 4-inch maximum. The concrete shall have a 6% air entrainment with a plus or minus variable of 1%. All air entraining agents shall conform to the requirements of AASHTO Designation ASTM260. The 28-day compressive strength shall be 4,000 P.S.I.

2.2 AGGREGATE

A. The aggregate shall be well graded from fine to coarse. The fine aggregate shall be uniformly graded meeting the requirements of AASHTO Designation ASTM-C33. The coarse aggregate shall be 1" to #4 conforming to the requirements of AASHTO Designation M-92.

2.3 WATER

A. The maximum water/cement ratio shall be 5 gallons per sack. All water used in mixing the concrete shall be clean and free of oil, alkali, organic matter, or other deleterious substances.

2.4 FILL AND BACK FILL

A. The entire area beneath the concrete shall be excavated to the proper depth to allow for the specified thickness of untreated base course or the area shall be compacted to 95% as measured by a Procter test.

B. All excavated material shall be either re-used on the site or hauled away as specified on the plans.

C. Where untreated base course (free drainage material) is specified, the contractor shall import the required quantities from a local supplier. The contractor shall submit samples of the material to be used to the Inspector 3 days prior to use on the site. The untreated base course shall meet the requirements of Section 301 of the most recent edition of State of Utah Standard Specifications for Road and Bridge Construction. This refers to AASHTO Designations I-90, T-27, T-11, T-19 for mineral aggregate requirements. The gradation shall be for 3/4 or 1" maximum passing through the sieves in the percentages and with the tolerances shown on page 108, section 301.03 of the State Standard Specifications referred to above. (Base material shall be installed 12" wider than concrete walk width, both sides.)

2.5 FORMS

A. Forms shall be of suitable materials such as wood, plastic, metal, or combinations thereof. Forms shall be of the shape and dimensions shown on the plans and true to line and grades specified. All forms shall be free from knotholes, loose knots, cracks, splints, warps, or other defects affecting the strength or appearance of the finished product. All forms shall be free of bulges and warping. They shall be cleaned thoroughly before they are used on this project. There shall be no split holes, bolts, or nuts on the final concrete surface when the forms are removed.

B. If at any stage of work, during or after placing the concrete, the forms sag or bulge the affected concrete shall be removed. Exceptions may be taken by the Inspector if the concrete is going to be covered with earth.

PART 3 - EXECUTION

3.1 Supervisor/Foreman must have A.C.I. Training

3.2 All debris shall be removed from the inside of the forms prior to placement of any concrete. Placement operations may be postponed when in the opinion of the Inspector rainfall, excessive wind, low temperatures, wet spots, or the base is not sufficiently compacted. The Contractor shall take all necessary measures to protect the concrete after placement to prevent rain, graffiti, or other damage to the surface.

A. Concrete mix trucks shall be routed to each pour over areas where the least possible damage will occur to the existing sprinkler irrigation system, utilities, lawn, or plant materials. The Contractor shall be responsible for repair of damage done by the concrete mix trucks and any other vehicles involved in these operations.

B. The concrete shall be spread in horizontal layers insofar as practical and only of the thickness that can be satisfactorily hand worked or compacted with vibrators and other such equipment.

C. The concrete shall be deposited as near the final resting place as possible so as to minimize working it and to prevent separating the ingredients.

D. The concrete slope shall be 1" per 10' or 1% in the direction of the natural grade or as indicated on the plans. Flat work will have not more than a 1/8" difference in a 20' radius.

3.3 SAMPLING AND TESTING

A. All concrete shall be sampled and tested in accordance with AASHTO Designation T-141 for air entrainment, slump, and strength. The Contractor shall have the test made at the appropriate times and places. All test results shall be sent to the project Landscape Architect or project Engineer by the testing laboratory at the Contractors expense.

1. Slump Test: Slump tests shall be made in accordance with AASHTO Designation T-119. If a slump test does not meet the specifications, a second slump test shall be made immediately on the same load. The load will be accepted or rejected from the site by the inspector depending on the results of the second test.

2. Air Entrainment: Air entrainment tests shall be made in accordance with AASHTO Designations T-152. If an air entrainment test does not meet the specification, a second test shall be taken immediately on the same load. The load will be accepted or rejected from the site by the Inspector depending on the results of the second test.

3. Compression Tests: Making, curing, and determining compressive strength of concrete cylinders shall be in accordance with AASHTO Designation T-22 and T23. Compressive strength shall be determined from "Strength Tests" in which the average of three standard cylinders shall constitute one strength test. Cylinders for strength tests shall be taken by the testing laboratory, which will also inspect the batching procedure to ascertain compliance with the mix design.

   If any individual strength test is below 4,000 PSI, the concrete may be accepted by the project Landscape Architect or Engineer after reviewing the circumstances. The price the county shall pay for the concrete will be reduced in accordance with the following schedule:

PSI Below Specified Strength Specification	Pay Factor (Percent)
1-100	98
101-200	94
200-300	88
301-400	80

4. Proctor Tests: Compaction of the natural or imported base shall be tested in accordance with AASHTO Designation T-191. All testing procedures and any

additional tests which may be required shall follow those specified in the most recent edition of State of Utah Standard Specifications for Road and Bridge Construction.

B. All costs incurred in sampling and re-sampling, testing and retesting shall be paid by the Contractor.

C. All batching and mixing procedures shall be followed based upon the Salt Lake County Public Works Specifications as administered by the Salt Lake County Public Works Department as related to the most recent edition of the State of Utah Standard Specifications for Road and Bridge Construction

3.4 FINISH

A. Unless specified on the plans, the finish for all concrete flat work shall be a non-skid surface by medium brooming.

3.5 JOINTING

A. Joints shall be placed in the concrete by the Contractor so as to control and minimize cracking. Normally the Contractor shall follow the jointing patterns shown on the plans or submit a drawing showing recommended changes for approval by the project Landscape Architect or Engineer.

1. Control Joints: Shall be every 10 feet in curb and gutter. Sidewalk joints shall be in linear feet equal to the width of the walk (for example, a 6-foot wide walk shall be scored every 6 linear feet.) Slab work shall be jointed a maximum in feet of 2 -1/2 times the thickness of the concrete in inches (for example, the joints would be less than 15 feet apart for a slab 6 inches thick) and never more than 15 feet apart - for a 4" slab, between 8 - 10 feet.

   The control joints shall be a depth of 1/4 the thickness of the slab. Control joints shall be made before shrinkage cracking occurs. All control joints shall be continuous across the concrete except where interrupted by a post, wall, joint, or other obstacle.

   Control joints shall be saw cut (within 24 hours of pour), filled with an exterior weather sealant, and then a one part polyurethane sealant such as Chem-Calks 900. They may be hand formed with a deep cut wand tool with 1/4 radius round edges.

2. Construction Joints: Shall be created longitudinally by the edges of paving or transversely at the end of each days work. A key way shall be formed by fastening a key of wood, plastic, or PVC to the form of the first slab. The thickness of the key way shall be 1/5 of the thickness of the slab. The edges shall be rounded 1/4" radius, never on slabs less than 6" thick. Use a release agent on wood formed key ways and 50’ or less on walkways.

3. Isolation Joints: Shall be created at junctions of new and existing pavement, at buildings, or other abutting objects. A 1/2” expansion joint material (full depth) shall be placed against the existing object to prevent bonding.

3.6 WINTER CONCRETE

A. When outside temperatures reach 35 degrees Fahrenheit, a 7-1/2 bag mix shall be used; heated water shall be used in the concrete mix. Heaters shall be used to heat the aggregate to a temperature of 70-150 degrees Fahrenheit. The aggregates shall be uniformly heated and the development of “hot spots” shall be avoided. The temperature of the mixed concrete shall be 60-90 degrees Fahrenheit. A straw blanket shall be used on all surfaces. Concrete shall not be poured on frozen ground and shall meet A.C.I. 305 and 306 requirements for hot and cold weather precautions. Concrete temperature must be maintained at 50 degrees Fahrenheit or greater but never more than 90 degrees Fahrenheit for 7 days.

3.7 CARE AND CURING

A. All concrete shall be cured for a minimum of 7 days before heavy loads may be placed upon it. Care shall be taken by the supplier and the contractor to prevent too rapid curing and the improper aging of the concrete. Materials such as burlap mats, hay, straw, polyethylene, and water shall be used if necessary.

B. After pouring and during the curing process, the contractor shall see that no initials or other unnecessary marks are made into the surface. The Contractor shall replace any section containing permanent marks at the completion of the project. Prior to that time, the Contractor may grind the surface or take measures to erase any permanent marks in a section if approved by the Inspector or project Landscape Architect (Engineer).

3.8 FORM REMOVAL

A. After the concrete is cured, all forms, stakes, and fastening materials shall be removed from the concrete. Care shall be taken to protect the edges from chipping and to prevent damage to the concrete during removal.

B. All forming materials shall be taken from the site as soon as possible after removal. The area taken up by the forms shall be filled with approved backfill, if needed, and compacted so that top soil shall be placed on top to meet finished grade. If the area is in existing lawn, the sod shall be removed back from the edges of the concrete the standard width of new commercial sod. Then new commercial sod shall be laid full width along the edges of the new concrete until all areas are repaired. The finish grade against the concrete shall be 1 to 1-1/2" below the top of the concrete for sod, 1” for seed.

3.9 CLEAN-UP

A. Upon completion of the concrete work, the entire affected area shall be cleaned up by the Contractor. All wood, forms, stakes, rocks, sod, and other extraneous material shall be removed from the premises.

3.10 GUARANTEE AND REPLACEMENT

A. The Contractor shall guarantee all concrete materials, labor, and workmanship for 1 year following final approval of the contract as per the general County Specifications. Cracks in the concrete shall be routed out and filled with exterior weather sealant.

3.11 METHOD OF MEASUREMENT AND PAYMENT (LUMP SUM)

A. The concrete work shall be measured either by the square foot or included as part of another item such as footings for a fence. The individual concrete work items shall be specified on the bidding schedule with the cost listed as lump sum or unit price. For example, a 6' sidewalk shall be measured as a walk 6' wide in units of 1' long. The unit price bid by the Contractor and used for payment shall include all equipment, labor, and materials to complete each square foot of sidewalk. Curb and gutter shall be measured and paid by the linear foot.

B. Final payment shall be made by the actual units completed as described by the plans and specifications at the price shown on the bidding schedule.

END OF SECTION 33 0000

IRRIGATION AND DRAINAGE CONDUITS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures for installing pipe.

B. Class, type, size, and thickness designations.

C. Asphalt coating for pipe.

1.2 RELATED SECTIONS

A. Section 33 05 04: Corrugated Metal Pipe

B. Section 33 05 06: Polyethylene Pipe

C. Section 03 30 04: Concrete

D. Section 03 20 00: Concrete Reinforcing

1.3 REFERENCES

A. AASHTO M 36: Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

B. AASHTO M 55: Steel Welded Wire Fabric, Plain, for Concrete Reinforcement

C. AASHTO M 86: Concrete Sewer, Storm Drain, and Culvert Pipe

D. AASHTO M 167: Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches

E. AASHTO M 170: Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

F. AASHTO M 196: Corrugated Aluminum Pipe for Sewers and Drains

G. AASHTO M 197: Aluminum Alloy Sheet for Corrugated Aluminum Pipe

H. AASHTO M 198: Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants

I. AASHTO M 207: Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe

J. AASHTO M 219: Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches

K. AASHTO M 243: Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe Arches, and Arches

L. AASHTO M 245: Corrugated Steel Pipe, Polymer Precoated, for Sewers and Drains

M. AASHTO M 246: Steel Sheet, Metallic-Coated and Polymer Precoated for Corrugated Steel Pipe

N. AASHTO M 274: Steel Sheet, Aluminum-Coated (Type 2), for Corrugated Steel Pipe

O. AASHTO M 294: Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter

P. AASHTO M 304: Polyvinyl Chloride (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter

Q. AASHTO National Transportation Product Evaluation Program

R. AASHTO LRFD Bridge Design and Construction Specifications

S. ASTM A 849: Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe

T. ASTM C 828: Low Pressure Air Test of Vitrified Clay Pipe Lines

U. ASTM C 924: Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method

V. ASTM C 969: Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Sewer Lines

W. ASTM C 1103: Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

X. ASTM D 1784: for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

Y. ASTM D 3212: Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

Z. ASTM D 3350: Polyethylene Plastics Pipe and Fittings Materials

AA. ASTM F 477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe

BB. ASTM F 1417: Testing Installation Acceptance of Plastic Gravity Flow Sewer Lines Using Low Pressure Air

CC. Utah Occupation Safety and Health Regulations

1.4 DEFINITIONS

A. Pipe and Pipe Arch are identified according to diameter or by span and rise, the following definitions, and according to corrosion class.

1. Cover – The vertical extent of soil above the crown of the pipe or culvert. Refer to DG Series Standard Drawings.
2. Cross Culvert – A transverse drain covered with embankment that allows surface runoff to pass under the embankment.
3. End Section – A structure commonly made of steel or concrete that is attached to one or both ends of a culvert or a pipe to retain the embankment, improve appearance, provide anchorage, improve discharge, and limit scour at the opening.
4. Headwall – A structure commonly made of concrete, placed at the end of culvert inlet or outlet or storm drain outlet, to anchor the pipe, to retain the highway embankment near the pipe end, and to protect the pipe ends from bank erosion and channel bed scour.
5. Invert – The floor, bottom, or lowest part of the internal cross section of a culvert, conduit, or storm drain.
6. Irrigation Pipe – A pipe designed to carry seasonal irrigation water by gravity flow.
7. Paved Invert – Lining of concrete, bituminous, or other materials placed in the invert to protect the invert from abrasion or to improve the culvert hydraulics.
8. Rise – The vertical height dimension of a box, pipe arch, and arch structure.
9. Skew – The angle between a line perpendicular to the roadway centerline and the longitudinal direction of the culvert barrel.
10. Soffit – The inside top or roof of a culvert, conduit, or storm-drain pipe.
11. Span – The horizontal dimension of a box culvert, pipe arch, or arch structure.
12. Storm Drain – A closed conduit or waterway that collects and conveys storm runoff that has drainage structures at the ends of

individual pipe runs such as catch basins, drop inlets, manholes, endwalls, and other similar features by gravity flow.

B. Corrosion Classification
1. Class A – Pipe used in mostly non-reactive soils that requires no special materials, treatments, or coatings.
2. Class B – Pipe used in moderately reactive and corrosive soils.
3. Class C – Pipe used in soils that are highly reactive and corrosive.
4. Class D – Untreated structural plate pipe used in mostly non-reactive and non-corrosive soils.
5. Class E – Structural plate pipe used in highly reactive and corrosive soils.

1.5 SUBMITTALS

A. Provide a manufacturer's Certificate of Compliance showing that furnished pipes meet or exceed the requirements in this Section, Article 2.4 paragraph A.1.

B. Provide certification that the company manufacturing HDPE pipe is enrolled in the National Transportation Product Evaluation Program (NTPEP) and that the particular pipe size they are furnishing has been tested and meets AASHTO minimum requirements for HDPE pipe.

C. Furnish a Certification of Compliance from the manufacturer certifying coating thickness.

1.6 ACCEPTANCE CRITERIA

A. General
1. Final Acceptance testing criteria detailed below at the request of the Contractor and with the concurrence of the Engineer. Progress payments will only be made after certification by the Contractor that all of the following elements meet the requirements of this specification for each sample unit or segments of sample units submitted for payment.
    a. Horizontal and vertical alignment deviations
    b. Barrel distortion
    c. Damage to the pipe
    d. Joints
    e. Coating integrity
    f. Provide a digital picture with a format and resolution quality acceptable to the Engineer of the pipe barrel condition at each end of each pipe sample unit or segments of sample units submitted for Progress payments.

2. Final acceptance of pipes will be according to the criteria outlined in this section. Perform the acceptance testing or use the services of a Department approved third party testing company

B. Requirements
1. Horizontal and vertical alignment deviations.
2. Remove and reinstall all pipes that exceed the alignment tolerances shown in Table 1.

Table 1

Installation Alignment Tolerances		
Design Grade	**Horizontal Deviation**	**Vertical Deviation *** inches/100 feet
> 1%	Horizontal joint deflections not to exceed industry standards	1½
≤ 1%		1
< 0.5%		± 0.5

* Increase tolerance by 50 percent for cross culverts.

3. Joints
   a. Cross Culverts – Provide pipes with joints that pass a 3 psi pressure test in the laboratory according to this Section, Article 2.4 paragraph A.
   b. Storm Drains – Provide pipes with joints that pass a 5 psi pressure test or any other pressure requirements specified in the plans. Test pipes according to this Section, Article 2.4 paragraph A.
   c. Irrigation Pipe – Provide pipes with joints that pass laboratory tests for 5 psi or any other pressure requirements specified in the plans.
   d. Pipe Arches and Structural Plate Pipes – Install according to manufacturer's recommendations and are not pressure rated.
4. Allowable distortions – Provide installed pipes that do not have ovaling or distortions greater than 5 percent of the nominal pipe diameter. Measure distortions using a mandrel or directly. Use measured diameter to calculate the 5 percent tolerance limit for nominal pipe diameter larger than 48 inches.

C. Inspection and Testing
1. The inspection and testing is divided into two categories:
a. Cross Culverts
b. Storm drains and irrigation pipes.
2. Table 2 shows the inspection and testing required according to pipe category. Inspect or test with the Engineer or his representative present the cross culverts, storm drains, and irrigation pipes installation before placing the roadway pavement.

Table 2

Pipe Testing Requirements According to Pipe Function					
	Visual		**Physical**		**Leakage**
Pipe Category and Size	**Sight**	**Video Recording**	**Manual Measure**	**Mandrel Refer / Laser Ring**	**Air or Water Test**
Cross Culverts ≤ 48-inch dia.		X*	X*	Non-compliance with criteria in this section	
Cross Culverts > 48-inch dia.	X		X		
Storm Drains/ Irrigation Pipes ≤ 48-inch dia.		X*	X*	Non-compliance with criteria in this section	Visual non-compliance with criteria in this section
Storm Drains/Irrigation Pipe > 48-inch dia.	X		X		Visual non-compliance with criteria in this section

* Both methods are acceptable for pipes with diameters larger than 30 inches

3. Video record all the cross culvert, storm drain installations, and irrigation pipe units installed. Additionally, test any pipes with apparent defects in the visual test and recording according to this table or as directed by the engineer.

4. Visual Inspection
   a. Visually inspect pipes as required in Table 2. Follow OSHA requirements for inspecting confined entry spaces.
   b. Provide and use a mobile color video camera with an appropriate light to show the interior of the pipe, able to move inside the pipe barrel, and controlled remotely to record installed pipes as required in Table 2.
   c. Provide a remote monitor and a recording apparatus for the camera to view and record the condition of the installed pipes.
   d. Provide a digital copy of the pipe inspection video recording to the Engineer.
6. Mandrel Test/Laser Ring – The Engineer can require a mandrel test or a laser ring video according to the following criteria when visual inspection shows pipe deformation or faulting.
   a. Test pipe by hand pulling a fabricated mandrel through the sample unit.
   b. Provide and use mandrels to verify that the installed pipes meet the specification requirements in Table 2 of this specification.
   c. Provide the following:
      1) A mandrel acceptable to the Engineer
      2) A mandrel with an effective diameter equal to 95 percent of the nominal inside diameter
      3) A proving-ring to verify mandrel size
      4) A mandrel with a minimum of nine equally spaced runners (40 degree angles)
7. Manual Measurement
   a. Measure manually any pipe distortions or deflections as indicated in Table 2 and verify in the presence of the Engineer or his representative that the installed pipes sample meet the criteria in Table 2.
8. Joint Test for Storm Drains and Irrigation Pipes only – In addition to the inspection requirements in this Section, Article 1.6 paragraph C, test units with diameters equal to or less than 42 inches when visual inspection indicates noncompliance with the criteria in this section. Test all pipes that have joints showing visible gaps, defects, or any other problem according to one of the following testing methods:

   a. Air Test
      1) Individual joints – Test according to ASTM C 1103.
      2) Concrete pipe – Test according to ASTM C 924.
      3) Plastic pipe – Test according to ASTM C 828, C 924, or F 1417 and manufacturer’s recommendations.
   b. Exfiltration Test

1) Test all pipe material types according to AASHTO M 86 and ASTM C 969.
2) Maintain head for one hour.
3) Do not exceed leakage values in Table 3.
4) Locate source or sources of leakage and repair damaged storm drain or irrigation system that does not pass the test.

Table 3

Leakage Test Allowances	
Nominal Pipe Diameter (Inches)	Maximum Leakage Allowed (Gal/hr/100 ft)
18	4.5
24	6
30	7.5
36	9
42	10.5
48	12

D. Quality Assurance
1. Repair or replace damaged or improperly installed pipes in a sample unit at the direction of the Engineer.
2. Repair pipes that fail the Joint Test in this Section, Article 1.6 paragraph C and according to manufacturer’s recommendations at no cost to the Department. Retest the repaired pipes. Remove and replace pipes if they fail retest.
3. Provide engineering analysis certifying the structural and hydraulic integrity of the pipe to the Resident Engineer and Central Hydraulics, signed and sealed by a professional engineer licensed in the State of Utah, for all pipes that fail the mandrel test and that do not exceed 10 percent deflections for the pipe acceptance.
4. Apply the pay reduction schedule in Table 4 for sample units left in place that have pipes that do not meet mandrel test requirements if an engineering analysis is not performed.

Table 4

Pipe Deflection Payment Reductions	
Amount of Deflection (%)	Payment
0.0 to 5	100% of the Unit Bid Price
5.1 to 9.9	75% of the Unit Bid Price
10 or greater	Remove and Replace

5. Remove and replace all pipes that exceed 10 percent deflections.

PART 2 PRODUCTS

2.1 PIPE TYPES

A. Pipe, Pipe Arch, Structural Plate Pipe, and Structural Plate Pipe Arch Types – Refer to Table 5.

Table 5

AASHTO Reference Specifications for Pipe					
Pipe Type	**Pipe Class**				
	A	**B**	**C**	**D**	**E**
Substitutions: Class B and C may be substituted for Class A, Class C may be substituted for Class B or A, Class E may be substituted for Class D.					
Corrugated Pipe and Pipe Arch					
Corrugated steel pipe. Corrugated steel pipe arch. **(1)**	M 36	M 36 Polymeric Coating 0 µm (inside)/250 µm (outside) M 245 & M 246 ASTM A 849 or Aluminized Type **II** Steel M 274 (2)	M 36 Polymeric Coating 250 µm (inside)/250 m (outside) M 245 & M 246 ASTM A 849	N/A	N/A
Corrugated aluminum pipe. Corrugated aluminum pipe arch. **(1)**	M 196 M 197	M 196 M 197	M 196 M 197	N/A	N/A
Corrugated polyethylene (HDPE) pipe	M 294 ASTM D 3350	M 294 ASTM D 3350	M 294 ASTM D 3350	N/A	N/A

Smooth-Lined Pipe and Pipe Arch					
Concrete lined corrugated steel pipe (Use Type V cement. Refer to Section 03055)	M 36	M 36 Polymeric Coating 250 µm (inside)/250 µm (outside) M 245 & M 246 ASTM A 849	M 36 Polymeric Coating 250 µm (inside)/250 µm (outside) M 245 & M 246 ASTM A 849	N/A	N/A
Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter	M 294 ASTM D3350	M 294 ASTM D3350	M 294 ASTM D3350	N/A	N/A
Smooth lined Polyvinyl chloride (PVC) pipe	M 304 Cell Class # 12454C ASTM D 1784	M 304 Cell Class # 12454C ASTM D 1784	M 304 Cell Class # 12454C ASTM D 1784	N/A	N/A
Spiral rib steel pipe Spiral rib steel pipe arch	M 36	M 36 Polymeric Coating 0µm (inside)/250 µm (outside) M 245 and M 246, ASTM A 849 or Aluminized Type II Steel M 274 (2)	M 36 Polymeric Coating 250 µm (inside)/250 µm (outside) M 245 and M 246 ASTM A 849	N/A	N/A
Spiral rib aluminum pipe and pipe arch	M 196 and M 197	M 196 and M 197	M 196 and M 197	N/A	N/A
Reinforced concrete pipe	M 170 Type II Cement	M 170 Type II Cement	M 170 Type V Cement required	N/A	N/A
Non-reinforced concrete pipe	M 86 Type II Cement	M 86 Type II Cement	M 86 Type V Cement required	N/A	N/A
Elliptical reinforced concrete pipe	M 207 Type II Cement	M 207 Type II Cement	M 207 Type V Cement required	N/A	N/A
Structural Plate Pipe and Pipe Arch					
Structural steel plate pipe and pipe arch	N/A	N/A	N/A	M 167	M 167 M 243
Aluminum alloy structural plate pipe and pipe arch	N/A	N/A	N/A	M 219	M 219

Footnotes
1. Minimum corner radii conforming to the details shown on the standard drawings.
2. Acceptable Soil Conditions, Class B, Aluminized Type II Steel are, 1.6mm minimum thickness of metal acceptable where pH is greater than 7 and less than 8.5, and soil resistivity is greater than 1500 ohm-centimeters.

2.2 RELATED PRODUCTS

A. Asphalt Coating – Furnish Material Class M-Mastic, either asphalt or tar base, cold applied. Refer to AASHTO M 243 and ASTM A 849.

2.3 PIPE SELECTION

A. Use the same type and strength or thickness for the entire run of pipe.

B. Use the maximum height of cover to determine the strength or thickness.

C. Do not use aluminum pipe when a paved invert is required unless protective measures are taken. Follow this Section, Article 3.7 paragraph C.

D. Corrugated and smooth-lined high density polyethylene pipes – Use only HDPE Plastic Pipe up to 60-inch diameter that is certified by AASHTO National Transportation Product Evaluation Program (NTPEP)to meet AASHTO M 294 requirements and. Provide a copy of NTPEP certification to the Engineer.

E. Corrugated and smooth-lined PVC pipes – Use up to 36 inch diameter.

F. Furnish Material Pipe Coating Class M-Mastic, either asphalt or tar base, cold applied. Refer to ASTM A 849.

G. Precast, non-reinforced concrete pipe – Use only 18 inch to 36 inch diameter.

H. Do not allow pipes of different types of metal to contact each other. Use matching materials to make direct extensions of existing pipes.

I. Do not use pipe containing longitudinal lap seams if watertight pipe or watertight joints are required.

J. Do not use thermoplastic pipe manufactured without UV inhibitors approved by the Materials Engineer in applications subject to direct sunlight.

2.4 JOINTS OR COUPLING BANDS FOR PIPES

A. General
   1. Furnish pipes with joints that can sustain at least 3 psi minimum pressure for all cross culverts or 5 psi minimum pressure or any other pressure defined in the plans or specifications for all storm-drains and irrigation pipes, tested according to the proper AASHTO and ASTM test requirements.
   2. Comply with manufacturer’s recommendations for connecting pipes and for connecting pipes to concrete headwalls, catch basins, and similar structures.

B. Concrete Pipes
   1. Refer to AASHTO M 198.

C. Metal Pipe
   1. Refer to AASHTO LRFD Bridge Design and Construction Specifications and AASHTO M 36 or AASHTO M 245 with the following modifications:
      a. Use connecting bands of the same class as the pipe. Maintain a minimum thickness of 0.064 inch for the connecting bands.
      b. Use bands with projections (dimple bands) only in extension of existing pipes where annular corrugations do not exist.
      c. Re-roll ends of helically corrugated pipe to form at least two full annular corrugations each before being joined.
      d. Use flat bands only when approved in writing by the Engineer.

D. Test joints in the lab according to ASTM D 3212.

E. Joints for PVC Pipes – Show no leakage when tested according to ASTM D 3212. Refer to ASTM F 477 for gaskets.

PART 3 EXECUTION

3.1 PREPARATION

A. Excavating, Trenching, Bedding and Backfill

3.2 INSTALLATION

A. Follow manufacturer installation requirements for installing all types of pipe.

B. Install pipe to conform to AASHTO LRFD Bridge Design and Construction Specifications.

3.3 SMOOTH LINING FOR CORRUGATED STEEL PIPE AND PIPE ARCH

A. Clean all surfaces to be lined including removal of all oil and grease from the metal. Allow the surface to dry before proceeding.

B. Concrete Lining – Refer to ASTM A 849, subsections 5 and 9.

C. Asphalt Lining – No asphalt coating.

3.4 PIPE AND PIPE ARCH

A. Refer to AASHTO M 243.

B. Use materials described in Table 5.

C. Remove moisture, dirt, oil, un-bonded or incompatible paint, grease residual oil, alkalis, or other foreign matter from the surface to be coated.

D. Spray or brush-coat all aluminum pipes contacting concrete with an asphalt mastic or tar base material to a minimum thickness of 0.05 inch.

3.5 STRUCTURAL PLATE PIPE AND PLATE PIPE ARCH

A. Use materials described in Table 5.

B. Repair or replace all damaged plates or coatings before installation.

D. Assembly
1. Give the Engineer a copy of the detail plan showing the position of each plate and the assembly order.
2. Follow the manufacturer's instructions.
3. Clearly mark each modified plate designating its position in the finished structure.
4. Place outside circumferential pipe-laps facing upstream.
5. Attain approved seam fit-up. Place and torque all bolts according to manufacturer's recommendation.
6. Form structural plates so the finished pipe is elliptical with the vertical diameter of round pipe approximately 5 percent greater than the nominal diameter.

E. No Asphalt Coating allowed.

3.6 INVERT PROTECTION

A. Paved Invert
1. Use corrugated steel pipe or pipe arch and structural steel plate pipe or plate pipe arch.
2. Complete backfill and embankment over the pipe before placing paved invert material.
3. Use 10 gauge wire fabric with wire spaced at 6 inch centers. Refer to AASHTO M 55.
4. Arc-weld the wire mesh reinforcement to the corrugation at not more than 2 ft centers.

5. Place concrete at least 2 inches above the crest of the corrugations, at least ¼ of the circumference of round pipe, or the span width of arch pipe.
6. Finish the concrete to a floated surface finish.
7. Coat the joint between the pipe and concrete with liquid asphalt at a rate 0.9 gal/yd^2 of residual asphalt after curing. Coat 6 inches above and below the joints.

3.7 QUALITY CONTROL

A. Provide adequate cover or protection for all pipe during project construction. Replace all damaged pipe before acceptance by the Department.

B. The following are some causes for rejection:
   1. Irregular or distorted shape (not as provided or designed)
   2. Dents or bends
   3. Damaged, broken, delaminated, or scaled coating
   4. Loose bolts or nuts
   5. Uneven laps
   6. Improper fitting joints
   7. Any damage that compromises the functionality and design life of the pipe.

C. Coatings
   1. Department will take a representative sample from each lot furnished to conduct verification testing.

END OF SECTION

SECTION 329200 - TURF AND GRASSES

TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on Masterworks/Single-File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on Masterworks/Supporting Information.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Meadow grasses and wildflowers.

B. Related Requirements:

1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

1. Certification of each seed mixture for **turfgrass sod, meadow, and seed for areas to be seeded**. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf, **meadows and seeded areas** during a calendar year. Submit before expiration of required maintenance periods.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf[**and meadow** establishment.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: **Five** years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances as indicated on planting plan.

2.2 MEADOW GRASSES AND WILDFLOWERS

A. Wildflower Seed: Fresh, clean, and dry new seed, of mixed species as indicated on planting plan.

B. Grass Seed: Fresh, clean, and dry new seed, of mixed species as indicated on planting plan.

C. Seed Carrier: Inert material, sharp clean sand or perlite.

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.

C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of [**2 to 5**] <**Insert range or value**> decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: [**50 to 60**] <**Insert number range**> percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

G. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

C. Erosion-Control Mats: Cellular, nonbiodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of [**3-inch (75-mm)**] [**4-inch (100-mm)**] [**6-inch (150-mm)**] <**Insert dimension**> nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Placing Planting Soil: **Place and mix planting soil in place over exposed subgrade**.

B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h).

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate as indicated on planting plan.

C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

D. Protect seeded areas from hot, dry weather or drying winds by applying **compost mulch, or peat mulch** within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of [**3/16 inch (4.8 mm)**] , and roll surface smooth.

3.5 HYDROSEEDING

A. Hydroseeding: Mix specified seed, **commercial fertilizer**, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry with **fiber-mulch manufacturer's recommended** tackifier.
2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than **1500-lb/acre (15.6-kg/92.9 sq. m)**] dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.6 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.

2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow **turfgrass** to a height of 2 inches (50 mm).

C. Turf Postfertilization: Apply [**commercial fertilizer**] after initial mowing and when grass is dry.

1. Use fertilizer that provides actual nitrogen of at least **1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m)**] to turf area.

3.7 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding [**90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm)**] .

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.8 MEADOW

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h).

1. Before sowing, mix seed with seed carrier at a ratio of not less than [**two**] parts seed carrier to one part seed.
2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
3. Do not use wet seed or seed that is moldy or otherwise damaged.

B. Sow seed at a total rate as indicated on planting plan.

C. Brush seed into top 1/16 inch (1.6 mm) of soil, roll lightly, and water with fine spray.

D. Protect seeded areas from hot, dry weather or drying winds by applying **peat**] [**or**] [**compost**] mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch (4.8 mm), and roll surface smooth.

E. Water newly planted areas and keep moist until meadow is established.

3.9 MEADOW MAINTENANCE

A. Maintain and establish meadow by watering, weeding, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

3.10 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove nondegradable erosion-control measures after grass establishment period.

3.12 MAINTENANCE SERVICE

A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

1. Seeded Turf: [**60**] <**Insert number**> days from date of [**planting completion**] [**Substantial Completion**] <**Insert starting time**>.

    a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

2. Sodded Turf: [**30**] <**Insert number**> days from date of [**planting completion**] [**Substantial Completion**] <**Insert starting time**>.
3. Plugged Turf: [**30**] <**Insert number**> days from date of [**planting completion**] [**Substantial Completion**] <**Insert starting time**>.
4. Sprigged Turf: [**30**] <**Insert number**> days from date of [**planting completion**] [**Substantial Completion**] <**Insert starting time**>.

B. Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Meadow Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than maintenance period below.

1. Maintenance Period: [**40**] <**Insert number**> days from date of [**planting completion**] [**Substantial Completion**] <**Insert starting time**>.

END OF SECTION 329200