# WEST AGRICULTURAL SCIENCE FACILITY

## TOMBALL ISD

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SITE LOCATION MAP

NORTH

SHEET INDEX

| SHEET # | SHEET NAME |
|---|---|
| G0.00 | COVER SHEET |
| G1.00 | GENERAL/CODE INFORMATION |
| G1.01A | CODE ANALYSIS |
| G1.01B | HC CODE REVIEW MAIN BUILDING |
| G1.01C | HC CODE REVIEW POULTRY BLDG. |
| G1.01D | HC CODE REVIEW FIELD HOUSE |
| G1.01E | HC CODE REVIEW PRESS BOX |
| G1.02 | 1ST FLOOR LIFE SAFETY PLAN |
| CA1.00 | COMPOSITE SITE PLAN |
| CA1.01 | SITE PLAN AREA 'S1' |
| CA1.02 | SITE PLAN AREA 'S2' |
| CA1.03 | ENLARGED SITE PLAN - FIELD HOUSE |
| CA1.04 | ENLARGED SITE PLAN - PRESSBOX |
| CA1.05 | SITE DETAILS |
| CA1.06 | GATE DETAILS & SCHEDULE |
| L1.01 | LANDSCAPE PLAN AREA 'S1' |
| L1.02 | LANDSCAPE PLAN AREA 'S2' |
| C0.00 | CIVIL COVER SHEET |
| C0.01 | GENERAL NOTES |
| C0.02 | HARRIS COUNTY ENGINEERING REVIEW SHEET |
| C0.03 | HARRIS COUNTY FLOOD CONTROL REVIEW SHEET |
| C0.04 | TOPOGRAPHIC SURVEY |
| C1.00 | OVERALL LAYOUT |
| C1.01 | DEMOLITION PLAN (SHEET 1 OF 2) |
| C1.02 | DEMOLITION PLAN (SHEET 2 OF 2) |
| C1.03 | SITE LAYOUT (SHEET 1 OF 2) |
| C1.04 | SITE LAYOUT (SHEET 2 OF 2) |
| C1.05 | FIRE LANE LAYOUT |
| C1.06 | LEFT TURN LANE |
| C2.01 | GRADING LAYOUT (SHEET 1 OF 2) |
| C2.02 | GRADING LAYOUT (SHEET 2 OF 2) |
| C3.01 | STORM SEWER LAYOUT (SHEET 1 OF 2) |
| C3.02 | STORM SEWER LAYOUT (SHEET 2 OF 2) |
| C3.03 | STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 2) |
| C3.04 | STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 2) |
| C3.05 | DRAINAGE AREA MAP (SHEET 1 OF 2) |
| C3.06 | DRAINAGE AREA MAP (SHEET 2 OF 2) |
| C3.07 | STORM SEWER CALCULATIONS |
| C4.01 | WATER LINE & SANITARY SEWER LAYOUT (SHEET 1 OF 2) |
| C4.02 | WATER LINE & SANITARY SEWER LAYOUT (SHEET 2 OF 2) |
| C5.01 | JOINT LAYOUT PLAN (SHEET 1 OF 2) |
| C5.02 | JOINT LAYOUT PLAN (SHEET 2 OF 2) |
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| C7.02 | STORM SEWER DETAILS |
| C7.03 | WATER & SANITARY SEWER DETAILS |
| C7.04 | STORM WATER POLLUTION PREVENTION DETAILS |
| C7.05 | GRASS FIELD DETAILS |
| C7.06 | HARRIS COUNTY SWP DETAIL |
| C7.07 | HARRIS COUNTY CONCRETE PAVEMENT DETAIL 1 |
| C7.08 | HARRIS COUNTY CONCRETE PAVEMENT DETAIL 2 |
| C7.09 | HARRIS COUNTY PAVEMENT MARKING DETAIL 1 |
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| C7.11 | HARRIS COUNTY TRAFFIC CONTROL DETAIL |
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| LI1.2 | IRRIGATION PLAN (SHEET 2 OF 2) |
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| S0.02 | GENERAL NOTES |
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| S0.04 | TYPICAL FRAMING DETAILS |
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| A2.01 | AREA 'A1' 1ST FLOOR PLAN |
| A2.02 | AREA 'B1' 1ST FLOOR PLAN |
| A2.03 | SCHEDULES AND OPENINGS |
| A3.01 | PLAN DETAILS |
| A4.01 | ROOF PLAN |
| A4.02 | CANOPY PLAN AND DETAILS |
| A5.01 | ENLARGED RESTROOM PLANS |
| A6.01 | PARTITION TYPES AND WALL DETAILS |
| A6.02 | WALL SECTIONS |
| A6.03 | WALL SECTIONS |
| A7.01 | EXTERIOR ELEVATIONS |
| A7.02 | INTERIOR ELEVATIONS |
| A9.01 | FRAME ELEVATIONS AND OPENING DETAILS |
| A10.01 | AREA 'A1' 1ST FLOOR RCP |
| A10.02 | AREA 'B1' 1ST FLOOR RCP |
| A11.00 | INTERIOR FINISH LEGEND |
| A11.01 | AREA 'A1' 1ST FLOOR FINISH PLAN |
| A12.00 | SIGNAGE DETAILS |
| A12.01 | SIGNAGE PLAN AND DETAILS |
| M0.01 | MECHANICAL SYMBOL LEGEND |
| M0.11 | MECHANICAL GENERAL NOTES |
| M2.11 | MECHANICAL PLAN LEVEL 1 |
| M3.01 | MECHANICAL ENLARGED PLAN |
| M5.01 | MECHANICAL SCHEDULES |
| M6.01 | MECHANICAL DETAILS |
| M7.01 | MECHANICAL CONTROL DIAGRAMS |
| E0.01 | ELECTRICAL SYMBOL LEGEND |
| E0.11 | ELECTRICAL GENERAL NOTES |
| E1.01 | ELECTRICAL SITE PLAN |
| E2.01 | ELECTRICAL LIGHTING PLAN |
| E2.11 | ELECTRICAL POWER PLAN LEVEL 1 |
| E3.01 | ELECTRICAL LIGHTING ENLARGED PLAN |
| E3.02 | ELECTRICAL POWER ENLARGED PLAN |
| E4.01 | ELECTRICAL ONE-LINE DIAGRAM |
| E5.01 | ELECTRICAL SCHEDULES |
| E5.02 | ELECTRICAL SCHEDULES |
| E6.01 | ELECTRICAL DETAILS |
| E6.02 | ELECTRICAL DETAILS |
| P0.01 | PLUMBING SYMBOL LEGEND |
| P0.11 | PLUMBING GENERAL NOTES |
| P2.11 | PLUMBING PLAN LEVEL 1 |
| P2.12 | PLUMBING ENLARGED PLAN |
| P4.01 | PLUMBING RISER DIAGRAM |
| P4.02 | PLUMBING RISER DIAGRAM |
| P5.01 | PLUMBING SCHEDULES |
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| T0.01 | TECHNOLOGY SYMBOL LEGEND |
| T0.21 | TECHNOLOGY SITE PLAN |
| T2.11 | TECHNOLOGY PLAN LEVEL 1 |
| T3.01 | TECHNOLOGY ENLARGED PLAN |
| T6.01 | TECHNOLOGY DETAILS |
| T6.02 | TECHNOLOGY DETAILS |
| T6.03 | SECURITY DETAILS |
| T6.04 | SECURITY DOOR DETAILS |
| T6.05 | SECURITY DOOR DETAILS |

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REGISTERED ARCHITECT
25340
STATE OF TEXAS

2025-07-28

PROJECT NO. 202414
DATE: 2025-07-28

| DATE | ISSUE |
|---|---|
| ISSUE | PERMIT AND PROPOSAL |

SET NO.

WEST AGRICULTURAL SCIENCE FACILITY

- ACCOUSTICAL TILE
- BATT INSULATION
- BRICK
- CAST-IN-PLACE CONCRETE
- CONCRETE MASONRY UNIT
- EARTH FILL
- FINISHED WOOD
- GYPSUM BOARD
- GYPSUM SHEATHING
- PLASTER
- PLYWOOD
- RIGID INSULATION
- STEEL
- STONE
- WOOD BLOCKING
- WOOD SHIM

## 18 GEN - DRAWING LEGEND
3/4" = 1'-0"

| | |
|---|---|
| ACT | ACOUSTIC CEILING TILE |
| AED | AUTOMATED EXTERNAL DEFIBRILLATOR |
| A.F.F. | ABOVE FINISH FLOOR |
| AWP | ACOUSTIC WALL PANEL |
| CC | CHARGING CABINET |
| C.J. | CONTROL JOINT |
| CL | CENTER LINE |
| CORR. | CORRIDOR |
| CPT | CARPET |
| CT | CERAMIC TILE |
| C.R.D. | CORROSION RESISTANT DOOR |
| CUST. | CUSTODIAL |
| D | DRYER |
| DW | DISHWASHER |
| DWG(S) | DRAWING(S) |
| E/S | EMERGENCY EYEWASH & SAFETY SHOWER |
| E.J. | EXPANSION JOINT |
| ELEV. | ELEVATOR |
| EPX | EPOXY FLOORING |
| EQ | EQUAL |
| FD | FLOOR DRAIN |
| FE | FIRE EXTINGUISHER |
| FEC | FIRE EXTINGUISHER CABINET |
| F.R.P. | FIBERGLASS REINFORCED POLYETHYLENE |
| GALV. | GALVANIZED(I) |
| G.F.R.C. | GLASS FIBER REINFORCED CONCRETE |
| GYP. BD. | GYPSUM BOARD |
| HC | HANDICAP |
| I.I.B. | INTERACTIVE INFORMATION BOARD |
| I.M. | INTERACTIVE MONITOR |
| INFO | INFORMATION |
| K.S. | KNEE SPACE |
| L.B. | LOCKDOWN BUTTON |
| LVT | LUXURY VINYL TILE |
| LKR. | LOCKER |
| MEP | MECHANICAL, ELECTRICAL, PLUMBING |
| MB | MARKER BOARD |
| M.I.M. | MOBILE INTERACTIVE MONITOR |
| MIN | MINIMUM |
| M.J. | MASONRY JOINT |
| MTL. | METAL |
| N.I.C. | NOT IN CONTRACT |
| O.C. | ON CENTER |
| OH | OPPOSITE HAND |
| ORD | OVERFLOW ROOF DRAIN |
| O.P.C.I. | OWNER PROVIDED CONTRACTOR INSTALLED |
| O.P.O.I. | OWNER PROVIDED OWNER INSTALLED |
| P-LAM | PLASTIC LAMINATE |
| POR | PORCELAIN TILE |
| PRAC. | PRACTICE |
| RD | ROOF DRAIN |
| RE: | REFER TO |
| RFT | RESILIENT TILE FLOORING |
| REF. | REFRIGERATOR |
| SCHED. | SCHEDULE(D) |
| SIM | SIMILAR |
| SK | SINK |
| SPECS | SPECIFICATIONS |
| S.S. | STAINLESS STEEL |
| STOR. | STORAGE |
| STRUC. | STRUCTURE |
| TB | TACK BOARD |
| TC | TEACHER CABINET |
| TR | TACK RAIL |
| TYP. | TYPICAL |
| U.N.O. | UNLESS NOTED OTHERWISE |
| VEST. | VESTIBULE |
| W | WASHER |

## 17 GEN - ABREVIATIONS
1/4" = 1'-0"

- A — COLUMN GRID
- 1 — PLAN KEY NOTE
- X A6.XX — WALL & BUILDING SECTIONS
- 2'-6" / [ 15'-0" ] — TYP. DIMENSION / [FIELD VERIFY] DIMENSION
- ALL DIMENSIONS TO FACE OF WALL @ CMU OR FACE OF STUD U.N.O.
- X A1.XX — PLAN OR DETAIL ENLARGED
- X'-X" F.F. — FINISH FLOOR
- X'-X" T.O.S. — TOP OF STEEL
- X'-X" T.O.WD. — TOP OF WOOD
- CLASSROOM **A101** — ROOM NAME / ROOM NUMBER
- CLASSROOM **A101** / *CPT-1* / *RB-1* / *PT-1* — ROOM NAME / ROOM NUMBER / FLOOR FINISH / BASE FINISH / WALL FINISH
- RE: X/A.XX / RE: X/A.XX — MATCH LINE
- CEILING ELEVATION
- PLAN KEY NOTE
- 1 TOILET ACCESSORY
- A101.1 DOOR DESIGNATION
- A101-A WINDOW DESIGNATION
- B11 PARTITION TYPE
- X/A7.XX — ELEVATION SYMBOL
- CASEWORK ELEVATION
- X/A8.XX — 6'H DEC / 100'-0" — FENCE HEIGHT, FENCE TYPE, FENCE LENGTH
- 00.00 — FINISH GRADE ELEVATION
- 1 — REVISION NUMBER
- NORTH — NORTH SYMBOL

## 15 GEN - DRAWING CONVENTIONS
1/4" = 1'-0"

**221. ASSEMBLY AREAS**

| NUMBER OF SEATS | MIN NUMBER OF REQ'D WHEELCHAIR SPACES |
|---|---|
| 4 - 25 | 1 |
| 26 - 50 | 2 |
| 51 - 150 | 4 |
| 151 - 300 | 5 |
| 301 - 500 | 6 |
| 501 - 5000 | 6, PLUS 1 FOR EACH 150, OR FRACTION THEREOF, BETWEEN 501 THROUGH 5000 |
| 5001 AND OVER | 36, PLUS 1 FOR EACH 200, OR FRACTION THEREOF, OVER 5000 |

TABLE 221.2.1. NUMBER OF WHEELCHAIR SPACES IN ASSEMBLY AREAS

## 14 ADA - 221 ASSEMBLY AREA
1/4" = 1'-0"

**219. ASSISTED LISTENING SYSTEMS**

| CAPACITY OF SEATING IN ASSEMBLY AREA | MIN NUMBER OF REQ'D. RECEIVERS | MIN NUMBER OF REQ'D. RECEIVERS REQ'D TO BE HEARING-AID COMPATIBLE |
|---|---|---|
| 50 OR LESS | 2 | 2 |
| 51 - 200 | 2, PLUS 1 PER 25 SEATS OVER 50 SEATS | 2 |
| 201 - 500 | 2, PLUS 1 PER 25 SEATS OVER 50 SEATS | 1 PER 4 RECEIVERS |
| 501 - 1000 | 20, PLUS 1 PER 33 SEATS OVER 500 SEATS | 1 PER 4 RECEIVERS |
| 1001 - 2000 | 35, PLUS 1 PER 50 SEATS OVER 1000 SEATS | 1 PER 4 RECEIVERS |
| 2001 AND OVER | 55 PLUS 1 PER 100 SEATS OVER 2000 SEATS | 1 PER 4 RECEIVERS |

TABLE 219.3 RECEIVERS FOR ASSISTIVE LISTENING SYSTEMS

## 13 ADA - 219 ASSISTIVE LISTENING SYSTEMS
1/4" = 1'-0"

| | ACCESSIBLE MOUNTING HEIGHTS BY AGE GROUP | | | |
|---|---|---|---|---|
| | ADULT | AGE: 9 - 12 | AGE: 5 - 8 | AGE: 2 - 3 |
| **REACH RANGES** | | | | |
| HIGH (MAX) | 48" | 44" | 40" | 36" |
| LOW (MIN) | 15" | 16" | 18" | 20" |
| **RAMPS AND STAIRS** | | | | |
| TOP OF HANDRAIL GRIPPING SURFACE | 34" - 38" | SECOND SET 28" MAX | SECOND SET 28" MAX | SECOND SET 28" MAX |
| **ELEVATORS** | | | | |
| EMERGENCY CONTROL BUTTONS | 35" TO C.L. | | | |
| CONTROL BUTTONS | 48" MAX | | | |
| **DRINKING FOUNTAINS & WATER COOLERS** | | | | |
| HEIGHT TO SPOUT WHEELCHAIR STANDING | 36" 38" - 43" | 30" MAX | 30" MAX | 30" MAX |
| **WATER CLOSETS** | | | | |
| CENTERLINE - WALL HUNG | 16" - 18" | 15" - 18" | 12" - 15" | 12" |
| TOP OF SEAT | 17" - 19" | 15" - 17" | 12" - 15" | 11" - 12" |
| GRAB BARS | 33" - 36" | 25" - 27" | 20" - 25" | 18" - 20" |
| DISPENSER HEIGHT | 15" MIN | 17" - 19" | 14" - 17" | 14" |
| **URINALS** | | | | |
| CENTERLINE - WALL HUNG | 15" MIN | | | |
| TOP OF RIM | 17" MAX | | | |
| FLUSH CONTROLS | 46" MAX | 44" MAX | | |
| **LAVATORIES AND SINKS** | | | | |
| RIM OR COUNTER SURFACE | 34" MAX | 31" MAX | 31" MAX | |
| KNEE CLEARANCE | PER 306.2 | 24" MIN | 24" MIN | |
| **SHOWER STALLS** | | | | |
| TOP OF SEAT | 17" - 19" | | | |
| GRAB BARS | 33" - 36" | 25" - 27" | 20" - 25" | 18" - 20" |
| HAND SHOWER HEAD MOUNTING | SPRAY UNIT W/ 59" MIN HOSE | | | |
| **FIXED OR BUILT-IN SEATING & TABLES** | | | | |
| HIGHEST OPERABLE PART | 28" - 34" | 26" - 30" | 26" - 30" | |
| **DRESSING AND FITTING ROOMS** | | | | |
| HANDICAP BENCH MOUNT | 17" - 19" | | | |
| TOP OF RIM | 20" - 24" | | | |
| FLUSH CONTROLS | 42" MIN | | | |
| **FOOD SERVICE LINES** | | | | |
| TOP OF TRY SLIDE | | | | |
| **EMERGENCY EYEWASH** | | | | |
| TOP OF COUNTER ACTUATOR | | | | |

HOT WATER AND DRAIN PIPES UNDER LAVATORIES SHALL BE INSULATED.
THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES

GRAB BARS, HANDRAILS AND SHOWER SEATS TO BE CAPABLE OF SUPPORTING A STEADY FORCE OF 250 POUNDS IN ANY DIRECTION.

## 6 ADA - ACCESS. MNT. HTS BY AGE
1/4" = 1'-0"

**404. DOORS, DOORWAYS, AND GATES**

FIG. 404.2.3. CLEAR WIDTH OF DOORWAYS

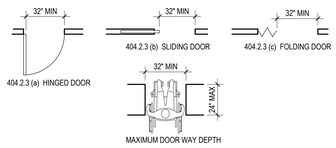
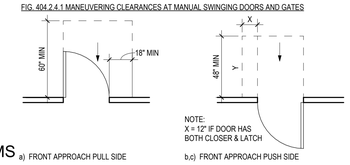
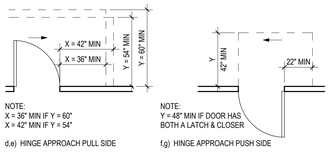
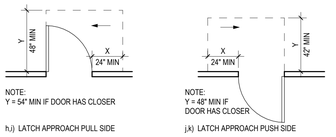



FIG. 404.2.4.1 MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

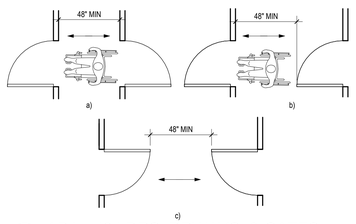


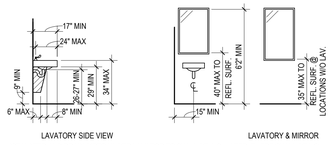

NOTE: ALL DOORS IN ALCOVES SHALL COMPLY WITH THE CLEARANCE FOR FRONT APPROACHES

FIG. 404.2.6 DOORS IN SERIES AND GATES IN SERIES

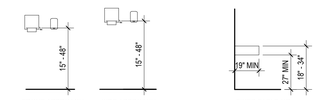



## 5 ADA - 404 DRS, DRWAYS, & GATES
1/4" = 1'-0"

**603. TOILET AND BATHING ROOMS**




HOT WATER AND DRAIN PIPES UNDER LAVATORIES SHALL BE INSULATED, THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES.




**604. WATER CLOSETS AND TOILET COMPARTMENTS**

FIG. 604.3.1 SIZE OF CLEARANCES AT WATER CLOSETS

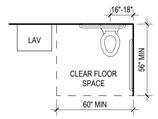



FIG. 604.8.1 WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT DOORS

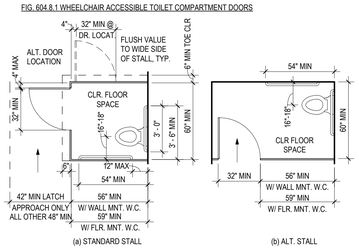
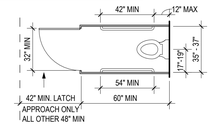
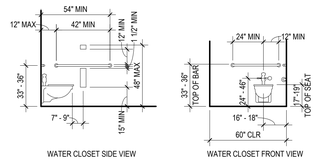



FIG. 604.8.2 AMBULATORY ACCESSIBLE TOILET COMPARTMENT

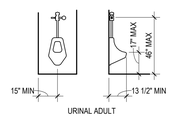



WATER CLOSETS SHALL BE ARRANGED FOR A LEFT-HANDED OR RIGHT-HANDED APPROACH




GRAB BARS, HANDRAILS AND SHOWER SEATS TO BE CAPABLE OF SUPPORTING A STEADY FORCE OF 250 POUNDS IN ANY DIRECTION

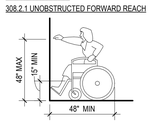
**605. URINALS**



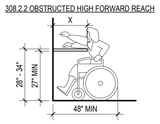

## 9 ADA - 603, 604, 605 - TLT CMPRTMNTS
1/4" = 1'-0"

**308. REACH RANGE**

308.2.1 UNOBSTRUCTED FORWARD REACH

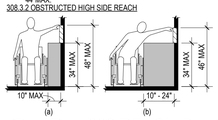



308.2.2 OBSTRUCTED HIGH FORWARD REACH

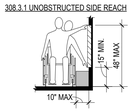



IF THE REACH IS OVER AN OBSTRUCTION, X IS THE REACH DEPTH, Y IS THE REACH HEIGHT AND Z IS THE DEPTH OF THE OBSTRUCTION: WHEN X IS LESS THAN OR EQUAL TO 20", THEN Y SHALL BE 48" MAX. WHEN X IS 20"- 25", THEN Y SHALL BE 44"MAX

308.3.2 OBSTRUCTED HIGH SIDE REACH




308.3.1 UNOBSTRUCTED SIDE REACH




## 4 ADA - 308 REACH RANGE
1/4" = 1'-0"

**503. PARKING AND PASSENGER LOADING ZONES**

TABLE 208.2 PARKING SPACES

| TOTAL SPACES | 1-25 | 26-50 | 51-75 | 76-100 | 101-150 | 151-200 | 201-300 | 301-400 | 401-500 | 501-1000 |
|---|---|---|---|---|---|---|---|---|---|---|
| REQUIRED ACCESSIBLE SPACES | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2% OF TOTAL |

1001 AND OVER = 20, + 1 FOR EACH 100, OR FRACTION THEREOF, OVER 1000

FIGURE 810.2.2 DIMENSIONS OF BUS BOARDING AND ALIGHTING AREAS

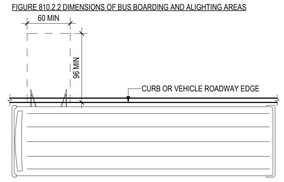
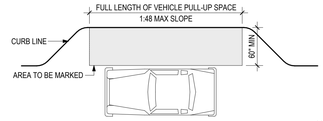
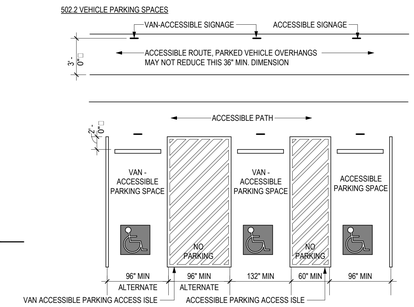



FIGURE 503.3 PASSENGER LOADING ZONE ACCESS AISLE




502.2 VEHICLE PARKING SPACES




## 16 ADA - 503 PARKING & PASSENGER LOADING ZONES
1/4" = 1'-0"

**505. HANDRAILS**

FIG. 505.4 HANDRAIL HEIGHT

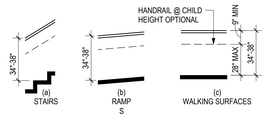



FIG. 505.10.1 TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS

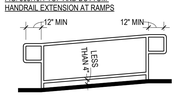



FIG. 505.5 HANDRAIL CLEARANCE

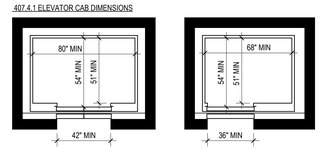
FIG. 505.10.2 TOP HANDRAIL EXTENSION AT STAIRS

FIG. 505.10.3 BOTTOM HANDRAIL EXTENSION AT STAIRS

## 12 ADA - 505 HANDRAILS
1/4" = 1'-0"

**407. ELEVATORS**

407.4.1 ELEVATOR CAB DIMENSIONS



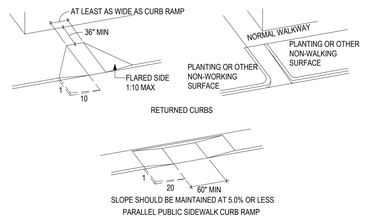

## 11 ADA - 407 ELEVATOR CAB
1/4" = 1'-0"

**407. CURB RAMPS**

ADJOINING SLOPE SHALL NOT EXCEED 1:20

SLOPE = Y:X WHERE X IS A LEVEL PLANE

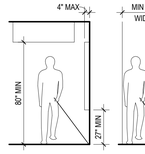
MEASUREMENT OF CURB RAMP SLOPES



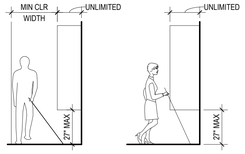

## 8 ADA - 407 CURB RAMPS
1/4" = 1'-0"

**307. PROTRUDING OBJECTS**

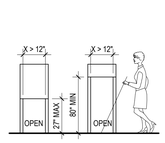
FIG. 307.2 LIMITS OF PROTRUDING OBJECTS




307(a) WALKING PERPENDICULAR TO A WALL




307.3(b) POST MOUNTED PROTRUDING OBJECTS




307.4 VERTICAL CLEARANCE

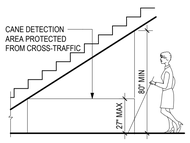
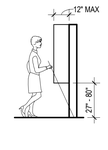
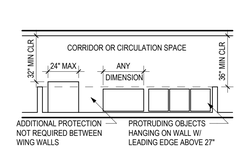



FIG. 307.3(a) POST MOUNTED PROTRUDING OBJECT




307(b). EXAMPLE OF PROTECTION AROUND WALL MOUNTED OBJECTS AND MEASUREMENTS OF CLEAR WIDTHS




## 3 ADA - 307 PROTRUDING OBJECTS
1/4" = 1'-0"

**305. CLEAR FLOOR OR GROUND SPACE**

FIG. 305.3 CLEAR FLOOR OR GROUND SPACE

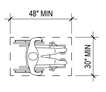
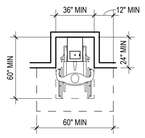
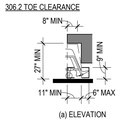



FIG. 304.3.2 T-SHAPED TURNING SPACE




**306 KNEE AND TOE CLEARANCE**

306.2 TOE CLEARANCE




## 2 ADA - 305 & 306 CLEARANCES
1/4" = 1'-0"

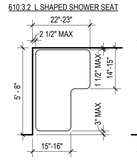
**608. SHOWER COMPARTMENTS**

FIG. 35(a) 36x36 SHOWER SIZE & CLEARANCES

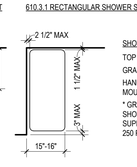
FIG. 31(b) 30x60 SHOWER SIZE & CLEARANCES

NOTE: FLOOR SURFACE IN STALL SHALL NOT SLOPE IN EXCESS OF 1:50 IN ANY DIRECTION

610.3.2 L SHAPED SHOWER SEAT




610.3.1 RECTANGULAR SHOWER SEAT




SHOWER STALL
TOP OF SEAT 17"-19"
GRAB BARS 33"-36"
HAND SHOWER HEAD MOUNTED 48" MAX
* GRAB BARS, HANDRAILS AND SHOWER SEATS TO BE CAPABLE OF SUPPORTING A STEADY FORCE OF 250 POUNDS IN ANY DIRECTION.

FIG. 608.5.1 TRANSFER TYPE SHOWER COMPARTMENT CONTROL LOCATION

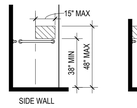
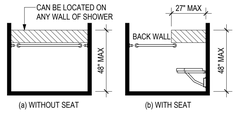


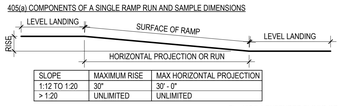

FIG. 608.5.2 STANDARD ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION




## 10 ADA - 608 SHOWER STALLS ADULT
1/4" = 1'-0"

**405. Ramps**

405(a) COMPONENTS OF A SINGLE RAMP RUN AND SAMPLE DIMENSIONS




| SLOPE | MAXIMUM RISE | MAX HORIZONTAL PROJECTION |
|---|---|---|
| 1:12 TO 1:20 | 30" | 30' -0" |
| > 1:20 | UNLIMITED | UNLIMITED |

405(b) EDGE PROTECTION & HANDRAIL EXTENSIONS

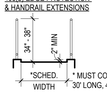
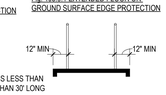


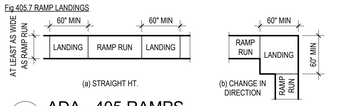

Fig. 405.9.2 CURB OR BARRIER EDGE PROTECTION

Fig. 405.9.1 EXTENDED FLOOR OR GROUND SURFACE EDGE PROTECTION




* MUST COMPLY AS 36" MIN IF RAMP IS LESS THAN 30' LONG, 44" MIN IF RAMP IS MORE THAN 30' LONG

Fig 405.7 RAMP LANDINGS




## 7 ADA - 405 RAMPS
1/4" = 1'-0"

**302. FLOOR OR GROUND SURFACES**

FIG. 302.2 CARPET PILE THICKNESS

FIG. 302.3 ELONGATED OPENINGS IN FLOOR OR GROUND SURFACES

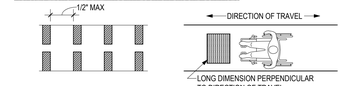
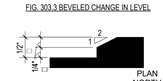



FIG. 303.2 VERTICAL CHANGE IN LEVEL

FIG. 303.3 BEVELED CHANGE IN LEVEL




## 1 ADA - 302 SURFACE
1/4" = 1'-0"

PLAN NORTH


CONSULTANTS

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Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT — 25345 — STATE OF TEXAS

07/28/2025

PROJECT #: 202414
DATE: 2025-07-28
DRAWN: Author
CHECKED: Checker

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# G1.00

GENERAL/CODE INFORMATION

**I. GENERAL DESCRIPTION**

1. PROJECT NAME: TOMBALL ISD WEST AGRICULTURAL SCIENCE FACILITY
2. PROJECT LOCATION: HARRIS COUNTY
3. APPLICABLE CODES:
   INTERNATIONAL BUILDING CODE, 2021 ED.
   UNIFORM MECHANICAL CODE, 2021 ED. WITH ADOPTED AMENDMENTS
   UNIFORM PLUMBING CODE, 2021 ED. WITH ADOPTED AMENDMENTS
   NATIONAL ELECTRICAL CODE, 2020 ED. WITH ADOPTED AMENDMENTS
   INTERNATIONAL FIRE CODE, 2021 ED.
   INTERNATIONAL ENERGY CONSERVATION CODE, 2021 ED.
   ASHRAE 90.1-2007
   THE STANDARDS OF THE STATE BOARD OF INSURANCE
   TEXAS ACCESSIBILITY STANDARDS - (TAS) 2012
   NFPA 101

**II. USE AND OCCUPANCY CLASSIFICATION (IBC CH.3, CH.4, AND CH.5)**

1. USE AND OCCUPANCY CLASSIFICATION (IBC SECTION 302,303, AND 304)

A. WEST AGRICULTURAL SCIENCE FACILITY: TYPE U
B. POULTRY BUILDING: TYPE U
C. FIELD HOUSE: TYPE E

ACCESSORY OCCUPANCIES (IBC SECTION 508.2)
ACCESSORY OCCUPANCIES THAT ARE ANCILLARY TO THE MAIN OCCUPANCY OF THE BUILDING OR PORTION THEREOF. ACCESSORY OCCUPANCIES SHALL COMPLY WITH THE PROVISIONS OF SECTIONS 508.2.1 THROUGH 508.2.4.

GENERAL (IBC SECTION 508.1)
EACH PORTION OF A BUILDING SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. WHERE A BUILDING CONTAINS MORE THAN ONE OCUPANCY GROUP, THE BUILDING OR PORTION THEREOF SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTION 508.2, 508.3 OR 508.4, OR A COMBINATION OF THESE SECTIONS.

OCCUPANCY CLASSIFICATION (IBC SECTOPM 508.2.1)
ACCESSORY OCCUPANCIES SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. THE REQUIREMENTS OF THIS CODE SHALL APPLY TO EACH PORTION OF THE BUILDING BASED ON THE OCCUPANCY CLASSIFICATION OF THAT SPACE.

ALLOWABLE BUILDING HEIGHT (IBC SECTION 508.2.2)
THE ALLOWABLE HEIGHT AND NUMBER OF STORIES OF THE BUILDING CONTAINING ACCESSORY OCCUPANCIES SHALL BE IN ACCORDANCE WITH SECTION 504 FOR THE MAIN OCCUPANCY OF THE BUILDING.

ALLOWABLE BUILDING AREA (IBC SECTION 508.2.3)
THE ALLOWABLE AREA OF THE BUILDNG SHALL BE BASED ON THE APPLICABLE PROVISIONS OF SECTION 506 FOR THE MAIN OCCUPANCY OF THE BUILDING. AGGREGATE ACCESSORY OCCUPANCIES SHALL NOT OCCUPY MORE THAN 10 PERCENT OF THE FLOOR AREA OF THE STORY IN WHICH THEY ARE LOCATED AND SHALL NOT EXCEED THE TABULAR VALUES FOR NON-SPRINKLED BUILDINGS IN THE TABLE 506.2 FOR EACH SUCH ACCESSORY OCCUPANCY.

SEPERATION OF OCCUPANCIES (IBC SECTION 508.2.4)
NO SEPERATION IS REQUIRED BETWEEN ACCESSORY OCCUPANCIES AND THE MAIN OCCUPANCY.

REQUIRED SEPERATION OF OCCUPANCIES (IBC TABLE 508.4)
NO DIFFERING OCCUPANCIES WITHIN THE SAME BUILDING.

3. INCIDENTAL USES (IBC SECTION 509)

OCCUPANCY CLASSIFICATION (IBC SECTION 509.2)
INCIDENTAL USES SHALL NOT BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. INCIDENTAL USES SHALL BE INCLUDED IN THE BUILDING OCCUPANCIES WITHIN WHICH THEY ARE LOCATED.

INCIDENTAL USES (IBC TABLE 509)
A. FURNACE ROOOM WHERE ANY PIECE OF EQUIPMENT IS OVER 400,000 BTU PER HOUR INPUT: 1 HOUR OR AUTOMATIC SPRINKLER SYSTEM
B. ROOMS WITH BOILERS WHERE THE LARGEST PIECE OF EQUIPMENT IS OVER 15 PSI AND 10 HORSEPOWER: 1 HOUR OR PROVIDE AUTOMATIC SPRINKLER SYSTEM
C. REFRIGERANT MACHINERY ROOM: 1 HOUR OR PROVIDE AUTOMATIC SPRINKLER SYSTEM

**III. CONSTRUCTION CLASSIFICATION**

1. CONSTRUCTION TYPE (IBC TABLE 506.2)
   TYPE II-B, NON-SPRINKLED

**IV. ALLOWABLE HEIGHT AND BUILDING AREA**

1. ALLOWABLE NUMBER OF STORIES (IBC TABLE 404.4)
   UTILITY AND MISCELLANEOUS GROUP "U": 2 STORIES
   EDUCATIONAL GROUP "E": 2 STORIES

2. ALLOWABLE HEIGHT (IBC TABLE 504.3)
   UTILITY AND MISCELLANEOUS GROUP "U": 55 FEET
   EDUCATIONAL GROUP "E": 55 FEET

3. ALLOWABLE AREA FACTOR (IBC TABLE C102.1)
   UTILITY AND MISCELLANEOUS GROUP "U" PER APPENDIX C: 18,000 S.F. = PER STORY
   EDUCATIONAL GROUP "E": 14,500 S.F. = PER STORY

ALLOWABLE AREA DETERMINATION (IBC SECTION 506.2)
THE ALLOWABLE AREA OF A BUILDING SHALL BE DETERMINED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF SECTIONS 506.2.1 THROUGH 506.2.4 AND SECTION 506.3.

SINGLE OCCUPANCY, MULTISTORY BUILDINGS (IBC SECTION 506.2.3)
THE ALLOWABLE AREA OF A SINGLE-OCCUPANCY BUILDING WITH ONE STORY ABOVE GRADE PLANE SHALL DETERMINED IN ACCORDANCE WITH EQUATION 5-1: Aa = [At + (At x If) + At x Is)]

FRONTAGE INCREASE PER 506.3.3 TABLE (CALCULATION ONLY FOR WEST AGRICULTURAL SCIENCE FACILITY)
TOTAL BUILDING PERIMETER: 1068 FT
BUILDING FRONTAGE WITH AT LEAST 30' OPEN SPACE: 903 FT (84%)
FRONTAGE INCREASE FACTOR: 0.75

Aa = [At + (NS x If)]
Aa = [18,000 + 13,500) = **31,500 S.F. ALLOWABLE**

**V. ACTUAL HEIGHT AND BUILDING AREA**

1. ACTUAL HEIGHT (ALL BUILDINGS): 1 STORY

2. ACTUAL GROSS BUILDING AREA:
   TOTAL FIRST FLOOR SQUARE FEET FOR EACH SEPARATE PERMITTED BUILDING
   WEST AGRICULTURAL SCIENCE FACILITY = **29,228 S.F.**
   POULTRY BUILDING = **2,995 S.F.**
   FIELDHOUSE = **1,793 S.F.**

**VI. SEPERATION AND/ OR PROTECTION**

1. FIRE RESISTANCE RATING REQUIREMENTS (IBC TABLE 601)
   CONSTRUCTION TYPE II-A

| BUILDING ELEMENT | FIRE-RESISTANCE RATING | PROVIDED |
|---|---|---|
| PRIMARY STRUC. FRAME | 0 HOUR | 0 HOURS |
| BEARING WALLS<br>EXTERIOR<br>INTERIOR | <br>0 HOUR<br>0 HOUR | <br>0 HOURS<br>0 HOURS |
| NONBEARING WALLS & PARTITIONS (EXTERIOR)<br>NONBEARING WALLS & PARTITIONS (INTERIOR) | 0 HOURS<br>0 HOURS | 0 HOURS<br>0 HOURS |
| FLOOR CONSTRUCTION | 0 HOURS | 0 HOURS |
| ROOF CONSTRUCTION | 0 HOURS | 0 HOURS |

2. FIRE BARRIERS (IBC SECTION 707)

FIRE RESISTANCE RATING (IBC SECTION 707.3)
THE FIRE-RESISTANCE RATING OF FIRE BARRIERS SHALL COMPLY WITH THIS SECTION.

SHAFT ENCLOSURES (IBC SECTION 707.3.1)
THE FIRE-RESISTANCE RATING OF THE FIRE BARRIER SEPERATING BUILDING AREAS FROM A SHAFT SHALL COMPLY WITH SECTION 713.4.

FIRE-RESISTANCE RATING (IBC SECTION 713.4)
SHAFT ENCLOSURES REQUIRED TO BE 1 HOUR FIRE RATED

3. INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY (IBC TABLE 803.11)

NO RESTRICTIONS ON INTERIOR WALL AND CEILING FINISHES FOR GROUP U.

| GROUP | NON-SPRINKLERED | | |
|---|---|---|---|
| | INTERIOR EXIT STAIRWAYS, INTERIOR EXIT RAMPS & EXIT PASSAGE WAYS | CORRIDORS & ENCLOSURE FOR EXIT ACCESS STAIRWAYS & EXIT ACCESS RAMPS | ROOMS & ENCLOSED SPACES |
| EDUCATIONAL "E" | A | B | C |

4. MACHINE ROOMS (IBC SECTION 3005) **(N/A)**

MACHINE ROOMS, CONTROL ROOMS, MACHINERY SPACES, AND CONTROL SPACES. (IBC SECTION 3005.4)
ELEVATOR MACHINE ROOMS, CONTROL ROOMS, CONTROL SPACES AND MACHINERY SPACES OUTSIDE OF BUT ATTACHED TO A HOISTWAY THAT HAVE OPENINGS INTO THE HOISTWAY SHALL BE ENCLOSED WITH FIRE BARRIERS CONSTRUCTED IN ACCORDANCE WITH SECTION 707 OR HORIZONTAL ASSEMBLIES CONSTRUCTED IN ACCORDANCE WITH SECTION 711, OR BOTH. THE FIRE-RESISTANCE RATING SHALL BE NOT LESS THAN THE REQUIRED RATING OF THE HOISTWAY ENCLOSURE SERVED BY THE MACHINERY. OPENINGS IN THE FIRE BARRIERS SHALL BE PROTECTED WITH ASSEMBLIES HAVING A FIRE PROTECTION RATING NOT LESS THAN THAT REQUIRED FOR THE HOISTWAY ENCLOSURE DOORS. (ELEVATOR IS MACHINE ROOM-LESS)

**VII. FIRE PROTECTION SYSTEMS**

1. AUTOMATIC SPRINKLER SYSTEMS (IBC SECTION 903): NOT PROVIDED

2. PORTABLE FIRE EXTINGUISHERS (IBC SECTION 906)
PORTABLE FIRE EXTIGUISHERS SHALL BE INSTALLED IN ALL OF THE FOLLOWING LOCATIONS:

A. IN GROUP A,B,E,F,H,I,M,R-1,R-2,R-4 AND S OCCUPANCIES.
B. WITHIN 30 FEET (9144 MM) OF COMMERCIAL COOKING EQUIPMENT.
C. ON EACH FLOOR OF STRUCTURES UNDER CONSTRUCTION, EXCEPT GROUP R-3 OCCUPANCIES, IN ACCORDANCE WITH SECTION 3315.1 OF INTERNATIONAL FIRE CODE.
D. WHERE REQUIRED BY THE INTERNATIONAL FIRE CODE SECTIONS INDICATED IN THE TABLE 906.1.
E. SPECIAL-HAZARD AREAS, INCLUDING BUT NOT LIMITED TO LABORATORIES, COMPUTER ROOMS AND GENERATOR ROOMS, WHERE REQUIRED BY THE FIRE CODE OFFICIAL

MAXIMUM TRAVEL DISTANCE TO EXTIGUISHER (IFC TABLE 906.3): 75 FEET

3. FIRE ALARM SYSTEM (IBC SECTION 907): PROVIDED

**VIII. FIRE APARATUS ACCESS ROADS**

1. REQUIRED ACCESS (IFC SECTION D102)

ACCESS AND LOADING (IFC SECTION D102.1)
FACILITIES, BUILDINGS OR PORTIONS OF BUILDINGS HEREAFTER CONSTRUCTED SHALL BE ACCESSIBLE TO FIRE DEPARTMENT APPARATUS BY WAY OF AN APPROVED FIRE APPARATUS ACCESS ROAD WITH AN ASPHALT, CONCRETE OR OTHER APPROVED DRIVING SURFACE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 75,000 POUNDS.

ACCESS ROAD WIDTH WITH A HYDRANT (IFC SECTION D103.1)
WHERE FIRE HYDRANT IS LOCATED ON A FIRE APARATUS ACCESS ROAD, THE MINIMUM ROAD WIDTH SHALL BE 26 FEET, EXCLUSIVE OF SHOULDERS. PROVIDED

BUILDINGS EXCEEDING THREE STORIES OR 30 FEET IN HEIGHT (IFC SECTION D104.1)
BUILDINGS OR FACILITIES EXCEEDING 30 FEET OR THREE STORIES IN HEIGHT SHALL HAVE ATLEAST TWO MEANS OF FIRE APPARATUS ACCESS ROADS. PROVIDED

BUILDINGS EXCEEDING 62,000 SQUARE FEET IN AREA (IFC SECTION D104.2)
BUILDINGS OR FACILITIES HAVING A GROSS BUILDING AREA OF MORE THAN 62,000 SQUARE FEET SHALL BE PROVIDED WITH TWO SEPERATE AND APPROVED FIRE APPARATUS ACCESS ROADS.

**IX. EGRESS REQUIREMENTS**

1. MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT (IBC TABLE 1004.1.2)

| FUNCTION SPACE | FLOOR AREA (SF PER OCCUPANT) |
|---|---|
| ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM | 300 GROSS |
| ASSEMBLY WITHOUT FIXED SEATS<br>CONCENTRATED (CHAIRS ONLY - NOT FIXED)<br>STANDING SPACE<br>UNCONCENTRATED (TABLES AND CHAIRS) | <br>7 NET<br>5 NET<br>15 NET |
| BUSINESS AREAS | 100 GROSS |
| EDUCATIONAL<br>CLASSROOM AREA<br>SHOPS AND OTHER VOCATIONAL ROOM AREAS | <br>20 NET<br>50 NET |
| KITCHENS, COMMERCIAL | 200 GROSS |
| LOCKER ROOMS | 50 GROSS |
| AGRICULTURE BUILDING | 300 GROSS |

2. MEANS OF EGRESS SIZING (IBC SECTION 1005)

OTHER EGRESS COMPONENTS (IBC SECTION 1005.3.2)
NO SPRINKLER SYSTEM PROVIDED
3'-0" DOOR @ .2" PER OCCUPANT = 180 OCCUPANTS
4'-0" DOOR @ .2" PER OCCUPANT = 240 OCCUPANTS
PAIR 3'-0" DOORS @ .2" PER OCCUPANT = 360 OCCUPANTS
PAIR 4'-0" DOORS @ .2" PER OCCUPANT = 480 OCCUPANTS

3. ADJACENT STORIES (IBC SECTION 1004.1.1.3)
OTHER THAN FOR THE EGRESS COMPONENTS DESIGNED FOR CONVERGENCE IN ACCORDANCE WITH SECTION 1005.6, THE OCCUPANT LOAD FROM SEPERATE STORIES SHALL NOT BE ADDED.

5. EXIT ACCESS TRAVEL DISTANCE (IBC SECTION 1017)

LIMITATIONS (IBC SECTION 1017.2)
EXIT ACCESS TRAVEL DISTANCE SHALL NOT EXCEED THE VALUES GIVEN IN TABLE 1017.2.

EXIT ACCESS TRAVEL DISTANCE (IBC TABLE 1017.2)
UTILITY AND MISCELLANEOUS "U" WITH NO SPRINKLER SYSTEM: 300 FEET
EDUCATIONAL GROUP "E" WITH NO SPRINKLER SYSTEM: 200 FEET

6. EGRESS FROM STORIES OR OCCUPIED ROOFS (IBC SECTION 1006.3)
THE MEANS OF EGRESS SYSTEM SERVING ANY STORY OR OCCUPIED ROOF SHALL BE PROVIDED WITH THE NUMBER OF EXITS OR ACCESS TO EXITS BASED ON THE AGGREGATE OCCUPANT LOAD SERVED IN ACCORDANCE WITH THIS SECTION. THE PATH OF EGRESS TRAVEL TO AN EXIT SHALL NOT PASS THROUGH MORE THAN ONE ADJACENT STORY.

WHERE THREE OR MORE EXITS OR ACCESS TO EXITS ARE REQUIRED, NOT LESS THAN 50 PERCENT OF THE REQUIRED EXITS SHALL BE INTERIOR OR EXTERIOR EXIT STAIRWAYS.

7. STAIRWAYS (IBC SECTION 1009.3)
IN ORDER TO BE CONSIDERED PART OF AN ACCESSIBLE MEANS OF EGRESS, A STAIRWAY BETWEEN STORIES SHALL HAVE A CLEAR WIDTH OF 48 INCHES (219MM) MINIMUM BETWEEN HANDRAILS AND SHALL EITHER INCORPORATE AN AREA OF REFUGE WITHIN AN ENLARGED FLOOR-LEVEL LANDING OR SHALL BE ACCESSED FROM AN AREA OF REFUGE COMPLYING WITH SECTION 1009.6. EXIT ACCESS STAIRWAYS THAT CONNECT LEVELS IN THE SAME STORY ARE NOT PERMITTED AS PART OF AN ACCESSIBLE MEANS OF EGRESS.
EXCEPTION 5: AREAS OF REFUGE ARE NOT REQUIRED AT STAIRWAYS IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 OR 903.3.1.2. NOT REQUIRED

8. AREAS OF REFUGE (IBC SECTION 1009.6)
EVERY REQUIRED AREA OF REFUGE SHALL BE ACCESSIBLE FROM THE SPACE IT SERVES BY AN ACCESSIBLE MEANS OF EGRESS.

SIZE (IBC SECTION 1009.6.3)
EACH AREA OF OF REFUGE SHALL BE SIZED TO ACCOMODATE ONE WHEELCHAIR SPACE OF 30 INCHES BY 48 INCHES (762MM BY 1219MM) FOR EACH 200 OCCUPANTS OR PORTION PORTION THEREOF, BASED ON THE OCCUPANT LOAD OF THE AREA OF REFUGE AND AREAS SERVED BY THE AREA OF REFUGE. SUCH WHEELCHAIR SPACES SHALL NOT REDUCE THE MEANS OF EGRESS MINIMUM WIDTH OR REQUIRED CAPACITY. ACCESS TO ANY OF THE REQUIRED WHEELCHAIR SPACES IN AN AREA OF REFUGE SHALL NOT BE OBSTRUCTED BY MORE THAN ONE ADJOINING WHEEL CHAIR.

SEPARATION (IBC SECTION 1009.4)
EACH AREA OF REFUGE SHALL BE SEPERATED FROM THE REMAINDER OF THE STORY BY A SMOKE BARRIER COMPLYING WITH SECTION 709 OR HORIZONTAL EXIT COMPLYING WITH SECTION 1026. EACH AREA OF REFUGE SHALL BE DESIGNED TO MINIMIZE THE INTRUSION OF SMOKE.
EXCEPTION 1: AREAS OF REFUGE LOCATED WITHIN AN ENCLOSURE FOR INTERIOR EXIT STAIRWAYS COMPLYING WITH SECTION 023.

TWO WAY COMMUNICATION (IBC SECTION 1009.6.5)
AREAS OF REFUGE SHALL BE PROVIDED WITH TWO-WAY COMMUNICATION SYSTEM COMPLYING WITH SECTIONS 1009.8.1 AND 1009.8.2.

9. CORRIDORS SECTION 1020

WIDTH AND CAPACITY (IBC SECTION 1020.2)
THE REQUIRED CAPCITY OF CORRIDORS SHALL BE DETERMINED AS SPECIFIED IN SECTION 1005.1, BUT THE MINIMUM WIDTH SHALL BE NOT LESS THAN THAT SPECIFIED IN TABLE 1020.2.
"OCCUPANCY "U" MINIMUM WIDTH 44 INCHES

DEAD ENDS (IBC SECTION 1020.4)
EXCEPTION 2: IN OCCUPANCIES IN GROUPS B,E,F,I-1,M,R-1,R-2,R-4,S,AND U, WHERE THE BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1, THE LENGTH OF THE DEAD-END CORRIDORS SHALL NOT EXCEED 50 FEET.

**X. MINIMUM PLUMBING FIXTURE COUNT**

1. MINIMUM NUMBER OF REQUIRES PLUMBING FIXTURES (UPC TABLE 422.1)

| USE GROUP | DESCRIPTION | WATER CLOSETS/ URINALS | | LAVATORIES | | BATHTUBS/ SHOWERS | DRINKING FOUNTAIN (1:150) | SERVICE SINK (1) |
|---|---|---|---|---|---|---|---|---|
| | | MALE (1:50) EDUCATION FACILITIES | FEMALE (1:50) EDUCATION FACILITIES | MALE (1:50) EDUCATION FACILITIES | FEMALE (1:50) EDUCATION FACILITIES | | | |
| U | 113 OCCUPANTS | 1/1 | 2 | 2 | 2 | X | 2 | 1 |
| E | 208 OCCUPANTS INCLUDING BLEACHERS | 2/1 | 3 | 3 | 3 | X | 2 | 1 |

FIXTURE CALCULATIONS (IBC SECTION 2902.1.1)
TO DETERMINE THE OCCUPANT LOAD OF EACH SEX, THE TOTAL OCCUPANT LOAD SHALL BE DIVIDED IN HALF. TO DETERMINE THE REQUIRES NUMBER OF FIXTURES, THE FIXTURE RATIO OR RATIOS FOR EACH FIXTURE TYPE SHALL BE APPLIED TO THE OCCUPANT LOAD OF EACH SEX IN ACCORDANCE WITH TABLE 2902.1. FRACTIONAL NUMBERS RESULTING FROM APPLYING THE FIXTURE RATIOS OF TABLE 2902.1 SHALL BE ROUNDED UP TO THE NEXT WHOLE NUMBER. FOR CALCULATIONS INVOLVING MULTIPLE OCCUPANCIES, SUCH FRACTIONAL NUMBERS FOR EACH OCCUPANCY SHALL FIRST BE SUMMED AND THEN ROUNDED TO THE NEXT WHOLE NUMBER.

**XI. ACTUAL PLUMBING FIXTURE COUNT**

| USE GROUP | DESCRIPTION | WATER CLOSETS/URINALS | | LAVATORIES | | BATHTUBS/ SHOWERS | DRINKING FOUNTAIN | SERVICE SINK |
|---|---|---|---|---|---|---|---|---|
| | | MALE | FEMALE | MALE | FEMALE | | | |
| U | AG FACILITY | 2/1 | 3 | 2 | 2 | X | 2 | 1 |
| E | FIELDHOUSE | 2/3 | 5 | 3 | 3 | X | 2 | 1 |

1 GEN - CODE ANALYSIS
12" = 1'-0"

PLAN NORTH


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT — BRIAN NEIL — 25345 — STATE OF TEXAS

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | BN |
| CHECKED: | - |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | 1 PERMIT AND PROPOSAL |

# G1.01A

CODE ANALYSIS

# 1 BUILDING PLANNING & DESCRIPTION

☒ NEW CONSTRUCTION ☐ SHELL BUILDING
☐ LEASE SPACE BUILD-OUT (LSBO) ☐ CHANGE OF OCCUPANCY
☐ SUBSTANTIAL IMPROVEMENT ☐ OTHER: _____

| MIXED OCCUPANCY | | |
|---|---|---|
| ☒ SINGLE OCCUPANCY | ☐ SEPARATED USE | ☐ NON-SEPARATED USE |

*(SECTION 508.3 OR 508.4 IBC 2021)*

TYPE OF CONSTRUCTION: TYPE IIB *(CHAPTER 6 IBC 2021)*

HEIGHT LIMITATION: 55' - 0" AREA LIMITATION: 18,000 S.F. *(TABLES 504.3, 504.4, 506.2 IBC 2021)*

FRONTAGE INCREASE CALCULATIONS ARE SHOWN ON SHEET: 31,500 S.F. CALCULATION SHOWN ON G1.01A

**BUILDING VALUATION**

BUILDING NUMBER: 1 OF 4

ADDRESS: 18530 CYPRESS HEIGHTS DRIVE

CITY, ST: CYPRESS, TX ZIP CODE: 77433 SUITE: _____

CALL CENTERPOINT ENERGY AHEAD OF TIME, AT 713-207-4460, TO OBTAIN AN ADDRESS

HCAD #. OR PROPERTY TAX #: 1440160010001 (13 DIGITS)
(http://www.hcad.org)

X-UNSHADED X 500-YR ____ 100-YR ____ OTHER ____

BUILDING LOCATED IN FLOODPLAIN: BFE _____ FFE _____ NG _____

GROSS SQUARE FOOTAGE: 29,233 SQ FT #OF FLOORS: 1 HEIGHT: 20' - 0"

ESTIMATED COST OF CONSTRUCTION: $_____

T.D.L.R #: _____ *(REQUIRED FOR CONSTRUCTION OVER $50,000)*
TEXAS DEPARTMENT OF LICENSING AND REGULATIONS
(https://www.tdlr.texas.gov/ab/ab.htm)
TELEPHONE: (512) 463-6599 TOLL FREE (IN TEXAS): 800-803-9202
FAX: (512) 475-2871 RELAY TEXAS-TDD: 800-735-2989

SHELL BUILDING PERMIT #: _____ CIVIL PROJECT #: _____

PUBLIC UTILITIES: YES ☒ NO ☐

OSSF : YES ☐ NO ☒ PROJECT/PERMIT #: N/A

**LIST BELOW THE PURPOSE/USE OF THE BUILDING OR AREA BEING REVIEWED. INCLUDE DETAILS ON THE PRODUCTS/MATERIALS BEING STORED/FABRICATED AND NOTE HOW THEY ARE BEING PACKAGED.**

THIS PROJECT WILL SERVE AS AN AGRICULTURAL FACILITY FOR TOMBALL WEST HIGH SCHOOL AND WILL HOUSE STUDENTS ANIMALS AND SUPPLIES. ALL SHELVING PROVIDED WILL BE LESS THAN 7' TALL.

# 2 OCCUPANCY TYPE AND LOAD

**CHAPTER 2, 3 & TABLE 1004.5 IBC 2021**

**BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR**

| OCC. CLASS | AREA SPECIFIC USE | GROSS SF | NET SF | SF PER OCC. | DESIGN OCC. |
|---|---|---|---|---|---|
| U | AGRICULTURAL BUILDING | 29,228 S.F. | | 300 | 98 |
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| | | | | | |
| TOTAL NET | | | | | |
| TOTAL GROSS | | 29,228 S.F. | | | 98 |

# 3 MEANS OF EGRESS

**CHAPTER 10 IBC 2021**

| MEANS OF EGRESS | # OF REQUIRED EXITS | # OF EXITS PROVIDED | SHEET # |
|---|---|---|---|
| STAIRWAYS (PER FLOOR) | - | - | - |
| EGRESS @ 1ST FL OR LSBO | - | - | - |

*(SECTIONS 1005 & 1006 IBC 2021)*

PANIC HARDWARE ON EXIT DOORS? YES ☒ NO ☐ *(SECTION 1010.2.9 IBC 2021)*

**STAIRWAYS** *(SECTION 1011 IBC 2021)*

STAIR DETAILS AND EGRESS WIDTHS SHOWN ON: N/A

**EXIT SIGNS/EGRESS ILLUMINATION** *(SECTIONS 1008 & 1013 IBC 2021)*

REQUIRED AND SHOWN ON: E2.01 *(HIGHLIGHT ON PLANS)*

EXTERIOR MEANS OF EGRESS LIGHTING PROVIDED? YES ☒ *(SECTION 1008 IBC 2021)*

**EXIT TRAVEL DISTANCE** *(SECTION 1017 IBC 2021)*

| OCCUPANCY TYPE | MAX TRAVEL DISTANCE | PROVIDE TRAVEL DISTANCE | SHEET # |
|---|---|---|---|
| U | 300 FT | MAX 170 FT | G1.02 |
| | | | |
| | | | |

**ELEVATORS**

NEW ☐ EXISTING ☐ ELEVATOR HOISTWAY IBC SECTION 3006.2.1? YES ☐ NO ☒

ELEVATOR KEYBOX LOCATED IN LOBBY? YES ☐ NO ☒

# 4 FIRE PROTECTION & LIFE SAFETY SYS.

**CHAPTER 9 IFC & IBC 2021**

**ALL FIRE PROTECTION PLANS SHALL BE SUBMITTED FOR REVIEW AFTER BUILDING PERMIT HAS BEEN ISSUED** ***(I.E. UNDERGROUND FIRE LINE, SPRINKLER SYSTEM, FIRE ALARM SYSTEM, STANDPIPE, FIRE PUMP ROOM, AND FIRE PROTECTION WATER SUPPLY SYSTEMS)***

**AUTOMATIC FIRE SPRINKLER SYSTEM/ALTERNATIVE AUTOMATIC FIRE EXTINGUISHING SYSTEM SECTION 903 IFC 2021**

**ALL SPRINKLERS SHALL COMPLY WITH MONITORING AND OCCUPANT NOTIFICATION PER 903.4.2.1 SECTION 903.4.1 IFC 2021 AMENDMENTS**

☐ PROVIDED AS NOTED ON: _____ ☒ NOT REQUIRED PER SECTION 903

SYSTEM PROVIDED:
☐ NFPA 13
☐ NFPA 13R
☐ NFPA 13D
☐ OTHER: _____

SPRINKLER HEAD PROVIDED:
☐ STANDARD
☐ ELO
☐ ESFR
☐ QUICK RESPONSE

FIRE PUMP PROVIDED:
☐ YES ☐ NO

FIRE PUMP SEPARATION:
SEE SECTION 913.2.1 IFC 2021

FIRE DEPARTMENT ACCESS TO SPRINKLER CONTROLS:
☐ SPRINKLER RISER ROOM OR POST INDICATOR VALVE SHOWN ON: _____
*(SECTION 901.4.7 HC AMENDMENTS IFC 2021)*

☐ FDC SHOWN ON: _____ *(FDC SHALL COMPLY WITH SECTION 912 IFC 2021)*

**ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS** *(SECTION 904 IFC 2021)*
☐ REQUIRED AND SHOWN ON: _____
☒ NOT REQUIRED

**STANDPIPE SYSTEM & HOSE CONNECTIONS** *(SECTION 905 IFC 2021)*
*(I.E. IN STAIRWAYS, STAGES, MALLS)*
☐ PROVIDED AS NOTED ON: _____, TYPE OF SYSTEM PROVIDED: _____ *(CLASS I, II OR III)*
☒ NOT REQUIRED

**PORTABLE FIRE EXTINGUISHERS** *(SECTION 906 IFC 2021)*
☒ PROVIDED AS NOTED ON: G1.02 , NUMBER PROVIDED: 6 *(HIGHLIGHT ON PLANS)*

**FIRE ALARM & DETECTION SYSTEMS** *(SECTION 907 HC AMENDMENTS IFC 2021)*
☒ FIRE ALARM SYSTEM (DEFERRED SUBMITTAL)
☐ NOT REQUIRED
☐ EMERGENCY VOICE EVACUATION
☐ OTHER: _____
☐ ELEVATOR RECALL
☐ GAS DETECTION SYSTEM SECTION 909

**HVAC & AIR DISTRIBUTION SYSTEM CONTROLS** *(SECTION 907.3.1 IFC 2021)*
☐ SMOKE DETECTORS PROVIDED TO SHUT DOWN UNITS OVER 2,000 CFM PROVIDED ON: _____
☒ NO HVAC UNITS OVER 2,000 CFM
☐ FIRE/SMOKE DAMPERS IN THE BUILDING SHOWN ON: _____
☐ NO FIRE/SMOKE DAMPERS IN THE BUILDING

**SMOKE CONTROL SYSTEM** *(SECTION 909 IFC 2021)*
☐ PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**SMOKE & HEAT VENTILATION** *(SECTION 910 IFC 2021)*
☐ CALCULATIONS PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**ENHANCED RESPONDER COMMUNICATIONS COVERAGE SYSTEM (ERCCS)**
☐ PROVIDED AS NOTED ON: _____ *(SECTION 510 HC AMENDMENTS)*
☒ NOT REQUIRED

# 5 FIRE-RESISTANCE RATE CONSTRUCTION

**CHAPTERS 6, 7 AND 10 IBC 2021**

*Provide section details on the plans showing compliance for any proposed fire rated construction (walls, partitions, floors, roof, etc.).
*Please reference and provide standard for the rated design.

**FIRE-RESISTANCE RATING REQUIREMENTS** *TABLE 601 & PROPOSED OR REQUIRED CONSTRUCTION PER IBC 2021*

| BUILDING ELEMENTS | HOURS REQUIRED | HOURS PROVIDED | UL OR IBC STANDARD USED & DESIGN DETAIL SHOWN ON |
|---|---|---|---|
| STRUCTURAL FRAME | 0 | 0 | |
| EXTERIOR BEARING WALLS | 0 | 0 | |
| EXTERIOR NON-BEARING WALLS | 0 | 0 | |
| INTERIOR BEARING WALLS | 0 | 0 | |
| INTERIOR NON-BEARING WALLS | 0 | 0 | |
| FLOOR CONSTRUCTION | 0 | 0 | |
| ROOF CONSTRUCTION | 0 | 0 | |
| STAIRWELLS *(SECTION 1023)* | N/A | N/A | |
| ELEVATOR SHAFTS *(SECTION 713)* | N/A | N/A | |
| CORRIDORS *(SECTION 1020)* | N/A | N/A | |
| FIRE RATED DOORS *(TABLE 716.1(2))* | N/A | N/A | |
| DEMISING/PARTITION WALL *(SECTION 708)* | N/A | N/A | |
| FIRE BARRIER *(SECTION 707)* | N/A | N/A | |
| FIRE WALL *(SECTION 706)* | N/A | N/A | |
| DRAFTSTOPS: ☐ YES, SHOWN ON: _____ | ☐ NO (SPRINKLED ATTIC) | ☒ N/A *(SECTION 718.4)* | |

| FIRE SEPARATION DISTANCE (FEET) *(SECTION 602 IBC 2021)* | 17' - 0" TO PROJ. TRY / 151' TO PROP. LINE | MIN. 98' | 86'-0" | 96' TO PROP. BERM |
|---|---|---|---|---|
| | NORTH | SOUTH | EAST | WEST |

ROOF COVERING CLASSIFICATION PROVIDED: A ☐ B ☐ C ☒ *(TABLE 1505.1 IBC 2021)*

# 6 WATER SUPPLY (FOR FIREFIGHTING)

**CHAPTER 5, APPENDIX B & C IFC 2018**

29,233 S.F. GROSS SIZE OF BUILDING IN SQUARE FEET *(INCLUDE ALL OVERHANGS UNDER ROOF)*

**PUBLIC WATER SUPPLY WITH FIRE HYDRANTS**
(FOR PROPOSED AND EXISTING FIRE HYDRANTS ONLY)
NAME OF THE MUNICIPAL UTILITY DISTRICT: _____
NUMBER OF HYDRANTS WITHIN 400 FT (NON-SPRINKLED) OR 600 FT (SPRINKLED) OF BUILDING: _____, SHOWN ON: _____
OR
REQUIRED GPM: _____ DURATION: _____ *(TABLE B105.1(2) IFC 2021)*
75% REDUCTION? YES ☐ NO ☐ *(MUST MAINTAIN MINIMUM PER TABLE B105.2 IFC 2021)*

**WATER SOURCE FOR RURAL AREAS WITHOUT FIRE HYDRANTS**
☐ ***DRY HYDRANT ☐ UNDERGROUND STORAGE ☐ PRIVATE HYDRANT
☐ ABOVEGROUND STORAGE ☐ OTHER: _____

DESIGN SPECIFICATIONS AND LOCATIONS SHOULD MEET MINIMUM REQUIRED WATER SUPPLY IN ACCORDANCE WITH SECTION B103.3 IN THE HARRIS COUNTY FIRE CODE. THE FIRE CODE OFFICIAL IS AUTHORIZED TO UTILIZE NFPA 1142 OR THE INTERNATIONAL WILDLAND-URBAN INTERFACE CODE.

# 7 FIRE LANE ACCESS

**CHAPTER 5, APPENDIX D IFC 2021**

FIRE LANE LAYOUT PLAN, WHICH SHALL INCLUDE THE SITE PLAN, THE FIRE LANE & FIRE HYDRANTS, IS SHOWN ON: _____ *(HIGHLIGHT THE FIRE HYDRANT LOCATIONS ON THE PLANS)* AERIAL ACCESS LAYOUT, FOR BUILDINGS OVER 30 FT, IS SHOWN ON: _____.

FIRE LANES WILL BE APPROVED CONCEPTUALLY DURING THE CIVIL REVIEW PROCESS. HOWEVER, THE FIRE CODE PLAN REVIEWER MAY CHANGE THE FIRE LANE LAYOUT BASED ON THE BUILDING SPECIFICATIONS.

☒ GATES AND BARRICADES ACROSS THE FIRE ACCESS ROAD
PROPERTIES WITH FENCE AND GATES SHALL PROVIDE A 911 KEY BOX AT ENTRY GATE.

# 8 INTERIOR FINISH

**CHAPTER 8, TABLE 803.13 IBC 2021**

| OCCUPANCY GROUP | EXIT ENCLOSURES AND EXIT PASSAGEWAYS | CORRIDORS | ROOMS AND ENCLOSED SPACES | SHEET # |
|---|---|---|---|---|
| U | NO RESTRICTIONS | NO RESTRICTIONS | NO RESTRICTIONS | A11.00 |
| | | | | |
| | | | | |

# 9 STORAGE: STANDARD

YES ☒ NO ☐ PRODUCTS BEING STORED: AGRICULTURE EQUIPMENT AND MATERIAL

YES ☒ NO ☐ STORAGE METHOD *(I.E. RACKS, PALLETS ON FLOOR, ETC.)*: NON FIXED SHELVING
STORAGE LAYOUT SHOWN ON: NONE

YES ☒ NO ☐ MAXIMUM HEIGHT STORAGE: ALL BELOW 8' - 0"

# 10 STORAGE: HIGH PILED

**CHAPTER 32 IFC 2021 - SEE ALSO SECTION 3201.3 & HC AMENDMENTS IFC 2021**
***DEFERRED SUBMITTAL THAT MUST BE SUBMITTED WITHIN 180 DAYS OF ORIGINAL PERMITTING.*

YES ☐ NO ☐ PRODUCTS BEING STORED: _____
YES ☐ NO ☐ STORAGE PACKAGING *(I.E. PALLETS, RACKS, SOLID PILED, DRUMS, CARDBOARD BOXES, WRAPPED IN PLASTIC, ETC.)*: _____
YES ☐ NO ☐ MAXIMUM HEIGHT OF COMMODITY: _____
YES ☐ NO ☐ ***THIS BUILDING IS DESIGNED FOR THE INTENT OF HIGH PILED STORAGE. IF YES, THEN PROVIDE HIGH PILED STORAGE FORM FOUND ON HC WEBSITE
YES ☐ NO ☐ FIRE DEPARTMENT ACCESS DOORS
YES ☐ NO ☐ HIGH PILED STORAGE RACK LAYOUT/ELEVATIONS, CODE ANALYSIS, ETC. SHOWN ON: _____

# 11 HAZARDOUS MATERIALS

**CHAPTER 50 IFC 2021 - SEE ALSO SECTION 5001.7 HC AMENDMENTS IFC 2021**
**HMIS FORM FOUND ON HC WEBSITE.**

YES ☐ NO ☐ DOES THE BUILDING HAVE HAZARDOUS MATERIAL USE OR STORAGE? IF YES, THEN PROVIDE ALL HMIS SUMMARY AND MSDS REPORTS.
YES ☐ NO ☐ IF YES, DO THE QUANTITIES EXCEED THE MAXIMUM ALLOWABLE PER IFC 2021?
IF YES, YOU WILL BE REQUIRED TO PROVIDE THE FOLLOWING:
CODE ANALYSIS BY FIRE PROTECTION ENGINEER TO SHOW COMPLIANCE WITH IFC 2021
CODES AND REFERENCED STANDARDS SHOWN ON SHEET(S) _____

# 12 SPECIAL CONDITIONS

YES ☐ NO ☒ ATRIUM(S) SECTION 404 IBC 2021
YES ☐ NO ☒ HIGH RISE BLDG SECTION 403 IBC 2021 & 914.3 IFC 2021
YES ☐ NO ☒ ANY FUEL STORAGE TANKS CHAPTERS 23, 50, 57 IFC 2021
YES ☐ NO ☒ CRITICAL FACILITIES (HARRIS COUNTY SECTION 1203.2.20 HC AMENDMENTS IFC 2021)
YES ☐ NO ☒ COMPRESSED GASES CHAPTERS 53,58 IFC 2021
YES ☐ NO ☒ CRYOGENIC FLUIDS CHAPTER 55 IFC 2021
YES ☐ NO ☒ FLAMMABLE & COMBUSTIBLE LIQUIDS CHAPTERS 50 & 57 IFC 2021

YES ☐ NO ☒ PAINT SPRAY BOOTHS, COATINGS, DIPPING OR INDUSTRIAL OVENS USED CHAPTERS 24 & 30 IFC 2021
YES ☐ NO ☒ HEALTH DEPARTMENT APPROVAL? REQUIRED FOR ALL ESTABLISHMENTS THAT SERVE/PREPARE FOOD AND BEVERAGES FOR THE PUBLIC OR HAVE REFRIGERATED FOOD STORAGE.
YES ☐ NO ☒ LP GAS CHAPTER 61 IFC 2021
YES ☐ NO ☒ PROPOSING PHASED PERMITS PHASING PLAN SHOWN ON: _____
YES ☐ NO ☒ OTHER: _____

# COMMENTS & NOTES

**A COPY OF THESE APPROVED CONSTRUCTION PLANS MUST BE KEPT AT PROJECT SITE FOR THE FINAL INSPECTION OF THE BUILDING**

PROJECT NUMBER:

**THE PROJECT KNOWN AS**
(MUST BE THE NAME OF BUSINESS/DBA IF BUILDING IS FOR A SPECIFIC COMPANY)
TOMBALL ISD WEST AGRICULTURAL SCIENCE FACILITY
WEST AGRICULTURAL SCIENCE BUILDING
WAS ACCEPTED BY HARRIS COUNTY FOR THE PURPOSES LISTED BELOW:

REVIEWER'S SIGNATURE BLOCK

PERMIT OFFICE

THE PROJECT WAS REVIEWED; HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER / ARCHITECT LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE PROFESSIONAL'S RESPONSIBILITY AND ACCOUNTABILITY. THIS ACCEPTANCE DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO DEVELOPMENT.

HCED REVIEW:

CERTIFICATION

I, AARON D. SANDERS, A LICENSED PROFESSIONAL ENGINEER/ARCHITECT IN THE STATE OF TEXAS DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I AM/AM NOT A DESIGNER OF RECORD FOR THIS PROJECT. THE PROJECT CONSISTS OF DRAWING SHEETS G0.00 THROUGH T6.05.
ENGINEERING FIRM ARCADIS FIRM# _____

REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
SEAL

SIGNATURE

07/28/2025
DATE

# HARRIS COUNTY (IFC & IBC 2021)

## FIRE CODE DESIGN AND COMPLIANCE REVIEW SHEET VERSION 9.0 (JAN 2025)

**REVISIONS (DO NOT USE THIS BLOCK UNTIL AFTER PERMIT IS ISSUED)**

| DATE | SHEET NO.(S) | DESCRIPTION | REVIEWER |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

FIRE CODE REVIEW

SHEET NUMBER
1 OF 4


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

**G1.01B**

HC CODE REVIEW MAIN BUILDING

PLAN NORTH

# 1 BUILDING PLANNING & DESCRIPTION

☒ NEW CONSTRUCTION ☐ SHELL BUILDING
☐ LEASE SPACE BUILD-OUT (LSBO) ☐ CHANGE OF OCCUPANCY
☐ SUBSTANTIAL IMPROVEMENT ☐ OTHER: _____

| MIXED OCCUPANCY | | |
|---|---|---|
| ☒ SINGLE OCCUPANCY | ☐ SEPARATED USE | ☐ NON-SEPARATED USE |

*(SECTION 508.3 OR 508.4 IBC 2021)*

TYPE OF CONSTRUCTION: TYPE IIB *(CHAPTER 6 IBC 2021)*

HEIGHT LIMITATION: 55' - 0" AREA LIMITATION: 18,000 S.F. *(TABLES 504.3, 504.4, 506.2 IBC 2021)*

FRONTAGE INCREASE CALCULATIONS ARE SHOWN ON SHEET: **31,500 S.F.** CALCULATION SHOWN ON G1.01A

**BUILDING VALUATION**

BUILDING NUMBER: 1 OF 4

ADDRESS: 18530 CYPRESS HEIGHTS DRIVE

CITY, ST: CYPRESS, TX ZIP CODE: 77433 SUITE: _____

CALL CENTERPOINT ENERGY AHEAD OF TIME, AT 713-207-4460, TO OBTAIN AN ADDRESS

HCAD #. OR PROPERTY TAX #: 1440160010001 (13 DIGITS)
(http://www.hcad.org)

X-UNSHADED X 500-YR ____ 100-YR ____ OTHER ____

BUILDING LOCATED IN FLOODPLAIN: BFE _____ FFE _____ NG _____

GROSS SQUARE FOOTAGE: 2,995 SQ FT #OF FLOORS: 1 HEIGHT: 20' - 0"

ESTIMATED COST OF CONSTRUCTION: $_____

T.D.L.R #: _____ *(REQUIRED FOR CONSTRUCTION OVER $50,000)*
TEXAS DEPARTMENT OF LICENSING AND REGULATIONS
(https://www.tdlr.texas.gov/ab/ab.htm)
TELEPHONE: (512) 463-6599 TOLL FREE (IN TEXAS): 800-803-9202
FAX: (512) 475-2871 RELAY TEXAS-TDD: 800-735-2989

SHELL BUILDING PERMIT #: _____ CIVIL PROJECT #: _____

PUBLIC UTILITIES: YES ☒ NO ☐

OSSF : YES ☐ NO ☒ PROJECT/PERMIT #: N/A

**LIST BELOW THE PURPOSE/USE OF THE BUILDING OR AREA BEING REVIEWED. INCLUDE DETAILS ON THE PRODUCTS/MATERIALS BEING STORED/FABRICATED AND NOTE HOW THEY ARE BEING PACKAGED.**

THIS PROJECT WILL SERVE AS AN AGRICULTURAL FACILITY FOR TOMBALL WEST HIGH SCHOOL AND WILL HOUSE STUDENTS ANIMALS AND SUPPLIES. ALL SHELVING PROVIDED WILL BE LESS THAN 7' TALL.

# 2 OCCUPANCY TYPE AND LOAD

**CHAPTER 2, 3 & TABLE 1004.5 IBC 2021**

**BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR**

| OCC. CLASS | AREA SPECIFIC USE | GROSS SF | NET SF | SF PER OCC. | DESIGN OCC. |
|---|---|---|---|---|---|
| U | AGRICULTURAL BUILDING | 2,995 S.F. | | 300 | 10 |
| | | | | | |
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| | | | | | |
| | | | | | |
| TOTAL NET | | | | | |
| TOTAL GROSS | | 2,995 S.F. | | | 10 |

# 3 MEANS OF EGRESS

**CHAPTER 10 IBC 2021**

| MEANS OF EGRESS | # OF REQUIRED EXITS | # OF EXITS PROVIDED | SHEET # |
|---|---|---|---|
| STAIRWAYS (PER FLOOR) | - | - | - |
| EGRESS @ 1ST FL OR LSBO | - | - | - |

*(SECTIONS 1005 & 1006 IBC 2021)*

PANIC HARDWARE ON EXIT DOORS? YES ☒ NO ☐ *(SECTION 1010.2.9 IBC 2021)*

**STAIRWAYS** *(SECTION 1011 IBC 2021)*

STAIR DETAILS AND EGRESS WIDTHS SHOWN ON: N/A

**EXIT SIGNS/EGRESS ILLUMINATION** *(SECTIONS 1008 & 1013 IBC 2021)*

REQUIRED AND SHOWN ON: E2.01 *(HIGHLIGHT ON PLANS)*

EXTERIOR MEANS OF EGRESS LIGHTING PROVIDED? YES ☒ *(SECTION 1008 IBC 2021)*

**EXIT TRAVEL DISTANCE** *(SECTION 1017 IBC 2021)*

| OCCUPANCY TYPE | MAX TRAVEL DISTANCE | PROVIDE TRAVEL DISTANCE | SHEET # |
|---|---|---|---|
| U | 300 FT | MAX 50 FT | G1.02 |
| | | | |
| | | | |

**ELEVATORS**

NEW ☐ EXISTING ☐ ELEVATOR HOISTWAY IBC SECTION 3006.2.1? YES ☐ NO ☒

ELEVATOR KEYBOX LOCATED IN LOBBY? YES ☐ NO ☒

# 4 FIRE PROTECTION & LIFE SAFETY SYS.

**CHAPTER 9 IFC & IBC 2021**

**ALL FIRE PROTECTION PLANS SHALL BE SUBMITTED FOR REVIEW AFTER BUILDING PERMIT HAS BEEN ISSUED** ***(I.E. UNDERGROUND FIRE LINE, SPRINKLER SYSTEM, FIRE ALARM SYSTEM, STANDPIPE, FIRE PUMP ROOM, AND FIRE PROTECTION WATER SUPPLY SYSTEMS)***

**AUTOMATIC FIRE SPRINKLER SYSTEM/ALTERNATIVE AUTOMATIC FIRE EXTINGUISHING SYSTEM SECTION 903 IFC 2021**

**ALL SPRINKLERS SHALL COMPLY WITH MONITORING AND OCCUPANT NOTIFICATION PER 903.4.2.1 SECTION 903.4.1 IFC 2021 AMENDMENTS**

☐ PROVIDED AS NOTED ON: _____ ☒ NOT REQUIRED PER SECTION 903

SYSTEM PROVIDED:
☐ NFPA 13
☐ NFPA 13R
☐ NFPA 13D
☐ OTHER: _____

SPRINKLER HEAD PROVIDED:
☐ STANDARD
☐ ELO
☐ ESFR
☐ QUICK RESPONSE

FIRE PUMP PROVIDED:
☐ YES ☐ NO

FIRE PUMP SEPARATION:
SEE SECTION 913.2.1 IFC 2021

FIRE DEPARTMENT ACCESS TO SPRINKLER CONTROLS:
☐ SPRINKLER RISER ROOM OR POST INDICATOR VALVE SHOWN ON: _____ *(SECTION 901.4.7 HC AMENDMENTS IFC 2021)*

☐ FDC SHOWN ON: _____ *(FDC SHALL COMPLY WITH SECTION 912 IFC 2021)*

**ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS** *(SECTION 904 IFC 2021)*
☐ REQUIRED AND SHOWN ON: _____
☒ NOT REQUIRED

**STANDPIPE SYSTEM & HOSE CONNECTIONS** *(SECTION 905 IFC 2021)*
*(I.E. IN STAIRWAYS, STAGES, MALLS)*
☐ PROVIDED AS NOTED ON: _____, TYPE OF SYSTEM PROVIDED: _____ *(CLASS I, II OR III)*
☒ NOT REQUIRED

**PORTABLE FIRE EXTINGUISHERS** *(SECTION 906 IFC 2021)*
☒ PROVIDED AS NOTED ON: G1.02 , NUMBER PROVIDED: 1 *(HIGHLIGHT ON PLANS)*

**FIRE ALARM & DETECTION SYSTEMS** *(SECTION 907 HC AMENDMENTS IFC 2021)*
☒ FIRE ALARM SYSTEM (DEFERRED SUBMITTAL)
☐ NOT REQUIRED
☐ EMERGENCY VOICE EVACUATION
☐ OTHER: _____
☐ ELEVATOR RECALL
☐ GAS DETECTION SYSTEM SECTION 909

**HVAC & AIR DISTRIBUTION SYSTEM CONTROLS** *(SECTION 907.3.1 IFC 2021)*
☐ SMOKE DETECTORS PROVIDED TO SHUT DOWN UNITS OVER 2,000 CFM PROVIDED ON: _____
☒ NO HVAC UNITS OVER 2,000 CFM
☐ FIRE/SMOKE DAMPERS IN THE BUILDING SHOWN ON: _____
☐ NO FIRE/SMOKE DAMPERS IN THE BUILDING

**SMOKE CONTROL SYSTEM** *(SECTION 909 IFC 2021)*
☐ PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**SMOKE & HEAT VENTILATION** *(SECTION 910 IFC 2021)*
☐ CALCULATIONS PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**ENHANCED RESPONDER COMMUNICATIONS COVERAGE SYSTEM (ERCCS)**
☐ PROVIDED AS NOTED ON: _____ *(SECTION 510 HC AMENDMENTS)*
☒ NOT REQUIRED

# 5 FIRE-RESISTANCE RATE CONSTRUCTION

**CHAPTERS 6, 7 AND 10 IBC 2021**

*Provide section details on the plans showing compliance for any proposed fire rated construction (walls, partitions, floors, roof, etc.).
*Please reference and provide standard for the rated design.

**FIRE-RESISTANCE RATING REQUIREMENTS** *TABLE 601 & PROPOSED OR REQUIRED CONSTRUCTION PER IBC 2021*

| BUILDING ELEMENTS | HOURS REQUIRED | HOURS PROVIDED | UL OR IBC STANDARD USED & DESIGN DETAIL SHOWN ON |
|---|---|---|---|
| STRUCTURAL FRAME | 0 | 0 | |
| EXTERIOR BEARING WALLS | 0 | 0 | |
| EXTERIOR NON-BEARING WALLS | 0 | 0 | |
| INTERIOR BEARING WALLS | 0 | 0 | |
| INTERIOR NON-BEARING WALLS | 0 | 0 | |
| FLOOR CONSTRUCTION | 0 | 0 | |
| ROOF CONSTRUCTION | 0 | 0 | |
| STAIRWELLS *(SECTION 1023)* | N/A | N/A | |
| ELEVATOR SHAFTS *(SECTION 713)* | N/A | N/A | |
| CORRIDORS *(SECTION 1020)* | N/A | N/A | |
| FIRE RATED DOORS *(TABLE 716.1(2))* | N/A | N/A | |
| DEMISING/PARTITION WALL *(SECTION 708)* | N/A | N/A | |
| FIRE BARRIER *(SECTION 707)* | N/A | N/A | |
| FIRE WALL *(SECTION 706)* | N/A | N/A | |
| DRAFTSTOPS: ☐ YES, SHOWN ON: _____ ☐ NO (SPRINKLED ATTIC) ☒ N/A *(SECTION 718.4)* | | | |

| FIRE SEPARATION DISTANCE (FEET) *(SECTION 602 IBC 2021)* | NORTH | SOUTH | EAST | WEST |
|---|---|---|---|---|
| | 105' - 0" | 17' - 0" | 208'-0" | 154' TO PROP. BERM |

ROOF COVERING CLASSIFICATION PROVIDED: A ☐ B ☐ C ☒ *(TABLE 1505.1 IBC 2021)*

# 6 WATER SUPPLY (FOR FIREFIGHTING)

**CHAPTER 5, APPENDIX B & C IFC 2018**

2,995 S.F. GROSS SIZE OF BUILDING IN SQUARE FEET *(INCLUDE ALL OVERHANGS UNDER ROOF)*

**PUBLIC WATER SUPPLY WITH FIRE HYDRANTS**
(FOR PROPOSED AND EXISTING FIRE HYDRANTS ONLY)

NAME OF THE MUNICIPAL UTILITY DISTRICT: _____

NUMBER OF HYDRANTS WITHIN 400 FT (NON-SPRINKLED) OR 600 FT (SPRINKLED) OF BUILDING: _____, SHOWN ON: _____

OR

REQUIRED GPM: _____ DURATION: _____ *(TABLE B105.1(2) IFC 2021)*

75% REDUCTION? YES ☐ NO ☐ *(MUST MAINTAIN MINIMUM PER TABLE B105.2 IFC 2021)*

**WATER SOURCE FOR RURAL AREAS WITHOUT FIRE HYDRANTS**

☐ ***DRY HYDRANT ☐ UNDERGROUND STORAGE ☐ PRIVATE HYDRANT
☐ ABOVEGROUND STORAGE ☐ OTHER: _____

DESIGN SPECIFICATIONS AND LOCATIONS SHOULD MEET MINIMUM REQUIRED WATER SUPPLY IN ACCORDANCE WITH SECTION B103.3 IN THE HARRIS COUNTY FIRE CODE. THE FIRE CODE OFFICIAL IS AUTHORIZED TO UTILIZE NFPA 1142 OR THE INTERNATIONAL WILDLAND-URBAN INTERFACE CODE.

# 7 FIRE LANE ACCESS

**CHAPTER 5, APPENDIX D IFC 2021**

FIRE LANE LAYOUT PLAN, WHICH SHALL INCLUDE THE SITE PLAN, THE FIRE LANE & FIRE HYDRANTS, IS SHOWN ON: _____ *(HIGHLIGHT THE FIRE HYDRANT LOCATIONS ON THE PLANS)* AERIAL ACCESS LAYOUT, FOR BUILDINGS OVER 30 FT, IS SHOWN ON: _____.

FIRE LANES WILL BE APPROVED CONCEPTUALLY DURING THE CIVIL REVIEW PROCESS. HOWEVER, THE FIRE CODE PLAN REVIEWER MAY CHANGE THE FIRE LANE LAYOUT BASED ON THE BUILDING SPECIFICATIONS.

☒ GATES AND BARRICADES ACROSS THE FIRE ACCESS ROAD PROPERTIES WITH FENCE AND GATES SHALL PROVIDE A 911 KEY BOX AT ENTRY GATE.

# 8 INTERIOR FINISH

**CHAPTER 8, TABLE 803.13 IBC 2021**

| OCCUPANCY GROUP | EXIT ENCLOSURES AND EXIT PASSAGEWAYS | CORRIDORS | ROOMS AND ENCLOSED SPACES | SHEET # |
|---|---|---|---|---|
| U | NO RESTRICTIONS | NO RESTRICTIONS | NO RESTRICTIONS | A11.00 |
| | | | | |
| | | | | |

# 9 STORAGE: STANDARD

YES ☐ NO ☒ PRODUCTS BEING STORED: NONE

YES ☐ NO ☒ STORAGE METHOD *(I.E. RACKS, PALLETS ON FLOOR, ETC.)*: NONE
STORAGE LAYOUT SHOWN ON: NONE

YES ☐ NO ☒ MAXIMUM HEIGHT STORAGE: NONE

# 10 STORAGE: HIGH PILED

**CHAPTER 32 IFC 2021 - SEE ALSO SECTION 3201.3 & HC AMENDMENTS IFC 2021**
***DEFERRED SUBMITTAL THAT MUST BE SUBMITTED WITHIN 180 DAYS OF ORIGINAL PERMITTING.*

YES ☐ NO ☐ PRODUCTS BEING STORED: _____
YES ☐ NO ☐ STORAGE PACKAGING *(I.E. PALLETS, RACKS, SOLID PILED, DRUMS, CARDBOARD BOXES, WRAPPED IN PLASTIC, ETC.)*: _____
YES ☐ NO ☐ MAXIMUM HEIGHT OF COMMODITY: _____
YES ☐ NO ☐ ***THIS BUILDING IS DESIGNED FOR THE INTENT OF HIGH PILED STORAGE. IF YES, THEN PROVIDE HIGH PILED STORAGE FORM FOUND ON HC WEBSITE
YES ☐ NO ☐ FIRE DEPARTMENT ACCESS DOORS
YES ☐ NO ☐ HIGH PILED STORAGE RACK LAYOUT/ELEVATIONS, CODE ANALYSIS, ETC. SHOWN ON: _____

# 11 HAZARDOUS MATERIALS

**CHAPTER 50 IFC 2021 - SEE ALSO SECTION 5001.7 HC AMENDMENTS IFC 2021**
**HMIS FORM FOUND ON HC WEBSITE.**

YES ☐ NO ☐ DOES THE BUILDING HAVE HAZARDOUS MATERIAL USE OR STORAGE? IF YES, THEN PROVIDE ALL HMIS SUMMARY AND MSDS REPORTS.
YES ☐ NO ☐ IF YES, DO THE QUANTITIES EXCEED THE MAXIMUM ALLOWABLE PER IFC 2021?
IF YES, YOU WILL BE REQUIRED TO PROVIDE THE FOLLOWING:
CODE ANALYSIS BY FIRE PROTECTION ENGINEER TO SHOW COMPLIANCE WITH IFC 2021 CODES AND REFERENCED STANDARDS SHOWN ON SHEET(S) _____

# 12 SPECIAL CONDITIONS

YES ☐ NO ☒ ATRIUM(S) SECTION 404 IBC 2021
YES ☐ NO ☒ HIGH RISE BLDG SECTION 403 IBC 2021 & 914.3 IFC 2021
YES ☐ NO ☒ ANY FUEL STORAGE TANKS CHAPTERS 23, 50, 57 IFC 2021
YES ☐ NO ☒ CRITICAL FACILITIES (HARRIS COUNTY SECTION 1203.2.20 HC AMENDMENTS IFC 2021)
YES ☐ NO ☒ COMPRESSED GASES CHAPTERS 53,58 IFC 2021
YES ☐ NO ☒ CRYOGENIC FLUIDS CHAPTER 55 IFC 2021
YES ☐ NO ☒ FLAMMABLE & COMBUSTIBLE LIQUIDS CHAPTERS 50 & 57 IFC 2021

YES ☐ NO ☒ PAINT SPRAY BOOTHS, COATINGS, DIPPING OR INDUSTRIAL OVENS USED CHAPTERS 24 & 30 IFC 2021
YES ☐ NO ☒ HEALTH DEPARTMENT APPROVAL? REQUIRED FOR ALL ESTABLISHMENTS THAT SERVE/PREPARE FOOD AND BEVERAGES FOR THE PUBLIC OR HAVE REFRIGERATED FOOD STORAGE.
YES ☐ NO ☒ LP GAS CHAPTER 61 IFC 2021
YES ☐ NO ☒ PROPOSING PHASED PERMITS PHASING PLAN SHOWN ON: _____
YES ☐ NO ☒ OTHER: _____

# COMMENTS & NOTES

**A COPY OF THESE APPROVED CONSTRUCTION PLANS MUST BE KEPT AT PROJECT SITE FOR THE FINAL INSPECTION OF THE BUILDING**

PROJECT NUMBER:

**THE PROJECT KNOWN AS**
(MUST BE THE NAME OF BUSINESS/DBA IF BUILDING IS FOR A SPECIFIC COMPANY)

TOMBALL ISD WEST AGRICULTURAL SCIENCE FACILITY

POULTRY BUILDING

WAS ACCEPTED BY HARRIS COUNTY FOR THE PURPOSES LISTED BELOW:

REVIEWER'S SIGNATURE BLOCK

PERMIT OFFICE

THE PROJECT WAS REVIEWED; HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER / ARCHITECT LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE PROFESSIONAL'S RESPONSIBILITY AND ACCOUNTABILITY. THIS ACCEPTANCE DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO DEVELOPMENT.

HCED REVIEW:

CERTIFICATION

I, AARON D. SANDERS, A LICENSED PROFESSIONAL ENGINEER/ARCHITECT IN THE STATE OF TEXAS DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I AM/AM NOT A DESIGNER OF RECORD FOR THIS PROJECT. THE PROJECT CONSISTS OF DRAWING SHEETS G0.00 THROUGH T6.05.

ENGINEERING FIRM ARCADIS FIRM# _____

SEAL — SIGNATURE — 07/28/2025 DATE

**REVISIONS (DO NOT USE THIS BLOCK UNTIL AFTER PERMIT IS ISSUED)**

| DATE | SHEET NO.(S) | DESCRIPTION | REVIEWER |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

# HARRIS COUNTY (IFC & IBC 2021)

## FIRE CODE DESIGN AND COMPLIANCE REVIEW SHEET VERSION 9.0 (JAN 2025)

FIRE CODE REVIEW

SHEET NUMBER 2 OF 4


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | 1 PERMIT AND PROPOSAL |

**G1.01C**

HC CODE REVIEW POULTRY BLDG.

PLAN NORTH

# 1 BUILDING PLANNING & DESCRIPTION

☒ NEW CONSTRUCTION ☐ SHELL BUILDING
☐ LEASE SPACE BUILD-OUT (LSBO) ☐ CHANGE OF OCCUPANCY
☐ SUBSTANTIAL IMPROVEMENT ☐ OTHER: _____

| MIXED OCCUPANCY | | |
|---|---|---|
| ☒ SINGLE OCCUPANCY | ☐ SEPARATED USE | ☐ NON-SEPARATED USE |

*(SECTION 508.3 OR 508.4 IBC 2021)*

TYPE OF CONSTRUCTION: TYPE IIB *(CHAPTER 6 IBC 2021)*

HEIGHT LIMITATION: 55' - 0" AREA LIMITATION: 14,500 S.F. *(TABLES 504.3, 504.4, 506.2 IBC 2021)*

FRONTAGE INCREASE CALCULATIONS ARE SHOWN ON SHEET: N/A

**BUILDING VALUATION**

BUILDING NUMBER: 3 OF 4

ADDRESS: 18530 CYPRESS HEIGHTS DRIVE

CITY, ST: CYPRESS, TX ZIP CODE: 77433 SUITE: _____

CALL CENTERPOINT ENERGY AHEAD OF TIME, AT 713-207-4460, TO OBTAIN AN ADDRESS

HCAD #. OR PROPERTY TAX #: 1440160010001 (13 DIGITS)
(http://www.hcad.org)

X-UNSHADED X 500-YR ____ 100-YR ____ OTHER ____

BUILDING LOCATED IN FLOODPLAIN: BFE _____ FFE _____ NG _____

GROSS SQUARE FOOTAGE: 1,733 SQ FT #OF FLOORS: 1 HEIGHT: 20' - 0"

ESTIMATED COST OF CONSTRUCTION: $_____

T.D.L.R #: _____ *(REQUIRED FOR CONSTRUCTION OVER $50,000)*
TEXAS DEPARTMENT OF LICENSING AND REGULATIONS
(https://www.tdlr.texas.gov/ab/ab.htm)
TELEPHONE: (512) 463-6599 TOLL FREE (IN TEXAS): 800-803-9202
FAX: (512) 475-2871 RELAY TEXAS-TDD: 800-735-2989

SHELL BUILDING PERMIT #: _____ CIVIL PROJECT #: _____

PUBLIC UTILITIES: YES ☒ NO ☐

OSSF : YES ☐ NO ☒ PROJECT/PERMIT #: N/A

**LIST BELOW THE PURPOSE/USE OF THE BUILDING OR AREA BEING REVIEWED. INCLUDE DETAILS ON THE PRODUCTS/MATERIALS BEING STORED/FABRICATED AND NOTE HOW THEY ARE BEING PACKAGED.**

THIS BUILDING WILL SERVE AS THE STORAGE, RESTROOM, CONCESSIONS BUILDING SERVING THE SOCCER COMPETITION FIELD FOR TOMBALL WEST HIGH SCHOOL. ITEMS STORED WILL BE ATHLETICS RELATED. ANY FOOD SERVED FROM CONCESSIONS IS TO BE PRE-PACKAGED EXCLUSIVELY AND NO FOOD PREP OR COOKING WILL BE DONE IN THE CONCESSIONS SPACE

# 2 OCCUPANCY TYPE AND LOAD
**CHAPTER 2, 3 & TABLE 1004.5 IBC 2021**

**BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR**

| OCC. CLASS | AREA SPECIFIC USE | GROSS SF | NET SF | SF PER OCC. | DESIGN OCC. |
|---|---|---|---|---|---|
| E | FIELDHOUSE BUILDING | 1,793 S.F. | | 300 | 6 |
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| | | | | | |
| TOTAL NET | | | | | |
| TOTAL GROSS | | 1,793 S.F. | | | 6 |

# 3 MEANS OF EGRESS
**CHAPTER 10 IBC 2021**

| MEANS OF EGRESS | # OF REQUIRED EXITS | # OF EXITS PROVIDED | SHEET # |
|---|---|---|---|
| STAIRWAYS (PER FLOOR) | - | - | - |
| EGRESS @ 1ST FL OR LSBO | - | - | - |

*(SECTIONS 1005 & 1006 IBC 2021)*

PANIC HARDWARE ON EXIT DOORS? YES ☒ NO ☐ *(SECTION 1010.2.9 IBC 2021)*

**STAIRWAYS** *(SECTION 1011 IBC 2021)*

STAIR DETAILS AND EGRESS WIDTHS SHOWN ON: N/A

**EXIT SIGNS/EGRESS ILLUMINATION** *(SECTIONS 1008 & 1013 IBC 2021)*

REQUIRED AND SHOWN ON: E2.01 *(HIGHLIGHT ON PLANS)*

EXTERIOR MEANS OF EGRESS LIGHTING PROVIDED? YES ☒ *(SECTION 1008 IBC 2021)*

**EXIT TRAVEL DISTANCE** *(SECTION 1017 IBC 2021)*

| OCCUPANCY TYPE | MAX TRAVEL DISTANCE | PROVIDE TRAVEL DISTANCE | SHEET # |
|---|---|---|---|
| E | 200 FT | MAX 29 FT | G1.02 |
| | | | |
| | | | |

**ELEVATORS**

NEW ☐ EXISTING ☐ ELEVATOR HOISTWAY IBC SECTION 3006.2.1? YES ☐ NO ☒

ELEVATOR KEYBOX LOCATED IN LOBBY? YES ☐ NO ☒

# 4 FIRE PROTECTION & LIFE SAFETY SYS.
**CHAPTER 9 IFC & IBC 2021**

**ALL FIRE PROTECTION PLANS SHALL BE SUBMITTED FOR REVIEW AFTER BUILDING PERMIT HAS BEEN ISSUED** ***(I.E. UNDERGROUND FIRE LINE, SPRINKLER SYSTEM, FIRE ALARM SYSTEM, STANDPIPE, FIRE PUMP ROOM, AND FIRE PROTECTION WATER SUPPLY SYSTEMS)***

**AUTOMATIC FIRE SPRINKLER SYSTEM/ALTERNATIVE AUTOMATIC FIRE EXTINGUISHING SYSTEM** **SECTION 903 IFC 2021**

**ALL SPRINKLERS SHALL COMPLY WITH MONITORING AND OCCUPANT NOTIFICATION PER 903.4.2.1 SECTION 903.4.1 IFC 2021 AMENDMENTS**

☐ PROVIDED AS NOTED ON: _____ ☒ NOT REQUIRED PER SECTION 903

SYSTEM PROVIDED:
☐ NFPA 13
☐ NFPA 13R
☐ NFPA 13D
☐ OTHER: _____

SPRINKLER HEAD PROVIDED:
☐ STANDARD
☐ ELO
☐ ESFR
☐ QUICK RESPONSE

FIRE PUMP PROVIDED:
☐ YES ☐ NO
FIRE PUMP SEPARATION: SEE SECTION 913.2.1 IFC 2021

FIRE DEPARTMENT ACCESS TO SPRINKLER CONTROLS:
☐ SPRINKLER RISER ROOM OR POST INDICATOR VALVE SHOWN ON: _____ *(SECTION 901.4.7 HC AMENDMENTS IFC 2021)*

☐ FDC SHOWN ON: _____ *(FDC SHALL COMPLY WITH SECTION 912 IFC 2021)*

**ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS** *(SECTION 904 IFC 2021)*
☐ REQUIRED AND SHOWN ON: _____
☒ NOT REQUIRED

**STANDPIPE SYSTEM & HOSE CONNECTIONS** *(SECTION 905 IFC 2021)*
*(I.E. IN STAIRWAYS, STAGES, MALLS)*
☐ PROVIDED AS NOTED ON: _____, TYPE OF SYSTEM PROVIDED: _____ *(CLASS I, II OR III)*
☒ NOT REQUIRED

**PORTABLE FIRE EXTINGUISHERS** *(SECTION 906 IFC 2021)*
☒ PROVIDED AS NOTED ON: G1.02, NUMBER PROVIDED: 6 *(HIGHLIGHT ON PLANS)*

**FIRE ALARM & DETECTION SYSTEMS** *(SECTION 907 HC AMENDMENTS IFC 2021)*
☒ FIRE ALARM SYSTEM (DEFERRED SUBMITTAL)
☐ NOT REQUIRED
☐ EMERGENCY VOICE EVACUATION
☐ OTHER: _____
☐ ELEVATOR RECALL
☐ GAS DETECTION SYSTEM SECTION 909

**HVAC & AIR DISTRIBUTION SYSTEM CONTROLS** *(SECTION 907.3.1 IFC 2021)*
☐ SMOKE DETECTORS PROVIDED TO SHUT DOWN UNITS OVER 2,000 CFM PROVIDED ON: _____
☒ NO HVAC UNITS OVER 2,000 CFM
☐ FIRE/SMOKE DAMPERS IN THE BUILDING SHOWN ON: _____
☐ NO FIRE/SMOKE DAMPERS IN THE BUILDING

**SMOKE CONTROL SYSTEM** *(SECTION 909 IFC 2021)*
☐ PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**SMOKE & HEAT VENTILATION** *(SECTION 910 IFC 2021)*
☐ CALCULATIONS PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**ENHANCED RESPONDER COMMUNICATIONS COVERAGE SYSTEM (ERCCS)**
☐ PROVIDED AS NOTED ON: _____ *(SECTION 510 HC AMENDMENTS)*
☒ NOT REQUIRED

# 5 FIRE-RESISTANCE RATE CONSTRUCTION
**CHAPTERS 6, 7 AND 10 IBC 2021**

*Provide section details on the plans showing compliance for any proposed fire rated construction (walls, partitions, floors, roof, etc.).
*Please reference and provide standard for the rated design.

**FIRE-RESISTANCE RATING REQUIREMENTS** *TABLE 601 & PROPOSED OR REQUIRED CONSTRUCTION PER IBC 2021*

| BUILDING ELEMENTS | HOURS REQUIRED | HOURS PROVIDED | UL OR IBC STANDARD USED & DESIGN DETAIL SHOWN ON |
|---|---|---|---|
| STRUCTURAL FRAME | 0 | 0 | |
| EXTERIOR BEARING WALLS | 0 | 0 | |
| EXTERIOR NON-BEARING WALLS | 0 | 0 | |
| INTERIOR BEARING WALLS | 0 | 0 | |
| INTERIOR NON-BEARING WALLS | 0 | 0 | |
| FLOOR CONSTRUCTION | 0 | 0 | |
| ROOF CONSTRUCTION | 0 | 0 | |
| STAIRWELLS *(SECTION 1023)* | N/A | N/A | |
| ELEVATOR SHAFTS *(SECTION 713)* | N/A | N/A | |
| CORRIDORS *(SECTION 1020)* | N/A | N/A | |
| FIRE RATED DOORS *(TABLE 716.1(2))* | N/A | N/A | |
| DEMISING/PARTITION WALL *(SECTION 708)* | N/A | N/A | |
| FIRE BARRIER *(SECTION 707)* | N/A | N/A | |
| FIRE WALL *(SECTION 706)* | N/A | N/A | |
| DRAFTSTOPS: ☐ YES, SHOWN ON: _____ | ☐ NO (SPRINKLED ATTIC) | ☒ N/A *(SECTION 718.4)* | |

| FIRE SEPARATION DISTANCE (FEET) *(SECTION 602 IBC 2021)* | 55' | 80' | 85' TO PROP. BERM | 500'-0" |
|---|---|---|---|---|
| | NORTH | SOUTH | EAST | WEST |

ROOF COVERING CLASSIFICATION PROVIDED: A ☐ B ☐ C ☒ *(TABLE 1505.1 IBC 2021)*

# 6 WATER SUPPLY (FOR FIREFIGHTING)
**CHAPTER 5, APPENDIX B & C IFC 2018**

1,793 S.F. GROSS SIZE OF BUILDING IN SQUARE FEET *(INCLUDE ALL OVERHANGS UNDER ROOF)*

**PUBLIC WATER SUPPLY WITH FIRE HYDRANTS**
(FOR PROPOSED AND EXISTING FIRE HYDRANTS ONLY)
NAME OF THE MUNICIPAL UTILITY DISTRICT: _____
NUMBER OF HYDRANTS WITHIN 400 FT (NON-SPRINKLED) OR 600 FT (SPRINKLED) OF BUILDING: _____, SHOWN ON: _____
OR
REQUIRED GPM: _____ DURATION: _____ *(TABLE B105.1(2) IFC 2021)*
75% REDUCTION? YES ☐ NO ☐ *(MUST MAINTAIN MINIMUM PER TABLE B105.2 IFC 2021)*

**WATER SOURCE FOR RURAL AREAS WITHOUT FIRE HYDRANTS**
☐ ***DRY HYDRANT ☐ UNDERGROUND STORAGE ☐ PRIVATE HYDRANT
☐ ABOVEGROUND STORAGE ☐ OTHER: _____

DESIGN SPECIFICATIONS AND LOCATIONS SHOULD MEET MINIMUM REQUIRED WATER SUPPLY IN ACCORDANCE WITH SECTION B103.3 IN THE HARRIS COUNTY FIRE CODE. THE FIRE CODE OFFICIAL IS AUTHORIZED TO UTILIZE NFPA 1142 OR THE INTERNATIONAL WILDLAND-URBAN INTERFACE CODE.

# 7 FIRE LANE ACCESS
**CHAPTER 5, APPENDIX D IFC 2021**

FIRE LANE LAYOUT PLAN, WHICH SHALL INCLUDE THE SITE PLAN, THE FIRE LANE & FIRE HYDRANTS, IS SHOWN ON: _____ *(HIGHLIGHT THE FIRE HYDRANT LOCATIONS ON THE PLANS)* AERIAL ACCESS LAYOUT, FOR BUILDINGS OVER 30 FT, IS SHOWN ON: _____.

FIRE LANES WILL BE APPROVED CONCEPTUALLY DURING THE CIVIL REVIEW PROCESS. HOWEVER, THE FIRE CODE PLAN REVIEWER MAY CHANGE THE FIRE LANE LAYOUT BASED ON THE BUILDING SPECIFICATIONS.

☒ GATES AND BARRICADES ACROSS THE FIRE ACCESS ROAD
PROPERTIES WITH FENCE AND GATES SHALL PROVIDE A 911 KEY BOX AT ENTRY GATE.

# 8 INTERIOR FINISH
**CHAPTER 8, TABLE 803.13 IBC 2021**

| OCCUPANCY GROUP | EXIT ENCLOSURES AND EXIT PASSAGEWAYS | CORRIDORS | ROOMS AND ENCLOSED SPACES | SHEET # |
|---|---|---|---|---|
| E | A | B | C | A11.00 |
| | | | | |
| | | | | |

# 9 STORAGE: STANDARD

YES ☒ NO ☐ PRODUCTS BEING STORED: ATHLETIC EQUIPMENT AND CONCESSIONS MATERIAL

YES ☒ NO ☐ STORAGE METHOD *(I.E. RACKS, PALLETS ON FLOOR, ETC.)*: NON FIXED SHELVING
STORAGE LAYOUT SHOWN ON: NONE

YES ☒ NO ☐ MAXIMUM HEIGHT STORAGE: ALL BELOW 8' - 0"

# 10 STORAGE: HIGH PILED
**CHAPTER 32 IFC 2021 - SEE ALSO SECTION 3201.3 & HC AMENDMENTS IFC 2021**
***DEFERRED SUBMITTAL THAT MUST BE SUBMITTED WITHIN 180 DAYS OF ORIGINAL PERMITTING.*

YES ☐ NO ☐ PRODUCTS BEING STORED: _____
YES ☐ NO ☐ STORAGE PACKAGING *(I.E. PALLETS, RACKS, SOLID PILED, DRUMS, CARDBOARD BOXES, WRAPPED IN PLASTIC, ETC.)*: _____
YES ☐ NO ☐ MAXIMUM HEIGHT OF COMMODITY: _____
YES ☐ NO ☐ ***THIS BUILDING IS DESIGNED FOR THE INTENT OF HIGH PILED STORAGE. IF YES, THEN PROVIDE HIGH PILED STORAGE FORM FOUND ON HC WEBSITE
YES ☐ NO ☐ FIRE DEPARTMENT ACCESS DOORS
YES ☐ NO ☐ HIGH PILED STORAGE RACK LAYOUT/ELEVATIONS, CODE ANALYSIS, ETC. SHOWN ON: _____

# 11 HAZARDOUS MATERIALS
**CHAPTER 50 IFC 2021 - SEE ALSO SECTION 5001.7 HC AMENDMENTS IFC 2021**
**HMIS FORM FOUND ON HC WEBSITE.**

YES ☐ NO ☐ DOES THE BUILDING HAVE HAZARDOUS MATERIAL USE OR STORAGE? IF YES, THEN PROVIDE ALL HMIS SUMMARY AND MSDS REPORTS.
YES ☐ NO ☐ IF YES, DO THE QUANTITIES EXCEED THE MAXIMUM ALLOWABLE PER IFC 2021?
IF YES, YOU WILL BE REQUIRED TO PROVIDE THE FOLLOWING:
CODE ANALYSIS BY FIRE PROTECTION ENGINEER TO SHOW COMPLIANCE WITH IFC 2021
CODES AND REFERENCED STANDARDS SHOWN ON SHEET(S) _____

# 12 SPECIAL CONDITIONS

YES ☐ NO ☒ ATRIUM(S) SECTION 404 IBC 2021
YES ☐ NO ☒ HIGH RISE BLDG SECTION 403 IBC 2021 & 914.3 IFC 2021
YES ☐ NO ☒ ANY FUEL STORAGE TANKS CHAPTERS 23, 50, 57 IFC 2021
YES ☐ NO ☒ CRITICAL FACILITIES (HARRIS COUNTY SECTION 1203.2.20 HC AMENDMENTS IFC 2021)
YES ☐ NO ☒ COMPRESSED GASES CHAPTERS 53,58 IFC 2021
YES ☐ NO ☒ CRYOGENIC FLUIDS CHAPTER 55 IFC 2021
YES ☐ NO ☒ FLAMMABLE & COMBUSTIBLE LIQUIDS CHAPTERS 50 & 57 IFC 2021

YES ☐ NO ☒ PAINT SPRAY BOOTHS, COATINGS, DIPPING OR INDUSTRIAL OVENS USED CHAPTERS 24 & 30 IFC 2021
YES ☐ NO ☒ HEALTH DEPARTMENT APPROVAL? REQUIRED FOR ALL ESTABLISHMENTS THAT SERVE/PREPARE FOOD AND BEVERAGES FOR THE PUBLIC OR HAVE REFRIGERATED FOOD STORAGE.
YES ☐ NO ☒ LP GAS CHAPTER 61 IFC 2021
YES ☐ NO ☒ PROPOSING PHASED PERMITS PHASING PLAN SHOWN ON: _____
YES ☐ NO ☒ OTHER: _____

# COMMENTS & NOTES

**A COPY OF THESE APPROVED CONSTRUCTION PLANS MUST BE KEPT AT PROJECT SITE FOR THE FINAL INSPECTION OF THE BUILDING**

PROJECT NUMBER:

**THE PROJECT KNOWN AS**
(MUST BE THE NAME OF BUSINESS/DBA IF BUILDING IS FOR A SPECIFIC COMPANY)
TOMBALL ISD WEST AGRICULTURAL SCIENCE FACILITY
SOCCER FIELD HOUSE
WAS ACCEPTED BY HARRIS COUNTY FOR THE PURPOSES LISTED BELOW:

REVIEWER'S SIGNATURE BLOCK
PERMIT OFFICE

THE PROJECT WAS REVIEWED; HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER / ARCHITECT LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE PROFESSIONAL'S RESPONSIBILITY AND ACCOUNTABILITY. THIS ACCEPTANCE DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO DEVELOPMENT.

HCED REVIEW:

CERTIFICATION

I, AARON D. SANDERS, A LICENSED PROFESSIONAL ENGINEER/ARCHITECT IN THE STATE OF TEXAS DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I AM/AM NOT A DESIGNER OF RECORD FOR THIS PROJECT. THE PROJECT CONSISTS OF DRAWING SHEETS G0.00 THROUGH T6.05.
ENGINEERING FIRM ARCADIS FIRM# _____

REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
SEAL

SIGNATURE

07/28/2025
DATE

# HARRIS COUNTY (IFC & IBC 2021)
## FIRE CODE DESIGN AND COMPLIANCE REVIEW SHEET VERSION 9.0 (JAN 2025)

**REVISIONS (DO NOT USE THIS BLOCK UNTIL AFTER PERMIT IS ISSUED)**

| DATE | SHEET NO.(S) | DESCRIPTION | REVIEWER |
|---|---|---|---|
| | | | |
| | | | |
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FIRE CODE REVIEW
SHEET NUMBER
3 OF 4


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

G1.01D
HC CODE REVIEW FIELD HOUSE

PLAN NORTH

# 1 BUILDING PLANNING & DESCRIPTION

☒ NEW CONSTRUCTION ☐ SHELL BUILDING
☐ LEASE SPACE BUILD-OUT (LSBO) ☐ CHANGE OF OCCUPANCY
☐ SUBSTANTIAL IMPROVEMENT ☐ OTHER: _____

| MIXED OCCUPANCY | | |
|---|---|---|
| ☒ SINGLE OCCUPANCY | ☐ SEPARATED USE | ☐ NON-SEPARATED USE |

*(SECTION 508.3 OR 508.4 IBC 2021)*

TYPE OF CONSTRUCTION: TYPE IIB *(CHAPTER 6 IBC 2021)*

HEIGHT LIMITATION: 55' - 0" AREA LIMITATION: 14,500 S.F. *(TABLES 504.3, 504.4, 506.2 IBC 2021)*

FRONTAGE INCREASE CALCULATIONS ARE SHOWN ON SHEET: 31,500 S.F. CALCULATION SHOWN ON G1.01A

**BUILDING VALUATION**

BUILDING NUMBER: 4 OF 4

ADDRESS: 18530 CYPRESS HEIGHTS DRIVE

CITY, ST: CYPRESS, TX ZIP CODE: 77433 SUITE: _____

CALL CENTERPOINT ENERGY AHEAD OF TIME, AT 713-207-4460, TO OBTAIN AN ADDRESS

HCAD #. OR PROPERTY TAX #: 1440160010001 (13 DIGITS)
(http://www.hcad.org)

BUILDING LOCATED IN FLOODPLAIN: X-UNSHADED X 500-YR ____ 100-YR ____ OTHER ____
BFE _____ FFE _____ NG _____

GROSS SQUARE FOOTAGE: 96 SQ FT #OF FLOORS: 1 HEIGHT: 20' - 0"

ESTIMATED COST OF CONSTRUCTION: $_____

T.D.L.R #: _____ *(REQUIRED FOR CONSTRUCTION OVER $50,000)*
TEXAS DEPARTMENT OF LICENSING AND REGULATIONS
(https://www.tdlr.texas.gov/ab/ab.htm)
TELEPHONE: (512) 463-6599 TOLL FREE (IN TEXAS): 800-803-9202
FAX: (512) 475-2871 RELAY TEXAS-TDD: 800-735-2989

SHELL BUILDING PERMIT #: _____ CIVIL PROJECT #: _____

PUBLIC UTILITIES: YES ☒ NO ☐

OSSF : YES ☐ NO ☒ PROJECT/PERMIT #: N/A

**LIST BELOW THE PURPOSE/USE OF THE BUILDING OR AREA BEING REVIEWED. INCLUDE DETAILS ON THE PRODUCTS/MATERIALS BEING STORED/FABRICATED AND NOTE HOW THEY ARE BEING PACKAGED.**

THIS PORTION IS A PRESS BOX SERVING THE SOCCER COMPETITION FIELD FOR TOMBALL WEST HIGH SCHOOL

# 2 OCCUPANCY TYPE AND LOAD

**CHAPTER 2, 3 & TABLE 1004.5 IBC 2021**

**BREAK DOWN AREAS AND OCCUPANT LOADS PER FLOOR**

| OCC. CLASS | AREA SPECIFIC USE | GROSS SF | NET SF | SF PER OCC. | DESIGN OCC. |
|---|---|---|---|---|---|
| E | PRESS BOX | 96 S.F. | | 50/1 | 2 |
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| | | | | | |
| TOTAL NET | | | | | |
| TOTAL GROSS | | 96 S.F. | | | 2 |

# 3 MEANS OF EGRESS

**CHAPTER 10 IBC 2021**

| MEANS OF EGRESS | # OF REQUIRED EXITS | # OF EXITS PROVIDED | SHEET # |
|---|---|---|---|
| STAIRWAYS (PER FLOOR) | - | - | - |
| EGRESS @ 1ST FL OR LSBO | - | - | - |

*(SECTIONS 1005 & 1006 IBC 2021)*

PANIC HARDWARE ON EXIT DOORS? YES ☒ NO ☐ *(SECTION 1010.2.9 IBC 2021)*

**STAIRWAYS** *(SECTION 1011 IBC 2021)*

STAIR DETAILS AND EGRESS WIDTHS SHOWN ON: N/A

**EXIT SIGNS/EGRESS ILLUMINATION** *(SECTIONS 1008 & 1013 IBC 2021)*

REQUIRED AND SHOWN ON: E2.01 *(HIGHLIGHT ON PLANS)*

EXTERIOR MEANS OF EGRESS LIGHTING PROVIDED? YES ☒ *(SECTION 1008 IBC 2021)*

**EXIT TRAVEL DISTANCE** *(SECTION 1017 IBC 2021)*

| OCCUPANCY TYPE | MAX TRAVEL DISTANCE | PROVIDE TRAVEL DISTANCE | SHEET # |
|---|---|---|---|
| E | 200 FT | MAX 12 FT | G1.02 |
| | | | |
| | | | |

**ELEVATORS**

NEW ☐ EXISTING ☐ ELEVATOR HOISTWAY IBC SECTION 3006.2.1? YES ☐ NO ☒

ELEVATOR KEYBOX LOCATED IN LOBBY? YES ☐ NO ☒

# 4 FIRE PROTECTION & LIFE SAFETY SYS.

**CHAPTER 9 IFC & IBC 2021**

**ALL FIRE PROTECTION PLANS SHALL BE SUBMITTED FOR REVIEW AFTER BUILDING PERMIT HAS BEEN ISSUED** ***(I.E. UNDERGROUND FIRE LINE, SPRINKLER SYSTEM, FIRE ALARM SYSTEM, STANDPIPE, FIRE PUMP ROOM, AND FIRE PROTECTION WATER SUPPLY SYSTEMS)***

**AUTOMATIC FIRE SPRINKLER SYSTEM/ALTERNATIVE AUTOMATIC FIRE EXTINGUISHING SYSTEM SECTION 903 IFC 2021**

**ALL SPRINKLERS SHALL COMPLY WITH MONITORING AND OCCUPANT NOTIFICATION PER 903.4.2.1 SECTION 903.4.1 IFC 2021 AMENDMENTS**

☐ PROVIDED AS NOTED ON: _____ ☒ NOT REQUIRED PER SECTION 903

SYSTEM PROVIDED:
☐ NFPA 13
☐ NFPA 13R
☐ NFPA 13D
☐ OTHER: _____

SPRINKLER HEAD PROVIDED:
☐ STANDARD
☐ ELO
☐ ESFR
☐ QUICK RESPONSE

FIRE PUMP PROVIDED:
☐ YES ☐ NO

FIRE PUMP SEPARATION:
SEE SECTION 913.2.1 IFC 2021

FIRE DEPARTMENT ACCESS TO SPRINKLER CONTROLS:
☐ SPRINKLER RISER ROOM OR POST INDICATOR VALVE SHOWN ON: _____
*(SECTION 901.4.7 HC AMENDMENTS IFC 2021)*

☐ FDC SHOWN ON: _____ *(FDC SHALL COMPLY WITH SECTION 912 IFC 2021)*

**ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS** *(SECTION 904 IFC 2021)*
☐ REQUIRED AND SHOWN ON: _____
☒ NOT REQUIRED

**STANDPIPE SYSTEM & HOSE CONNECTIONS** *(SECTION 905 IFC 2021)*
*(I.E. IN STAIRWAYS, STAGES, MALLS)*
☐ PROVIDED AS NOTED ON: _____, TYPE OF SYSTEM PROVIDED: _____ *(CLASS I, II OR III)*
☒ NOT REQUIRED

**PORTABLE FIRE EXTINGUISHERS** *(SECTION 906 IFC 2021)*
☒ PROVIDED AS NOTED ON: G1.02 , NUMBER PROVIDED: 6 *(HIGHLIGHT ON PLANS)*

**FIRE ALARM & DETECTION SYSTEMS** *(SECTION 907 HC AMENDMENTS IFC 2021)*
☒ FIRE ALARM SYSTEM (DEFERRED SUBMITTAL)
☐ NOT REQUIRED
☐ EMERGENCY VOICE EVACUATION
☐ OTHER: _____
☐ ELEVATOR RECALL
☐ GAS DETECTION SYSTEM SECTION 909

**HVAC & AIR DISTRIBUTION SYSTEM CONTROLS** *(SECTION 907.3.1 IFC 2021)*
☐ SMOKE DETECTORS PROVIDED TO SHUT DOWN UNITS OVER 2,000 CFM PROVIDED ON: _____
☒ NO HVAC UNITS OVER 2,000 CFM
☐ FIRE/SMOKE DAMPERS IN THE BUILDING SHOWN ON: _____
☐ NO FIRE/SMOKE DAMPERS IN THE BUILDING

**SMOKE CONTROL SYSTEM** *(SECTION 909 IFC 2021)*
☐ PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**SMOKE & HEAT VENTILATION** *(SECTION 910 IFC 2021)*
☐ CALCULATIONS PROVIDED AS NOTED ON: _____
☒ NOT REQUIRED

**ENHANCED RESPONDER COMMUNICATIONS COVERAGE SYSTEM (ERCCS)**
☐ PROVIDED AS NOTED ON: _____ *(SECTION 510 HC AMENDMENTS)*
☒ NOT REQUIRED

# 5 FIRE-RESISTANCE RATE CONSTRUCTION

**CHAPTERS 6, 7 AND 10 IBC 2021**

*Provide section details on the plans showing compliance for any proposed fire rated construction (walls, partitions, floors, roof, etc.).
*Please reference and provide standard for the rated design.

**FIRE-RESISTANCE RATING REQUIREMENTS** *TABLE 601 & PROPOSED OR REQUIRED CONSTRUCTION PER IBC 2021*

| BUILDING ELEMENTS | HOURS REQUIRED | HOURS PROVIDED | UL OR IBC STANDARD USED & DESIGN DETAIL SHOWN ON |
|---|---|---|---|
| STRUCTURAL FRAME | 0 | 0 | |
| EXTERIOR BEARING WALLS | 0 | 0 | |
| EXTERIOR NON-BEARING WALLS | 0 | 0 | |
| INTERIOR BEARING WALLS | 0 | 0 | |
| INTERIOR NON-BEARING WALLS | 0 | 0 | |
| FLOOR CONSTRUCTION | 0 | 0 | |
| ROOF CONSTRUCTION | 0 | 0 | |
| STAIRWELLS *(SECTION 1023)* | N/A | N/A | |
| ELEVATOR SHAFTS *(SECTION 713)* | N/A | N/A | |
| CORRIDORS *(SECTION 1020)* | N/A | N/A | |
| FIRE RATED DOORS *(TABLE 716.1(2))* | N/A | N/A | |
| DEMISING/PARTITION WALL *(SECTION 708)* | N/A | N/A | |
| FIRE BARRIER *(SECTION 707)* | N/A | N/A | |
| FIRE WALL *(SECTION 706)* | N/A | N/A | |
| DRAFTSTOPS: ☐ YES, SHOWN ON: _____ | ☐ NO (SPRINKLED ATTIC) | ☒ N/A *(SECTION 718.4)* | |

| FIRE SEPARATION DISTANCE (FEET) *(SECTION 602 IBC 2021)* | 80' | 214' | 95' TO PROP. BERM | 509' |
|---|---|---|---|---|
| | NORTH | SOUTH | EAST | WEST |

ROOF COVERING CLASSIFICATION PROVIDED: A ☐ B ☐ C ☒ *(TABLE 1505.1 IBC 2021)*

# 6 WATER SUPPLY (FOR FIREFIGHTING)

**CHAPTER 5, APPENDIX B & C IFC 2018**

96 S.F. GROSS SIZE OF BUILDING IN SQUARE FEET *(INCLUDE ALL OVERHANGS UNDER ROOF)*

**PUBLIC WATER SUPPLY WITH FIRE HYDRANTS**
(FOR PROPOSED AND EXISTING FIRE HYDRANTS ONLY)
NAME OF THE MUNICIPAL UTILITY DISTRICT: _____
NUMBER OF HYDRANTS WITHIN 400 FT (NON-SPRINKLED) OR 600 FT (SPRINKLED) OF BUILDING: _____, SHOWN ON: _____
OR
REQUIRED GPM: _____ DURATION: _____ *(TABLE B105.1(2) IFC 2021)*
75% REDUCTION? YES ☐ NO ☐ *(MUST MAINTAIN MINIMUM PER TABLE B105.2 IFC 2021)*

**WATER SOURCE FOR RURAL AREAS WITHOUT FIRE HYDRANTS**
☐ ***DRY HYDRANT ☐ UNDERGROUND STORAGE ☐ PRIVATE HYDRANT
☐ ABOVEGROUND STORAGE ☐ OTHER: _____

DESIGN SPECIFICATIONS AND LOCATIONS SHOULD MEET MINIMUM REQUIRED WATER SUPPLY IN ACCORDANCE WITH SECTION B103.3 IN THE HARRIS COUNTY FIRE CODE. THE FIRE CODE OFFICIAL IS AUTHORIZED TO UTILIZE NFPA 1142 OR THE INTERNATIONAL WILDLAND-URBAN INTERFACE CODE.

# 7 FIRE LANE ACCESS

**CHAPTER 5, APPENDIX D IFC 2021**

FIRE LANE LAYOUT PLAN, WHICH SHALL INCLUDE THE SITE PLAN, THE FIRE LANE & FIRE HYDRANTS, IS SHOWN ON: _____ *(HIGHLIGHT THE FIRE HYDRANT LOCATIONS ON THE PLANS)* AERIAL ACCESS LAYOUT, FOR BUILDINGS OVER 30 FT, IS SHOWN ON: _____.

FIRE LANES WILL BE APPROVED CONCEPTUALLY DURING THE CIVIL REVIEW PROCESS. HOWEVER, THE FIRE CODE PLAN REVIEWER MAY CHANGE THE FIRE LANE LAYOUT BASED ON THE BUILDING SPECIFICATIONS.

☒ GATES AND BARRICADES ACROSS THE FIRE ACCESS ROAD
PROPERTIES WITH FENCE AND GATES SHALL PROVIDE A 911 KEY BOX AT ENTRY GATE.

# 8 INTERIOR FINISH

**CHAPTER 8, TABLE 803.13 IBC 2021**

| OCCUPANCY GROUP | EXIT ENCLOSURES AND EXIT PASSAGEWAYS | CORRIDORS | ROOMS AND ENCLOSED SPACES | SHEET # |
|---|---|---|---|---|
| E | A | B | C | A11.00 |
| | | | | |
| | | | | |

# 9 STORAGE: STANDARD

YES ☐ NO ☒ PRODUCTS BEING STORED: NONE

YES ☐ NO ☒ STORAGE METHOD *(I.E. RACKS, PALLETS ON FLOOR, ETC.)*: NONE
STORAGE LAYOUT SHOWN ON: NONE

YES ☐ NO ☒ MAXIMUM HEIGHT STORAGE: NONE

# 10 STORAGE: HIGH PILED

**CHAPTER 32 IFC 2021 - SEE ALSO SECTION 3201.3 & HC AMENDMENTS IFC 2021**
***DEFERRED SUBMITTAL THAT MUST BE SUBMITTED WITHIN 180 DAYS OF ORIGINAL PERMITTING.*

YES ☐ NO ☐ PRODUCTS BEING STORED: _____
YES ☐ NO ☐ STORAGE PACKAGING *(I.E. PALLETS, RACKS, SOLID PILED, DRUMS, CARDBOARD BOXES, WRAPPED IN PLASTIC, ETC.)*: _____
YES ☐ NO ☐ MAXIMUM HEIGHT OF COMMODITY: _____
YES ☐ NO ☐ ***THIS BUILDING IS DESIGNED FOR THE INTENT OF HIGH PILED STORAGE. IF YES, THEN PROVIDE HIGH PILED STORAGE FORM FOUND ON HC WEBSITE
YES ☐ NO ☐ FIRE DEPARTMENT ACCESS DOORS
YES ☐ NO ☐ HIGH PILED STORAGE RACK LAYOUT/ELEVATIONS, CODE ANALYSIS, ETC. SHOWN ON: _____

# 11 HAZARDOUS MATERIALS

**CHAPTER 50 IFC 2021 - SEE ALSO SECTION 5001.7 HC AMENDMENTS IFC 2021**
**HMIS FORM FOUND ON HC WEBSITE.**

YES ☐ NO ☐ DOES THE BUILDING HAVE HAZARDOUS MATERIAL USE OR STORAGE? IF YES, THEN PROVIDE ALL HMIS SUMMARY AND MSDS REPORTS.
YES ☐ NO ☐ IF YES, DO THE QUANTITIES EXCEED THE MAXIMUM ALLOWABLE PER IFC 2021?
IF YES, YOU WILL BE REQUIRED TO PROVIDE THE FOLLOWING:
CODE ANALYSIS BY FIRE PROTECTION ENGINEER TO SHOW COMPLIANCE WITH IFC 2021
CODES AND REFERENCED STANDARDS SHOWN ON SHEET(S) _____

# 12 SPECIAL CONDITIONS

YES ☐ NO ☒ ATRIUM(S) SECTION 404 IBC 2021
YES ☐ NO ☒ HIGH RISE BLDG SECTION 403 IBC 2021 & 914.3 IFC 2021
YES ☐ NO ☒ ANY FUEL STORAGE TANKS CHAPTERS 23, 50, 57 IFC 2021
YES ☐ NO ☒ CRITICAL FACILITIES (HARRIS COUNTY SECTION 1203.2.20 HC AMENDMENTS IFC 2021)
YES ☐ NO ☒ COMPRESSED GASES CHAPTERS 53,58 IFC 2021
YES ☐ NO ☒ CRYOGENIC FLUIDS CHAPTER 55 IFC 2021
YES ☐ NO ☒ FLAMMABLE & COMBUSTIBLE LIQUIDS CHAPTERS 50 & 57 IFC 2021

YES ☐ NO ☒ PAINT SPRAY BOOTHS, COATINGS, DIPPING OR INDUSTRIAL OVENS USED CHAPTERS 24 & 30 IFC 2021
YES ☐ NO ☒ HEALTH DEPARTMENT APPROVAL? REQUIRED FOR ALL ESTABLISHMENTS THAT SERVE/PREPARE FOOD AND BEVERAGES FOR THE PUBLIC OR HAVE REFRIGERATED FOOD STORAGE.
YES ☐ NO ☒ LP GAS CHAPTER 61 IFC 2021
YES ☐ NO ☒ PROPOSING PHASED PERMITS PHASING PLAN SHOWN ON: _____
YES ☐ NO ☒ OTHER: _____

# COMMENTS & NOTES

**A COPY OF THESE APPROVED CONSTRUCTION PLANS MUST BE KEPT AT PROJECT SITE FOR THE FINAL INSPECTION OF THE BUILDING**

PROJECT NUMBER:

**THE PROJECT KNOWN AS**
(MUST BE THE NAME OF BUSINESS/DBA IF BUILDING IS FOR A SPECIFIC COMPANY)
TOMBALL ISD WEST AGRICULTURAL SCIENCE FACILITY
PRESS BOX
WAS ACCEPTED BY HARRIS COUNTY FOR THE PURPOSES LISTED BELOW:

REVIEWER'S SIGNATURE BLOCK

PERMIT OFFICE

THE PROJECT WAS REVIEWED; HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER / ARCHITECT LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE PROFESSIONAL'S RESPONSIBILITY AND ACCOUNTABILITY. THIS ACCEPTANCE DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO DEVELOPMENT.

HCED REVIEW:

CERTIFICATION

I, AARON D. SANDERS, A LICENSED PROFESSIONAL ENGINEER/ARCHITECT IN THE STATE OF TEXAS DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I AM/AM NOT A DESIGNER OF RECORD FOR THIS PROJECT. THE PROJECT CONSISTS OF DRAWING SHEETS G0.00 THROUGH T6.05.
ENGINEERING FIRM ARCADIS FIRM# _____

REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
SEAL

SIGNATURE

07/28/2025
DATE

# HARRIS COUNTY (IFC & IBC 2021)

## FIRE CODE DESIGN AND COMPLIANCE REVIEW SHEET VERSION 9.0 (JAN 2025)

**REVISIONS (DO NOT USE THIS BLOCK UNTIL AFTER PERMIT IS ISSUED)**

| DATE | SHEET NO.(S) | DESCRIPTION | REVIEWER |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

FIRE CODE REVIEW

SHEET NUMBER
4 OF 4


CONSULTANTS

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Talon Engineering, LLC
1118 Wolfs Knoll
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CJG Engineers
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Tel: 713.780.3345

MEP
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Tel: 713.914.0888


A B

**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT AARON D. SANDERS 25345 STATE OF TEXAS
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | 1 PERMIT AND PROPOSAL |

G1.01E

HC CODE REVIEW PRESS BOX

PLAN NORTH

(000) ROOM OCCUPANCY LOAD

DENOTES EXIT DIRECTION, MAX.EXIT CAPACITY & # OF OCCUPANTS PER FLOOR
CAPACITY: 480
1ST FLR TOTAL: 480

0'-0" TRAVEL DISTANCE TO EXIT

SMOKE RATED WALL

1HR RATED WALL

2HR RATED WALL

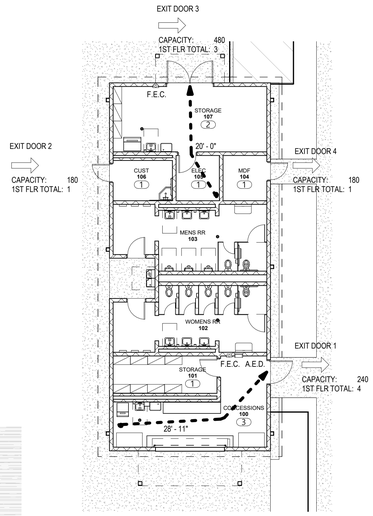
F.E. FIRE EXTINGUISHER

F.E.C. FIRE EXTINGUISHER & CABINET

A.E.D. A.E.D. & CABINET

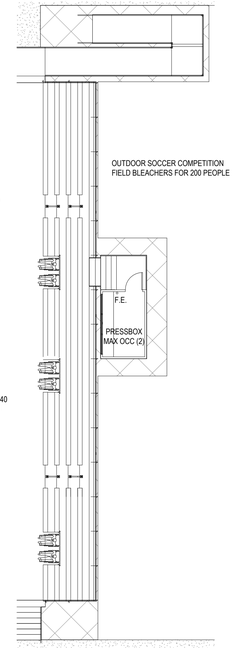
## LEGEND - LIFE SAFETY PLAN

1/4" = 1'-0"



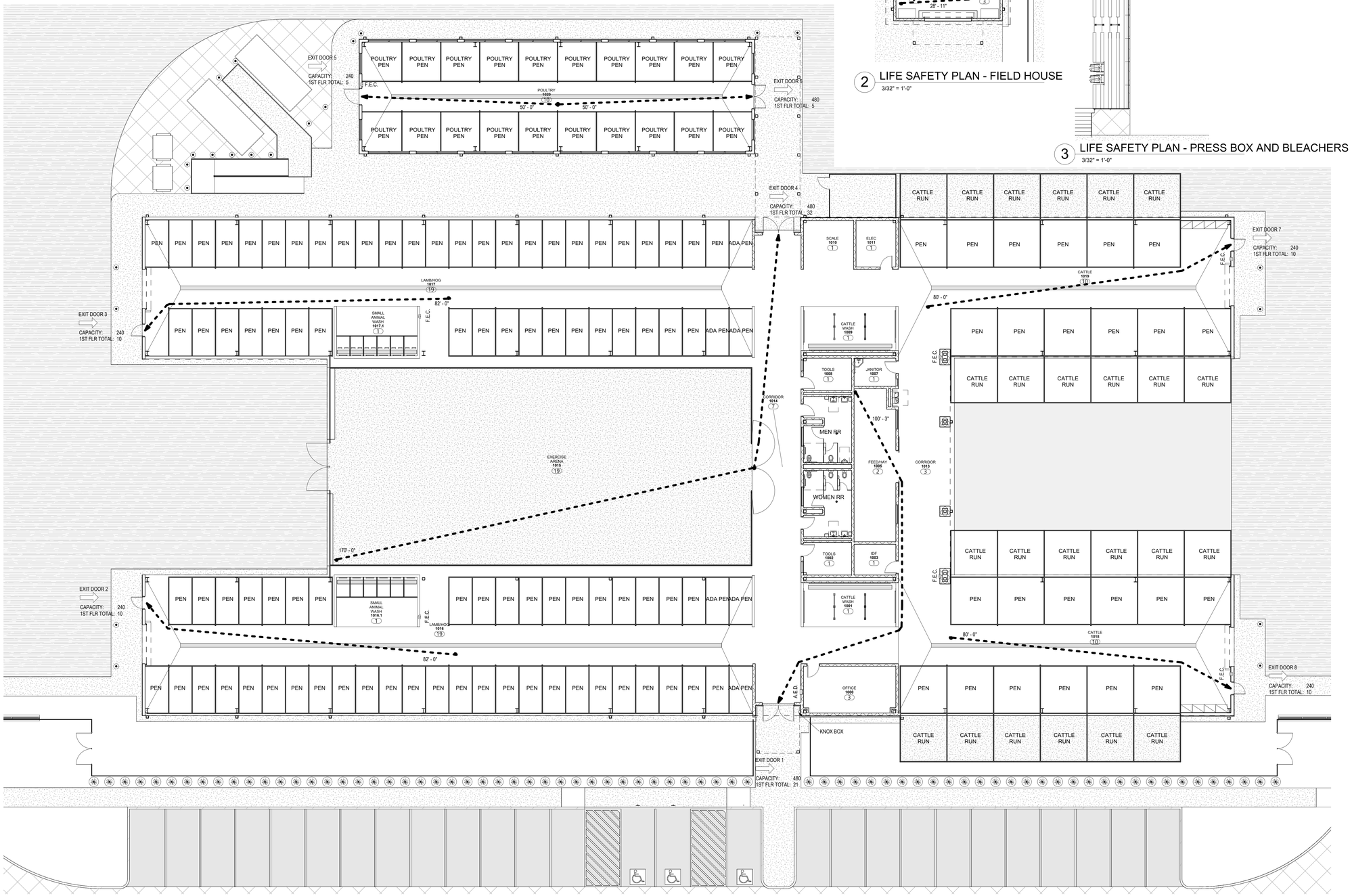

## 2 LIFE SAFETY PLAN - FIELD HOUSE

3/32" = 1'-0"




## 3 LIFE SAFETY PLAN - PRESS BOX AND BLEACHERS

3/32" = 1'-0"




## 1 LIFE SAFETY PLAN - WEST AGRICULTURAL SCIENCE FACILITY AND POULTRY BLDG

3/32" = 1'-0"

PLAN NORTH

CONSULTANTS

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# WEST AGRICULTURAL SCIENCE FACILITY

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ARCADIS

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REGISTERED ARCHITECT BRIAN NEWTON 25348 STATE OF TEXAS

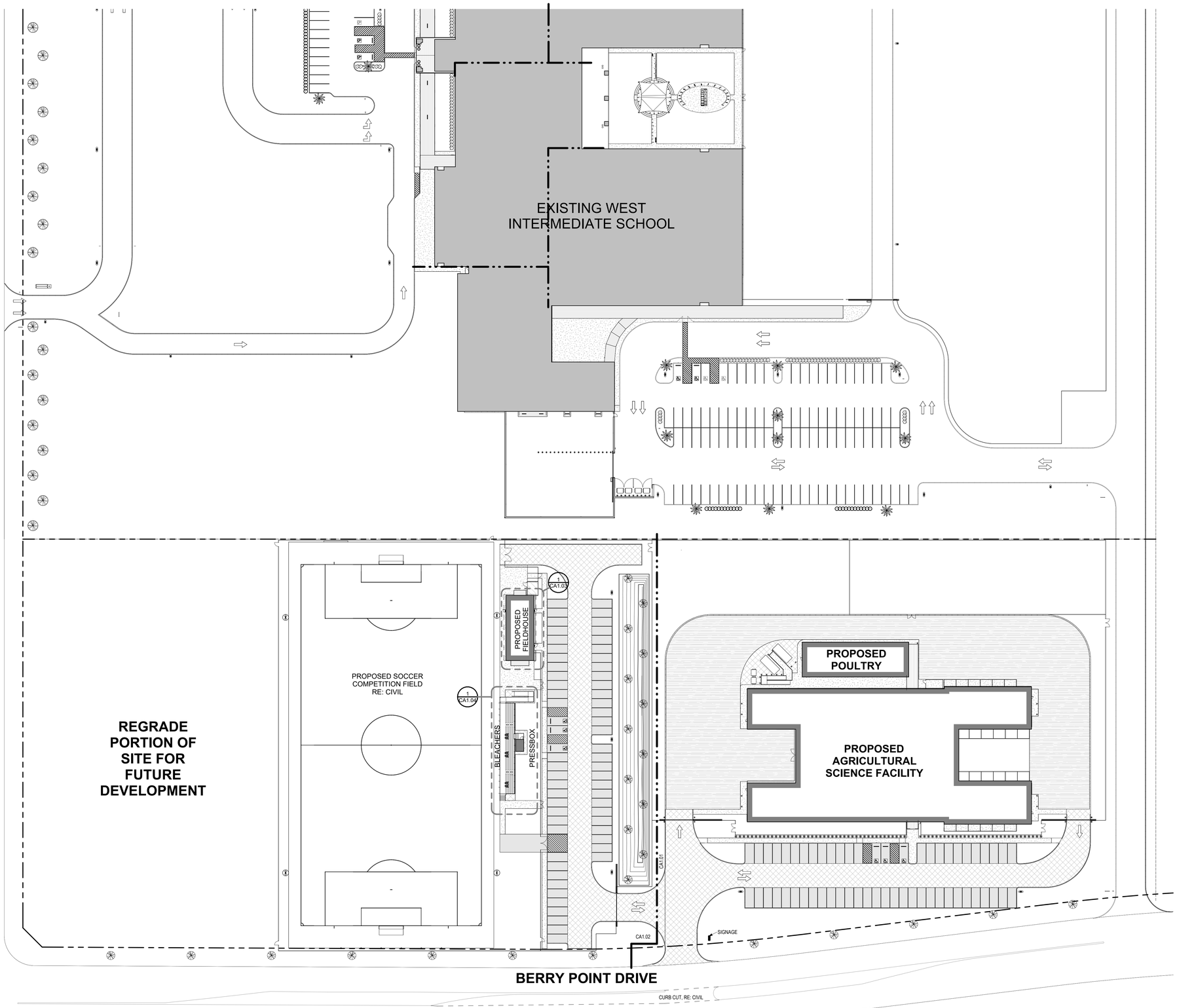
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | BN |
| CHECKED: | - |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# G1.02

1ST FLOOR LIFE SAFETY PLAN




1 COMPOSITE SITE PLAN
1" = 40'-0"

PLAN NORTH

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REGISTERED ARCHITECT BRIAN NEWMAN 25340 STATE OF TEXAS

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | BN |
| CHECKED: | AS |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

CA1.00

COMPOSITE
SITE PLAN

TYPICAL SITE PLAN NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING SITE CONDITIONS, DIMENSION, UTILITIES, ETC. WHERE NEW CONSTRUCTION JOINS EXISTING CONDITIONS, THE EXISTING CONDITIONS SHALL CONTROL. ALL DISCREPANCIES SHALL BE SUBMITTED TO THE ARCHITECT FOR CONSIDERATION BEFORE PROCEEDING WITH THE WORK.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND MODIFYING EXISTING UTILITY LINES ABOVE AND BELOW GRADE DURING THE ENTIRE CONSTRUCTION PERIOD, INCLUDING ALL NECESSARY TIE-INS AND ELEVATION ADJUSTMENTS, RELOCATION OF ALL UTILITY POLES, LINES AND OTHER EXISTING SERVICES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE WORK INCLUDING VERIFICATION AND COORDINATION WITH THE APPROPRIATE AGENCIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING UTILITIES IMMEDIATELY TO INSURE NO INTERRUPTION OF SERVICE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH APPROPRIATE AGENCIES ALL BURIED LINES THAT APPROACH THE CONSTRUCTION AREA.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, ACQUIREMENT OF ALL NECESSARY PERMITS, ETC. AND IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN WITH THE APPROPRIATE AGENCIES.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL VEGETATION, SHRUBS, TREES, ETC. INDICATED TO REMAIN FROM ALL CONSTRUCTION ACTIVITIES. DAMAGED LANDSCAPING SHALL BE REPLACED WITH LIKE MATERIALS AND SIZE(S) AT THE DIRECTION OF THE ARCHITECT.

5. THE OWNER HAS NEED TO OCCUPY THE FACILITIES DURING THE ENTIRE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE CONSTRUCTION AREA. NO DISRUPTIVE WORK WILL BE PERMITTED INSIDE THE FACILITY DURING SCHOOL HOURS. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE CONSTRUCTION AREA CLEAN OF DEBRIS AND EXCESSIVE DUST. CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY CORRECTING ANY INTERRUPTED USE TO THE FACILITY AT NO COST TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF ANY DAMAGE TO EXISTING FACILITY MATERIALS AT THE DIRECTION OF THE ARCHITECT AND AT NO COST TO THE OWNER.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL MEANS OF SECURITY INSIDE AND OUTSIDE REQUIRED AND APPROVED BY THE OWNER.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL MEANS OF ACCESSING THE CONSTRUCTION AREA REQUIRED AND APPROVED BY THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND RESTORATION OF THE EXISTING AREA(S) UPON COMPLETION OF THE CONSTRUCTION.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EXISTING UNDERGROUND STORM LINES DURING ALL CONSTRUCTION, INCLUDING NEW TIES-INS. CONTRACTOR SHALL REPAIR DAMAGE TO EXISTING SYSTEM (PIPE, GRATES, ETC.) IMMEDIATELY TO INSURE NO INTERRUPTION. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT SEDIMENT INFILTRATION AND SHALL JET CLEAN ALL LINES AS NECESSARY UPON COMPLETION OF CONSTRUCTION.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR MODIFYING EXISTING SWALES AND/OR CREATING NEW TEMPORARY SWALES OR BERMS AS REQUIRED TO PROVIDE POSITIVE DRAINAGE AWAY FROM CONSTRUCTION AREA(S).

10. CONTRACTOR SHALL E RESPONSIBLE FOR PROVIDING THE FOLLOWING AMERICANS WITH DISABILITIES ACT (A.D.A.) AND TEXAS ACCESSIBILITIES STANDARDS (T.A.S.) ACCESSIBLE ROUTE REQUIREMENTS:
- *ACCESSIBLE ROUTE (PARKING LOT AND WALKS):
  SLOPE SHALL NOT EXCEED 5% (5/8"/1 FOOT)
  CROSS-SLOPE SHALL NOT EXCEED 2% (1/4"/1 FOOT)
- *ACCESSIBLE APPROACH TO EXTERIOR DOOR(S)
  IMMEDIATELY OUTSIDE OF DOOR AND FOR A DISTANCE OF 5'-0" MIN. SHALL
  NOT EXCEED A SLOPE OF 2% (1/4"/1 FOOT)
  MAXIMUM RISE AT THRESHOLD SHALL NOT EXCEED 1/2".

11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONCRETE WALKS AS INDICATED ON THE SITE PLAN AND DETAILED ON THE DETAIL SHEET (EXPANSION JOINTS AT 20'-0" MAX. WITH CONTROL JOINTS AT 5'-0" MAX. AND EQUAL SPACES). CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING JOINT LAYOUT WITH ARCHITECT IN THE FIELD PRIOR TO FORMING.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HYDROMULCH AT ALL LANDSCAPE AND PLANING AREA, ETC. DISTURBED DURING CONSTRUCTION AND AT ALL AREAS NOTED AS FILL AND GRADE, UNLESS NOTED OTHERWISE ON PLANS. PROVIDE TEMPORARY BARRICADE ALONG MAIN ACCESS PATHS TO BUILDING UNTIL SUCH TIME THE GRASS HAS STABILIZED THE FINISH GRADE.

13. CONTRACTOR SHALL PROVIDE EXPANSION JOINTS AT THE PROPERTY LINE AT ALL DRIVES.

14. CONTRACTOR SHALL GRADE ALL LANDSCAPE ISLAND TO AVOID WATER PONDING INSIDE OF CURBS.

15. CONTRACTOR SHALL PROVIDE FILL AND SOLID SOD AT 5'-0" MIN. FROM ALL CONSTRUCTION AREAS UNLESS NOTED OTHERWISE.

16. CONTRACTOR SHALL REFER TO CIVIL DRAWINGS FOR ALL SITE GRADING AND SUB-SURFACE DRAINAGE SYSTEMS, MODIFICATIONS TO EXISTING SYSTEMS AND UTILITIES.

17. CONTRACTOR SHALL REFER TO PAVING SCHEDULE FOR THICKNESS OF SURFACES.

18. ALL DIMENSIONS ARE TO EDGE OF WALK OR PAVING, BACK OF CURB, FACE OF BUILDING OF PROPERTY LINE, UNLESS NOTED OTHERWISE.

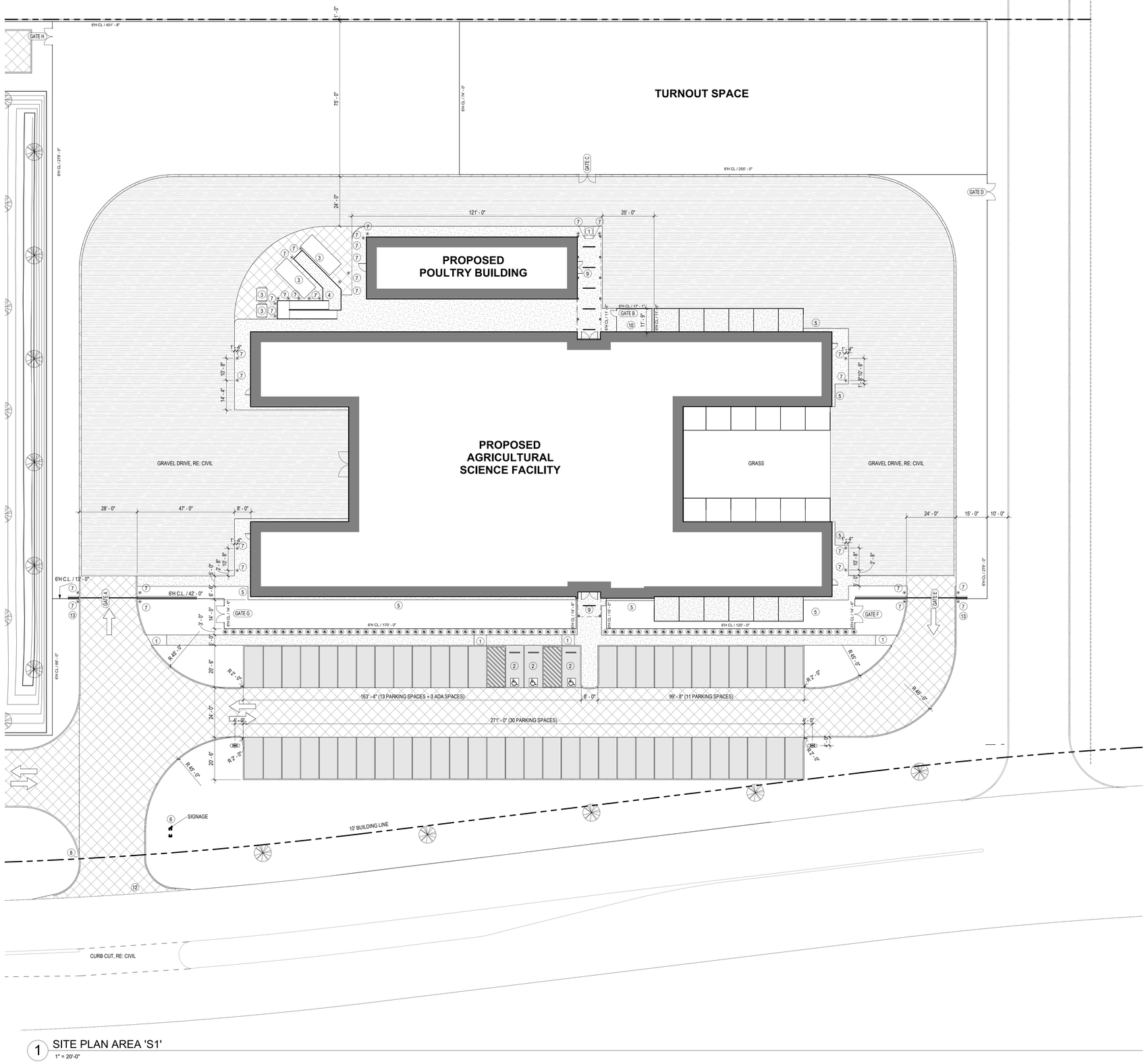
19. PARKING LOT PAINTING STANDARDS:
- *TYPICAL PARKING LINE SHALL BE 4" WIDE x 18'-0" LONG PER STALL, UNLESS NOTED OTHERWISE.
- *TYPICAL A.D.A. SYMBOL AND LOADING AREA SHALL BE PER DETAIL ON DETAIL SHEET.
- *TYPICAL IRE LANE CURB SHALL BE OF APPROVED COLOR WITH STENCILED CONTRASTING GRAPHICS AT 50'-0" SPACING THAT READS:
- "FIRE LANE - NO PARKING - TOW AWAY ZONE"

20. AT ALL FIRE LANE CURBS, PROVIDE FIRE LANE SIGNS, SIMILAR TO ACCESSIBLE SIGN ON X/C1.XX, EXCEPT LOCATION EVERY 50'-0" O.C. ALONG FIRE LANE CURBS. SIGN TO READ: "FIRE LANE", "NO PARKING", "TOW AWAY ZONE". COORDINATE THE LOCATIONS IN THE FIELD WITH ARCHITECT.

## NOTES - TYP. SITE PLAN
1/4" = 1'-0"

1. ADA RAMP, RE: 3 / CA1.05
2. ADA PARKING SPOT, RE: 2 / CA1.05
3. DUMPSTER, N.I.C.
4. DUMPSTER RAMP, RE: 3 / A3.01
5. 1'-6" CONC. MOW STRIP, RE: 7 / CA1.05
6. ENTRANCE SIGNAGE, RE: 6 / CA1.05
7. FIXED BOLLARD, RE: 4 / CA1.05
8. STOP SIGN, RE: 20 / CA1.05
9. CANOPY, RE: A4.02 SHEET
10. MECH PAD, RE: MEP FOR EQUIPMENT
11. CURB CUT FOR TURNING LANE, RE: CIVIL
12. CURB CUT FOR DRIVEWAY, RE: CIVIL
13. KNOX BOX, RE: SPECS
14. COMPETITION FIELD LIGHTING, RE: SPECS, MEP, & STRUCT.
15. TEAM BENCHES, RE: SPECS
16. SCOREBOARD, RE: SPECS & 22 / CA1.05
17. SOCCER GOAL, RE: SPECS
18. ATHLETIC SPORTSFIELD NETTING, RE: SPECS & 23 / CA1.05

## KEYNOTES - SITE PLAN
1/4" = 1'-0"




| DESCRIPTION | GRAPHIC | MATERIAL | REINFORCING |
|---|---|---|---|
| SIDEWALKS/ FLATWORK | | 4" THICK CONCRETE | #3 BARS @ 15" O.C. EACH WAY |
| STANDARD DUTY PARKING AREAS & DRIVES | | 5" THICK CONCRETE | #3 BARS @ 18" O.C. EACH WAY OR #4 BARS @ 24" O.C. EACH WAY |
| MEDIUM DUTY PARKING AREAS & DRIVES | | 6" THICK CONCRETE | #3 BARS @ 12" O.C. EACH WAY OR #4 BARS @ 18" O.C. EACH WAY |
| HEAVY DUTY PARKING AREAS, DRIVES, & SERVICE YARDS | | 7" THICK CONCRETE | #4 BARS @ 18" O.C. EACH WAY |
| GRAVEL DRIVE | | RE: CIVIL DWGS. | |

## LEGEND - PAVING/FLATWORK
1" = 1'-0"

## 1 SITE PLAN AREA 'S1'
1" = 20'-0"

PLAN NORTH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REGISTERED ARCHITECT 25348 STATE OF TEXAS
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# CA1.01

SITE PLAN AREA 'S1'

TYPICAL SITE PLAN NOTES:

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5. THE OWNER HAS NEED TO OCCUPY THE FACILITIES DURING THE ENTIRE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE CONSTRUCTION AREA. NO DISRUPTIVE WORK WILL BE PERMITTED INSIDE THE FACILITY DURING SCHOOL HOURS. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE CONSTRUCTION AREA CLEAN OF DEBRIS AND EXCESSIVE DUST. CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY CORRECTING ANY INTERRUPTED USE TO THE FACILITY AT NO COST TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF ANY DAMAGE TO EXISTING FACILITY MATERIALS AT THE DIRECTION OF THE ARCHITECT AND AT NO COST TO THE OWNER.

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9. CONTRACTOR SHALL BE RESPONSIBLE FOR MODIFYING EXISTING SWALES AND/OR CREATING NEW TEMPORARY SWALES OR BERMS AS REQUIRED TO PROVIDE POSITIVE DRAINAGE AWAY FROM CONSTRUCTION AREA(S).

10. CONTRACTOR SHALL E RESPONSIBLE FOR PROVIDING THE FOLLOWING AMERICANS WITH DISABILITIES ACT (A.D.A.) AND TEXAS ACCESSIBILITIES STANDARDS (T.A.S.) ACCESSIBLE ROUTE REQUIREMENTS:
   - *ACCESSIBLE ROUTE (PARKING LOT AND WALKS):
     SLOPE SHALL NOT EXCEED 5% (5/8"/1 FOOT)
     CROSS-SLOPE SHALL NOT EXCEED 2% (1/4"/1 FOOT)
   - *ACCESSIBLE APPROACH TO EXTERIOR DOOR(S)
     IMMEDIATELY OUTSIDE OF DOOR AND FOR A DISTANCE OF 5'-0" MIN. SHALL NOT EXCEED A SLOPE OF 2% (1/4"/1 FOOT)
     MAXIMUM RISE AT THRESHOLD SHALL NOT EXCEED 1/2".

11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONCRETE WALKS AS INDICATED ON THE SITE PLAN AND DETAILED ON THE DETAIL SHEET (EXPANSION JOINTS AT 20'-0" MAX. WITH CONTROL JOINTS AT 5'-0" MAX. AND EQUAL SPACES). CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING JOINT LAYOUT WITH ARCHITECT IN THE FIELD PRIOR TO FORMING.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HYDROMULCH AT ALL LANDSCAPE AND PLANING AREA, ETC. DISTURBED DURING CONSTRUCTION AND AT ALL AREAS NOTED AS FILL AND GRADE, UNLESS NOTED OTHERWISE ON PLANS. PROVIDE TEMPORARY BARRICADE ALONG MAIN ACCESS PATHS TO BUILDING UNTIL SUCH TIME THE GRASS HAS STABILIZED THE FINISH GRADE.

13. CONTRACTOR SHALL PROVIDE EXPANSION JOINTS AT THE PROPERTY LINE AT ALL DRIVES.

14. CONTRACTOR SHALL GRADE ALL LANDSCAPE ISLAND TO AVOID WATER PONDING INSIDE OF CURBS.

15. CONTRACTOR SHALL PROVIDE FILL AND SOLID SOD AT 5'-0" MIN. FROM ALL CONSTRUCTION AREAS UNLESS NOTED OTHERWISE.

16. CONTRACTOR SHALL REFER TO CIVIL DRAWINGS FOR ALL SITE GRADING AND SUB-SURFACE DRAINAGE SYSTEMS, MODIFICATIONS TO EXISTING SYSTEMS AND UTILITIES.

17. CONTRACTOR SHALL REFER TO PAVING SCHEDULE FOR THICKNESS OF SURFACES.

18. ALL DIMENSIONS ARE TO EDGE OF WALK OR PAVING, BACK OF CURB, FACE OF BUILDING OF PROPERTY LINE, UNLESS NOTED OTHERWISE.

19. PARKING LOT PAINTING STANDARDS:
   - *TYPICAL PARKING LINE SHALL BE 4" WIDE x 18'-0" LONG PER STALL, UNLESS NOTED OTHERWISE.
   - *TYPICAL A.D.A. SYMBOL AND LOADING AREA SHALL BE PER DETAIL ON DETAIL SHEET.
   - *TYPICAL IRE LANE CURB SHALL BE OF APPROVED COLOR WITH STENCILED CONTRASTING GRAPHICS AT 50'-0" SPACING THAT READS:
   - "FIRE LANE - NO PARKING - TOW AWAY ZONE"

20. AT ALL FIRE LANE CURBS, PROVIDE FIRE LANE SIGNS, SIMILAR TO ACCESSIBLE SIGN ON X/C1.XX, EXCEPT LOCATION EVERY 50'-0" O.C. ALONG FIRE LANE CURBS. SIGN TO READ: "FIRE LANE", "NO PARKING", "TOW AWAY ZONE". COORDINATE THE LOCATIONS IN THE FIELD WITH ARCHITECT.

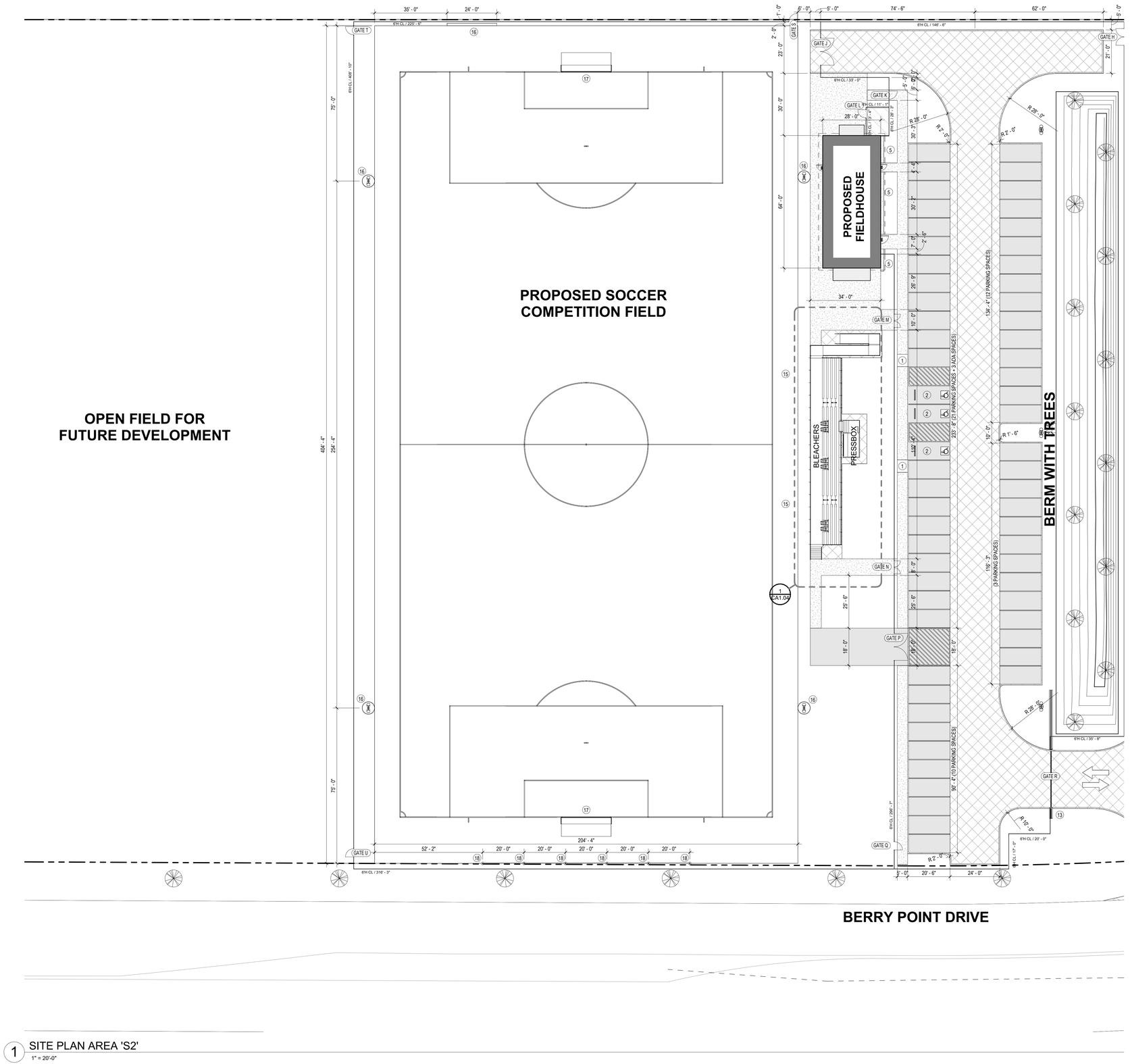
## NOTES - TYP. SITE PLAN
1/4" = 1'-0"

1. ADA RAMP, RE: 3 / CA1.05
2. ADA PARKING SPOT, RE: 2 / CA1.05
3. DUMPSTER, N.I.C.
4. DUMPSTER RAMP, RE: 3 / A3.01
5. 1'-6" CONC. MOW STRIP, RE: 7 / CA1.05
6. ENTRANCE SIGNAGE, RE: 6 / CA1.05
7. FIXED BOLLARD, RE: 4 / CA1.05
8. STOP SIGN, RE: 20 / CA1.05
9. CANOPY, RE: A4.02 SHEET
10. MECH PAD, RE: MEP FOR EQUIPMENT
11. CURB CUT FOR TURNING LANE, RE: CIVIL
12. CURB CUT FOR DRIVEWAY, RE: CIVIL
13. KNOX BOX, RE: SPECS
14. COMPETITION FIELD LIGHTING, RE: SPECS, MEP, & STRUCT.
15. TEAM BENCHES, RE: SPECS
16. SCOREBOARD, RE: SPECS & 22 / CA1.05
17. SOCCER GOAL, RE: SPECS
18. ATHLETIC SPORTSFIELD NETTING, RE: SPECS & 23 / CA1.05

## KEYNOTES - SITE PLAN
1/4" = 1'-0"

| DESCRIPTION | GRAPHIC | MATERIAL | REINFORCING |
|---|---|---|---|
| SIDEWALKS/ FLATWORK | | 4" THICK CONCRETE | #3 BARS @ 15" O.C. EACH WAY |
| STANDARD DUTY PARKING AREAS & DRIVES | | 5" THICK CONCRETE | #3 BARS @ 18" O.C. EACH WAY OR #4 BARS @ 24" O.C. EACH WAY |
| MEDIUM DUTY PARKING AREAS & DRIVES | | 6" THICK CONCRETE | #3 BARS @ 12" O.C. EACH WAY OR #4 BARS @ 18" O.C. EACH WAY |
| HEAVY DUTY PARKING AREAS, DRIVES, & SERVICE YARDS | | 7" THICK CONCRETE | #4 BARS @ 18" O.C. EACH WAY |
| GRAVEL DRIVE | | RE: CIVIL DWGS. | |

## LEGEND - PAVING/FLATWORK
1" = 1'-0"




## SITE PLAN AREA 'S2'
1" = 20'-0"

PLAN NORTH


CONSULTANTS

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Talon Engineering, LLC
1118 Wolfs Knoll
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6051 North Course Dr., Suite 375
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MEP
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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT STATE OF TEXAS 23345

07/28/2025

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| CHECKED: | Checker |

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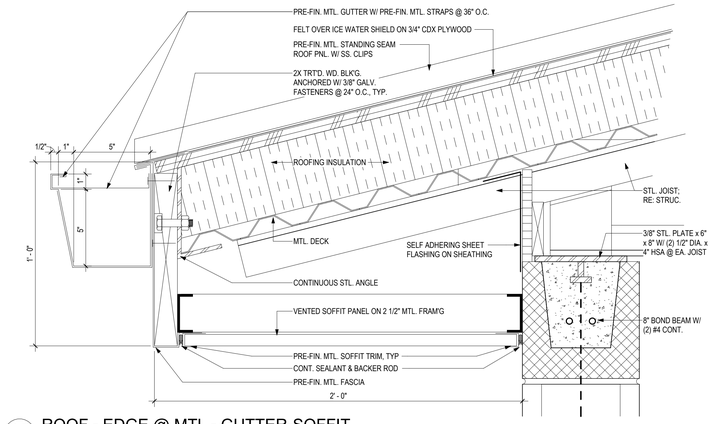
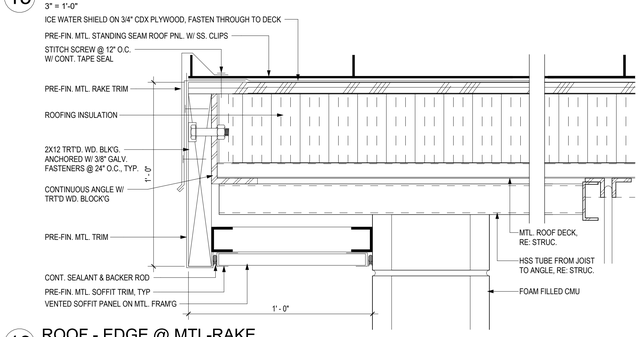
# CA1.02

SITE PLAN AREA 'S2'



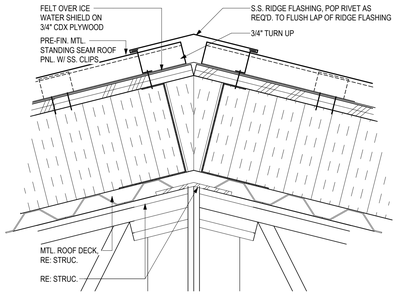

## 15 ROOF - EDGE @ MTL - GUTTER-SOFFIT

3" = 1'-0"



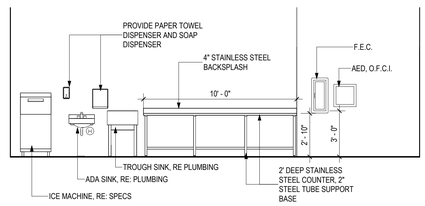

## 13 ROOF - EDGE @ MTL-RAKE

3" = 1'-0"



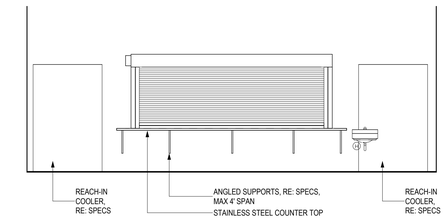

## 14 ROOF - RIDGE @ MTL

3" = 1'-0"



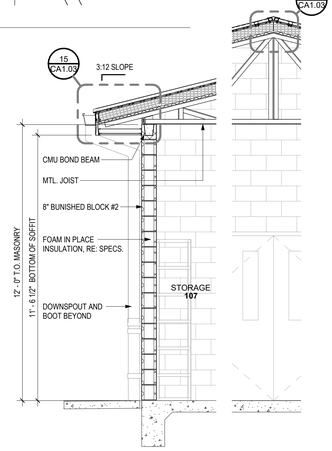

## 17 CSK - CONCESSION - N

1/4" = 1'-0"



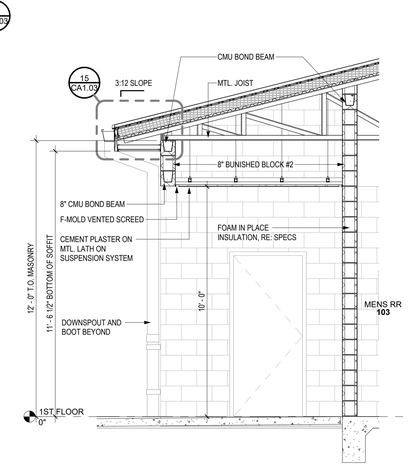

## 16 CSK - CONCESSION - S

1/4" = 1'-0"



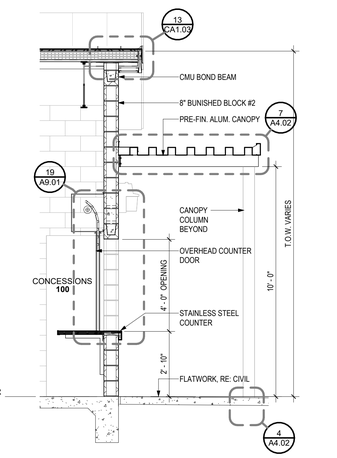

## 12 CMU - STORAGE 107

3/8" = 1'-0"



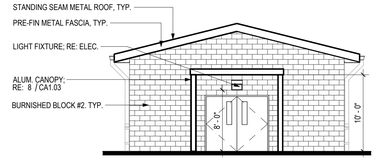

## 11 CMU - RR 102

3/8" = 1'-0"



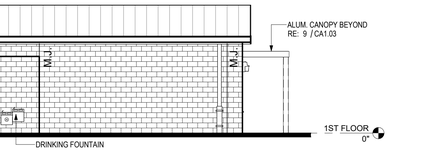

## 10 CMU - CONCESSIONS 100

3/8" = 1'-0"




## 7 EXT. - FIELDHOUSE - S

1/8" = 1'-0"



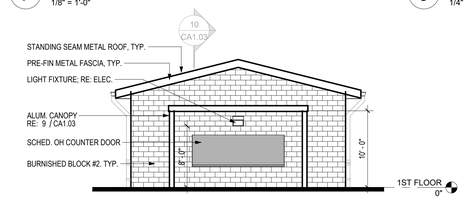

## 9 FIELDHOUSE - NORTH (CONCESSION) CANOPY

1/4" = 1'-0"

1. MOP SINK, RE: PLUMBING
2. HI/LO ELECTRONIC DRINKING FOUNTAIN, RE: MEP
3. KNOX BOX, RE: SPECS
4. REACH-IN COOLER, RE: SPECS
5. INDUSTRIAL METAL SHELVING, RE: SPECS
6. ICE MACHINE A, RE: SPECS
7. ICE MACHINE B, RE: SPECS
8. TROUGH SINK, RE: PLUMBING, SPECS

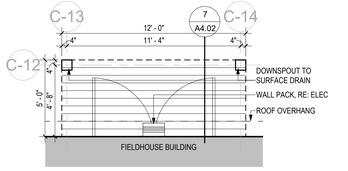
## KEYNOTES - FLOOR PLAN FIELDHOUSE

1/4" = 1'-0"



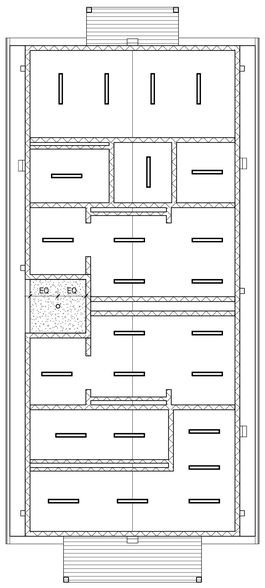

## 6 EXT. - FIELDHOUSE - N

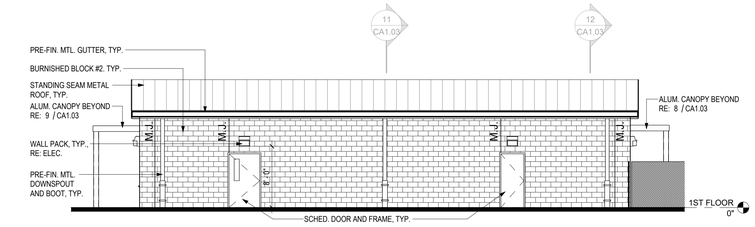
1/8" = 1'-0"




## 8 FIELDHOUSE - SOUTH CANOPY

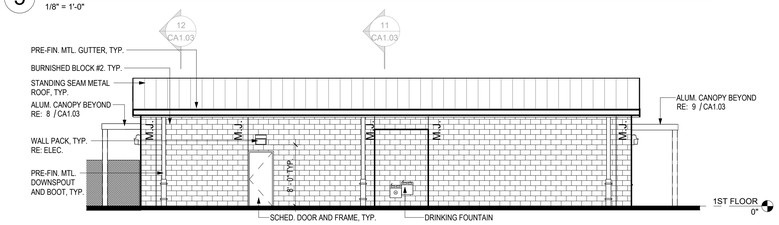
1/4" = 1'-0"



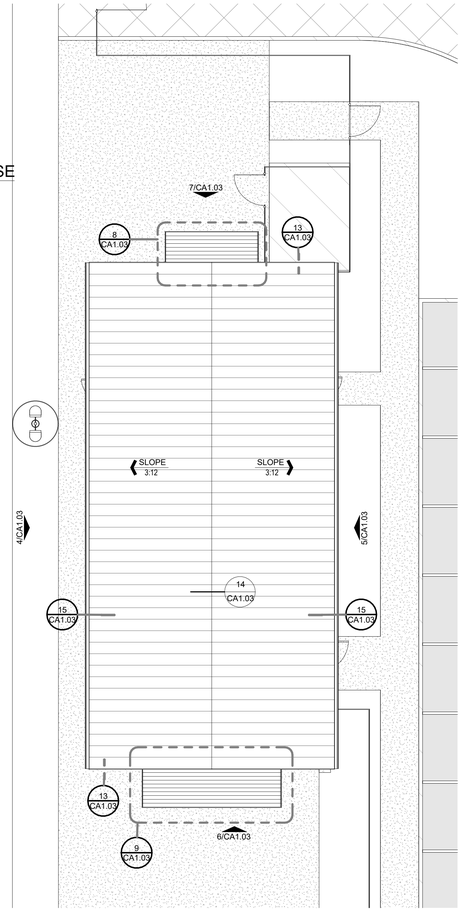

## 5 EXT. - FIELDHOUSE - W

1/8" = 1'-0"



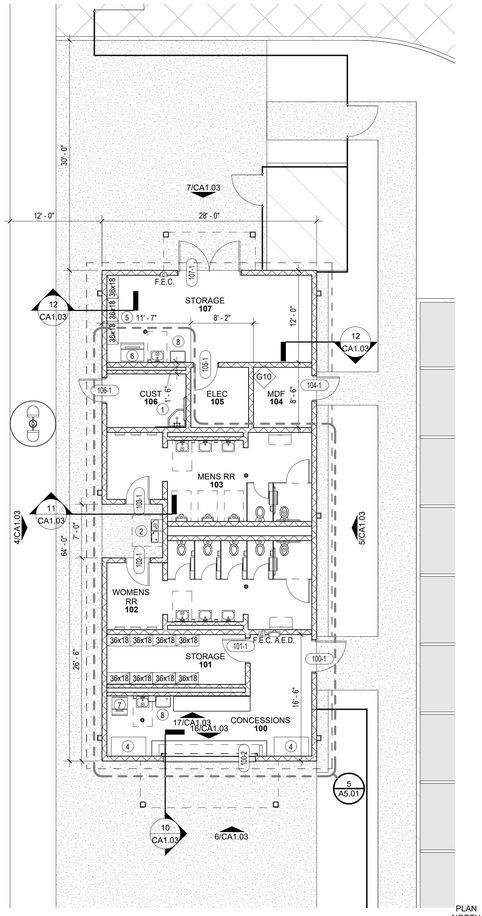

## 4 EXT. - FIELDHOUSE - E

1/8" = 1'-0"




## 3 RCP - FIELDHOUSE

1/8" = 1'-0"




## 2 ROOF PLAN - FIELDHOUSE

1/8" = 1'-0"

## 1 FIELDHOUSE

1/8" = 1'-0"

PLAN NORTH

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REGISTERED ARCHITECT 25345 STATE OF TEXAS

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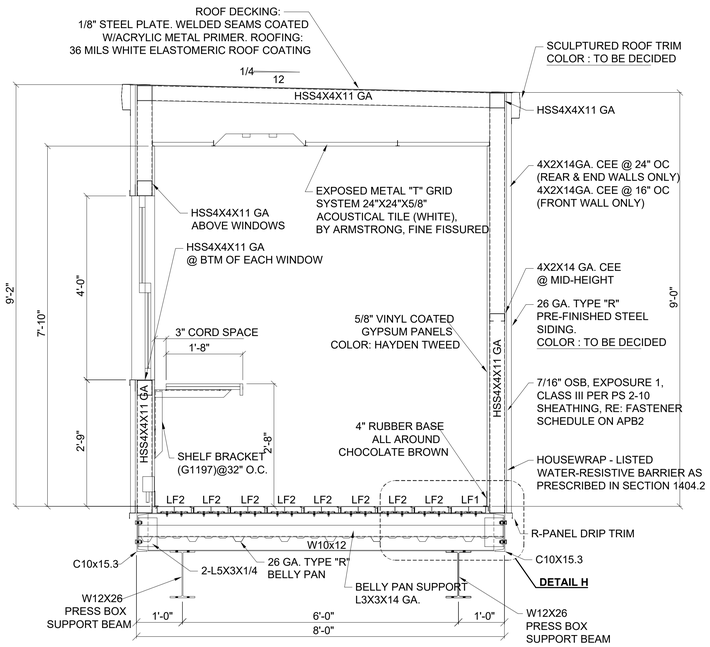
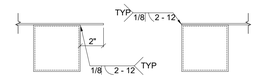
# CA1.03

ENLARGED SITE PLAN - FIELD HOUSE



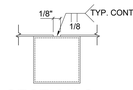

3 PRESS BOX - CROSS SECTION
3/4" = 1'-0"



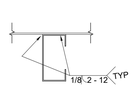

SECTION A



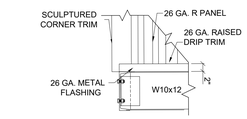
SECTION B




SECTION C




SECTION D

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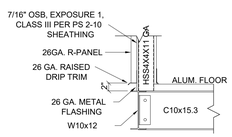


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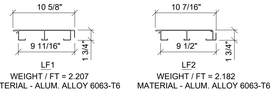
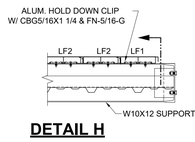
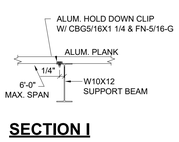


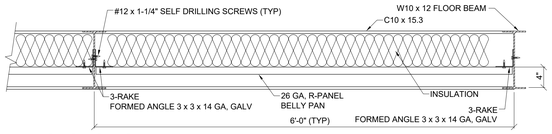

ALUMINUM BOARD DIMENSIONS & DETAILS




DETAIL H




SECTION I

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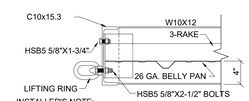
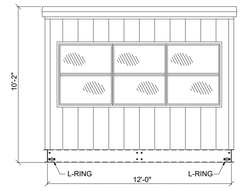


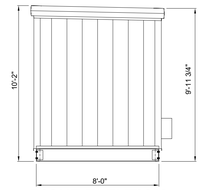

INSTALLER'S NOTE:
REMOVE LIFTING RINGS AND REPLACE THE 5/8X2-1/2 A325 GALV. BOLTS AFTER PRESS BOX IS INSTALLED. RETURN L-RINGS TO STURDISTEEL.

LIFT RING INSTALLATION

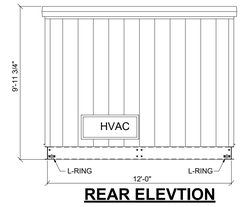
PRESS BOX - DETAILS/ SECTIONS
1" = 1'-0"



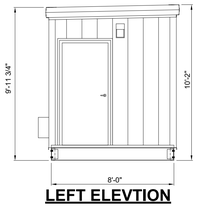

FRONT ELEVTION




RIGHT ELEVTION

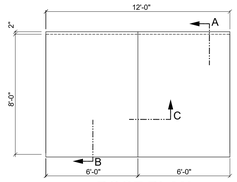



REAR ELEVTION

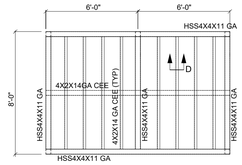



LEFT ELEVTION

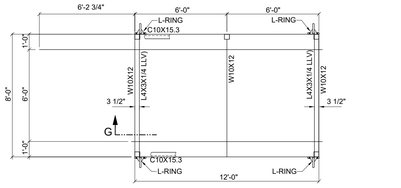
5 PRESS BOX - ELEVATIONS
1/4" = 1'-0"



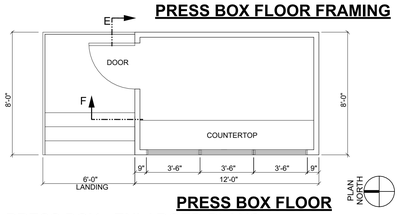

ROOF PLAN




ROOF FRAMING PLAN

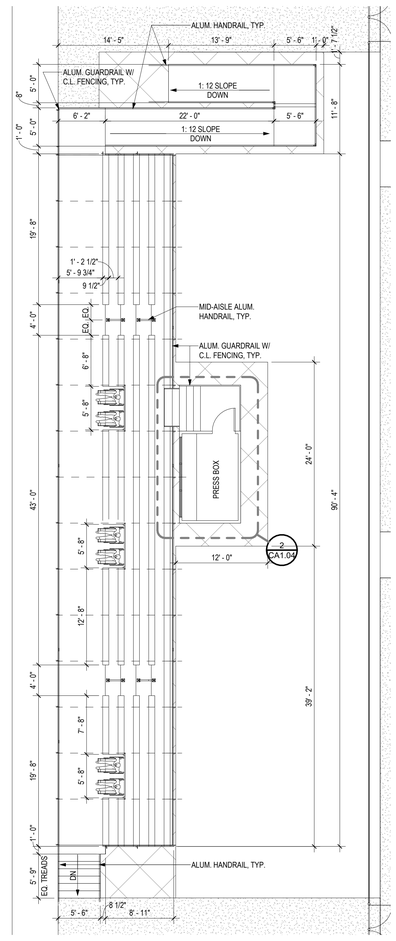



PRESS BOX FLOOR FRAMING




PRESS BOX FLOOR

PRESS BOX - ENLARGED PLANS
1/4" = 1'-0"




ENLARGED SITE PLAN - BLEACHERS
1/8" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
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MEP
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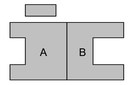



# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

REGISTERED ARCHITECT 25345 STATE OF TEXAS

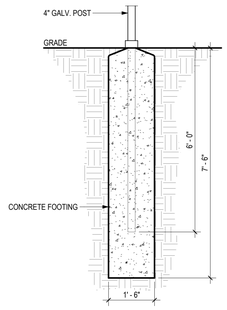
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

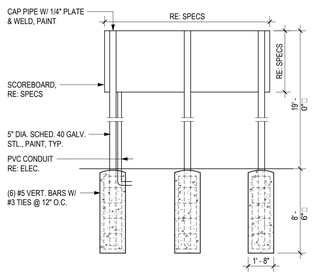
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# CA1.04

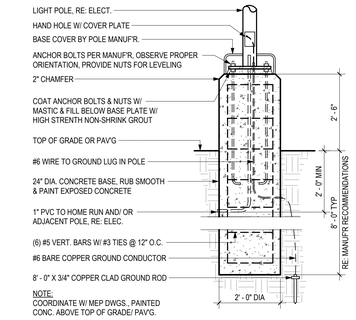
ENLARGED SITE PLAN - PRESSBOX



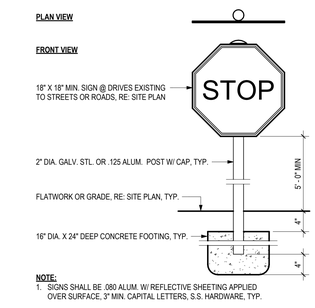

23 ATHL - BACKSTOP POST FOOTING
1/2" = 1'-0"



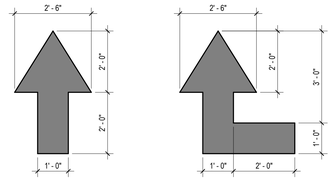

22 ATHL - SOCCER SCOREBOARD
1/4" = 1'-0"



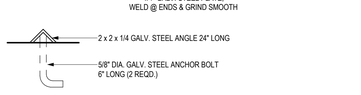

21 MISC - LIGHT POLE BASE
1/2" = 1'-0"



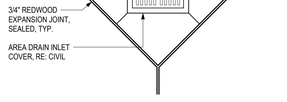

20 SIGN - STOP SIGN
1" = 1'-0"



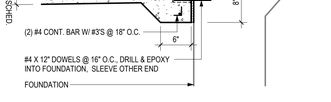

19 STRIPE - DIRECTIONAL ARROW
1/2" = 1'-0"



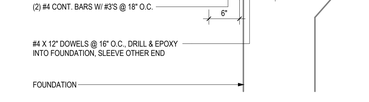

18 MISC - FOOT SCRAPER
1" = 1'-0"



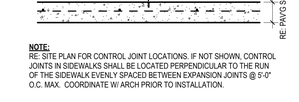

17 MISC - AREA DRAIN PLAN
1/2" = 1'-0"



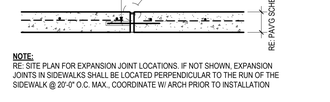

16 PAV'G - CONC FLTWRK @ BLDG
1" = 1'-0"



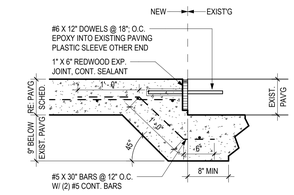

15 PAV'G - CONC FLTWRK @ DOOR
1" = 1'-0"



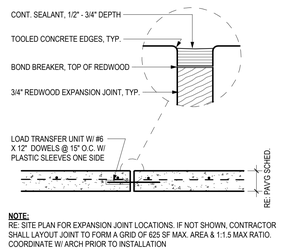

14 PAV'G - CONC FLTWRK CJ
1" = 1'-0"



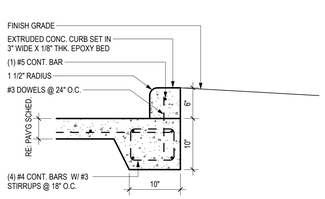

13 PAV'G - CONC FLTWRK EJ
1" = 1'-0"



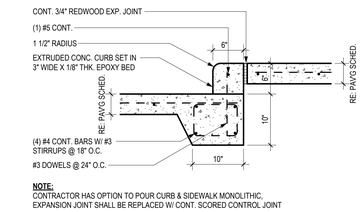

12 PAV'G - CONC PAV'G TO EXIST
1" = 1'-0"



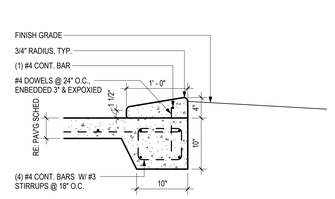

11 PAV'G - CONC PAV'G EJ
1" = 1'-0"



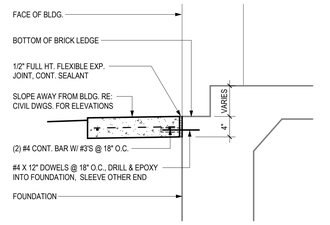

10 PAV'G - CONC PAV'G CURB @ GRADE
1" = 1'-0"



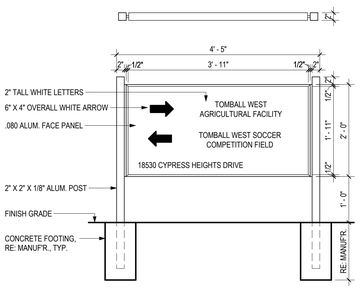

9 PAV'G - CONC PAV'G CURB @ FLTWRK
1" = 1'-0"



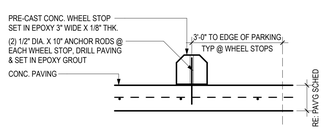

8 PAV'G - CONC PAV'G CURB - LAYDWN
1" = 1'-0"



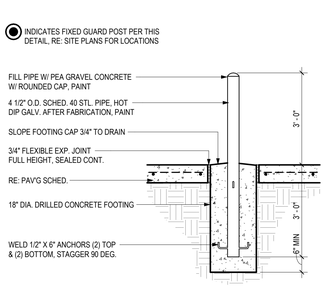

7 PAV'G - CONC FLTWRK @ MOW STRP
1" = 1'-0"



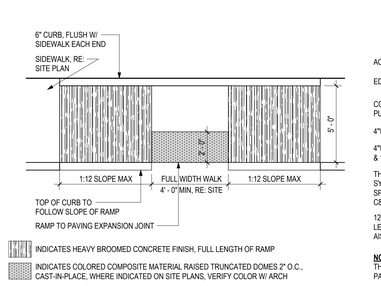

6 SIGN - PANEL SITE SIGNAGE
3/4" = 1'-0"



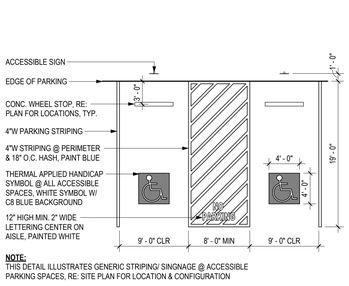

5 MISC - WHEEL STOP @ CONC PAV'G
1" = 1'-0"



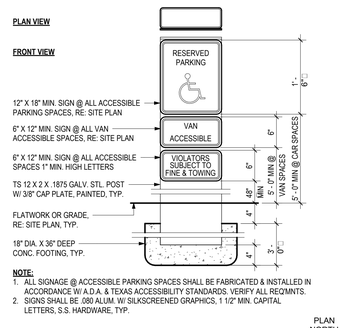

4 MISC - FIXED GUARD POST
1/2" = 1'-0"




3 PAV'G - CONC RAMP @ (2) IN-LINE ADA
1/4" = 1'-0"




2 STRIPE - ACCESS PARKING STRIPING
1/8" = 1'-0"




1 SIGN - ACCESSIBLE SIGN W/ TUBE
1" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
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Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS


ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED PROFESSIONAL ENGINEER 125345 STATE OF TEXAS
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

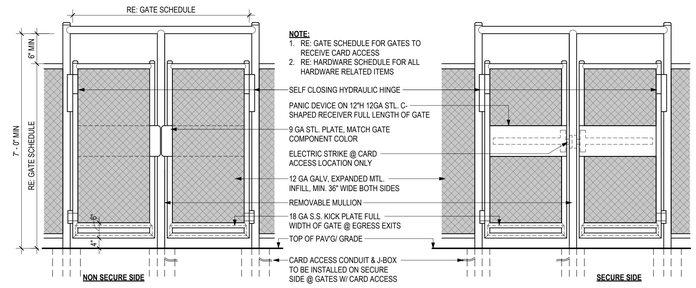
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

CA1.05

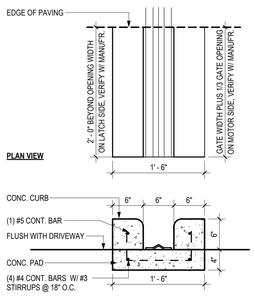
SITE DETAILS

## GATE SCHEDULE

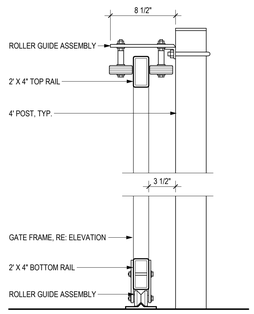
| MARK | DOOR SLAB WIDTH | HEIGHT | S/ PR | ELEV. | MATERIAL | GLASS | DOOR FRAME WIDTH | DEPTH | ELEV. | MATERIAL | FIRE R. | COMMENTS | MARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GATE A | 28' - 0" | 6' - 0" | S | T4 | C.L. MESH | | | | | GALV. | | MANUAL SLIDING GATE | GATE A |
| GATE B | 3' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE B |
| GATE C | 4' - 0" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE C |
| GATE D | 4' - 0" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE D |
| GATE E | 24' - 0" | 6' - 0" | S | T4 | C.L. MESH | | | | | GALV. | | MANUAL SLIDING GATE | GATE E |
| GATE F | 4' - 0" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE F |
| GATE G | 4' - 0" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE G |
| GATE H | 4' - 0" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE H |
| GATE J | 6' - 6" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE J |
| GATE K | 4' - 0" | 6' - 0" | S | C1 | C.L. MESH | | | | | GALV. | | EGRESS GATE | GATE K |
| GATE L | 4' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE L |
| GATE M | 3' - 0" | 6' - 0" | PR | CC1 | C.L. MESH | | | | | GALV. | | EGRESS GATE | GATE M |
| GATE N | 3' - 0" | 6' - 0" | PR | CC1 | C.L. MESH | | | | | GALV. | | EGRESS GATE | GATE N |
| GATE P | 6' - 6" | 6' - 0" | PR | CC3 | C.L. MESH | | | | | GALV. | | - | GATE P |
| GATE Q | 4' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE Q |
| GATE R | 28' - 0" | 6' - 0" | S | T4 | C.L. MESH | | | | | GALV. | | MANUAL SLIDING GATE | GATE R |
| GATE S | 4' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE S |
| GATE T | 4' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE T |
| GATE U | 4' - 0" | 6' - 0" | S | C3 | C.L. MESH | | | | | GALV. | | - | GATE U |



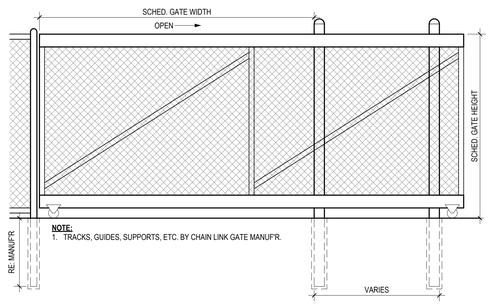

6 GATE - CC1 - CHAIN LNK EGRESS MAN-DBL
1/2" = 1'-0"



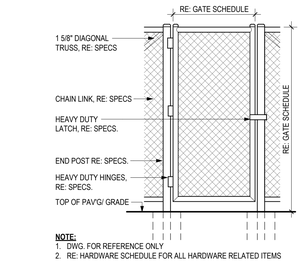

5 GATE - T4-5 - SLIDING TRACK W/CURB
1" = 1'-0"



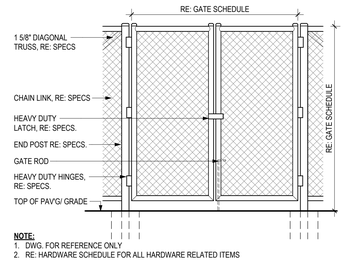

4 GATE - T4-5 - SLIDING TRACK
1 1/2" = 1'-0"




3 GATE - T4 - CHAIN LNK SLIDING TRAFFIC
1/2" = 1'-0"




2 GATE - C3 - CHAIN LNK MAN
1/2" = 1'-0"




1 GATE - CC3 - CHAIN LNK MAN-DBL
1/2" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
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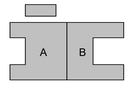



# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

REGISTERED ARCHITECT
STATE OF TEXAS
23345

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# CA1.06

GATE DETAILS & SCHEDULE

1. CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UNDERGROUND UTILITIES, PIPES AND STRUCTURES. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED DUE TO DAMAGE OF THESE UTILITES.

2. CONTRACTOR SHOULD NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED, WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE.

3. THE CONTRACTOR SHALL ASSUMUE FULL RESPONSIBILITY FOR NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH PLANTING OPERATION.

5. LANDSCAPE CONTRACTOR TO RECIEVE SITE GRADE TO +0.10 CONTRACTOR SHALL OBTAIN LETTER OF GRADE CERTIFICATION FROM OWNER PRIOR TO PROJECT EXECUTION.

6. CONTRACTOR SHALL NOTIFY OWNER'S AUTHORIZED REPRESENTATIVE 72 HRS (WEEKENDS NOT INCLUDED) PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULE.

7. IF CONFLICTS ARISE BETWEEN SIZE OF AREAS ON PLANS OR LAYOUTS OF PLANS, CONTRACTOR SHOULD CONTACT ARCHITECT FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO ARCHITECT WILL RESULT IN CONTRACTORS LIABILITY TO RELOCATE THE MATERIAL

8. PROVIDE A 5' STRIP OF SOD AROUND ALL PAVING, FLATWORK, OR CURBS. ALL OTHER DISTURBED SOIL TO RECEIVE HYDROMULCH UNLESS NOTED TO RECEIVE ANOTHER MATERIAL

9. CONTRACTOR SHALL PROVIDE FOR THE FEEDING, WATERING, AND GENERAL MAINTENANCE OF TREES TO KEEP THEM IN A HEALTHY CONDITION DURING CONSTRUCTION.

10. CONTRACTOR SHALL SUBMIT PHOTOS OF REPRESENTATIVE TREES AND SHRUBS WITH SPECIFICATIONS ON THE BACK OF PHOTO INCLUDING HEIGHT, WIDTH, AND CALIPER. IF A NURSERY VISIT IS REQUIRED THE CONTRACTOR WILL ARRANGE TO HAVE THE PARTICULAR NURSERIES PREPARED TO SHOW TREES. SHOULD CONTRACTOR INSTALL PLANT MATERIAL INFERIOR TO INDUSTRY STANDARD, IT IS AT HIS OWN RISK. ALL PHOTO SUBMITTALS ARE TO BE APPROVED PRIOR TO PLANTING.

11. CONTRACTOR SHALL FINE GRADE ALL DISTURBED AREAS TO PROVIDE FOR PROPER DRAINAGE.

12. REFER TO CIVIL DRAWINGS FOR IRRIGATION.

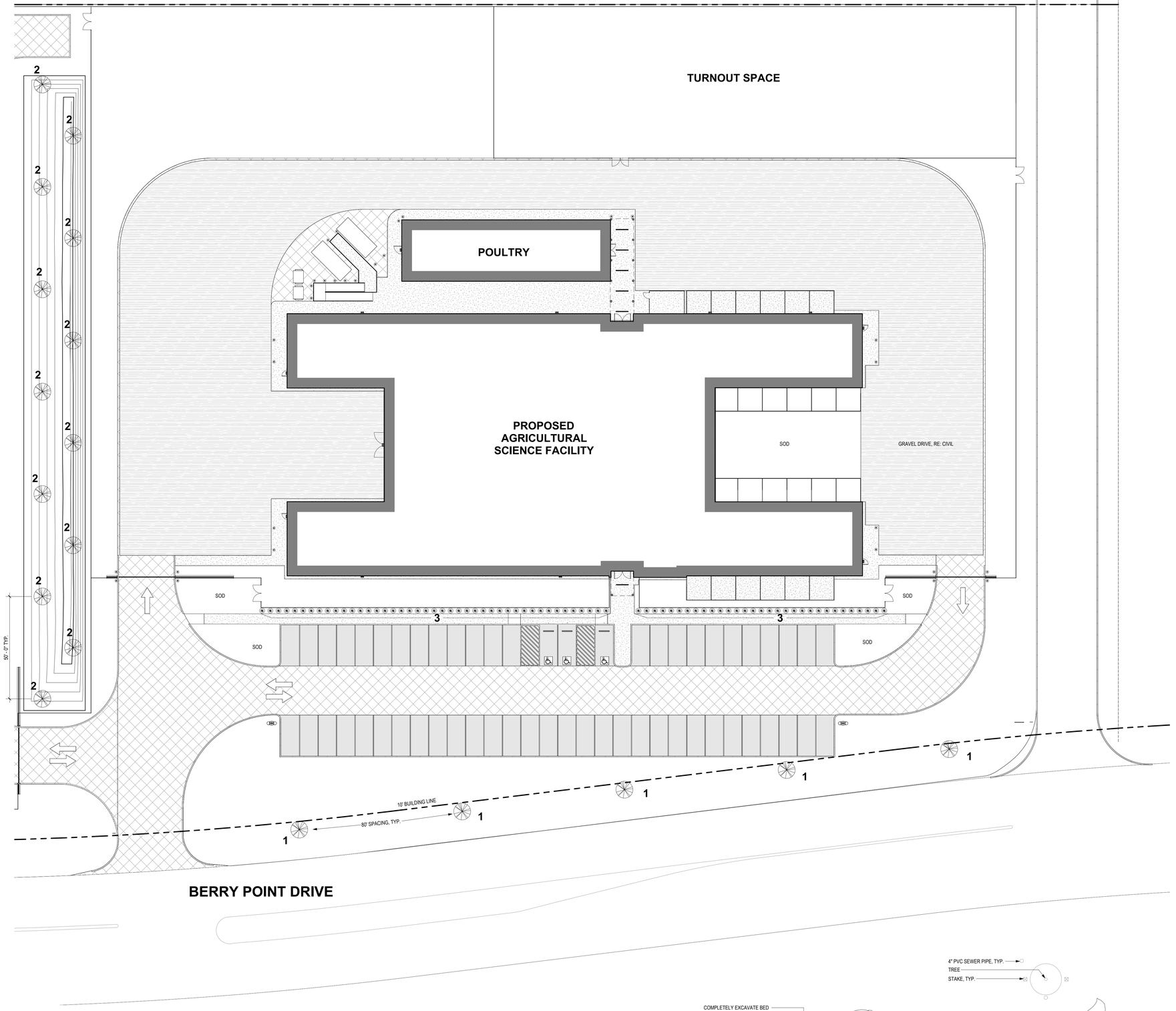
PLANTING SCHEDULE

1. STREET TREES
SHUMARD OAK
MINIMUM 1.5 CALIPER INCHES IN SIZE
SPACING NOTED

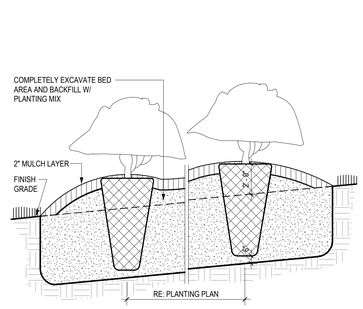
2. TREES ON BERM
CREPE MYRTLE 'FANTASY' TREE
MINIMUM 1.5 CALIPER INCHES IN SIZE
SPACING NOTES

3. SHRUB
TEXAS SAGE
MINIMUM 18" IN HEIGHT
SPACING 4' O.C.

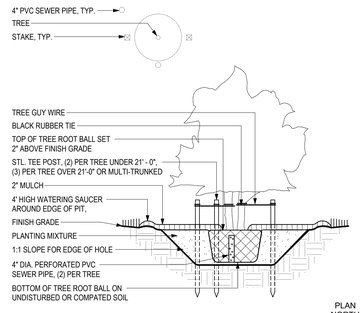
## NOTES - PLANTING AND LANDSCAPE
1/4" = 1'-0"




## LANDSCAPE PLAN AREA 'S1'
1" = 20'-0"




## LAND - SHRUB/ GROUND COVER
1/4" = 1'-0"




## LAND - TREE PLANTING
1/4" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT — KAREN M. KEIL — 25345 — STATE OF TEXAS

07/28/2025

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|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# L1.01

LANDSCAPE
PLAN AREA 'S1'

1. CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UNDERGROUND UTILITIES, PIPES AND STRUCTURES. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED DUE TO DAMAGE OF THESE UTILITES.

2. CONTRACTOR SHOULD NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED, WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE.

3. THE CONTRACTOR SHALL ASSUMUE FULL RESPONSIBILITY FOR NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH PLANTING OPERATION.

5. LANDSCAPE CONTRACTOR TO RECIEVE SITE GRADE TO +0.10 CONTRACTOR SHALL OBTAIN LETTER OF GRADE CERTIFICATION FROM OWNER PRIOR TO PROJECT EXECUTION.

6. CONTRACTOR SHALL NOTIFY OWNER'S AUTHORIZED REPRESENTATIVE 72 HRS (WEEKENDS NOT INCLUDED) PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULE.

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12. REFER TO CIVIL DRAWINGS FOR IRRIGATION.

PLANTING SCHEDULE

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SHUMARD OAK
MINIMUM 1.5 CALIPER INCHES IN SIZE
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MINIMUM 1.5 CALIPER INCHES IN SIZE
SPACING NOTES

3. SHRUB
TEXAS SAGE
MINIMUM 18" IN HEIGHT
SPACING 4' O.C.

## NOTES - PLANTING AND LANDSCAPE

1/4" = 1'-0"

1 LANDSCAPE PLAN AREA 'S2'

1" = 20'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
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A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
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CYPRESS TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT ... STATE OF TEXAS ... 25346

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
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| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

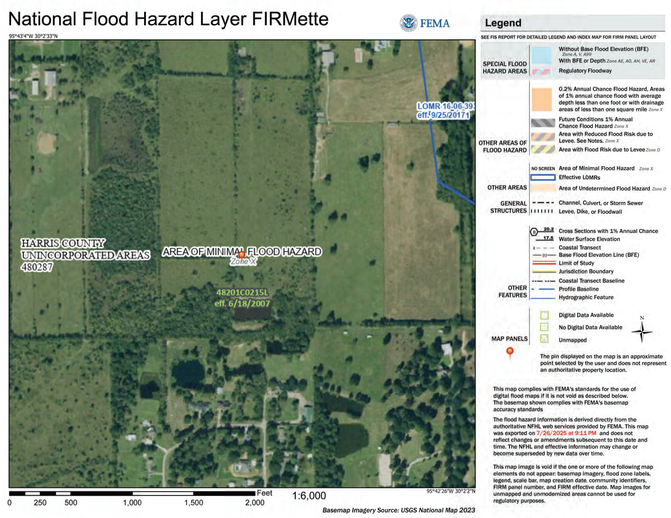
# L1.02

LANDSCAPE
PLAN AREA 'S2'

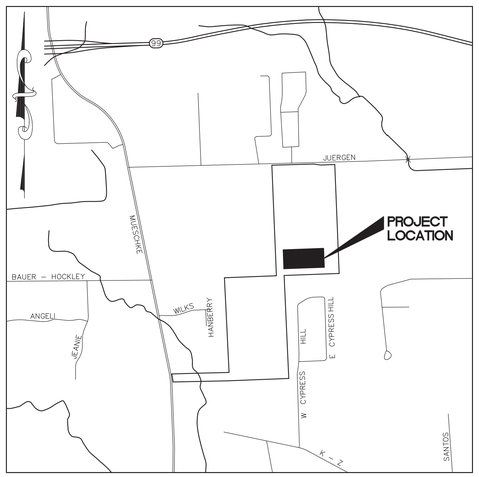
# TOMBALL INDEPENDENT SCHOOL DISTRICT
# WEST AGRICULTURAL SCIENCE FACILITY

## CONSTRUCTION PLANS - CIVIL SITE WORK & LEFT TURN LANE
## 18530 CYPRESS HEIGHTS DRIVE
## CYPRESS, TEXAS 77433

## JULY 2025




VICINITY MAP




KEY MAP 326D
N.T.S.

### CIVIL PLANS


| | |
|---|---|
| C0.00 | COVER SHEET |
| C0.01 | GENERAL NOTES |
| C0.02 | HARRIS COUNTY ENGINEERING REVIEW SHEET |
| C0.03 | HARRIS COUNTY FLOOD CONTROL REVIEW SHEET |
| C0.04 | TOPOGRAPHIC SURVEY |
| C1.00 | OVERALL LAYOUT |
| C1.01 | DEMOLITION PLAN (SHEET 1 OF 2) |
| C1.02 | DEMOLITION PLAN (SHEET 2 OF 2) |
| C1.03 | SITE LAYOUT (SHEET 1 OF 2) |
| C1.04 | SITE LAYOUT (SHEET 2 OF 2) |
| C1.05 | FIRE LANE LAYOUT |
| C1.06 | LEFT TURN LANE |
| C2.01 | GRADING LAYOUT (SHEET 1 OF 2) |
| C2.02 | GRADING LAYOUT (SHEET 2 OF 2) |
| C3.01 | STORM SEWER LAYOUT (SHEET 1 OF 2) |
| C3.02 | STORM SEWER LAYOUT (SHEET 2 OF 2) |
| C3.03 | STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 2) |
| C3.04 | STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 2) |
| C3.05 | DRAINAGE AREA MAP (SHEET 1 OF 2) |
| C3.06 | DRAINAGE AREA MAP (SHEET 2 OF 2) |
| C3.07 | STORM SEWER CALCULATIONS |
| C4.01 | WATER LINE & SANITARY SEWER LAYOUT (SHEET 1 OF 2) |
| C4.02 | WATER LINE & SANITARY SEWER LAYOUT (SHEET 1 OF 2) |
| C5.01 | JOINT LAYOUT PLAN (SHEET 1 OF 2) |
| C5.02 | JOINT LAYOUT PLAN (SHEET 2 OF 2) |
| C7.01 | PAVING DETAILS |
| C7.02 | STORM SEWER DETAILS |
| C7.03 | WATER & SANITARY SEWER DETAILS |
| C7.04 | STORM WATER POLLUTION PREVENTION DETAILS |
| C7.05 | GRASS FIELD DETAILS |
| C7.06 | HARRIS COUNTY SWP DETAIL |
| C7.07 | HARRIS COUNTY CONCRETE PAVEMENT DETAIL 1 |
| C7.08 | HARRIS COUNTY CONCRETE PAVEMENT DETAIL 2 |
| C7.09 | HARRIS COUNTY PAVEMENT MARKING DETAIL 1 |
| C7.10 | HARRIS COUNTY PAVEMENT MARKING DETAIL 2 |
| C7.11 | HARRIS COUNTY TRAFFIC CONTROL DETAIL |


### IRRIGATION PLANS


| | |
|---|---|
| LI1.1 | IRRIGATION PLAN (SHEET 1 OF 2) |
| LI1.2 | IRRIGATION PLAN (SHEET 2 OF 2) |



TALON ENGINEERING
CIVIL ENGINEERING & SPORTS DESIGN CONSULTANTS

**TEXAS ENGINEERING FIRM F-24281**
**1118 WOLFS KNOLL**
**HOUSTON, TX, 77094**
**(832) 287-9874**


TALON ENGINEERING, LLC
F-24281
STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

# GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION SCHEDULE WITH THE ENGINEER AND/OR ARCHITECT PRIOR TO COMMENCING WORK.

2. CONTRACTOR SHALL CONTACT ALL GOVERNING AGENCIES A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION AND COORDINATE ALL WORK WITH THE SAME.

3. WHETHER SHOWN ON DRAWINGS OR NOT THE CONTRACTOR SHALL PROVIDE ALL PIPING, APPURTENANCES, AND MISCELLANEOUS FITTINGS REQUIRED TO ACCOMPLISH THE DESIGN AS DRAWN AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL CONTACT ENGINEER IF UNSURE OF PIPING LAYOUT, SIZES OR LENGTHS.

4. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD BEFORE COMMENCING ANY WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPORT ANY DISCREPANCIES TO THE ENGINEER IN A TIMELY MANNER.

5. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE VERIFIED BY THE CONTRACTOR. CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT ARE TO BE APPROVED BY THE ENGINEER.

6. THE DRAWINGS SHOW AS MUCH INFORMATION AS CAN BE REASONABLY OBTAINED FROM AN ON THE GROUND OBSERVATION, SURVEY AND EXISTING CONSTRUCTION DRAWINGS REGARDING THE TOPOGRAPHIC FEATURES, ELEVATIONS AS WELL AS THE LOCATION AND NATURE OF PIPELINES, NATURAL GAS LINES, UNDERGROUND CABLES, UTILITIES, ETC. HOWEVER, THE ACCURACY OF OR COMPLETENESS OF SUCH INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO PRECLUDE DAMAGE TO EXISTING UTILITIES. IN THE EVENT THAT UNDERGROUND UTILITIES NOT SHOWN ON THE DRAWINGS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

7. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA A MINIMUM OF 48 HOURS PRIOR TO COMMENCING WORK IN ANY RIGHT-OF-WAY OR EXISTING EASEMENT. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT (713) 223-4567, 1-800-545-6005 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

8. SOME OF THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON HAVE NOT BEEN FIELD VERIFIED.

9. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICT EXISTS BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.

10. IN THE EVENT OF DAMAGE TO UNDERGROUND UTILITIES OR FACILITIES, WHETHER SHOWN OR NOT ON THE DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS TO REPLACE THE UTILITY OR FACILITY BACK IN SERVICE AT NO INCREASE IN THE CONTRACT PRICE. ALL SUCH REPAIRS SHALL CONFORM TO THE REQUIREMENTS OF THE COMPANY OR AGENCY SERVICING THE FACILITY.

11. ALL EXISTING POWER POLES, LIGHT STANDARDS, SIGNS, ETC. WHICH AFFECT THE PROPOSED CONSTRUCTION, SHALL BE REMOVED AND/OR RELOCATED AS REQUIRED WHETHER SHOWN ON DRAWINGS OR NOT AT NO ADDITIONAL COST TO THE OWNER.

12. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL ADHERE TO THE STANDARDS OF THE GOVERNING AUTHORITY.

13. INGRESS AND EGRESS SHALL BE PROVIDED AT ALL TIMES FOR THE PROPERTY OWNERS AND BUSINESSES OF THE ABUTTING PROPERTY AND THE CROSS STREETS WHICH ARE AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.

14. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR MAINTAINING A SAFE PROJECT SITE 24 HOURS A DAY.

15. DURING THE ENTIRE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL MAINTAIN CONSTRUCTION WARNING SIGNS AT EACH END OF THE PROJECT TO WARN MOTORING AND PEDESTRIAN TRAFFIC THAT CONSTRUCTION IS IN PROGRESS AND OF POSSIBLE HAZARDOUS CONDITIONS GENERATED BY THE CONSTRUCTION.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DELINEATING THE PERIMETER OF CONSTRUCTION AREA WITH CONSTRUCTION FENCING AT NO ADDITIONAL COST. CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO CONSTRUCTION AND REMOVED UPON COMPLETION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING TRAFFIC IN THE IMMEDIATE VICINITY OF CONSTRUCTION. ALL WORK SHALL BE IN SUCH A MANNER AND SEQUENCE AS TO PROVIDE MAXIMUM PROTECTION TO TRAFFIC AND PEDESTRIANS. CONTROLS SHALL BE CONSISTENT WITH THE TYPE OF WORK BEING PERFORMED.

18. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (TEXAS M.U.T.C.D. MOST RECENT EDITION WITH REVISIONS) DURING CONSTRUCTION.

19. DELINEATORS SHALL BE INSTALLED ALONG THE PAVEMENT EDGE TO WARN TRAFFIC OF ANY ROADSIDE OBJECTS OR HAZARDS AND TO DELINEATE THE ROADWAY EDGE DURING HOURS OF DARKNESS.

20. THE WORK AREA SHALL BE BARRICADED AND ILLUMINATED DURING DARKNESS AND PERIODS OF INACTIVITY, WHEN IN AN AREA OF DIRECT PUBLIC ACCESS.

21. UNOCCUPIED TRENCHES SHALL BE SECURED WITH SAFETY "SNOW" FENCING OR OTHER APPROPRIATE MEANS AT ALL TIMES. TRENCHES WHICH ARE NOT IMMEDIATELY BACKFILLED SHALL BE SECURELY COVERED OVERNIGHT AND BE SURROUNDED BY SAFETY "SNOW" FENCING.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT, AND WORK IN PROGRESS.

23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ADEQUATE DRAINAGE BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE GOVERNING AUTHORITY AND/OR ENGINEER. THE CONTRACTOR SHALL ALSO MAINTAIN DRAINAGE AROUND BUILDING AS TO NOT HOLD WATER ADJACENT TO ANY POINT NEAR BUILDING.

24. CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION OF ANY TEMPORARY DITCH OR DRAINAGE FACILITIES REQUIRED TO MAINTAIN ADEQUATE SITE DRAINAGE DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER

25. THE CONTRACTOR IS TO INSTALL GROUND WATER CONTROL FACILITIES IF NEEDED, AT DIRECTION OF ENGINEER AT NO ADDITIONAL COST TO OWNER.

26. THE ARCHITECT SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS REQUIRED BY ALL GOVERNING AGENCIES.

27. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION AND SUBMISSION OF ALL APPLICABLE STATE AND FEDERAL FORMS REQUIRED FOR STORM WATER POLLUTION PREVENTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, IMPLEMENTATION, MAINTENANCE, AND INSPECTION OF STORM WATER POLLUTION PREVENTION CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROLS, STORM WATER MANAGEMENT PLANS, WASTE COLLECTION AND DISPOSAL, OFF-SITE VEHICLE TRACKING, AND OTHER PRACTICES.

28. THE CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING AND SHORING.

29. THE CONTRACTOR SHALL DESIGN AND PROVIDE A TRENCH SAFETY SYSTEM TO MEET APPROPRIATE REQUIREMENTS ESTABLISHED IN OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY & HEALTH REGULATIONS, 29 CFR 1926, SUBPART P – EXCAVATIONS, TRENCHING AND SHORING, AND OSHA'S PROPOSED STANDARDS ON TRENCHING, EXCAVATION PUBLISHED IN VOLUME 52, NO. 72 OF THE FEDERAL REGISTER, APRIL 15, 1987, PAGES 12288-12339. SHOULD THE REFERENCED OSHA STANDARDS BE MODIFIED OR AMENDED, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

30. CONTRACTOR SHALL PROVIDE SHEETING, SHORING AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION.

31. IN ORDER TO COMPLY WITH HANDICAP REGULATIONS, THE CONTRACTOR SHALL ENSURE THAT THE SLOPE OF THE SIDEWALK AND/OR PAVING IN THE FIRST FIVE FEET OUTSIDE ANY DOOR DOES NOT EXCEED 2% IN ANY DIRECTION.

32. THE TEXAS DEPARTMENT OF TRANSPORTATION TxDOT 2004 STANDARD SPECIFICATIONS AND STANDARDS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES SHALL BE CONSIDERED PART OF THESE PLANS AND USED AS THE SPECIFICATIONS FOR ITEMS EXCEPT AS SHOWN OTHERWISE ON PLANS OR IN THE PROJECT SPECIFICATIONS.

33. NO CONSTRUCTION WHICH BLOCKS TRAFFIC ON ANY STREET, ALLEY, OR DRIVEWAY WILL BE ALLOWED DURING THE HOURS OF 6:30 A.M. – 8:30 A.M. AND 2:30-6:00 P.M.

34. THE CONTRACTOR MUST CLEAN MUD, DIRT OR DEBRIS TRACKED ONTO EXISTING STREETS BY HIMSELF OR SUBCONTRACTOR'S VEHICLES AND EQUIPMENT DAILY OR AS DIRECTED BY ENGINEER.

35. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.

36. ALL AREAS DISTURBED BY CONSTRUCTION WHICH ARE NOT TO BE REPAVED OR OTHERWISE COVERED SHALL BE HYDROMULCHED OR SHALL RECEIVE SOLID SOD.

37. CONTRACTOR SHALL STRIP AND STOCKPILE TOPSOIL. TOPSOIL SHALL BE SPREAD OVER ALL AREAS RECEIVING SOD AND OR HYDROMULCH. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AN 85% STAND OF GRASS WITH NO AREAS OF EROSION BEFORE FINAL ACCEPTANCE. TOPSOIL TO MEET THE CRITERIA IN THE SPECIFICATIONS.

38. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL WASTE MATERIAL GENERATED DURING CONSTRUCTION. WASTE MATERIAL MUST BE REMOVED FROM THE WORK SITE AND DISPOSED OF IN SUCH A MANNER AS TO NOT DAMAGE THE OWNER OR OTHER PERSONS AT NO ADDITIONAL COST.

39. ALL FILL PLACED ON SITE SHALL BE SELECT FILL PER THE RECOMMENDATION OF THE SOILS REPORT OR AS INDICATED IN THE SPECIFICATIONS.

40. FINISH GRADE ELEVATIONS INDICATE FINAL GRADE OF PROPOSED MATERIAL (I.E. SOD, DIRT, MULCH, ETC.). LANDSCAPED AREAS ADJACENT TO BUILDING, INCLUDING, DIRT, MULCH, AND/OR BEDDING MATERIALS SHALL NOT COVER WEEPHOLES. AREAS ADJACENT TO BUILDING, LANDSCAPED, OR OTHERWISE SHALL SHEET FLOW AWAY FROM BUILDING WITH NO AREAS OF STANDING WATER ADJACENT TO BUILDING.

41. GRADING AROUND BUILDINGS INCLUDING WALKWAYS SHALL BE COORDINATED WITH ENGINEER AND/OR ARCHITECT AND FINAL APPROVAL OF GRADES IN GRASS AREAS AND SWALES SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION OF LANDSCAPING MATERIALS.

42. AFTER INSTALLATION OF DRAINAGE SYSTEM, CONTRACTOR SHALL PERFORM FINAL GRADING AS SHOWN ON THE PLANS AND/OR AS DIRECTED BY ENGINEER OR OWNER TO INSURE POSITIVE DRAINAGE OF ENTIRE SITE. FINAL GRADING SHALL BE APPROVED BY ENGINEER PRIOR TO INSTALLATION OF GRASS.

43. THE CONTRACTOR SHALL COORDINATE FINAL GRADING OF LANDSCAPED AREAS WITH THE LANDSCAPE ARCHITECT.

44. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FINAL GRADES TO ENSURE POSITIVE DRAINAGE.

45. PLACE BACKFILL AS PROMPTLY AS PRACTICABLE AFTER COMPLETION OF EACH STRUCTURE OR PORTION OF A STRUCTURE. DO NOT PLACE BACKFILL AGAINST CONCRETE WALLS OR SIMILAR STRUCTURES UNTIL CONCRETE HAS CURED AT LEAST SEVEN (7) DAYS.

46. ALL STRUCTURES AND SEWER PIPE UNDER OR WITHIN TWO (2) FEET OF PROPOSED OR FUTURE PAVEMENT SHALL BE BEDDED AND BACKFILLED WITH CEMENT STABILIZED SAND UP TO THE BOTTOM OF THE PAVEMENT SUBGRADE.

47. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

48. WHERE PAVEMENT OR CURB IS BEING REMOVED AND REPLACED FULL DEPTH SAW CUT SHALL BE PERFORMED AT STREET CONNECTION.

49. CONCRETE PAVEMENT SHALL HAVE MINIMUM OF FIVE AND ONE-HALF SACKS OF CEMENT PER CUBIC YARD AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.

50. ALL STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615 GRADE 60.

51. DETAILING AND FABRICATION OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI-318 LATEST EDITION.

52. LAP ALL CONTINUOUS REINFORCING STEEL 36 DIAMETERS AT SPLICES, TEES, AND CORNERS UNLESS NOTED OTHERWISE ON PLANS.

53. WHERE CONCRETE CURB OR WALK IS INDICATED, ELEVATION SHALL BE 6 INCHES ABOVE TOP OF PAVEMENT ELEVATION SHOWN, UNLESS OTHERWISE SHOWN ON DRAWINGS.

54. MOW STRIPS SHALL BE INSTALLED SO AS NOT TO BLOCK ANY SHEET FLOW PATTERNS AS DESIGNED. ANY MOW STRIPS THAT BLOCK DRAINAGE SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER. IF CONTRACTOR HAS ANY QUESTIONS ON CORRECT ELEVATIONS FOR MOW STRIPS, CONTACT ENGINEER OR ARCHITECT.

55. A FIBERBOARD EXPANSION JOINT SHALL BE PLACED BETWEEN THE BUILDING FOUNDATION AND THE CONCRETE PAVEMENT.

56. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL PROPOSED UTILITIES EXITING BUILDING PRIOR TO COMMENCING WORK ON SITE UTILITIES. UPON ANY DISCREPANCIES, ENGINEER IS TO BE NOTIFIED.

57. ELECTRIC METER AND SERVICE LINE INSTALLATION TO BE COORDINATED WITH ELECTRICAL PROVIDER BY THE CONTRACTOR.

58. GAS METER AND SERVICE LINE INSTALLATION TO BE COORDINATED WITH GAS COMPANY BY THE CONTRACTOR.

59. IF WITHIN THE CITY OF HOUSTON A STORM WATER QUALITY PERMIT IS REQUIRED FOR THIS PROJECT, THE CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING ITEMS:

    A.) PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL PROVIDE THE CITY OF HOUSTON WITH A PERFORMANCE BOND FOR ALL STORM WATER QUALITY PERMITS ISSUED BY THE CITY OF HOUSTON STORM WATER QUALITY DEPARTMENT.

60. THE CONTRACTOR WILL JET ALL DEBRIS OUT OF THE FLOATABLES COLLECTION SCREEN UNITS INSTALLED AND WILL PROVIDE THE ENGINEER WITH AN AS-BUILT SURVEY, SIGNED AND SEALED BY A REGISTERED LAND SURVEYOR, SHOWING POSITIVE DRAINAGE PRIOR TO ENGINEER ISSUING AN AS-BUILT CERTIFICATE TO THE GOVERNING AGENCY.

61. CONTRACTOR IS RESPONSIBLE FOR PUMPING OUT STORM WATER QUALITY UNITS AND PROVIDING THE ENGINEER WITH A MANIFEST STATING THAT THE SILT AND DEBRIS WAS DISPOSED OF IN A LEGAL MANNER. MANIFEST AND TIME STAMPED PICTURES OF THE CLEAN UNITS MUST BE PROVIDED PRIOR TO ENGINEER SUBMITTING THE STORM WATER QUALITY AS-BUILT CERTIFICATE. CONTRACTOR TO NOTIFY ENGINEER WHEN PUMP OUT WILL TAKE PLACE.

# STORM SEWER CONSTRUCTION NOTES

1. ON SITE STORM SEWERS 12-INCH DIAMETER AND LARGER SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE (PER AASHTO M-294, TYPE S, HANCOR SURE-LOK F477 PIPE, OR APPROVED EQUAL,) UNLESS OTHERWISE SHOWN ON PLANS. PRODUCT MUST HAVE GASKET JOINTS.

2. ON SITE STORM SEWERS 10-INCH DIAMETER AND LESS SHALL BE PVC (POLY-VINYL CHLORIDE) PIPE MEETING A.S.T.M. SPECIFICATIONS, ASTM D3034 AND HAVING A S.D.R. OF 26, UNLESS OTHERWISE SHOWN ON PLANS.

3. ANY CONCRETE PIPE USED ON THIS PROJECT SHALL BE REINFORCED CONCRETE MEETING ASTM C-76 CLASS III, AND HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS. CONCRETE PIPE IS ONLY TO BE USED WHERE REQUIRED IN PUBLIC RIGHT-OF-WAY AND/OR AT TIES TO PUBLIC STORM SEWER SYSTEMS. BEDDING BACKFILLING AND INSTALLATION OF PIPE AND CONSTRUCTION OF APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CIVIL DETAIL SHEETS.

4. THE CONTRACTOR SHALL USE PRECAST 4000 PSI REINFORCED CONCRETE STORM SEWER MANHOLES AND INLETS. INVERT SHALL BE INSTALLED WITH NON-SHRINK GROUT AND SLOPED TO ENSURE POSITIVE DRAINAGE FROM INLET TO STORM SEWER LINE. WITH SMOOTH FINISH AND NO STANDING WATER IN INLET. BRICK MANHOLES AND/OR INLETS MAY BE USED AS APPROVED BY THE ENGINEER WHEN SETTING STRUCTURES ON EXISTING UTILITY LINE. BRICK STRUCTURES MUST BE MORTARED INSIDE AND OUT. COORDINATE EACH INCIDENT WITH ENGINEER.

5. ALL INLETS, MANHOLES, CLEANOUTS, AND HEADWALLS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND. CEMENT STABILIZED SAND FILL SHALL BE AT LEAST 12" ON BOTTOM OF STRUCTURE AND 12" AROUND OUTSIDE OF STRUCTURE.

6. NO CORNER CONNECTIONS WILL BE ALLOWED TO ANY INLETS, JUNCTION BOXES OR BOX MANHOLES.

7. CONTRACTOR SHALL CUT OFF PIPE FLUSH WITH INSIDE FACE OF INLETS AND MANHOLES. ALL PIPE PENETRATIONS SHALL BE GROUTED INSIDE AND OUT WITH NON-SHRINK GROUT. INVERTS SHAPED TO PROMOTE FLOW-NO STANDING WATER.

8. CONCRETE FOR DRAINAGE STRUCTURES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS.

9. CULVERT CROSSINGS LOCATED WITHIN 30 FEET OF THE RIGHT-OF-WAY SHALL HAVE MINIMUM 6:1 SLOPING ENDS KNOWN AS SAFETY END TREATMENTS (SETS). THE CULVERT SHALL HAVE SUFFICIENT LENGTH TO ALLOW THE 6:1 SLOPE TO BE ACHIEVED FROM THE EDGE OF PAVEMENT TO THE FLOWLINE AT THE END OF THE SET.

10. CULVERTS LARGER THAN SINGLE 30-INCH DIAMETER (OR LARGER THAN MULTIPLE 24-INCH DIAMETER CULVERTS) SHALL REQUIRE SAFETY PIPE RUNNERS IN ALL LOCATIONS.

11. CONTRACTOR SHALL HYDRO-FLUSH AND CLEAN ALL STORM SEWER LINES AND STRUCTURES PRIOR TO ACCEPTANCE.

12. UTILITIES ARE TO BE TAKEN TO WITHIN FIVE (5) FEET OF BUILDING. SEE PLUMBING SHEETS FOR CONTINUATION OF SERVICE CONNECTIONS INTO BUILDING.

13. TIE-INS TO EXISTING MANHOLES SHALL BE MADE SUCH THAT THE FINAL CONDITIONS UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.

14. THE CONTRACTOR IS TO INSTALL WATER-TIGHT ADAPTORS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.

15. THE CONTRACTOR IS TO INSTALL EACH CLEANOUT SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF A "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE. CLEANOUTS WILL BE MADE WITH AIR-TIGHT MECHANICAL PLUG. DO NOT INSTALL NEAR DOORWAYS/SIDEWALKS.

16. ALL STORM SEWER MANHOLES LOCATED OUTSIDE OF PAVED AREAS SHALL BE SET AT FINISH GRADE WITH CONCRETE COLLAR UNLESS OTHERWISE NOTED ON PLANS.

17. ALL INLETS AND JUNCTION BOXES LOCATED OUTSIDE OF PAVED AREAS SHALL HAVE A PRE-CAST TOP WITH CAST-IN FRAME.

18. CONTRACTOR SHALL GROUT ALL JOINTS INSIDE OF ALL INLETS, JUNCTION BOXES, AND MANHOLES WITH NON-SHRINK GROUT & CONSTRUCT INVERTS.

19. ALL TYPE "A" GRATE INLETS SHALL HAVE SLOTTED GRATE TOPS (MODEL V-4880-3). GRATE TOPS IN WALK AREAS SHALL HAVE ADA COMPLIANT GRATES.

20. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

21. CONTRACTOR IS RESPONSIBLE FOR PUMPING OUT STORM WATER QUALITY UNITS AND PROVIDING THE ENGINEER WITH A MANIFEST STATING THAT THE SILT AND DEBRIS WAS DISPOSED OF IN A LEGAL MANNER. MANIFEST AND TIME STAMPED PICTURES OF THE CLEAN UNITS MUST BE PROVIDED PRIOR TO ENGINEER SUBMITTING THE STORM WATER QUALITY AS-BUILT CERTIFICATE. CONTRACTOR TO NOTIFY ENGINEER WHEN PUMP OUT WILL TAKE PLACE.

22. TRUE SDR-PVC OR SDR-HDPE FITTINGS ARE REQUIRED. NO RUBBER/FERNCO TYPE FITTINGS WILL BE ALLOWED.

# SWPPP CONSTRUCTION NOTES

1 CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2 DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA

3 CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.

4 CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5 CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN(14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6 CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

# SANITARY SEWER CONSTRUCTION NOTES

1. SANITARY SEWER SHALL BE PVC (POLY-VINYL CHLORIDE) PIPE MEETING A.S.T.M. SPECIFICATIONS, D-3034-08 AND HAVING A S.D.R. OF 26 UNLESS OTHERWISE SHOWN ON PLANS. BEDDING BACKFILLING AND INSTALLATION OF PIPE AND CONSTRUCTION OF APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CIVIL DETAIL SHEETS.

2. THE CONTRACTOR SHALL USE 4000 PSI REINFORCED CONCRETE PRECAST SANITARY SEWER MANHOLES.

3. ALL MANHOLES, AND CLEANOUTS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND. CEMENT STABILIZED SAND FILL SHALL BE AT LEAST 12" ON BOTTOM OF STRUCTURE AND 12" AROUND OUTSIDE OF STRUCTURE.

4. CONTRACTOR SHALL CUT OFF PIPE FLUSH WITH INSIDE FACE OF MANHOLES. ALL PIPE PENETRATIONS SHALL BE GROUTED INSIDE AND OUT WITH NON-SHRINK GROUT.

5. CONTRACTOR SHALL SEAL INTERIOR SURFACE OF PROPOSED SANITARY SEWER MANHOLES WITH THANECOAT FE-100, OR APPROVED EQUAL AS PER MANUFACTURER'S SPECIFICATIONS.

6. ALL SANITARY SEWER MANHOLES SHALL BE VACUUM TESTED.

7. ALL SANITARY SEWER LINES SHALL BE MANDREL AND AIR TESTED. ALL SANITARY SEWER LINES SHALL ALSO BE INSPECTED VIA CAMERA.

8. UTILITIES ARE TO BE TAKEN TO WITHIN FIVE (5) FEET OF BUILDING. SEE PLUMBING SHEETS FOR CONTINUATION OF SERVICE CONNECTIONS INTO BUILDING.

9. TIE-INS TO EXISTING MANHOLES SHALL BE MADE SUCH THAT THE FINAL CONDITIONS UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN PRIOR TO STARTING WORK.

10. THE CONTRACTOR IS TO INSTALL WATER-TIGHT ADAPTORS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.

11. THE CONTRACTOR IS TO INSTALL EACH CLEANOUT SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF A "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE. CLEANOUTS WILL BE MADE WITH AIR-TIGHT MECHANICAL PLUG.

12. ALL SANITARY SEWER MANHOLES LOCATED OUTSIDE OF PAVED AREAS SHALL BE SET 3" ABOVE FINISHED GRADE WITH CONCRETE COLLAR.

13. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1-1/2 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS EIGHT (8) INCHES THICK MAXIMUM AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.

14. PVC TO SDR TRUE TRANSITION FITTINGS ARE REQUIRED.

# WATER LINE CONSTRUCTION NOTES

1. DOMESTIC OR FIRE WATER LINES 4" AND LARGER SHALL BE POLYVINYL CHLORIDE PVC), DR-18, CLASS 150, CONFORMING TO AWWA C900 OR C905, AS CURRENTLY AMENDED UNLESS OTHERWISE NOTED ON THE PLANS.

2. WATER LINES 3" AND SMALLER SHALL BE SCHEDULE 40 PVC.

3. ALL VALVES SHALL BE LEFT HAND (COUNTERCLOCKWISE) OPEN.

4. SEE DETAIL SHEET FOR THRUST BLOCK DETAILS.

5. CONTRACTOR SHALL INSTALL METALLIC TRACER WIRE ON ALL UNDERGROUND PVC PIPING AND SECURE WIRE ENDS AT ALL VALVE BOXES.

6. CONTRACTOR SHALL ADJUST ELEVATION OF WATER LINES AS REQUIRED TO CLEAR OTHER UTILITIES. ADJUSTMENT MUST MEET TCEQ REQUIREMENTS FOR MINIMUM CLEARANCES, TYPE OF PIPE, ETC.

7. MINIMUM VERTICAL CLEARANCE BETWEEN WATER LINES AND OTHER UTILITIES SHALL BE TWELVE INCHES, UNLESS OTHERWISE NOTED ON THE PLANS.

8. EXISTING WATER SERVICES SHALL NOT BE INTERRUPTED DURING CONSTRUCTION.

9. NO CONNECTIONS SHALL BE MADE TO EXISTING WATER LINES UNTIL ALL PROPOSED WATER LINES HAVE BEEN THOROUGHLY CLEANED, TESTED, DISINFECTED AND APPROVED. ALL TESTING PROCEDURES SHALL CONFORM TO THE GOVERNING AGENCY.

10. UTILITIES ARE TO BE TAKEN TO WITHIN FIVE (5) FEET OF BUILDING. SEE PLUMBING SHEETS FOR CONTINUATION OF SERVICE CONNECTIONS INTO BUILDING.

11. METER AND BACKFLOW VAULTS SHALL BE SET 3" ABOVE FINISHED GRADE.

12. CONTRACTOR TO COORDINATE APPROPRIATE NOZZLE SIZE AND TYPE WITH LOCAL FIRE MARSHAL/FIRE INSPECTOR PRIOR TO OBTAINING FIRE HYDRANT.

# SURVEY NOTE

ALL SURVEY INFORMATION, INCLUDING BUT NOT LIMITED TO DESCRIPTIONS OF PHYSICAL CHARACTERISTICS, LEGAL LIMITS, UTILITY LOCATIONS AND PERMANENT BENCHMARK FOR THE SITE OF THE PROJECT, WAS PROVIDED BY THE OWNER. THE ARCHITECTS AND ENGINEER DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY AND EXTENT OF ALL SURVEY INFORMATION PREPARED BY OTHERS AND FURTHER DISCLAIM RESPONSIBILITY FOR INTERPRETATION OF THAT DATA BY BIDDERS AND CONTRACTOR.

# GEOTECHNICAL NOTES

1. THE GEOTECHNICAL INVESTIGATION & SOILS REPORT WAS PREPARED BY TERRACON; REPORT NO. 92255211, DATED JUNE 18, 2025.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| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE # |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# C0.01

GENERAL NOTES

-

## 1. PAVING

(FOR EXISTING OR PROPOSED HC PUBLIC R.O.W.)

CONCRETE

| DESIGN THICKNESS OF PAVING (IN.) | STABILIZED SUBGRADE DEPTH (IN.) | DESIGN STRENGTH OF CONCRETE (PSI) | STEEL SPACING LONG. (IN.) | STEEL SPACING TRANS. (IN.) | REINFORCE STEEL SIZE (#4 MIN.) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

ASPHALT

| DESIGN SURFACE COURSE THICKNESS (IN.) | DESIGN SURFACE COURSE TYPE (MATERIAL) | DESIGN BASE COURSE THICKNESS (IN.) | DESIGN BASE COURSE TYPE (MATERIAL) | STABILIZED SUBGRADE DEPTH (IN.) | STABILIZED SUBGRADE TYPE (MATERIAL) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

*DRIVEWAYS (IN EXISTING OR PROPOSED HC PUBLIC R.O.W.)*

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDING WIDENING OR REPAVING EXISTING DRIVEWAYS

| DRWY | WIDTH | MATERIAL | CULVERT? (Y/N) | CULVERT LENGTH | NEAREST CROSS-STREET | DISTANCE TO CROSS-STREET |
|---|---|---|---|---|---|---|
| 1 | 30' | CONCRETE | NO | N/A | CYPRESS HEIGHTS | 680' |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET(S): C7.06

III. ADDITIONAL DRIVEWAY TABLE (AS APPLICABLE) APPEARS ON SHEET(S): ____

### *FIRE APPARATUS ACCESS ROAD*

☒ REQUIRED AND SHOWN ON SHEET(S): C1.03
☐ NOT REQUIRED DUE TO: ____

### *CURBING*

☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

## 2. TRAFFIC

I. MEDIAN CUTS
☒ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET(S): C1.06
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED

II. LEFT / RIGHT TURN LANE
☒ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET(S): C1.06
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED

III. TRAFFIC CONTROL PLAN
☐ TRAFFIC CONTROL SHOWN ON SHEET(S): ____
☐ NO WORK IN HC RIGHT OF WAY

IV. TRAFFIC SIGNAL
☐ EXISTING TRAFFIC SIGNAL DEVICES (BOXES AND LOOPS) SHOWN ON SHEET(S): ____
☐ NEW ☐ REBUILT ☐ MODIFIED TRAFFIC SIGNAL SHOWN ON SHEET(S): ____
☐ HC FIBER PRESENT
☐ NO TRAFFIC SIGNAL

V. TRAFFIC IMPACT ANALYSIS
☐ TRAFFIC IMPACT ANALYSIS APPROVED ON DATE: ____ PROJECT NO.: ____
☐ NO TRAFFIC IMPACT ANALYSIS REQUIRED AND HC APPROVED
☐ NO NEW TRIPS GENERATED

VI. TRAFFIC VARIANCE
☐ TRAFFIC VARIANCE APPROVED ON DATE: ____ PROJECT NO.: ____

## 3. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: 205.77 ACRES
B. ☐ SUBDIVISION: ____
☒ SURVEY & ABSTRACT: WILLIAM H. SETTLE SURVEY, ABSTRACT NO. 705
C. ADJACENT ROADS: CYPRESS HEIGHTS DR.; BERRY POINT DR.

II. PLATTING
A. SUBDIVISION PLAT (CHECK APPLICABLE)
☐ PROPOSED PLAT / REPLAT
☒ RECORDED PLAT / REPLAT
☐ EXEMPT FROM PLAT / REPLAT
PLAT NAME: TOMBALL ISD JUERGEN ROAD EDUCATIONAL CAMPUS
NOTE: FINAL CPC101 REQUIRED FOR PLAN APPROVAL, RECORDED PLAT REQUIRED FOR FINAL INSPECTION.
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☒ NONE

III. JURISDICTIONS
☐ CITY OF ____
☒ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF ____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL)
1440160010001

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED PER PLANNING COMMISSION / HC REGULATIONS SHOWN ON SHEET(S): ____
☐ NOT REQUIRED PER PLANNING COMMISSION / HC REGULATIONS

## 4. RESIDENTIAL / SUBDIVISION / STREET DEDICATION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON ____ YEAR FREQUENCY
☐ OTHER: ____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION BASIN (APPROVED HC PROJECT NO.): ____
DETENTION BASIN MAINTAINED BY: ____
☐ HCFCD DRAINAGE DITCH UNIT NO.: ____
☐ HC ROADSIDE DITCH (ROAD NAME): ____
☐ HC STORM SEWER (APPROVED HC PROJECT NO.): ____

IV. HC OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x ____ LF FRONTAGE = ____ (CFS)
PROPOSED OUTFALL RATE: ____ (CFS), CALCULATIONS PROVIDED ON SHEET(S): ____
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: ____ (CFS)
FROM DRAINAGE AREA MAP DATED: ____
PREPARED BY: ____
APPROVED HC PROJECT NO.: ____
ACTUAL OUTFALL RATE: ____ (CFS), CALCULATIONS PROVIDED ON SHEET(S): ____

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET(S): ____
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED HC PROJECT NO.): ____
PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS ____.

## 5. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☒ NEW DEVELOPMENT AREA: 9.09 ACRES
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): ____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME PROVIDED UNDER: 2207070042

NEW AREA ____ x * = ____ ACRE FEET DETENTION REQUIRED

*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER:

PROPOSED DETENTION VOLUME = ____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET(S): ____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION BASIN
APPROVED HC PROJECT NO.: 2207070042
DETENTION BASIN SERVICE AREA MAP IS PROVIDED ON SHEET(S): ____

III. OUTFALL
OUTFALL TO ☐ HC ROADSIDE DITCH
☐ EXISTING HC STORM SEWER
☒ OTHER ON SITE PRIVATE STORM SEWER

☐ HC ROADSIDE DITCH OUTFALL:
PROPOSED OUTFALL RATE: ____ (CFS), CALCULATIONS PROVIDED ON SHEET(S): ____
ALLOWABLE OUTFALL RATE: 0.0027 x ____ LF FRONTAGE = ____ (CFS)
☐ HC STORM SEWER OUTFALL:
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: ____ (CFS)
FROM DRAINAGE AREA MAP DATED: ____
PREPARED BY: ____
APPROVED HC PROJECT NO.: ____
ACTUAL OUTFALL RATE: ____ (CFS), CALCULATIONS PROVIDED ON SHEET(S): ____

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS: ____ ACRE FEET
VOLUME THAT IS PUMPED: ____ ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: ____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET(S): ____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: ____
RESTRICTOR PIPE SIZE: ____
ON SHEET(S): ____

## 6. OFFSITE SHEET FLOW (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMMODATIONS ARE SHOWN ON SHEET(S): N/A

TOTAL ACREAGE = 0 (AC.)
TOTAL DISCHARGE = 0 (CFS)

☐ ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT.
☐ SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

## 7. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES (COMPLETE FOR ALL PROJECTS)
NUMBER OF ACRES DISTURBED: 9.09 ACRES
☒ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S): ____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES (COMPLETE FOR ALL PROJECTS)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL, WITHIN A LARGER COMMON PLAN OF DEVELOPMENT OR SALE, LESS THAN 5 ACRES.
THIS EXEMPTION IS VERIFIED WITH THE PLAT AND/OR GENERAL PLAN ON THE PROPERTY.
EXEMPT REDEVELOPMENT:
☐ THE INCREASE IN THE TOTAL AMOUNT OF IMPERVIOUS SURFACE, CURRENT PROJECT AND ANY SINCE 10/01/2001, ON A PREVIOUSLY DEVELOPED 5 ACRE OR LARGER PARCEL, INDIVIDUALLY AND/OR CONTIGUOUSLY OWNED, IS LESS THAN 1 ACRE.
NEW IMPERVIOUS:

| CURRENT PROJECT | PREVIOUS PROJECT(S) TOTAL | TOTAL (CURRENT+PREVIOUS) |
|---|---|---|
| | | |

EXEMPT GRANDFATHERED:
☐ DRAINAGE FROM THIS PROJECT OUTFALLS DIRECTLY INTO AN EXISTING AND APPROVED DRAINAGE SYSTEM PRIOR TO 10/01/2001 WITH NO NEW DETENTION REQUIREMENT. INCLUDE THE ORIGINAL DRAINAGE AREA MAP OF THAT SYSTEM FOR VERIFICATION.
D.A. MAP NAME: ____ DATE: ____ APPROVED HC PROJECT NO.: ____

III. GENERAL
☒ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: 9.09 ACRES
(ONLY COMPLETE IF OUTSIDE OF UNINCORPORATED HARRIS COUNTY)
☒ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY:
☐ EXISTING SWQMP
PROJECT TITLE: TOMBALL INDEPENDENT SCHOOL DISTRICT PLANS FOR DETENTION BASINS, STORM SEWER AND SITE EARTHWORK TO SERVE JUERGEN ROAD EDUCATIONAL CAMPUS
HC PROJECT NO.: 2207070042 HC SWQ PERMIT NO.: 2207070042-SWQG-001
SWQ SERVICE AREA MAP INCLUDED ON SHEET(S): ____
☐ INDUSTRIAL PERMITTING. (IAC AND SUPPORTING DOCUMENTATION MUST BE SUBMITTED)
PERMIT NO: ____
IF THE PROJECT IS NOT EXEMPT, OUTSIDE OF HARRIS COUNTY'S JURISDICTION, OR COVERED BY AN EXISTING SWQMP, A STORMWATER QUALITY MANAGEMENT PLAN IS REQUIRED.

IV. PERMANENT SWQ FEATURES (COMPLETE IF NOT EXEMPT)
☐ SITE PLAN ON SHEET(S): ____
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY, LID) DETAILS AND CALCULATIONS APPEAR ON SHEET(S): ____
☐ BASIN STRUCTURE USED (WET, DRY, WETLANDS)
STRUCTURAL CONTROL IN BASIN: ____
DETAILS/CALCULATIONS ON SHEET(S): ____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: ____
DETAILS/CALCULATIONS ON SHEET(S): ____
☐ OTHER(S):
STRUCTURAL CONTROL(S): ____
DETAILS/CALCULATIONS ON SHEET(S): ____

## 8. FLOODPLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL(S) FOR PROPERTY: 48201C0215L
FIRM PANEL(S) DATE: JUNE 18, 2007
STATUS OF PROPERTY ON MAP
☒ ENTIRELY LOCATED IN UNSHADED ZONE X
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY A ZONE OR SHADED ZONE X, DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO. ____) (1% BASE FLOOD LEVEL ____) (0.2% BASE FLOOD LEVEL ____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO. ____ REVISED FLOODPLAIN IS SHOWN ON SHEET(S): ____

II. ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS) (2001 ADJ.)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT
RM111050 – ALUMINUM ROD WITH LOOD CAP STAMPED "11050" LOCATED ON THE NORTH SIDE OF BAUER-HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELI DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED.
ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

III. FLOODPLAIN DETERMINATION BASED ON GROUND ELEVATION
☒ PROPERTY LIES ENTIRELY ABOVE THE 1% BASE FLOOD LEVEL AND IN SHADED ZONE X
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE 1% BASE FLOOD LEVEL

IV. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL)
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.): BELOW 0.2% BASE FLOOD ELEVATION ____ (2001 ADJ.) ____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BELOW 0.2% BASE FLOOD ELEVATION ____ (2001 ADJ.) ____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET(S): ____

## 9. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES THE PROPERTY HAVE UTILITIES?
☐ PROPOSED ☒ EXISTING ☐ NO
CHECK APPLICABLE
☐ PUBLIC WATER & SANITARY
☒ PRIVATE WATER WELL & PRIVATE SANITARY SEWER
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY
☐ LETTER FROM THE DISTRICT / MUNICIPALITY AUTHORIZING MUNICIPALITY AUTHORIZING SERVICE & CONNECTION.
UTILITY DISTRICT / MUNICIPALITY NAME: ____
☐ PROPOSED OR EXISTING SEPTIC TANK(S) AND DISPOSAL AREA(S) SHOWN ON SHEET(S): ____
☐ ALL EXISTING AND PROPOSED UTILITIES ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

*NOTE: SEPTIC SYSTEMS REQUIRE HC WASTEWATER REVIEW*
HC SEPTIC PERMIT/REQUEST NO. ____

NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REVIEW DOES ***NOT*** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.

### *WASTEWATER TREATMENT PLANTS*

HC WWTP REVIEW:
☐ NEW WWTP SITE OR REHAB / EXPANSION OF AN EXISTING WWTP SITE
☐ HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRESS REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS

## 10. SIDEWALKS

☐ SIDEWALKS ARE PROPOSED IN THIS DEVELOPMENT
☒ NO SIDEWALKS ARE PROPOSED IN THIS DEVELOPMENT

## 11. LANDSCAPING

☒ COMMERCIAL BUILDING(S) PROPOSED AND LANDSCAPING SHOWN ON SHEET(S): LANDSCAPING INCLUDED IN ARCHITECTURAL DRAWINGS
☐ NO COMMERCIAL BUILDING(S) PROPOSED

## 12. PERMITS REQUIRED

☐ STORM WATER QUALITY
☐ ORIGINAL ☐ AMENDMENT TO PERMIT NO.: ____
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☒ CIVIL SITE WORK (PHASE II PERMIT CLASS I (UNSHADED X ZONE))
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS II (ALL OTHER ZONES))
☐ DRIVEWAY WITH CULVERT ☒ DRIVEWAY WITH CURB AND GUTTER
☐ BUILDING(S) IS A CRITICAL FACILITY
☒ BUILDING PERMITS (NO. OF BUILDINGS = ____)
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = ____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
☐ STREET DEDICATION

WORK IN HARRIS COUNTY R.O.W.
☐ UTILITY WORK ____
☒ TURN LANE ____
☐ OTHER CONSTRUCTION ____

VIOLATIONS
☐ EXISTING VIOLATIONS ON PROPERTY
VIOLATION NUMBER(S): ____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD R.O.W.

**BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBDIVISIONS**

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? *(to be determined by Harris County)* (__) yes (__) no

If a new Benchmark is required, the proposed benchmark information is shown on sheet(s): ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

*Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.*

*No net fill is allowed in the flood plain and no fill is allowed in the floodway.*

**FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)**

*All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.*

*Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.*

*All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.*

*Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.*

*Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.*

*Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.*

*A completed as-built certificate must be submitted after the structure is complete and before it is occupied.*

*The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.*

*No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.*

*All structures shall be designed to withstand a three second gust basic wind speed of 120mph.*

*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL)*

HARRIS COUNTY OFFICE OF THE COUNTY ENGINEER - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCOCE SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

### *ENGINEER'S CERTIFICATION*

I, BRIAN W. REED , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS C0.00 THRU C7.11

SIGNATURE ____ DATE 07-28-2025

SEAL
STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

| REV. NO. | DATE | SHEET NO. | DESCRIPTION | P.E. INITIAL | HC APPROVED DATE | HC INITIAL |
|---|---|---|---|---|---|---|
| | | | | | | |
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HC PROJECT NO. 0000000000000 | HCFCD PROJECT NO. 00000000000 | SHEET NUMBER C0.02 OF C7.11

# HARRIS COUNTY
## OFFICE OF THE COUNTY ENGINEER
## REVIEW SHEET

VERSION 21.0 FEBRUARY 20, 2025


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C0.02

HARRIS COUNTY ENGINEERING REVIEW SHEET

# 1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☒ 4

B. KEY MAP: 326D

C. ADDRESS: 18530 CYPRESS HEIGHTS DRIVE, CYPRESS, TX, 77433

II. LEGAL DESCRIPTION

A. ACREAGE: 205.77 ACRES

B. ☐ SUBDIVISION: _____

☒ SURVEY & ABSTRACT: _____
WILLIAM H. SETTLE SURVEY, ABSTRACT NO. 705

C. ADJACENT ROADS: CYPRESS HEIGHTS DR.; BERRY POINT DR.

III. PLATTING

A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☒ RECORDED PLAT / REPLAT

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☒ NONE

PLAT NAME:
TOMBALL ISD JUERGEN ROAD EDUCATIONAL CAMPUS

IV. JURISDICTIONS

☐ CITY OF _____
☒ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL)

1440160010001

# 2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☒ NEW DEVELOPMENT AREA: 9.09 ACRE
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☒ OTHER HARRIS COUNTY REGULATIONS–SEE SECTION III BELOW

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☒ OTHER (OWNER & OPERATOR) EXISTING DETENTION PROVIDED UNDER HC PROJECT # 2207070042

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

| DETENTION BASIN SERVICE AREA | | acres | |
|---|---|---|---|
| STORM EVENT | 50% EXCEEDANCE (2-YEAR) | 10% EXCEEDANCE (10-YEAR) | 1% EXCEEDANCE (100-YEAR) |
| MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW) | | | |
| MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN) | | | |
| LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE | | | |
| DESIGN WATER SURFACE ELEVATION | | | |
| MINIMUM STORAGE REQUIRED (ac-ft) | | | |
| DETENTION STORAGE PROVIDED (ac-ft) | | | |
| STORAGE RATE PROVIDED (ac-ft/ac) | | | |
| OUTFLOW VELOCITY INTO CHANNEL (ft/sec) | | | |
| DRAIN TIME – 1% ONLY (hours) | | | |
| EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.) | | | |

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ ACFT _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____HEAD CONDITIONS

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☒ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): 2207070042

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
*Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.*
*No net fill is allowed in the flood plain and no fill is allowed in the floodway.*

**OFFSITE SHEET FLOW:** (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET _____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = 0
TOTAL DISCHARGE = 0

*NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.*

# 3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☒ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF:
HARRIS COUNTY
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE:
TOMBALL INDEPENDENT SCHOOL DISTRICT PLANS FOR DETENTION BASINS, STORM SEWER AND SITE EARTHWORK TO SERVE JUERGEN ROAD EDUCATIONAL CAMPUS
HARRIS COUNTY PROJECT No 2207070042 & SWQ PERMIT No. 2207070042-SWQG-001

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S)

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

# 4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: 48201C0215L
FIRM PANEL(S) DATE: JUNE 18, 2007
STATUS OF PROPERTY ON MAP
☒ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET_____

ELEVATION INFORMATION
BENCHMARK USED
☒ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT *(2001 ADJ.)*
RM111050 – ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER–HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELI DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 2001 ADJ.)

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY
(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN)
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS _____
(INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

# 5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN:

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
I. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS:
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

# 6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

STORMWATER DRAINAGE DESIGN REPORT
REPORT TITLE _____
HCFCD PROJECT # _____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

GEOTECHNICAL INVESTIGATION REPORT
REPORT TITLE _____
HCFCD PROJECT # _____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

HCFCD APPROVED VARIANCE
DESCRIPTION OF VARIANCE _____
DOCUMENT ID # _____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.:

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

## HCFCD SIGNATURE BLOCK

PROJECT NAME: WEST AGRICULTURAL SCIENCE FACILITY

ADDRESS: 18530 CYPRESS HEIGHTS DRIVE, CYPRESS, TX, 77433

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

*HARRIS COUNTY FLOOD CONTROL DISTRICT*

INTERPOSE NO OBJECTION

BY_____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:

BY_____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:

BY_____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

## ENGINEER'S CERTIFICATION

I, BRIAN W. REED , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS C0.00 THRU C7.11 .

SIGNATURE 07–28–2025 DATE

SEAL
STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER

## REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

| DATE | SHEET NO. | DESCRIPTION | P.E. INITIAL | H.C.F.C.D APPROVED DATE |
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HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER C0.03 OF C7.11

# HARRIS COUNTY
## FLOOD CONTROL DISTRICT
## REVIEW SHEET

VERSION 1.0 OCTOBER 2019


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
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Tel: 713.914.0888


**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

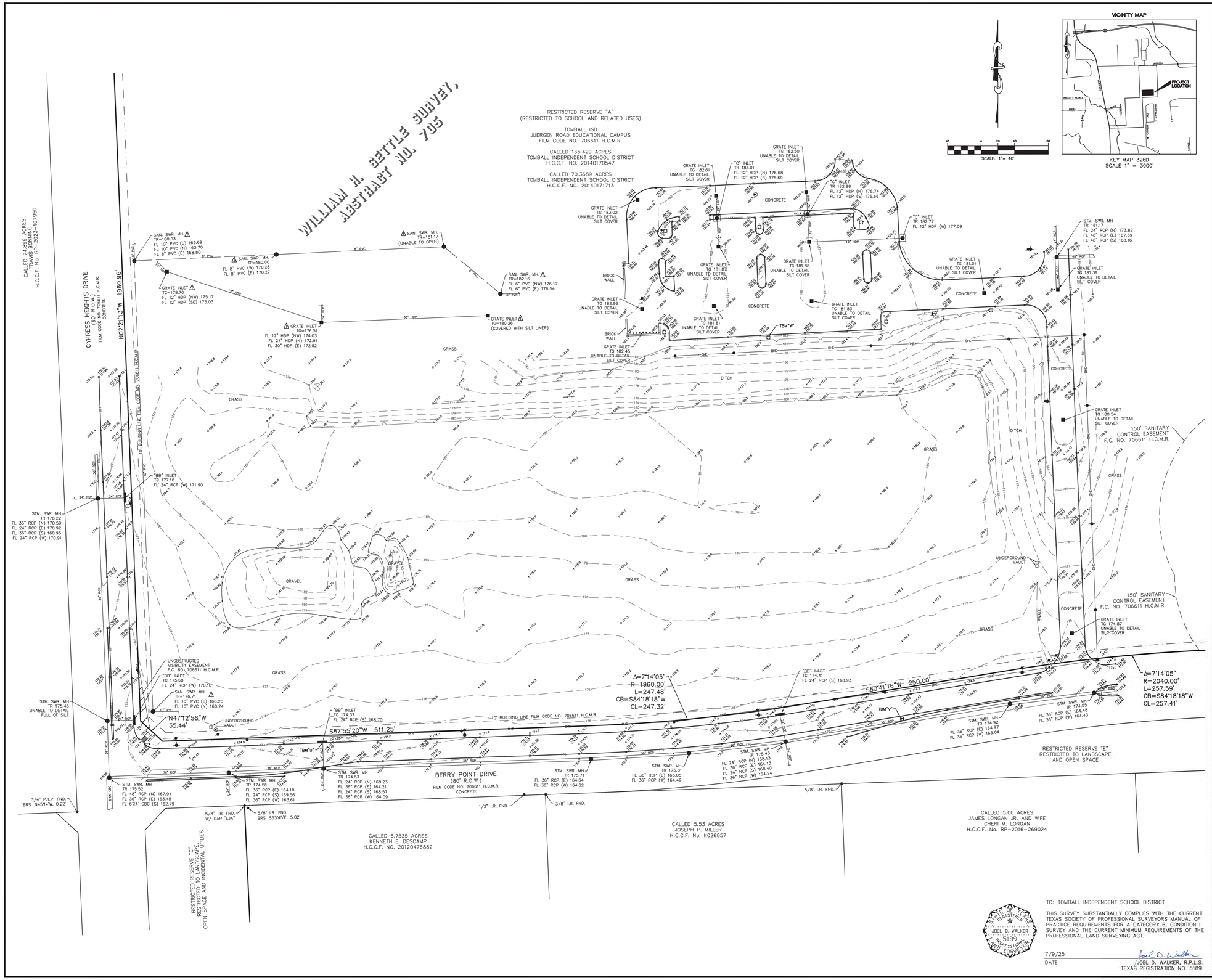

PROJECT #: 202414
DATE: 2025-07-28
DRAWN: JDK; BWR
CHECKED: BWR

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C0.03

HARRIS COUNTY FLOOD CONTROL REVIEW SHEET

SURVEY N.T.S. – SHOWN FOR REFERENCE ONLY




LEGEND

- "BB" INLET
- BENCHMARK
- "C" INLET
- CLEANOUT
- FIRE HYDRANT
- GUY WIRE
- INLET
- IRRIGATION CONTROL VALVE
- LIGHT STANDARD
- MANHOLE
- PIPELINE MARKER
- POWER POLE
- SIGN
- SIGNAL POST
- WATER VALVE

ABBREVIATIONS

BRS.–BEARS
FC–FILM CODE
FL–FLOW LINE
FND.–FOUND
H.C.C.F.–HARRIS COUNTY CLERK'S FILE
H.C.M.R.–HARRIS COUNTY MAP RECORDS
HDP–HIGH DENSITY POLYETHYLENE PIPE
I.R.–IRON ROD
MH–MANHOLE
OHE–OVERHEAD ELECTRIC
P.T.P.–PINCHED TOP PIPE
RCP–REINFORCED CONCRETE PIPE
R.O.W.–RIGHT–OF–WAY
SAN.–SANITARY
STM.–STORM
SWR.–SEWER
TBM–TEMPORARY BENCHMARK
TC–TOP OF CURB
TG–TOP OF GRATE
TR–TOP OF RIM

SURVEYOR'S NOTES:

1. THE BEARINGS SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD 83

2. THE CAD FILE OF THE DRAWING SHOWN HEREIN IS BASED ON TEXAS SOUTH CENTRAL ZONE NO. 4204, STATE PLANE SURFACE VALUE (NAD83) AND MAY BE CONVERTED TO GRID BY SCALING THE DRAWING BY THE FOLLOWING COMBINED SCALE FACTOR OF 0.999933828773.

3. ACCORDING TO F.I.R.M. MAP NO. 48201C0215L (COMMUNITY–PANEL NO. 4802870215L), MAP REVISED DATE: JUNE 18, 2007. THE SUBJECT PROPERTY LIES WITHIN THE AREAS DESIGNATED AS ZONE "X" UNSHADED. DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD.

THIS STATEMENT IS BASED ON SCALING THE LOCATION OF THE SUBJECT TRACT ON THE ABOVE REFERENCED MAP. THIS INFORMATION IS TO DETERMINE FLOOD INSURANCE RATES ONLY AND IS NOT INTENDED TO IDENTIFY SPECIFIC FLOODING CONDITIONS.

4. ALL UTILITIES SHOWN HEREON ARE LOCATED USING "APPARENT & VISIBLE" EVIDENCE BY ON–SITE OBSERVATION UNLESS OTHERWISE NOTED.

5. THE SUBJECT TRACT IS AFFECTED BY THE CITY OF HOUSTON ORDINANCE No. 85–1878, AMENDED BY ORDINANCE No. 1999–252.

6. THIS SURVEY DOES NOT PROVIDE ANY DETERMINATION CONCERNING WETLANDS, FAULT LINES, TOXIC WASTE OR ANY OTHER ENVIRONMENTAL ISSUE. SUCH MATTERS SHOULD BE DIRECTED BY THE CLIENT OR PROSPECTIVE PURCHASER TO AN EXPERT CONSULTANT.

7. ⊣ INDICATES AN UNDERGROUND SEWER LINE WITH UNKNOWN DIRECTION, SIZE OR LOCATION OR A POSSIBLE STUB–OUT.

REFERENCE BENCHMARK:

RM111050 – ALUMINUM ROD WITH LOGO CAP STAMPED "111050" LOCATED ON THE NORTH SIDE OF BAUER–HOCKLEY ROAD ±75' EAST OF ITS INTERSECTION WITH ANGELI DRIVE AND ±120' WEST OF A POWER POLE IN KEY MAP 326B IN THE CYPRESS CREEK WATERSHED. ELEVATION = 176.30' (NAVD 88, 200' ADJ.)

TEMPORARY BENCHMARKS:

TBM "U" – BOX CUT ON TOP OF FIRST "BB" INLET LOCATED ON THE NORTH SIDE OF BERRY POINT DRIVE ±224 FEET EAST OF CYPRESS HEIGHTS DRIVE.
ELEVATION = 174.36'

TBM "V" – BOX CUT ON WEST END OF CONCRETE MEDIAN FOR TURN LANE LOCATED IN THE CENTER OF BERRY POINT DRIVE ±920 FEET EAST OF CYPRESS HEIGHT DRIVE.
ELEVATION = 175.14'

TBM"W" – BOX CUT ON TOP OF CONCRETE BASE FOR LIGHT STANDARD LOCATED ON THE SOUTH SIDE OF PARKING LOT AT THE MIDDLE OF PARKING LOT.
ELEVATION = 185.79'

TO: TOMBALL INDEPENDENT SCHOOL DISTRICT

THIS SURVEY SUBSTANTIALLY COMPLIES WITH THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS MANUAL OF PRACTICE REQUIREMENTS FOR A CATEGORY 6, CONDITION I SURVEY AND THE CURRENT MINIMUM REQUIREMENTS OF THE PROFESSIONAL LAND SURVEYING ACT.

STATE OF TEXAS
REGISTERED
JOEL D. VALKER
5189
PROFESSIONAL
LAND SURVEYOR

7/9/25
DATE

JOEL D. WALKER, R.P.L.S.
TEXAS REGISTRATION NO. 5189

TOMBALL INDEPENDENT SCHOOL DISTRICT

TOPOGRAPHIC SURVEY

CALLED 205.770 ACRES
OUT OF THE
WILLIAM H. SETTLE SURVEY
ABSTRACT NO. 705
HARRIS COUNTY, TEXAS

WEST BELT
SURVEYING, INC.
21020 PARK ROW
KATY, TX. 77449
PHONE: (281) 599-8288
FAX: (281) 492-0020
CERTIFIED FIRM NO. 10073800

| NO. | DATE | REVISIONS | BY |
|---|---|---|---|
| | | | |
| | | | |
| 1 | 7/9/25 | ADDED STORM AND SANITARY DETAILS | DB |

| | |
|---|---|
| DRAWN BY: KMH | CHECKED BY: MDL |
| SCALE: 1" = 40' | APPROVED BY: JDW |
| PROJECT NO. 5866–00351 | DATE: MARCH 27, 2025 |

09 Jul 2025 11:36AM darrenb
G:\sdsk\proj\5866000351\DWG\AB070925.dwg

CONSULTANTS

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STATE OF TEXAS
REGISTERED
BRIAN W. REED
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LICENSED
PROFESSIONAL ENGINEER
07/28/2025

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C0.04

TOPOGRAPHIC SURVEY

EXISTING WEST
INTERMEDIATE SCHOOL

SEE SHEETS 2 OF 2
FOR ENLARGED DETAILS
OF THIS AREA

SEE SHEETS 1 OF 2
FOR ENLARGED DETAILS
OF THIS AREA

CALLED 24.899 ACRES
HOUSTON AUDUBON SOCIETY
H.C.C.F. No. RP-2023-167950

CYPRESS HEIGHTS DRIVE
(60' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

N02°21'13"W 1960.96'

GRATE INLET
TG=178.70'
FL 12" HDP (NW) 175.17
FL 12" HDP (SE) 175.03

GRATE INLET
TG=176.51
FL 12" HDP (NW) 174.03
FL 24" HDP (N) 172.91
FL 30" HDP (E) 172.52

GRATE INLET
TG=180.26
(COVERED WITH SILT LINER)

SAN. SWR. MH
TR=182.16
FL 6" PVC (NW) 176.17
FL 6" PVC (E) 176.54

GRATE INLET
TG 182.98
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 183.52
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 183.83
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 181.88
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 181.01
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 181.83
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 181.81
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 182.
UNABLE TO DETAIL

STM. SWR. MH
TR 181.17
FL 24" RCP (N) 173.82
FL 48" RCP (E) 167.39
FL 48" RCP (S) 168.16

GRATE INLET
TG 181.39
UNABLE TO DETAIL
SILT COVER

GRATE INLET
TG 180.54
UNABLE TO DETAIL
SILT COVER

150' SANITARY
CONTROL EASEMENT
F.C. NO. 706611 H.C.M.R.

GRATE INLET
TG 174.57
UNABLE TO DETAIL
SILT COVER

"BB" INLET
TC 177.18
FL 24" RCP (W) 171.90

STM. SWR. MH
TR 178.22
FL 36" RCP (N) 170.59
FL 24" RCP (E) 170.92
FL 36" RCP (S) 168.85
FL 24" RCP (W) 170.91

UNOBSTRUCTED
VISIBILITY EASEMENT
F.C. NO. 706611 H.C.M.R.

"BB" INLET
TC 175.68
FL 24" RCP (W) 170.10

SAN. SWR. MH
TR=176.71
FL 10" PVC (E) 160.20
FL 10" PVC (N) 160.24

N47°12'56"W
35.44'

S87°55'26"W 511.25'

"BB" INLET
TC 174.37
FL 24" RCP (S) 169.70

BUILDING LINE (FILM CODE NO. 706611

STM. SWR. MH
TR 174.47
FL 24" RCP (S) 168.93

S80°41'18"W 250.00'

Δ=7°14'05"
R=2040.00'
L=257.59'
CB=S84°18'18"W
CL=257.41'

STM. SWR. MH
TR 174.55
FL 36" RCP (E) 164.48
FL 36" RCP (W) 164.43

STM. SWR. MH
TR 174.92
FL 36" RCP (E) 164.97
FL 36" RCP (W) 165.04

STM. SWR. MH
TR 175.45
FL 24" RCP (N) 168.13
FL 36" RCP (E) 164.13
FL 24" RCP (S) 168.40
FL 36" RCP (W) 164.24

STM. SWR. MH
TR 175.81
FL 36" RCP (E) 165.05
FL 36" RCP (W) 164.49

STM. SWR. MH
TR 175.71
FL 36" RCP (E) 164.64
FL 36" RCP (W) 164.62

STM. SWR. MH
TR 175.45
UNABLE TO DETAIL
FULL OF SILT

STM. SWR. MH
TR 175.52
FL 48" RCP (N) 167.94
FL 36" RCP (E) 163.45
FL 6'X4' CBC (S) 162.79

STM. SWR. MH
TR 174.58
FL 36" RCP (E) 164.10
FL 24" RCP (S) 169.56
FL 36" RCP (W) 163.61

STM. SWR. MH
TR 174.82
FL 24" RCP (N) 168.23
FL 36" RCP (E) 164.21
FL 24" RCP (S) 168.57
FL 36" RCP (W) 164.09

BERRY POINT DRIVE
(80' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

3/4" P.T.P. FND.
BRS. N45°14'W, 0.22'

5/8" I.R. FND.
W/ CAP "LJA"

5/8" I.R. FND.
BRS. S53°45'E, 0.02'

1/2" I.R. FND.

3/8" I.R. FND.

5/8" I.R. FND.

RESTRICTED RESERVE "A"
RESTRICTED TO LANDSCAPE
OPEN SPACE AND INCIDENTAL UTILIES

CALLED 6.7535 ACRES
KENNETH E. DESCAMP
H.C.C.F. NO. 20120476882

CALLED 5.53 ACRES
JOSEPH P. MILLER
H.C.C.F. No. K028057

CALLED 5.00 ACRES
JAMES LONGAN JR. AND WIFE
CHERI M. LONGAN
H.C.C.F. No. RP-2016-269024

RESTRICTED RESERVE "E"
RESTRICTED TO LANDSCAPE
AND OPEN SPACE

50 0 25 50
SCALE: 1" = 50'

CONSULTANTS

CIVIL
Talon Engineering, LLC
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# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


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tel 281.286.6605, fax 713.977.4620


BRIAN W. REES
128933
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

07/28/2025

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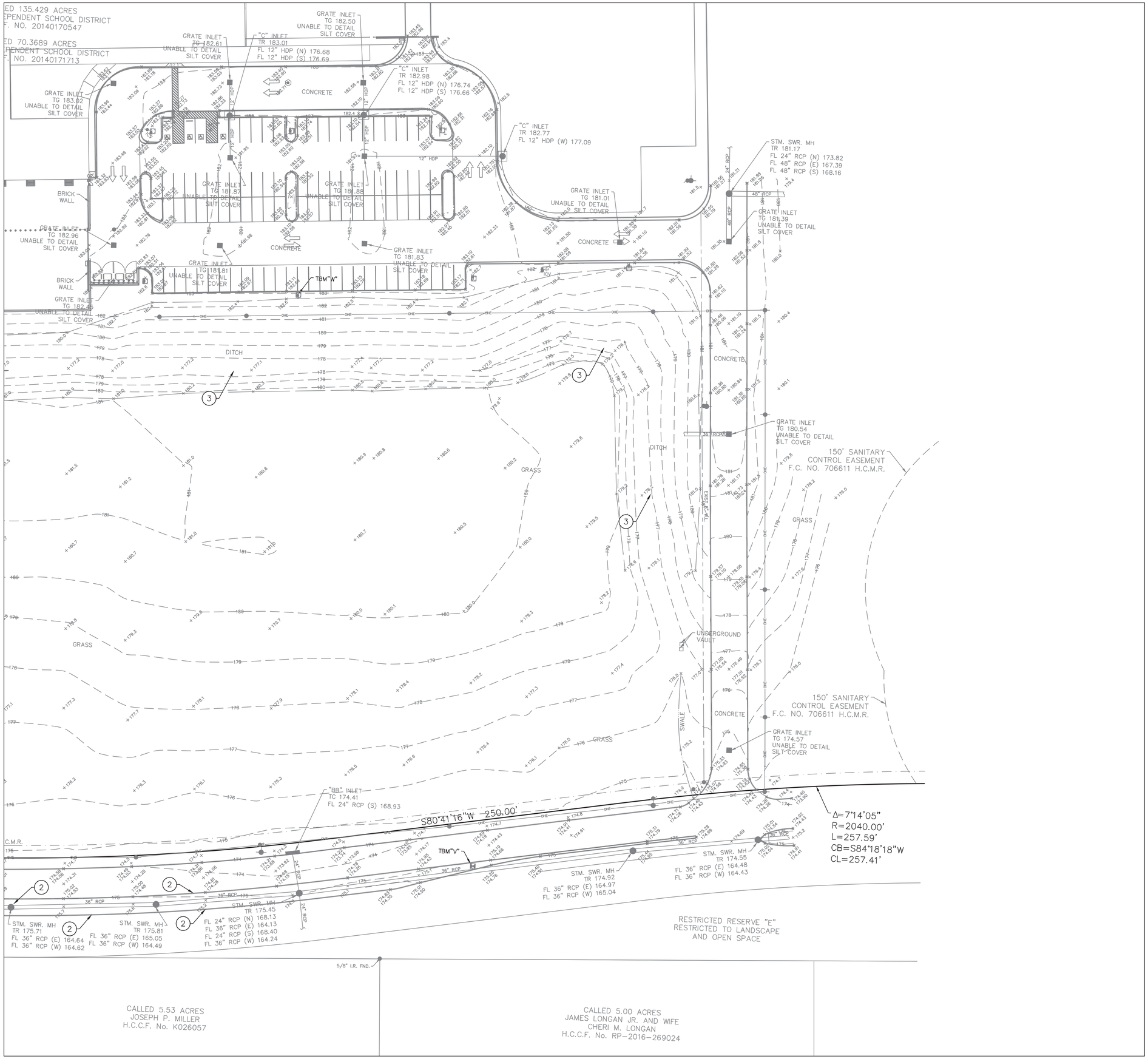
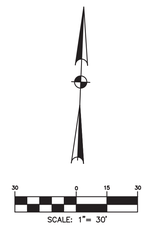
C1.00

OVERALL LAYOUT




## KEYED DEMO NOTES TO SHEET:

1. EXISTING GRAVEL SPOILS TO BE USED FOR BASE LAYER OF GRAVEL AREA ONLY IF ACCEPTABLE. REFER TO GRAVEL DETAIL ON SHEET C7.01.

   CONTRACTOR SHALL VERIFY QUALITY OF EXISTING GRAVEL TO ENSURE IT MATCHES THE DESIRED STONE SIZE PER DETAIL ON SHEET C7.01.

   ANY OF THE EXISTING GRAVEL SPOILS THAT DO NOT MEET THE STONE SIZE PER DETAIL SHOWN ON SHEET C7.01 SHALL BE HAULED OFF SITE IN THIS SCOPE OF WORK.

2. EXISTING CURB TO BE REMOVED TO FACILITATE CONSTRUCTION OF PROPOSED LEFT TURN LANE, REFER TO SHEET C1.06.

   TWO EXISTING STORM SEWER MANHOLES SHALL BE MODIFIED TO LOWER THE RIM ELEVATION TO MATCH THE PROPOSED FINISHED GRADE OF THE NEW CONCRETE PAVEMENT.

   ALL EXCAVATED MATERIAL FROM THE EXISTING RAISED MEDIAN SHALL BE REMOVED OFF SITE.

3. EXISTING SWALE TO BE FILLED IN PER GRADING SHEETS C2.01 & C2.02.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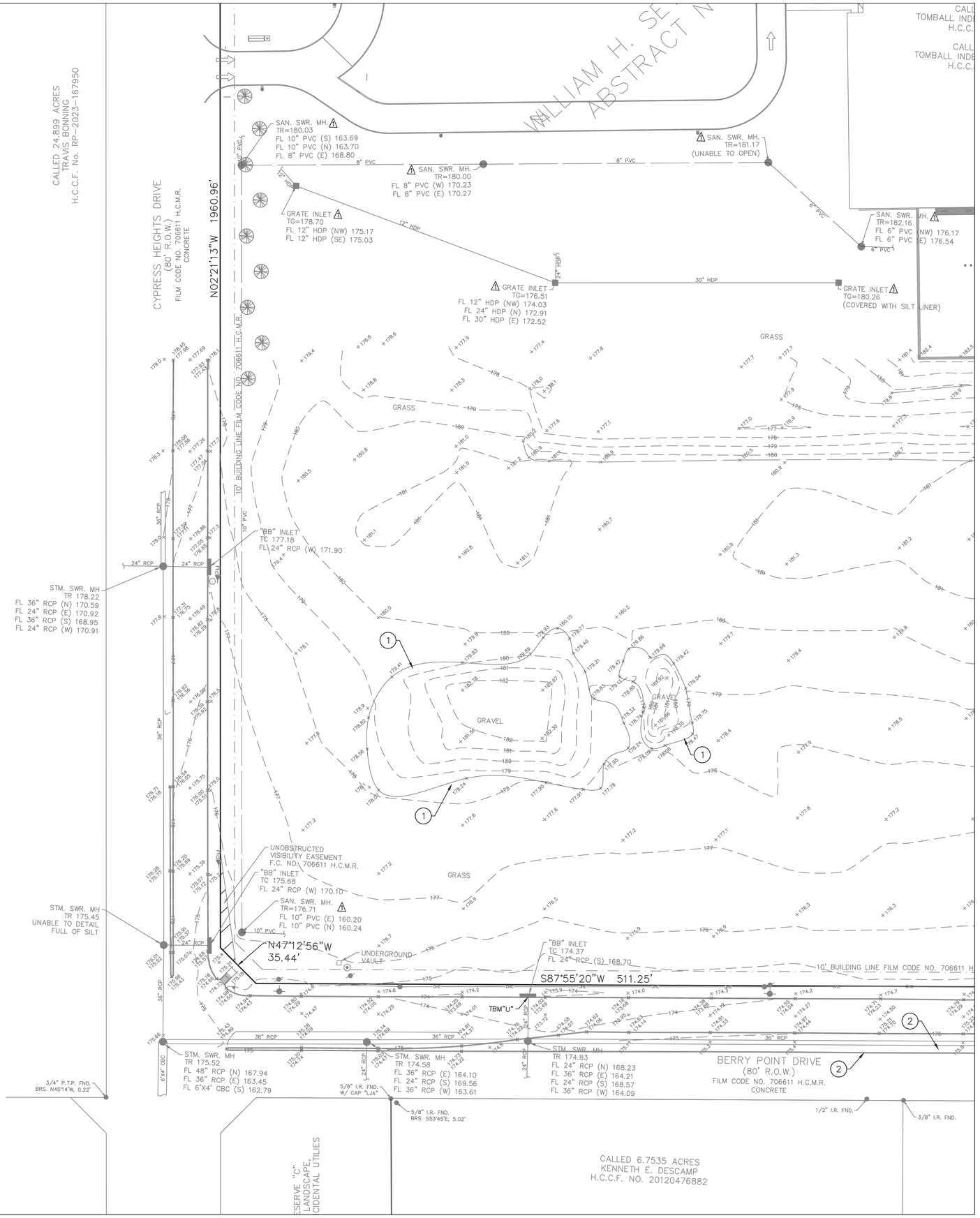
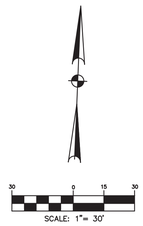
# C1.01

DEMOLITION PLAN
(SHEET 1 OF 2)




## KEYED DEMO NOTES TO SHEET:

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2. EXISTING CURB TO BE REMOVED TO FACILITATE CONSTRUCTION OF PROPOSED LEFT TURN LANE, REFER TO SHEET C1.06.

   TWO EXISTING STORM SEWER MANHOLES SHALL BE MODIFIED TO LOWER THE RIM ELEVATION TO MATCH THE PROPOSED FINISHED GRADE OF THE NEW CONCRETE PAVEMENT.

   ALL EXCAVATED MATERIAL FROM THE EXISTING RAISED MEDIAN SHALL BE REMOVED OFF SITE.

3. EXISTING SWALE TO BE FILLED IN PER GRADING SHEETS C2.01 & C2.02.


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128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

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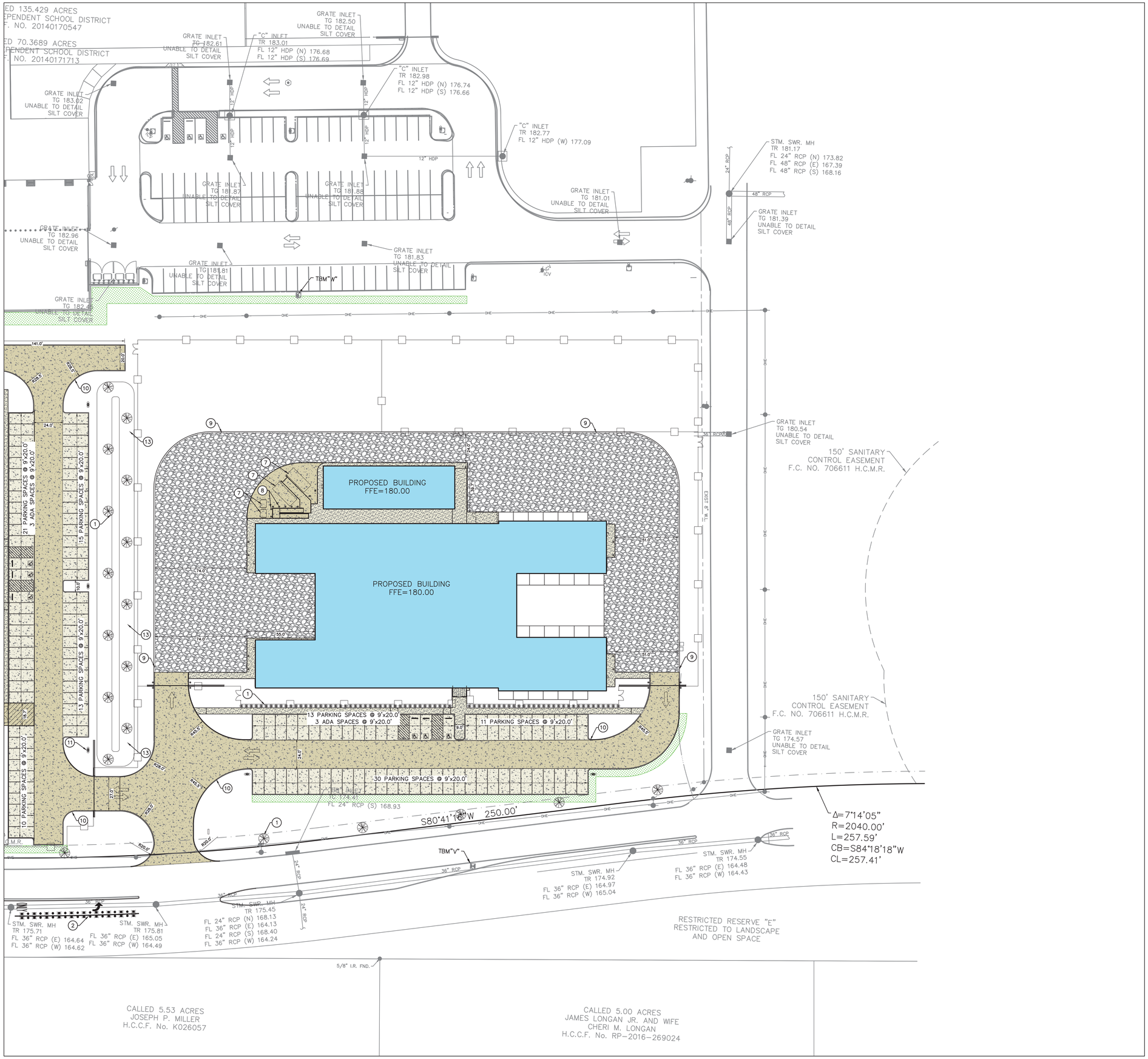
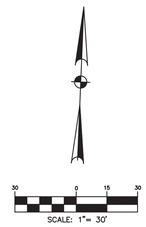
# C1.02

DEMOLITION PLAN
(SHEET 2 OF 2)




## LEGEND:

- PROPOSED BUILDING FOOTPRINT
- 7" REINFORCED CONCRETE PAVEMENT
- 5" REINFORCED CONCRETE PAVEMENT
- 4.5" REINFORCED SIDEWALK
- GRAVEL AREA
- AREAS TO RECEIVE SOLID SOD
- NATURAL GRASS PLAYING FIELD REFER TO DETAIL ON SHEET C7.05 GRASS SHALL BE BERMUDA TIFFWAY 419 WITH ROOT ZONE BASE

## KEYED DEMO NOTES TO SHEET:

1. PROPOSED LANDSCAPING–REFER TO ARCHITECTURAL DRAWINGS
2. PROPOSED LEFT TURN LANE–REFER TO SHEET C1.06
3. PROPOSED STADIUM FIELD LIGHTING. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
4. PROPOSED SCOREBOARD. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
5. PROPOSED SITE FENCING & GATES (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
6. PROPOSED BLEACHERS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
7. PROPOSED DUMPSTERS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
8. PROPOSED BOLLARDS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
9. PROPOSED ROLLOVER CURB (REFER TO DETAIL SHEET C7.01) ROLLOVER CURB TO GO AROUND ENTIRE GRAVEL AREA.
10. PROPOSED STANDARD 6–INCH CURB (REFER TO DETAIL SHEET C7.01) ALL AREAS OUTSIDE OF THE GRAVEL AREA SHALL HAVE 6–INCH STANDARD CURB.
11. PROPOSED SITE LIGHTING. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
12. PROPOSED NATURAL GRASS SOCCER FIELD. GRASS SHALL BE BERMUDA TIFFWAY 419 WITH ROOT ZONE BASE.

    ALL SOCCER LINEWORK IS SHOWN FOR REFERENCE ONLY. TOMBALL I.S.D. WILL PAINT THE FIELD STRIPING LAYOUT.

    REFER TO ARCHITECTURAL DRAWINGS FOR SOCCER GOALS, NETTING, & BENCH DETAILS.

    COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIELD NETTING ON THE SOUTH SIDE OF THE FIELD.
13. PROPOSED EARTHEN BERM @ 6–FEET IN HEIGHT. REFER TO GRADING SHEETS C2.01 & C2.02.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Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

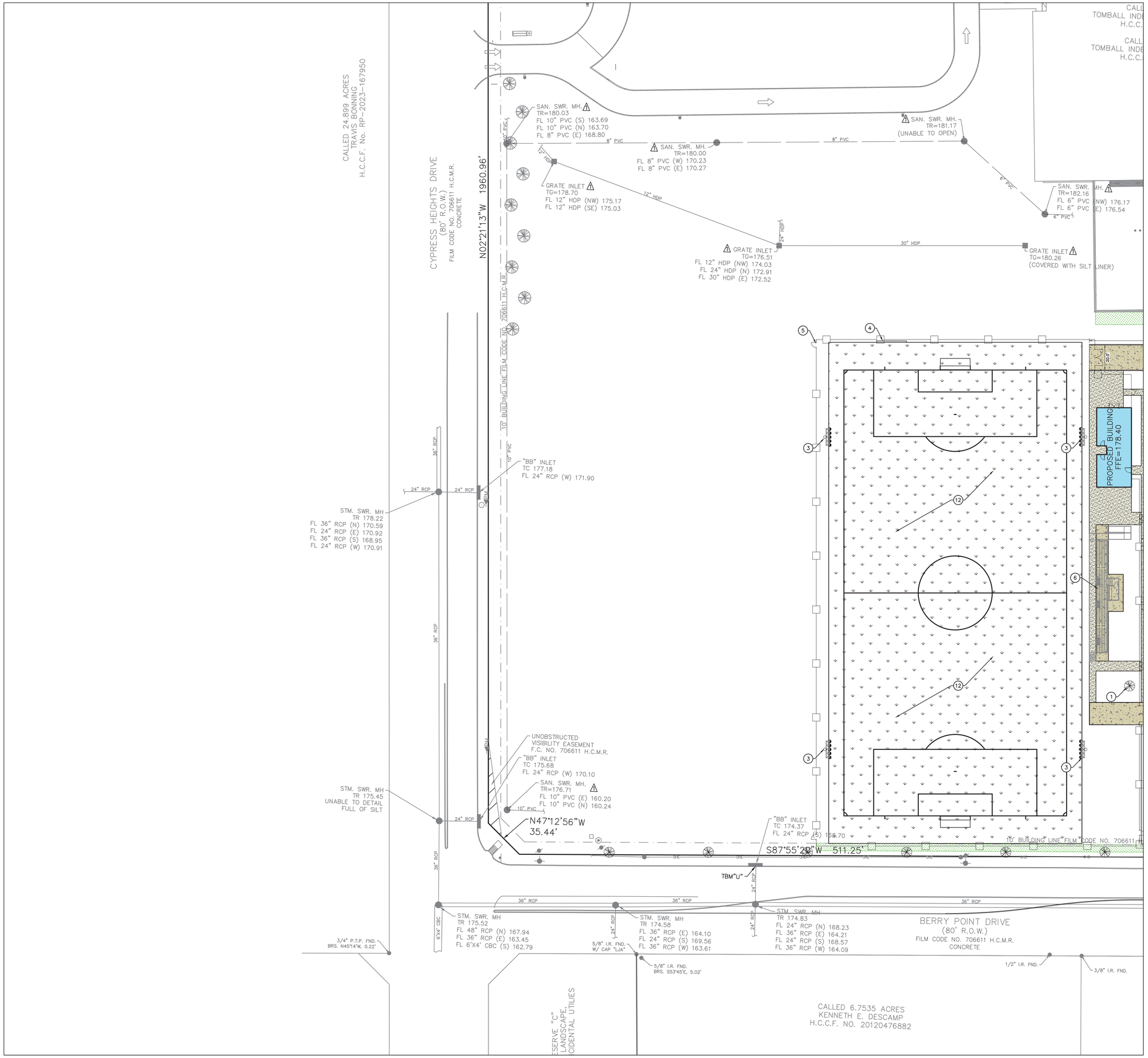

STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# C1.03

SITE LAYOUT
(SHEET 1 OF 2)




SCALE: 1"= 30'

## LEGEND:

- PROPOSED BUILDING FOOTPRINT
- 7" REINFORCED CONCRETE PAVEMENT
- 5" REINFORCED CONCRETE PAVEMENT
- 4.5" REINFORCED SIDEWALK
- GRAVEL AREA
- AREAS TO RECEIVE SOLID SOD
- NATURAL GRASS PLAYING FIELD
  REFER TO DETAIL ON SHEET C7.05
  GRASS SHALL BE BERMUDA TIFFWAY 419 WITH ROOT ZONE BASE

## KEYED DEMO NOTES TO SHEET:

1. PROPOSED LANDSCAPING–REFER TO ARCHITECTURAL DRAWINGS
2. PROPOSED LEFT TURN LANE–REFER TO SHEET C1.06
3. PROPOSED STADIUM FIELD LIGHTING. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
4. PROPOSED SCOREBOARD. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
5. PROPOSED SITE FENCING & GATES (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
6. PROPOSED BLEACHERS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
7. PROPOSED DUMPSTERS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
8. PROPOSED BOLLARDS (TYP.) REFER TO ARCHITECTURAL DRAWINGS.
9. PROPOSED ROLLOVER CURB (REFER TO DETAIL SHEET C7.01) ROLLOVER CURB TO GO AROUND ENTIRE GRAVEL AREA.
10. PROPOSED STANDARD 6–INCH CURB (REFER TO DETAIL SHEET C7.01) ALL AREAS OUTSIDE OF THE GRAVEL AREA SHALL HAVE 6–INCH STANDARD CURB.
11. PROPOSED SITE LIGHTING. REFER TO ARCHITECTURAL & ELECTRICAL DRAWINGS
12. PROPOSED NATURAL GRASS SOCCER FIELD. GRASS SHALL BE BERMUDA TIFFWAY 419 WITH ROOT ZONE BASE.

    ALL SOCCER LINEWORK IS SHOWN FOR REFERENCE ONLY. TOMBALL I.S.D. WILL PAINT THE FIELD STRIPING LAYOUT.

    REFER TO ARCHITECTURAL DRAWINGS FOR SOCCER GOALS, NETTING, & BENCH DETAILS.

    COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIELD NETTING ON THE SOUTH SIDE OF THE FIELD.
13. PROPOSED EARTHEN BERM @ 6–FEET IN HEIGHT. REFER TO GRADING SHEETS C2.01 & C2.02.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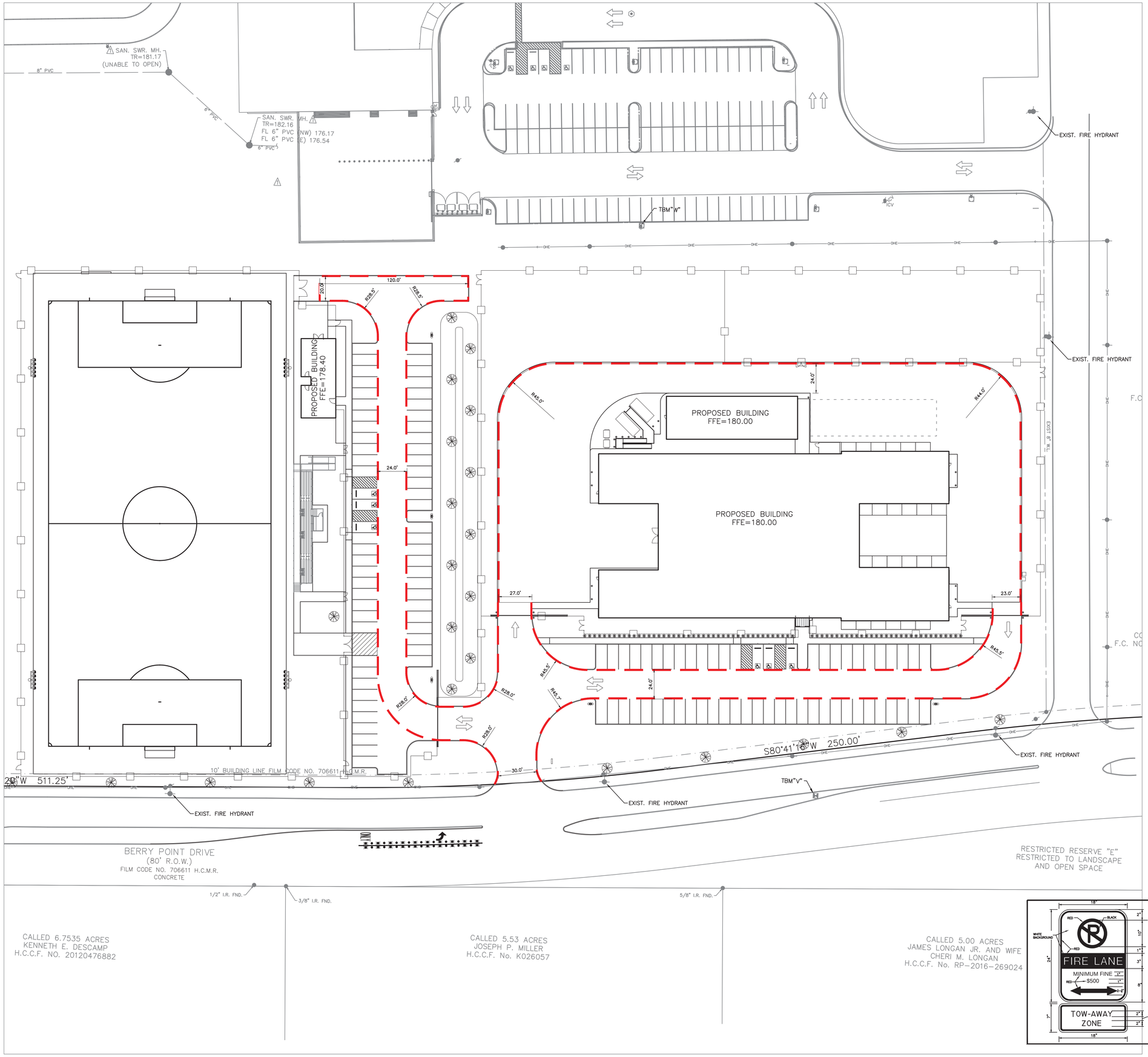
# C1.04

SITE LAYOUT
(SHEET 2 OF 2)




30 0 15 30
SCALE: 1"= 30'

## LEGEND:

| SYMBOL | DESCRIPTION |
|---|---|
| — — | ACCESS ROAD/FIRE LANE PAINT RED LANE STRIPE |
| ✦ | EXISTING FIRE HYDRANT |

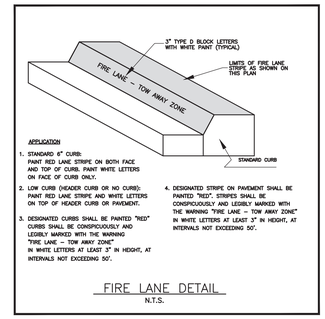
## FIRE LANE NOTES

CURBS LOCATED ON EITHER SIDE OF A FIRE LANE SHALL BE PAINTED RED OR A RED STRIPE SHALL BE PLACED ALONG THE PAVEMENT WHERE THERE IS NO CURB. WHERE A FIRE LANE PASSES BETWEEN HEAD IN PARKING SPACES, THE RED STRIPE SHOULD BE PLACED ALONG THE REAR OF THESE SPACES CLEARLY DEFINING THE FIRE LANE. PAINTED CURBS AND FIRE LANE STRIPES SHALL ALSO BE CONSPICUOUSLY AND LEGIBLY MARKED WITH THE WARNING "FIRE LANE – TOW AWAY ZONE" IN WHITE LETTERS AT LEAST THREE (3) INCHES IN HEIGHT, AT INTERVALS NOT EXCEEDING (50) FEET. WHERE FIRE LANES ARE NOT CLEARLY DEFINED BY CURB/PAVEMENT STRIPING, FIRE LANE SIGNS ARE REQUIRED. FIRE LANE SIGNS SHOULD BE PLACED EVERY (100) FEET MAXIMUM, ALTERNATING PLACEMENT OF SIGNS ON EACH SIDE OF FIRE ACCESS LANE.

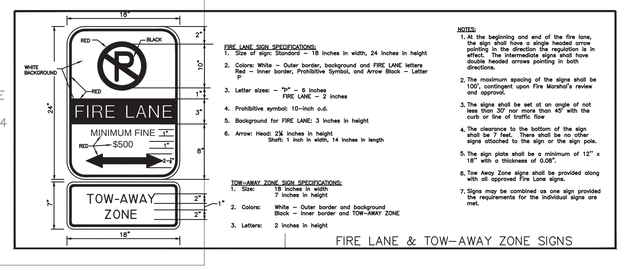
ANY COLOR OTHER THAN RED MAY BE USED IN "NO PARKING" AREAS THAT ARE NOT APPROVED FIRE LANES. RED COLORED CURBS; PAVEMENT STRIPING OR WHEEL STOPS SHALL BE USED ONLY TO DESIGNATE APPROVED FIRE LANES. THE PLANS WILL BE APPROVED WITH THE CIVIL SITE-PLAN REVIEW BUT MAY BE REVISED AT FIRE CODE REVIEW, BY THE BUILDING OFFICIAL.

CONTRACTOR TO PLACE FIRE LANE SIGN AT A MAXIMUM INTERVAL OF 100' ALONG PROPOSED FIRE LANE. CONTRACTOR TO COORDINATE WITH LOCAL FIRE MARSHAL/FIRE INSPECTOR FOR FINAL LOCATION OF PROPOSED SIGNAGE.

ALL FIRE LANE SHOWN SHALL BE 7" REINFORCED CONCRETE PAVEMENT
REFER TO SHEET C1.02.




FIRE LANE DETAIL
N.T.S.




FIRE LANE SIGN SPECIFICATIONS:
1. Size of sign: Standard – 18 inches in width, 24 inches in height
2. Colors: White – Outer border, background and FIRE LANE letters
Red – Inner border, Prohibitive Symbol, and Arrow Block – Letter "R"
3. Letter sizes: – "R" – 6 inches
FIRE LANE – 2 inches
4. Prohibitive symbol: 10-inch o.d.
5. Background for FIRE LANE: 3 inches in height
6. Arrow: Head: 2¼ inches in height
Shaft: 1 inch in width, 14 inches in length

TOW-AWAY ZONE SIGN SPECIFICATIONS:
1. Size: 18 inches in width
7 inches in height
2. Colors: White – Outer border and background
Black – Inner border and TOW-AWAY ZONE
3. Letters: 2 inches in height

NOTES:
1. At the beginning and end of the fire lane, the sign shall have a single headed arrow, pointing in the direction the regulation is in effect. The intermediate signs shall have double headed arrows pointing in both directions.
2. The maximum spacing of the signs shall be 100', contingent upon Fire Marshal's review and approval.
3. The signs shall be set at an angle of not less than 30° nor more than 45° with the curb or line of traffic flow
4. The clearance to the bottom of the sign shall be 7 feet. There shall be no other signs attached to the sign or the sign pole.
5. The sign plate shall be a minimum of 12" x 18" with a thickness of 0.08".
6. Tow Away Zone signs shall be provided along with all approved Fire Lane signs.
7. Signs may be combined as one sign provided the requirements for the individual signs are met.

FIRE LANE & TOW-AWAY ZONE SIGNS

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128933
LICENSED
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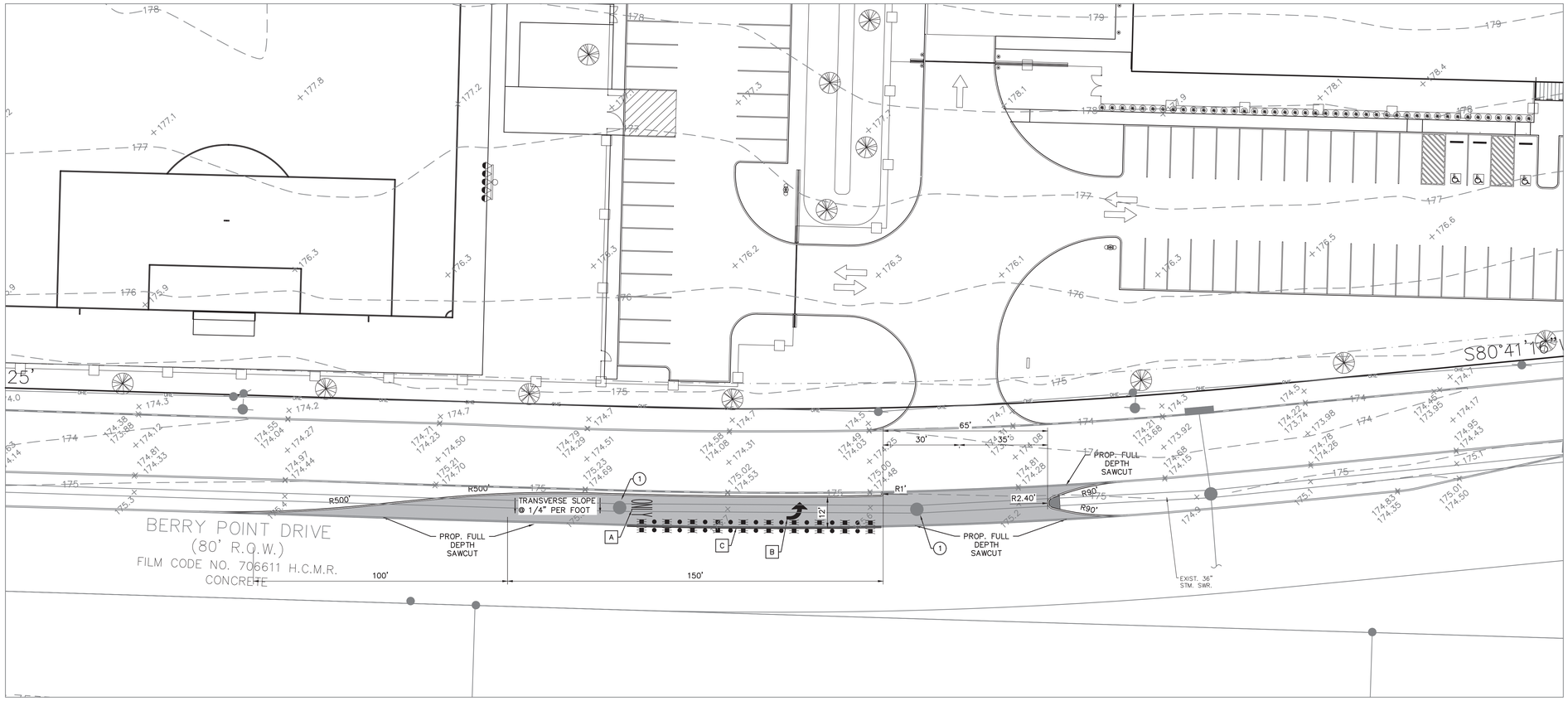
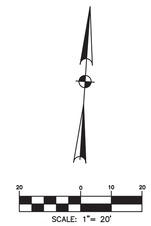
C1.05

FIRE LANE LAYOUT




LEGEND

PROPOSED 8" HIGH EARLY STRENGTH CONCRETE PAVEMENT W/ 8" CEMENT STABILIZED SAND AND 6" CONCRETE CURB

PROP. 6" BLACK CONC.

PAVEMENT MARKING LEGEND:

A WHITE (ONLY) THERMOPLASTIC PAVEMENT MARKING

B WHITE (ARROW) THERMOPLASTIC PAVEMENT MARKING

C 8" WHITE (SOLID) THERMOPLASTIC PAVEMENT MARKING W/ TWO ROWS OF ALTERNATING NON-REFLECTORIZED WHITE RAISED BUTTONS AND 4" SQ. 2-WAY REFLECTORIZED RAISED PAVEMENT MARKERS (TYPE II C-R)

KEYED NOTES:

1 CONTRACTOR SHALL LOWER RIM ELEVATION OF EXISTING STORM SEWER MANHOLES TO MATCH FINISHED GRADE ELEVATION OF NEW CONCRETE PAVEMENT.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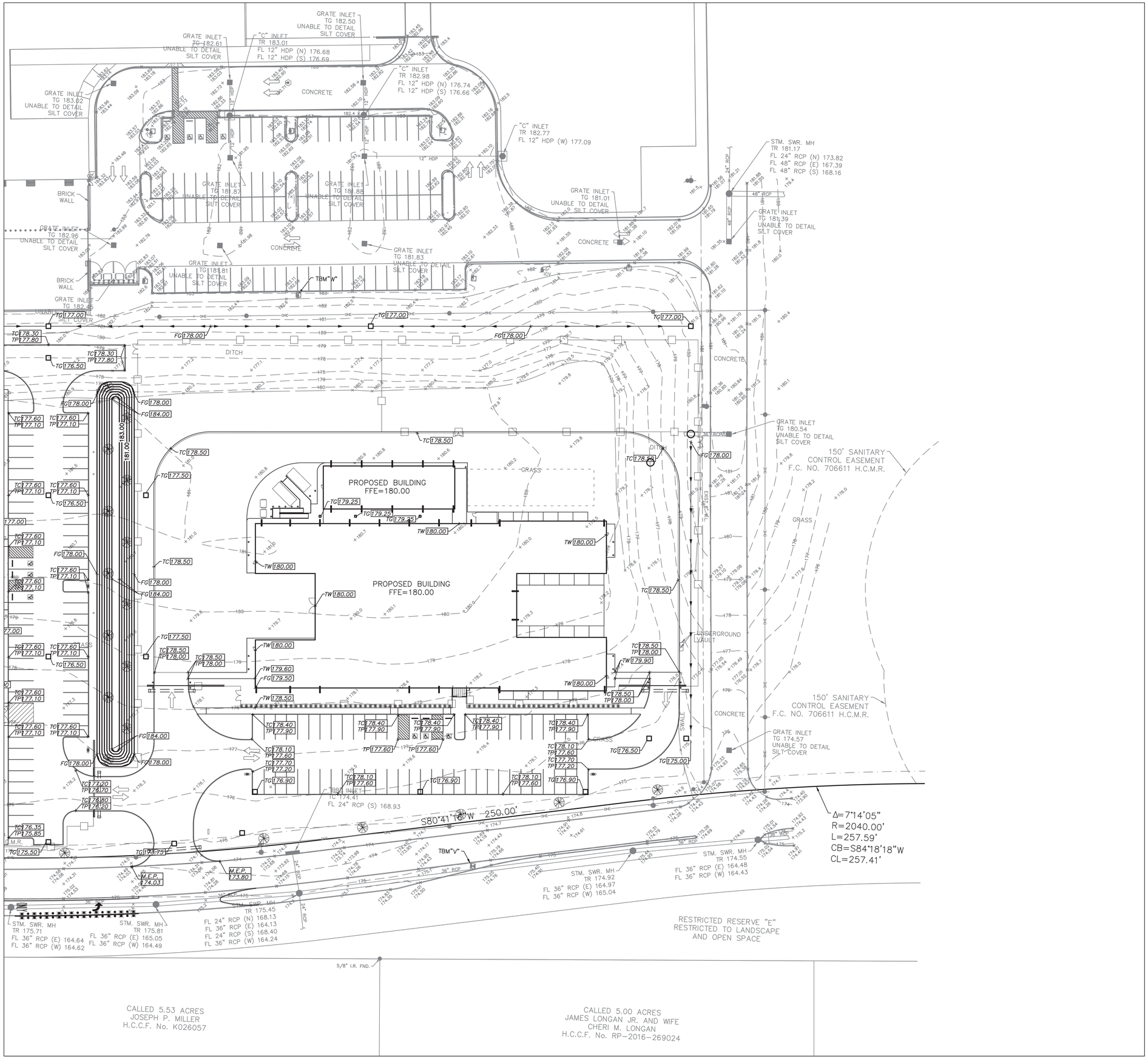
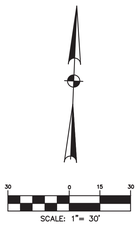
# C1.06

LEFT TURN LANE




LEGEND:

- PROPOSED GRATE/CURB INLET
- PROPOSED STORM SEWER MANHOLE WITH GRATE TOP
- EXISTING INLET
- TC 300.00 — PROPOSED TOP OF CURB ELEV.
- TP 300.00 — PROPOSED TOP OF PVMT ELEV.
- TW 300.00 — PROPOSED TOP OF WALK ELEV.
- FL 300.00 — PROPOSED FLOWLINE ELEV.
- FG 300.00 — PROPOSED FINISHED GRADE ELEV.
- TG 300.00 — PROPOSED TOP OF GRATE ELEV.
- 300.00 — PROPOSED CONTOUR
- M.E.C. — MATCH EXIST. CURB & GUTTER
- M.E.P. — MATCH EXIST. PAVEMENT
- M.E.W. — MATCH EXIST. WALK
- DIRECTION OF FLOW
- PROPOSED GRADE BREAK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STATE OF TEXAS
BRIAN W. KEELS
128934
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

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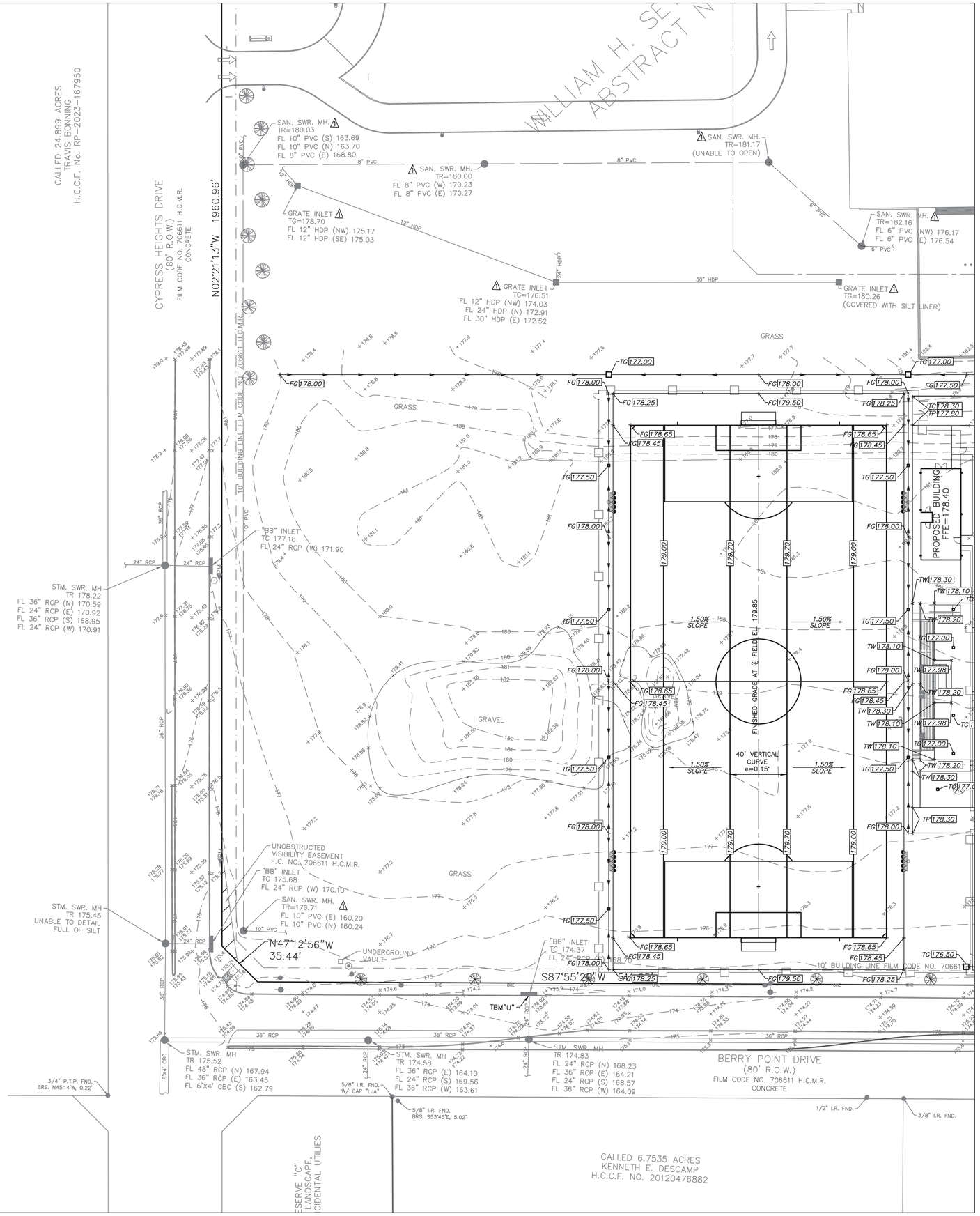
# C2.01

GRADING LAYOUT
(SHEET 1 OF 2)




SCALE: 1" = 30'

LEGEND:

- PROPOSED GRATE/CURB INLET
- PROPOSED STORM SEWER MANHOLE WITH GRATE TOP
- EXISTING INLET
- TC 300.00 — PROPOSED TOP OF CURB ELEV.
- TP 300.00 — PROPOSED TOP OF PVMT ELEV.
- TW 300.00 — PROPOSED TOP OF WALK ELEV.
- FL 300.00 — PROPOSED FLOWLINE ELEV.
- FG 300.00 — PROPOSED FINISHED GRADE ELEV.
- TG 300.00 — PROPOSED TOP OF GRATE ELEV.
- 300.00 — PROPOSED CONTOUR
- M.E.C. — MATCH EXIST. CURB & GUTTER
- M.E.P. — MATCH EXIST. PAVEMENT
- M.E.W. — MATCH EXIST. WALK
- DIRECTION OF FLOW
- PROPOSED GRADE BREAK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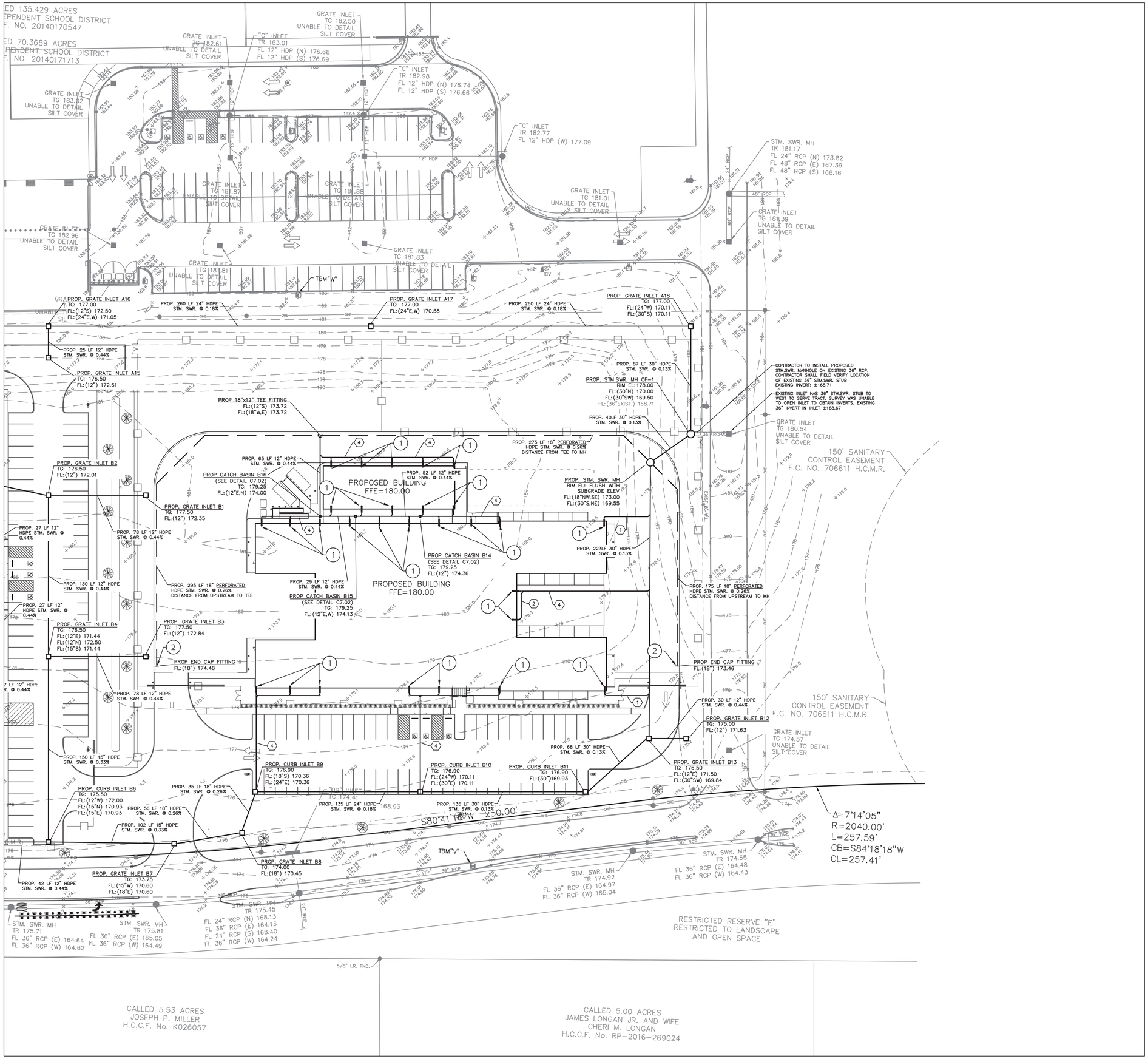
C2.02

GRADING LAYOUT
(SHEET 2 OF 2)




30 0 15 30

SCALE: 1"= 30'

LEGEND:

| | |
|---|---|
| ○ | PROPOSED MANHOLE |
| ◎ | PROPOSED MANHOLE W/GRATE TOP |
| □ | PROPOSED GRATE/CURB INLET |
| ■ | EXISTING INLET |
| FL | FLOW LINE |
| C.O. | PROPOSED CLEANOUT |
| ⟨1⟩ | PROP. 6" STM. SWR. @ 1.00% MIN. |
| ⟨2⟩ | PROP. 8" STM. SWR. @ 1.00% MIN. |
| ⟨3⟩ | PROP. 10" STM. SWR. @ 1.00% MIN. |
| ⟨4⟩ | PROP. 12" STM. SWR. @ 1.00% MIN. |

KEYED NOTES TO SHEET:

1. PROPOSED 6" STORM DRAIN LINE FL: 176.00 (-4.00' BFF) REFER TO MEP FOR CONTINUATION TO BUILDING
2. INSTALL END CAP ON SUBDRAIN PIPE PER ADS DETAIL ON SHEET F11.02 OR APPROVED EQUAL.

STORM WATER DETENTION PROVIDED FOR ENTIRE TRACT BY SEPARATE PROJECT. REFERENCE HARRIS COUNTY PROJECT #2207070042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C3.01

STORM SEWER LAYOUT (SHEET 1 OF 2)

CALLED 24.899 ACRES
TRAVIS BONNING
H.C.C.F. No. RP-2023-167950

CYPRESS HEIGHTS DRIVE
(80' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

N02°21'13"W 1960.96'

TO BUILDING LINE FILM CODE NO. 706611 H.C.M.R.

CALL
TOMBALL IND
H.C.C.

CALL
TOMBALL INDE
H.C.C.

SAN. SWR. MH.
TR=180.03
FL 10" PVC (S) 163.69
FL 10" PVC (N) 163.70
FL 8" PVC (E) 168.80

SAN. SWR. MH.
TR=180.00
FL 8" PVC (W) 170.23
FL 8" PVC (E) 170.27

SAN. SWR. MH.
TR=181.17
(UNABLE TO OPEN)

SAN. SWR. MH.
TR=182.16
FL 6" PVC (NW) 176.17
FL 6" PVC (E) 176.54

GRATE INLET
TG=178.70
FL 12" HDP (NW) 175.17
FL 12" HDP (SE) 175.03

GRATE INLET
TG=176.51
FL 12" HDP (NW) 174.03
FL 24" HDP (N) 172.91
FL 30" HDP (E) 172.52

GRATE INLET
TG=180.26
(COVERED WITH SILT LINER)

PROP. GRATE INLET A5
TG: 177.00
FL:(15"S) 171.74
FL:(18"E) 171.74

PROP. 210 LF 18" HDPE
STM. SWR. @ 0.26%

PROP. GRATE INLET A14
TG: 177.00
FL:(15"S) 171.20
FL:(18"W) 171.20
FL:(24"E) 171.20

PROP. 83 LF 24" HDPE
STM. SWR. @ 0.18%

PROP. 65 LF 15" HDPE
STM. SWR. @ 0.33%

PROP. 65 LF 15" HDPE
STM. SWR. @ 0.33%

PROP CATCH BASIN A4
(SEE DETAIL C7.02)
TG: 177.50
FL:(15"N,S) 171.97

PROP. 102 LF 15" HDPE
STM. SWR. @ 0.33%

PROP CATCH BASIN A13
(SEE DETAIL C7.02)
TG: 177.50
FL:(12"S) 171.41
FL:(15"N) 171.41

PROPOSED BUILDING
FFE=178.40

PROP. 102 LF 12" HDPE
STM. SWR. @ 0.44%

PROP CATCH BASIN A11
(SEE DETAIL C7.02)
TG: 177.00
FL:(12") 173.14

PROP. 32 LF 12" HDPE
STM. SWR. @ 0.44%

PROP CATCH BASIN A12
(SEE DETAIL C7.02)
TG: 177.50
FL:(12"N,S) 171.86
FL:(12"E) 173.00

PROP CATCH BASIN A3
(SEE DETAIL C7.02)
TG: 177.50
FL:(12"S) 172.31
FL:(15"N) 172.31

PROP CATCH BASIN A10
(SEE DETAIL C7.02)
TG: 177.00
FL:(12") 173.26

PROP. 107 LF 12" HDPE
STM. SWR. @ 0.44%

PROP. 105 LF 12" HDPE
STM. SWR. @ 0.44%

PROP CATCH BASIN A7
(SEE DETAIL C7.02)
TG: 177.00
FL:(12") 173.12

PROP CATCH BASIN A8
(SEE DETAIL C7.02)
TG: 177.00
FL:(12"N,SW) 173.00
FL:(12"W) 172.47

PROP CATCH BASIN A9
(SEE DETAIL C7.02)
TG: 177.50
FL:(12") 172.33

PROP. 2
STM. SW

PROP. 32 LF 12" HDPE
STM. SWR. @ 0.44%

PROP CATCH BASIN A2
(SEE DETAIL C7.02)
TG: 177.50
FL:(12"N,S) 172.78

PROP. 107 LF 12" HDPE
STM. SWR. @ 0.44%

PROP CATCH BASIN A6
(SEE DETAIL C7.02)
TG: 177.00
FL:(12") 173.12

UNOBSTRUCTED
VISIBILITY EASEMENT
F.C. NO. 706611 H.C.M.R.

"BB" INLET
TC 177.18
FL 24" RCP (W) 171.90

"BB" INLET
TC 175.68
FL 24" RCP (W) 170.10

SAN. SWR. MH.
TR=176.71
FL 10" PVC (E) 160.20
FL 10" PVC (N) 160.24

STM. SWR. MH
TR 178.22
FL 36" RCP (N) 170.59
FL 24" RCP (E) 170.92
FL 36" RCP (S) 168.95
FL 24" RCP (W) 170.91

STM. SWR. MH
TR 175.45
UNABLE TO DETAIL
FULL OF SILT

N47°12'56"W
35.44'

PROP CATCH BASIN A1
(SEE DETAIL C7.02)
TG: 177.50
FL:(12"N) 173.25

FL 24" RCP (S) 168.70

S87°55'20"W 511.25'

10' BUILDING LINE FILM CODE NO. 706611

PROP. GRATE INLET B5
TG: 176.00
FL:(12") 172.51

TBM"U"

STM. SWR. MH
TR 175.52
FL 48" RCP (N) 167.94
FL 36" RCP (E) 163.45
FL 6'X4' CBC (S) 162.79

STM. SWR. MH
TR 174.58
FL 36" RCP (E) 164.10
FL 24" RCP (S) 169.56
FL 36" RCP (W) 163.61

STM. SWR. MH
TR 174.83
FL 24" RCP (N) 168.23
FL 36" RCP (E) 164.21
FL 24" RCP (S) 168.57
FL 36" RCP (W) 164.09

BERRY POINT DRIVE
(80' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

3/4" P.T.P. FND.
BRS. N45°14'W, 0.22'

5/8" I.R. FND.
W/ CAP "LJA"

5/8" I.R. FND.
BRS. S53°45'E, 5.02'

1/2" I.R. FND.

3/8" I.R. FND.

RESERVE "C"
LANDSCAPE,
INCIDENTAL UTILIES

CALLED 6.7535 ACRES
KENNETH E. DESCAMP
H.C.C.F. NO. 20120476882

STORM WATER DETENTION PROVIDED FOR ENTIRE TRACT BY SEPARATE PROJECT. REFERENCE HARRIS COUNTY PROJECT #2207070042

30 0 15 30
SCALE: 1"= 30'

LEGEND:

- PROPOSED MANHOLE
- PROPOSED MANHOLE W/GRATE TOP
- PROPOSED GRATE/CURB INLET
- EXISTING INLET
- FL FLOW LINE
- C.O. PROPOSED CLEANOUT
- (1) PROP. 6" STM. SWR. @ 1.00% MIN.
- (2) PROP. 8" STM. SWR. @ 1.00% MIN.
- (3) PROP. 10" STM. SWR. @ 1.00% MIN.
- (4) PROP. 12" STM. SWR. @ 1.00% MIN.


CONSULTANTS

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Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

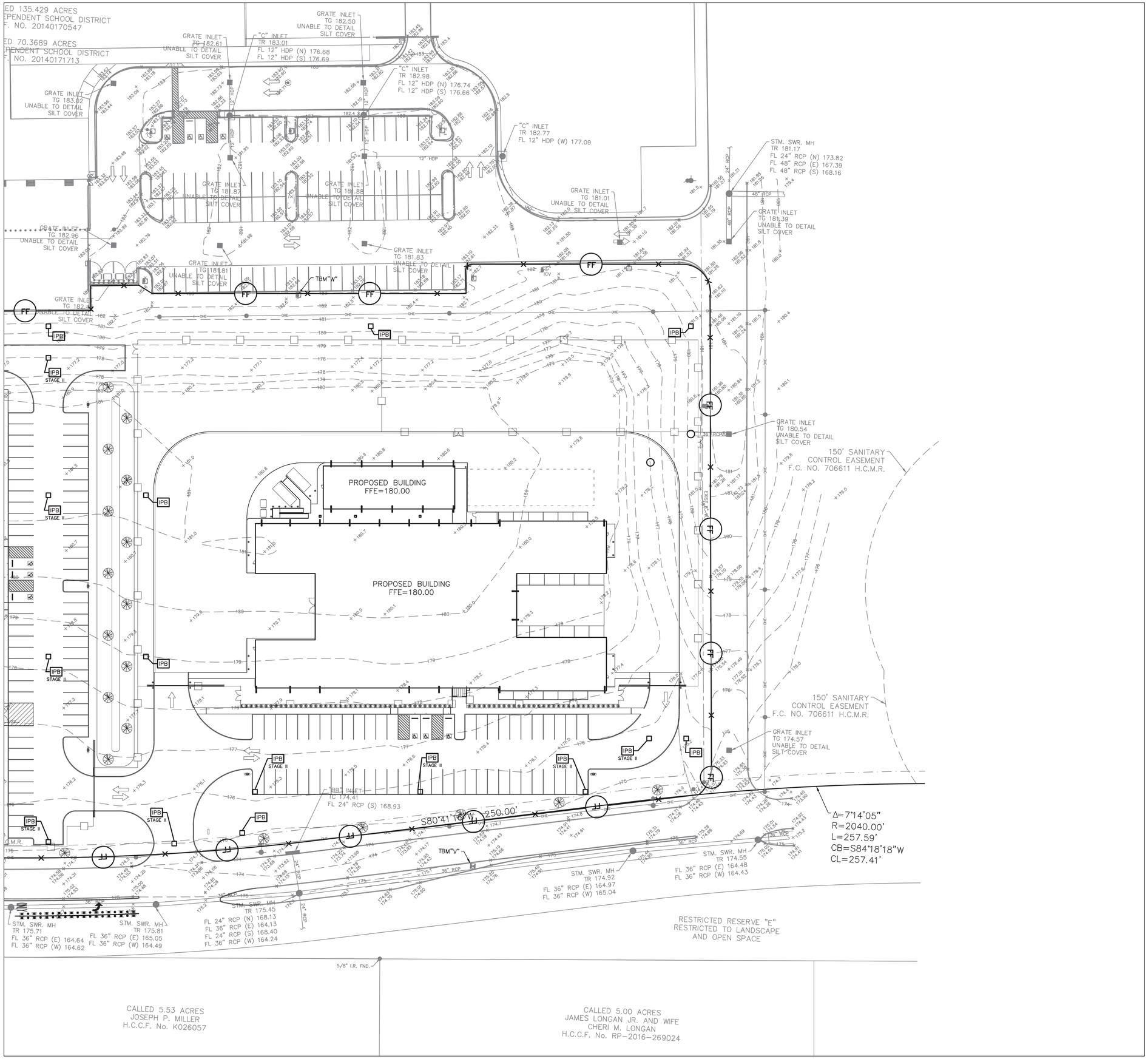

STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

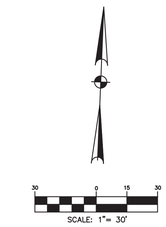
| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C3.02

STORM SEWER LAYOUT
(SHEET 2 OF 2)




## LEGEND:

- PROPOSED INLET
- FF — PROPOSED FILTER FABRIC FENCE (SILT FENCE)
- SBF — PROPOSED STRAW BALE FENCE
- SC — STABILIZED CONSTRUCTION ACCESS
- IPB — INLET PROTECTION BARRIER
- IPB STAGE II — INLET PROTECTION BARRIER (CURB INLET/INLET IN PAVEMENT)
- CONCRETE WASHOUT PIT

CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION, MAINTENANCE, MODIFICATION AND INSPECTION OF STORM WATER POLLUTION PREVENTION DEVICES AND STRUCTURES TO ENSURE NO SILT OR CONTAMINATED WATER LEAVES THE PROJECT SITE.

## SWPPP CONSTRUCTION NOTES

1 CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2 DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA

3 CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.

4 CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5 CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN(14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

- DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES.
- LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6 CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.


CONSULTANTS

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Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
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STRUCTURAL
CJG Engineers
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Houston, TX 77072
Tel: 713.780.3345

MEP
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Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

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CYPRESS, TX, 77433


ARCADIS

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tel 281.286.6605, fax 713.977.4620

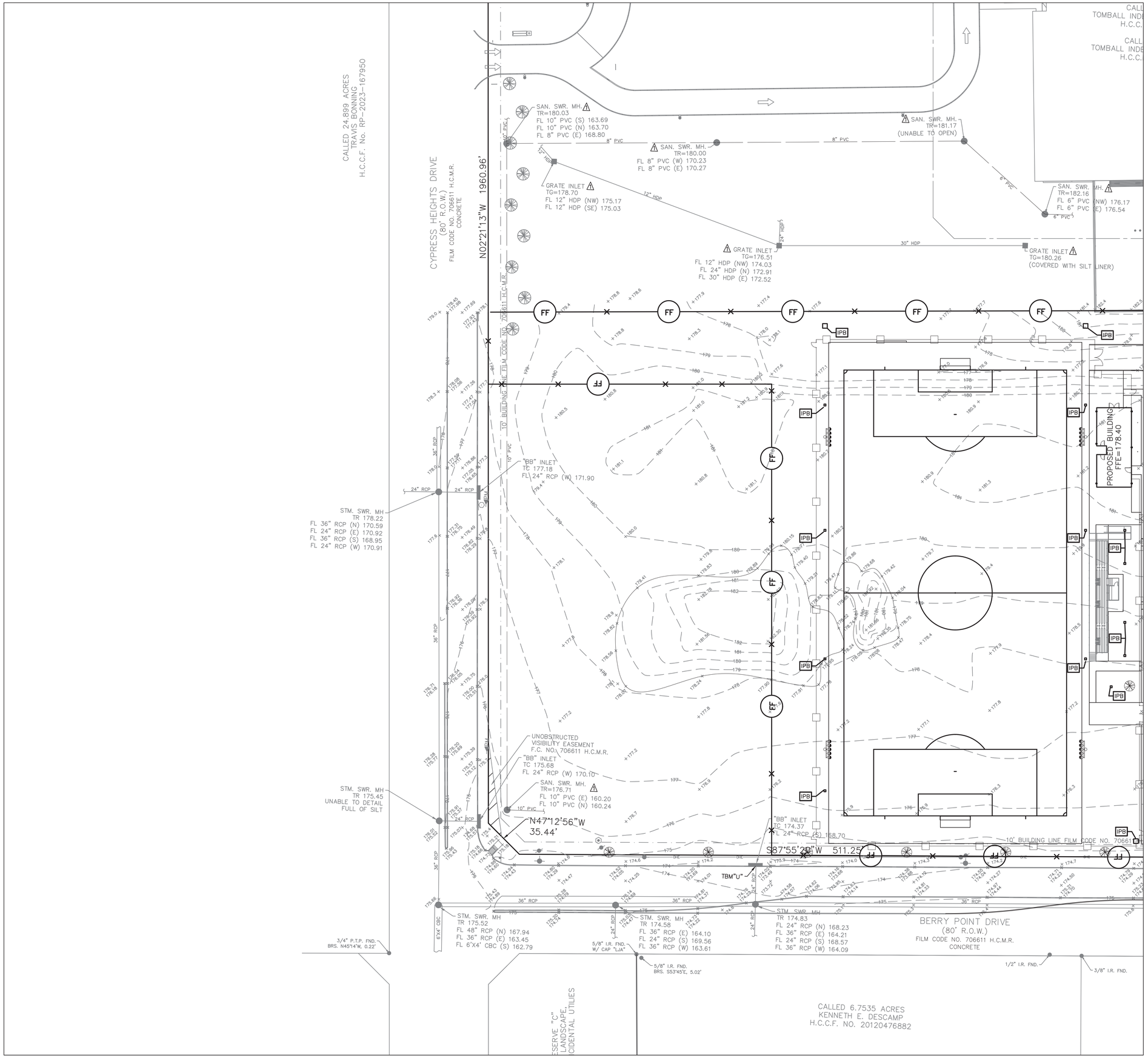

STATE OF TEXAS
BRIAN W. KEELS
128934
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# C3.03

STORM WATER POLLUTION PREVENTION PLAN (SHEET 1 OF 2)




SCALE: 1" = 30'

## LEGEND:

- PROPOSED INLET
- FF — PROPOSED FILTER FABRIC FENCE (SILT FENCE)
- SBF — PROPOSED STRAW BALE FENCE
- SC — STABILIZED CONSTRUCTION ACCESS
- IPB — INLET PROTECTION BARRIER
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STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER

07/28/2025

| | |
|---|---|
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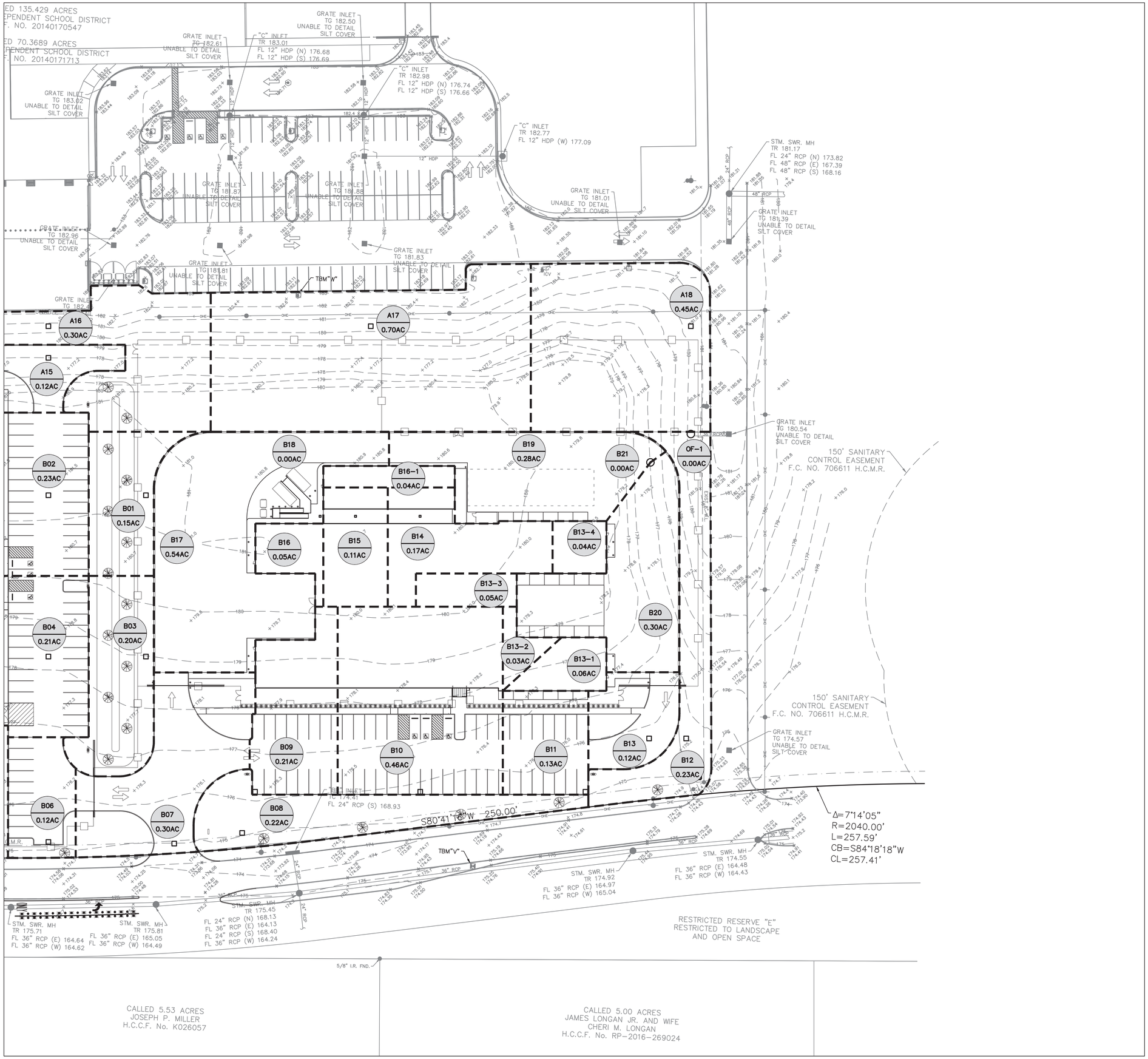
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# C3.04

STORM WATER POLLUTION PREVENTION PLAN (SHEET 2 OF 2)




30 0 15 30
SCALE: 1" = 30'

LEGEND:

XX / 0.00 — AREA (No.) / AREA (AC)

SYSTEM AREA


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
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STATE OF TEXAS
BRIAN W. REED
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07/28/2025

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| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# C3.05

DRAINAGE
AREA MAP
(SHEET 1 OF 2)

CALLED 24.899 ACRES
TRAVIS BONNING
H.C.C.F. No. RP-2023-167950

CYPRESS HEIGHTS DRIVE
(80' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

N02°21'13"W 1960.96'

CALL
TOMBALL IND
H.C.C.

CALL
TOMBALL INDE
H.C.C.

SAN. SWR. MH.
TR=180.03
FL 10" PVC (S) 163.69
FL 10" PVC (N) 163.70
FL 8" PVC (E) 168.80

SAN. SWR. MH.
TR=180.00
FL 8" PVC (W) 170.23
FL 8" PVC (E) 170.27

SAN. SWR. MH.
TR=181.17
(UNABLE TO OPEN)

SAN. SWR. MH.
TR=182.16
FL 6" PVC (NW) 176.17
FL 6" PVC (E) 176.54

GRATE INLET
TG=178.70
FL 12" HDP (NW) 175.17
FL 12" HDP (SE) 175.03

GRATE INLET
TG=176.51
FL 12" HDP (NW) 174.03
FL 24" HDP (N) 172.91
FL 30" HDP (E) 172.52

GRATE INLET
TG=180.26
(COVERED WITH SILT LINER)

10' BUILDING LINE FILM CODE NO. 706611 H.C.M.R.

"BB" INLET
TC 177.18
FL 24" RCP (W) 171.90

STM. SWR. MH
TR 178.22
FL 36" RCP (N) 170.59
FL 24" RCP (E) 170.92
FL 36" RCP (S) 168.95
FL 24" RCP (W) 170.91

UNOBSTRUCTED
VISIBILITY EASEMENT
F.C. NO. 706611 H.C.M.R.

"BB" INLET
TC 175.68
FL 24" RCP (W) 170.10

SAN. SWR. MH.
TR=176.71
FL 10" PVC (E) 160.20
FL 10" PVC (N) 160.24

STM. SWR. MH
TR 175.45
UNABLE TO DETAIL
FULL OF SILT

N47°12'56"W
35.44'

"BB" INLET
TC 174.37
FL 24" RCP (S) 158.70

S87°55'20"W 511.25'

TBM"U"

STM. SWR. MH
TR 175.52
FL 48" RCP (N) 167.94
FL 36" RCP (E) 163.45
FL 6'X4' CBC (S) 162.79

STM. SWR. MH
TR 174.58
FL 36" RCP (E) 164.10
FL 24" RCP (S) 169.56
FL 36" RCP (W) 163.61

STM. SWR. MH
TR 174.83
FL 24" RCP (N) 168.23
FL 36" RCP (E) 164.21
FL 24" RCP (S) 168.57
FL 36" RCP (W) 164.09

BERRY POINT DRIVE
(80' R.O.W.)
FILM CODE NO. 706611 H.C.M.R.
CONCRETE

3/4" P.T.P. FND.
BRS. N45°14'W, 0.22'

5/8" I.R. FND.
W/ CAP "LJA"

5/8" I.R. FND.
BRS. S53°45'E, 5.02'

1/2" I.R. FND.

3/8" I.R. FND.

RESERVE "C"
LANDSCAPE,
RESIDENTAL UTILIES

CALLED 6.7535 ACRES
KENNETH E. DESCAMP
H.C.C.F. NO. 20120476882

A05 0.39AC
A04 0.34AC
A03 0.34AC
A02 0.36AC
A01 0.36AC
A14 0.08AC
A13 0.31AC
A11 0.06AC
A12 0.25AC
A10 0.03AC
A07 0.04AC
A09 0.26AC
A08 0.02AC
A06 0.05AC
B05 0.38AC

LEGEND:

XX / 0.00 — AREA (No.) / AREA (AC)

SYSTEM AREA

30 0 15 30
SCALE: 1"= 30'

CONSULTANTS

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STATE OF TEXAS
BRIAN W. REED
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LICENSED
PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
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| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C3.06

DRAINAGE
AREA MAP
(SHEET 2 OF 2)

# 2-YEAR STORM SEWER CALCULATIONS

**Talon Engineering, LLC** — STORM SEWER CALCULATION SHEET

**Project Information:**
Project: Tomball ISD West Ag Facility
Job No.: 272-0001
System: System "A"
Designed: BWR
Checked: BWR

HGL Tie-In (ft): 172.50
Frequency 2
b = 48.35
d = 9.07
e = 0.7244

| Line | Manholes/Inlets | | Local Area | Total Area | C Factor | Tc | I | Local Q | Add. Q | Total Q | Reach | Pipe Size | Line Type | Slope | n | Design Q | Design V | Flowline Elevation | | Actual V | HGL | | TG | TG-HGL | Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | from | to | acre | | | minutes | in/hr | cfs | cfs | cfs | ft | in | | % | | cfs | fps | upstrm | dwnstrm | fps | upstrm | dwnstrm | elev | ft | ft |
| A1 | 1 | 2 | 0.36 | 0.36 | 0.35 | 23.35 | 3.89 | 0.49 | 0.00 | 0.49 | 107 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.25 | 172.78 | 0.62 | 174.26 | 174.25 | 177.50 | 3.24 | 3.25 |
| A2 | 2 | 3 | 0.36 | 0.72 | 0.35 | 23.90 | 3.84 | 0.48 | 0.00 | 0.97 | 107 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.78 | 172.31 | 1.24 | 173.84 | 173.78 | 177.50 | 3.66 | 3.72 |
| A3 | 3 | 4 | 0.34 | 1.06 | 0.35 | 24.42 | 3.80 | 0.45 | 0.00 | 1.43 | 102 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 172.31 | 171.97 | 1.16 | 173.60 | 173.56 | 177.50 | 3.90 | 3.94 |
| A4 | 4 | 5 | 0.34 | 1.40 | 0.35 | 24.75 | 3.77 | 0.45 | 0.00 | 1.88 | 65 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.97 | 171.74 | 1.53 | 173.38 | 173.34 | 177.50 | 4.12 | 4.28 |
| A5 | 5 | 14 | 0.39 | 1.79 | 0.35 | 25.81 | 3.69 | 0.50 | 0.00 | 2.38 | 210 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 171.74 | 171.20 | 1.35 | 173.34 | 173.24 | 177.00 | 3.66 | 3.76 |
| A6 | 6 | 8 | 0.05 | 0.05 | 0.80 | 20.90 | 4.12 | 0.16 | 0.00 | 0.16 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.12 | 173.00 | 0.21 | 174.12 | 174.12 | 177.00 | 2.88 | 2.88 |
| A7 | 7 | 8 | 0.04 | 0.04 | 0.80 | 20.67 | 4.14 | 0.13 | 0.00 | 0.13 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.12 | 173.00 | 0.17 | 174.12 | 174.12 | 177.00 | 2.88 | 2.88 |
| A8 | 8 | 9 | 0.02 | 0.11 | 0.80 | 20.90 | 4.12 | 0.07 | 0.00 | 0.36 | 32 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.47 | 172.33 | 0.46 | 173.48 | 173.47 | 177.00 | 3.52 | 3.53 |
| A9 | 9 | 12 | 0.26 | 0.37 | 0.35 | 21.44 | 4.07 | 0.37 | 0.00 | 0.73 | 105 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.33 | 171.86 | 0.93 | 173.44 | 173.40 | 177.50 | 4.06 | 4.17 |
| A10 | 10 | 11 | 0.03 | 0.03 | 0.80 | 20.39 | 4.17 | 0.10 | 0.00 | 0.10 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.26 | 173.14 | 0.13 | 174.26 | 174.26 | 177.00 | 2.74 | 2.74 |
| A11 | 11 | 12 | 0.06 | 0.09 | 0.80 | 20.56 | 4.15 | 0.20 | 0.00 | 0.30 | 32 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.14 | 173.00 | 0.38 | 174.14 | 174.14 | 177.00 | 2.86 | 2.86 |
| A12 | 12 | 13 | 0.25 | 0.71 | 0.35 | 21.44 | 4.07 | 0.36 | 0.00 | 1.39 | 102 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.86 | 171.41 | 1.77 | 173.40 | 173.27 | 177.50 | 4.10 | 4.64 |
| A13 | 13 | 14 | 0.31 | 1.02 | 0.35 | 21.77 | 4.03 | 0.44 | 0.00 | 1.83 | 65 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.41 | 171.20 | 1.49 | 173.27 | 173.22 | 177.50 | 4.23 | 4.84 |
| A14 | 14 | 15 | 0.08 | 2.89 | 0.35 | 25.81 | 3.69 | 0.10 | 0.00 | 4.31 | 83 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 171.20 | 171.05 | 1.37 | 173.22 | 173.20 | 177.00 | 3.78 | 3.80 |
| A15 | 15 | 16 | 0.12 | 0.12 | 0.80 | 21.88 | 4.02 | 0.39 | 0.00 | 0.39 | 25 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.61 | 172.50 | 0.49 | 173.61 | 173.61 | 176.50 | 2.89 | 2.89 |
| A16 | 16 | 17 | 0.30 | 3.31 | 0.35 | 25.81 | 3.69 | 0.39 | 0.00 | 5.08 | 260 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 171.05 | 170.58 | 1.62 | 173.16 | 173.05 | 177.00 | 3.84 | 3.95 |
| A17 | 17 | 18 | 0.70 | 4.01 | 0.35 | 27.12 | 3.59 | 0.88 | 0.00 | 5.96 | 260 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 170.58 | 170.11 | 1.90 | 172.73 | 172.58 | 177.00 | 4.27 | 4.42 |
| A18 | 18 | OF-1 | 0.45 | 4.46 | 0.35 | 27.56 | 3.56 | 0.56 | 0.00 | 6.52 | 87 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 170.11 | 170.00 | 1.33 | 172.52 | 172.50 | 177.00 | 4.48 | 4.39 |

**Talon Engineering, LLC** — STORM SEWER CALCULATION SHEET

**Project Information:**
Project: Tomball ISD West Ag Facility
Job No.: 272-0001
System: System "B"
Designed: BWR
Checked: BWR

HGL Tie-In (ft): 171.82
Frequency 2
b = 48.35
d = 9.07
e = 0.7244

| Line | Manholes/Inlets | | Local Area | Addt'l Area | Total Area | C Factor | Tc | I | Local Q | Add. Q | Total Q | Reach | Pipe Size | Line Type | Slope | n | Design Q | Design V | Flowline Elevation | | Actual V | HGL | | TG | TG-HGL | Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | from | to | acre | acre | | | minutes | in/hr | cfs | cfs | cfs | ft | in | | % | | cfs | fps | upstrm | dwnstrm | fps | upstrm | dwnstrm | elev | ft | ft |
| B1 | 1 | 2 | 0.15 | 0.00 | 0.15 | 0.35 | 22.16 | 4.00 | 0.21 | 0.00 | 0.21 | 78 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.35 | 172.01 | 0.27 | 173.35 | 173.35 | 177.50 | 4.15 | 4.15 |
| B2 | 2 | 4 | 0.23 | 0.00 | 0.38 | 0.80 | 22.82 | 3.94 | 0.72 | 0.00 | 0.93 | 130 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.01 | 171.44 | 1.19 | 173.12 | 173.04 | 176.50 | 3.38 | 3.49 |
| B3 | 3 | 4 | 0.20 | 0.00 | 0.20 | 0.35 | 22.53 | 3.96 | 0.28 | 0.00 | 0.28 | 78 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.78 | 171.44 | 0.35 | 173.05 | 173.04 | 177.50 | 4.45 | 4.72 |
| B4 | 4 | 6 | 0.21 | 0.00 | 0.79 | 0.80 | 23.29 | 3.90 | 0.65 | 0.00 | 1.87 | 150 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.44 | 170.93 | 1.52 | 173.04 | 172.94 | 176.50 | 3.46 | 3.81 |
| B5 | 5 | 6 | 0.38 | 0.00 | 0.38 | 0.35 | 23.43 | 3.88 | 0.52 | 0.00 | 0.52 | 42 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.12 | 170.93 | 0.66 | 172.94 | 172.94 | 176.00 | 3.06 | 3.88 |
| B6 | 6 | 7 | 0.12 | 0.00 | 1.29 | 0.80 | 23.43 | 3.88 | 0.37 | 0.00 | 2.76 | 102 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 170.93 | 170.60 | 2.25 | 172.94 | 172.78 | 175.50 | 2.56 | 3.32 |
| B7 | 7 | 8 | 0.30 | 0.00 | 1.59 | 0.80 | 23.72 | 3.86 | 0.93 | 0.00 | 3.68 | 56 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 170.60 | 170.45 | 2.08 | 172.78 | 172.72 | 173.75 | 0.97 | 1.65 |
| B8 | 8 | 9 | 0.22 | 0.00 | 1.81 | 0.35 | 23.89 | 3.84 | 0.30 | 0.00 | 3.98 | 35 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 170.45 | 170.36 | 2.25 | 172.72 | 172.68 | 174.00 | 1.28 | 2.05 |
| B9 | 9 | 10 | 0.21 | 0.00 | 2.02 | 0.80 | 24.57 | 3.79 | 0.64 | 0.00 | 4.61 | 135 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 170.36 | 170.11 | 1.47 | 172.68 | 172.63 | 176.90 | 4.22 | 4.54 |
| B10 | 10 | 11 | 0.46 | 0.00 | 2.48 | 0.80 | 25.26 | 3.73 | 1.37 | 0.00 | 5.99 | 135 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 170.11 | 169.93 | 1.22 | 172.63 | 172.61 | 176.90 | 4.27 | 4.29 |
| B11 | 11 | 13 | 0.13 | 0.00 | 2.61 | 0.80 | 25.61 | 3.71 | 0.39 | 0.00 | 6.37 | 68 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.93 | 169.84 | 1.30 | 172.44 | 172.43 | 176.90 | 4.46 | 4.47 |
| B12 | 12 | 13 | 0.23 | 0.00 | 0.23 | 0.35 | 22.72 | 3.95 | 0.32 | 0.00 | 0.32 | 30 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 169.97 | 169.84 | 0.40 | 172.41 | 172.41 | 175.00 | 2.59 | 4.03 |
| B13 | 13 | 21 | 0.12 | 0.18 | 3.14 | 0.80 | 25.61 | 3.71 | 0.36 | 0.53 | 7.58 | 223 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.84 | 169.55 | 1.54 | 172.41 | 172.34 | 176.50 | 4.09 | 4.16 |
| B14 | 14 | 15 | 0.17 | 0.00 | 0.17 | 0.80 | 22.32 | 3.98 | 0.54 | 0.00 | 0.54 | 52 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.36 | 174.13 | 0.69 | 175.59 | 175.58 | 179.25 | 3.66 | 3.89 |
| B15 | 15 | 16 | 0.11 | 0.00 | 0.28 | 0.80 | 22.47 | 3.97 | 0.35 | 0.00 | 0.89 | 29 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.13 | 174.00 | 1.13 | 175.58 | 175.56 | 179.25 | 3.67 | 4.12 |
| B16 | 16 | 18 | 0.05 | 0.04 | 0.37 | 0.80 | 22.80 | 3.94 | 0.16 | 0.13 | 1.17 | 65 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.00 | 173.72 | 1.50 | 175.56 | 175.50 | 179.25 | 3.69 | 4.25 |
| B17 | 17 | 18 | 0.54 | 0.00 | 0.54 | 0.80 | 23.97 | 3.84 | 1.66 | 0.00 | 1.66 | 295 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 174.48 | 173.72 | 0.94 | 176.04 | 175.98 | 178.50 | 2.46 | 2.52 |
| B18 | 18 | 21 | 0.00 | 0.28 | 1.19 | 0.80 | 23.97 | 3.84 | 0.00 | 0.86 | 3.69 | 275 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 173.72 | 173.00 | 2.09 | 175.50 | 175.22 | 178.50 | 3.00 | 3.29 |
| B20 | 20 | 21 | 0.30 | 0.00 | 0.30 | 0.80 | 23.09 | 3.91 | 0.94 | 0.00 | 0.94 | 175 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 173.46 | 173.00 | 0.53 | 174.97 | 174.96 | 178.50 | 3.53 | 3.54 |
| B21 | 21 | OF-1 | 0.00 | 0.00 | 4.63 | 0.80 | 25.61 | 3.71 | 0.00 | 0.00 | 12.21 | 40 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.55 | 169.50 | 2.49 | 171.85 | 171.82 | 177.00 | 5.15 | 4.95 |
| A+B | OF-1 | EXIST. INLET | | | | | | | | | 18.73 | 36 | 36 | RCP | 0.11 | 0.013 | 22.18 | 3.14 | 168.71 | 168.67 | 2.65 | 171.70 | 171.67 | 178.00 | 6.30 | 6.29 |

# 100-YEAR STORM SEWER CALCULATIONS

**Talon Engineering, LLC** — STORM SEWER CALCULATION SHEET

**Project Information:**
Project: Tomball ISD West Ag Facility
Job No.: 272-0001
System: System "A"
Designed: BWR
Checked: BWR

HGL Tie-In (ft): 172.50
Frequency 100
b = 60.66
d = 4.44
e = 0.5797

| Line | Manholes/Inlets | | Local Area | Total Area | C Factor | Tc | I | Local Q | Add. Q | Total Q | Reach | Pipe Size | Line Type | Slope | n | Design Q | Design V | Flowline Elevation | | Actual V | HGL | | TG | TG-HGL | Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | from | to | acre | | | minutes | in/hr | cfs | cfs | cfs | ft | in | | % | | cfs | fps | upstrm | dwnstrm | fps | upstrm | dwnstrm | elev | ft | ft |
| A1 | 1 | 2 | 0.36 | 0.36 | 0.35 | 23.35 | 8.83 | 1.11 | 0.00 | 1.11 | 107 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.25 | 172.78 | 1.42 | 175.46 | 175.37 | 177.50 | 2.04 | 3.25 |
| A2 | 2 | 3 | 0.36 | 0.72 | 0.35 | 23.90 | 8.73 | 1.10 | 0.00 | 2.21 | 107 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.78 | 172.31 | 2.82 | 175.37 | 175.02 | 177.50 | 2.13 | 3.72 |
| A3 | 3 | 4 | 0.34 | 1.06 | 0.35 | 24.42 | 8.64 | 1.03 | 0.00 | 3.24 | 102 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 172.31 | 171.97 | 2.64 | 175.02 | 174.80 | 177.50 | 2.48 | 3.94 |
| A4 | 4 | 5 | 0.34 | 1.40 | 0.35 | 24.75 | 8.58 | 1.02 | 0.00 | 4.26 | 65 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.97 | 171.74 | 3.47 | 174.80 | 174.56 | 177.50 | 2.70 | 4.28 |
| A5 | 5 | 14 | 0.39 | 1.79 | 0.35 | 25.81 | 8.40 | 1.15 | 0.00 | 5.41 | 210 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 171.74 | 171.20 | 3.06 | 174.56 | 174.09 | 177.00 | 2.44 | 3.76 |
| A6 | 6 | 8 | 0.05 | 0.05 | 0.80 | 20.90 | 9.31 | 0.37 | 0.00 | 0.37 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.12 | 173.00 | 0.47 | 175.20 | 175.19 | 177.00 | 1.80 | 2.88 |
| A7 | 7 | 8 | 0.04 | 0.04 | 0.80 | 20.67 | 9.36 | 0.30 | 0.00 | 0.30 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.12 | 173.00 | 0.38 | 175.20 | 175.19 | 177.00 | 1.80 | 2.88 |
| A8 | 8 | 9 | 0.02 | 0.11 | 0.80 | 20.90 | 9.31 | 0.15 | 0.00 | 0.82 | 32 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.47 | 172.33 | 1.05 | 175.19 | 175.18 | 177.00 | 1.81 | 3.53 |
| A9 | 9 | 12 | 0.26 | 0.37 | 0.35 | 21.44 | 9.20 | 0.84 | 0.00 | 1.66 | 105 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.33 | 171.86 | 2.11 | 175.18 | 174.99 | 177.50 | 2.32 | 4.17 |
| A10 | 10 | 11 | 0.03 | 0.03 | 0.80 | 20.39 | 9.42 | 0.23 | 0.00 | 0.23 | 27 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.26 | 173.14 | 0.29 | 175.00 | 175.00 | 177.00 | 2.00 | 2.74 |
| A11 | 11 | 12 | 0.06 | 0.09 | 0.80 | 20.56 | 9.39 | 0.45 | 0.00 | 0.68 | 32 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 173.14 | 173.00 | 0.86 | 175.00 | 174.99 | 177.00 | 2.00 | 2.86 |
| A12 | 12 | 13 | 0.25 | 0.71 | 0.35 | 21.44 | 9.20 | 0.81 | 0.00 | 3.14 | 102 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.86 | 171.41 | 4.00 | 174.99 | 174.32 | 177.50 | 2.51 | 4.64 |
| A13 | 13 | 14 | 0.31 | 1.02 | 0.35 | 21.77 | 9.13 | 0.99 | 0.00 | 4.13 | 65 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.41 | 171.20 | 3.37 | 174.32 | 174.09 | 177.50 | 3.18 | 4.84 |
| A14 | 14 | 15 | 0.08 | 2.89 | 0.35 | 25.81 | 8.40 | 0.24 | 0.00 | 9.78 | 83 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 171.20 | 171.05 | 3.11 | 174.09 | 173.96 | 177.00 | 2.91 | 3.80 |
| A15 | 15 | 16 | 0.12 | 0.12 | 0.80 | 21.88 | 9.11 | 0.87 | 0.00 | 0.87 | 25 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.61 | 172.50 | 1.11 | 173.97 | 173.96 | 176.50 | 2.53 | 2.89 |
| A16 | 16 | 17 | 0.30 | 3.31 | 0.35 | 25.81 | 8.40 | 0.88 | 0.00 | 11.53 | 260 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 171.05 | 170.58 | 3.67 | 173.96 | 173.39 | 177.00 | 3.04 | 3.95 |
| A17 | 17 | 18 | 0.70 | 4.01 | 0.35 | 27.12 | 8.20 | 2.01 | 0.00 | 13.54 | 260 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 170.58 | 170.11 | 4.31 | 173.39 | 172.60 | 177.00 | 3.61 | 4.42 |
| A18 | 18 | OF-1 | 0.45 | 4.46 | 0.35 | 27.56 | 8.14 | 1.28 | 0.00 | 14.82 | 87 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 170.11 | 170.00 | 3.02 | 172.60 | 172.50 | 177.00 | 4.40 | 4.39 |

**Talon Engineering, LLC** — STORM SEWER CALCULATION SHEET

**Project Information:**
Project: Tomball ISD West Ag Facility
Job No.: 272-0001
System: System "B"
Designed: BWR
Checked: BWR

HGL Tie-In (ft): 171.82
Frequency 100
b = 60.66
d = 4.44
e = 0.5797

| Line | Manholes/Inlets | | Local Area | Addt'l Area | Total Area | C Factor | Tc | I | Local Q | Add. Q | Total Q | Reach | Pipe Size | Line Type | Slope | n | Design Q | Design V | Flowline Elevation | | Actual V | HGL | | TG | TG-HGL | Cover |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | from | to | acre | acre | | | minutes | in/hr | cfs | cfs | cfs | ft | in | | % | | cfs | fps | upstrm | dwnstrm | fps | upstrm | dwnstrm | elev | ft | ft |
| B1 | 1 | 2 | 0.15 | 0.00 | 0.15 | 0.35 | 22.16 | 9.06 | 0.48 | 0.00 | 0.48 | 78 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.35 | 172.01 | 0.61 | 175.39 | 175.38 | 177.50 | 2.11 | 4.15 |
| B2 | 2 | 4 | 0.23 | 0.00 | 0.38 | 0.80 | 22.82 | 8.93 | 1.64 | 0.00 | 2.12 | 130 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 172.01 | 171.44 | 2.70 | 175.38 | 174.99 | 176.50 | 1.12 | 3.49 |
| B3 | 3 | 4 | 0.20 | 0.00 | 0.20 | 0.35 | 22.53 | 8.98 | 0.63 | 0.00 | 0.63 | 78 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.78 | 171.44 | 0.80 | 175.01 | 174.99 | 177.50 | 2.49 | 4.72 |
| B4 | 4 | 6 | 0.21 | 0.00 | 0.79 | 0.80 | 23.29 | 8.84 | 1.48 | 0.00 | 4.23 | 150 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 171.44 | 170.93 | 3.45 | 174.99 | 174.45 | 176.50 | 1.51 | 3.81 |
| B5 | 5 | 6 | 0.38 | 0.00 | 0.38 | 0.35 | 23.43 | 8.81 | 1.17 | 0.00 | 1.17 | 42 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 171.12 | 170.93 | 1.49 | 174.48 | 174.45 | 176.00 | 1.52 | 3.88 |
| B6 | 6 | 7 | 0.12 | 0.00 | 1.29 | 0.80 | 23.43 | 8.81 | 0.85 | 0.00 | 6.25 | 102 | 15 | HDPE | 0.33 | 0.012 | 4.03 | 3.28 | 170.93 | 170.60 | 5.09 | 174.45 | 173.64 | 175.50 | 1.05 | 3.32 |
| B7 | 7 | 8 | 0.30 | 0.00 | 1.59 | 0.80 | 23.72 | 8.76 | 2.10 | 0.00 | 8.35 | 56 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 170.60 | 170.45 | 4.73 | 173.64 | 173.34 | 173.75 | 0.11 | 1.65 |
| B8 | 8 | 9 | 0.22 | 0.00 | 1.81 | 0.35 | 23.89 | 8.73 | 0.67 | 0.00 | 9.02 | 35 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 170.45 | 170.36 | 5.11 | 173.34 | 173.12 | 174.00 | 0.66 | 2.05 |
| B9 | 9 | 10 | 0.21 | 0.00 | 2.02 | 0.80 | 24.57 | 8.61 | 1.45 | 0.00 | 10.47 | 135 | 24 | HDPE | 0.18 | 0.012 | 10.43 | 3.32 | 170.36 | 170.11 | 3.33 | 173.12 | 172.87 | 176.90 | 3.78 | 4.54 |
| B10 | 10 | 11 | 0.46 | 0.00 | 2.48 | 0.80 | 25.26 | 8.49 | 3.13 | 0.00 | 13.60 | 135 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 170.11 | 169.93 | 2.77 | 172.87 | 172.75 | 176.90 | 4.03 | 4.29 |
| B11 | 11 | 13 | 0.13 | 0.00 | 2.61 | 0.80 | 25.61 | 8.44 | 0.88 | 0.00 | 14.48 | 68 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.93 | 169.84 | 2.95 | 172.75 | 172.68 | 176.90 | 4.15 | 4.47 |
| B12 | 12 | 13 | 0.23 | 0.00 | 0.23 | 0.35 | 22.72 | 8.95 | 0.72 | 0.00 | 0.72 | 30 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 169.97 | 169.84 | 0.92 | 172.69 | 172.68 | 175.00 | 2.31 | 4.03 |
| B13 | 13 | 21 | 0.12 | 0.18 | 3.14 | 0.80 | 25.61 | 8.44 | 0.81 | 1.22 | 17.22 | 223 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.84 | 169.55 | 3.51 | 172.68 | 172.34 | 176.50 | 3.82 | 4.16 |
| B14 | 14 | 15 | 0.17 | 0.00 | 0.17 | 0.80 | 22.32 | 9.02 | 1.23 | 0.00 | 1.23 | 52 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.36 | 174.13 | 1.56 | 177.14 | 177.08 | 179.25 | 2.11 | 3.89 |
| B15 | 15 | 16 | 0.11 | 0.00 | 0.28 | 0.80 | 22.47 | 9.00 | 0.79 | 0.00 | 2.02 | 29 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.13 | 174.00 | 2.57 | 177.08 | 177.01 | 179.25 | 2.17 | 4.12 |
| B16 | 16 | 18 | 0.05 | 0.04 | 0.37 | 0.80 | 22.80 | 8.93 | 0.36 | 0.29 | 2.66 | 65 | 12 | HDPE | 0.44 | 0.012 | 2.57 | 3.27 | 174.00 | 173.72 | 3.39 | 177.01 | 176.70 | 179.25 | 2.24 | 4.25 |
| B17 | 17 | 18 | 0.54 | 0.00 | 0.54 | 0.80 | 23.97 | 8.72 | 3.77 | 0.00 | 3.77 | 295 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 174.48 | 173.72 | 2.13 | 177.02 | 176.70 | 178.50 | 1.48 | 2.52 |
| B18 | 18 | 21 | 0.00 | 0.28 | 1.19 | 0.80 | 23.97 | 8.72 | 0.00 | 1.95 | 8.38 | 275 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 173.72 | 173.00 | 4.74 | 176.70 | 175.22 | 178.50 | 1.80 | 3.29 |
| B20 | 20 | 21 | 0.30 | 0.00 | 0.30 | 0.80 | 23.09 | 8.88 | 2.13 | 0.00 | 2.13 | 175 | 18 | HDPE | 0.26 | 0.012 | 5.82 | 3.29 | 173.46 | 173.00 | 1.21 | 175.02 | 174.96 | 178.50 | 3.48 | 3.54 |
| B21 | 21 | OF-1 | 0.00 | 0.00 | 4.63 | 0.80 | 25.61 | 8.44 | 0.00 | 0.00 | 27.73 | 40 | 30 | HDPE | 0.13 | 0.012 | 16.06 | 3.27 | 169.55 | 169.50 | 5.65 | 171.97 | 171.82 | 177.00 | 5.03 | 4.95 |
| A+B | OF-1 | EXIST. INLET | | | | | | | | | 42.55 | 36 | 36 | RCP | 0.11 | 0.013 | 22.18 | 3.14 | 168.71 | 168.67 | 6.02 | 171.82 | 171.67 | 178.00 | 6.18 | 6.29 |


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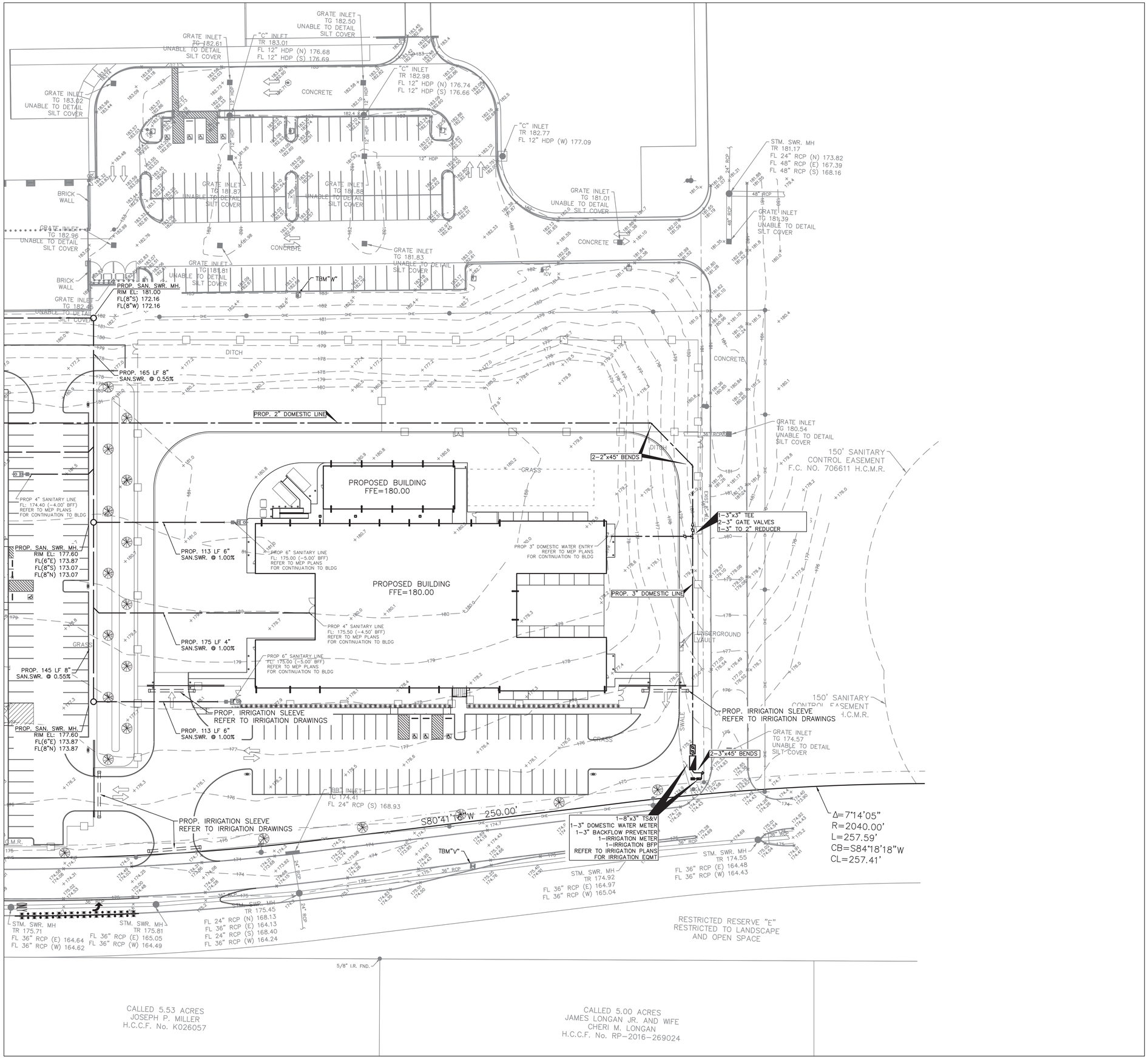
STATE OF TEXAS
BRIAN W. REES
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

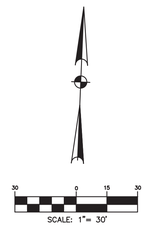
PROJECT #: 202414
DATE: 2025-07-28
DRAWN: JDK; BWR
CHECKED: BWR

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C3.07

STORM SEWER CALCULATIONS




LEGEND:

- PROPOSED MANHOLE
- C.O. PROPOSED CLEANOUT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED T.S.&V.
- FL FLOW LINE
- DIRECTION OF FLOW

GENERAL NOTES TO SHEET

1. CONTRACTOR SHALL CENTER JOINT OF WATER LINE AT PROPOSED SANITARY SEWER CROSSING. CONTRACTOR SHALL MAINTAIN MINIMUM OF 2' VERTICAL CLEARANCE.
2. CONTRACTOR SHALL CENTER JOINT OF SANITARY SEWER LINE AT PROPOSED WATER LINE CROSSING. CONTRACTOR SHALL MAINTAIN MINIMUM OF 2' VERTICAL CLEARANCE.
3. REFER TO PLUMBING PLANS FOR DOMESTIC AND FIRE WATER DESIGN INSIDE BUILDING.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9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

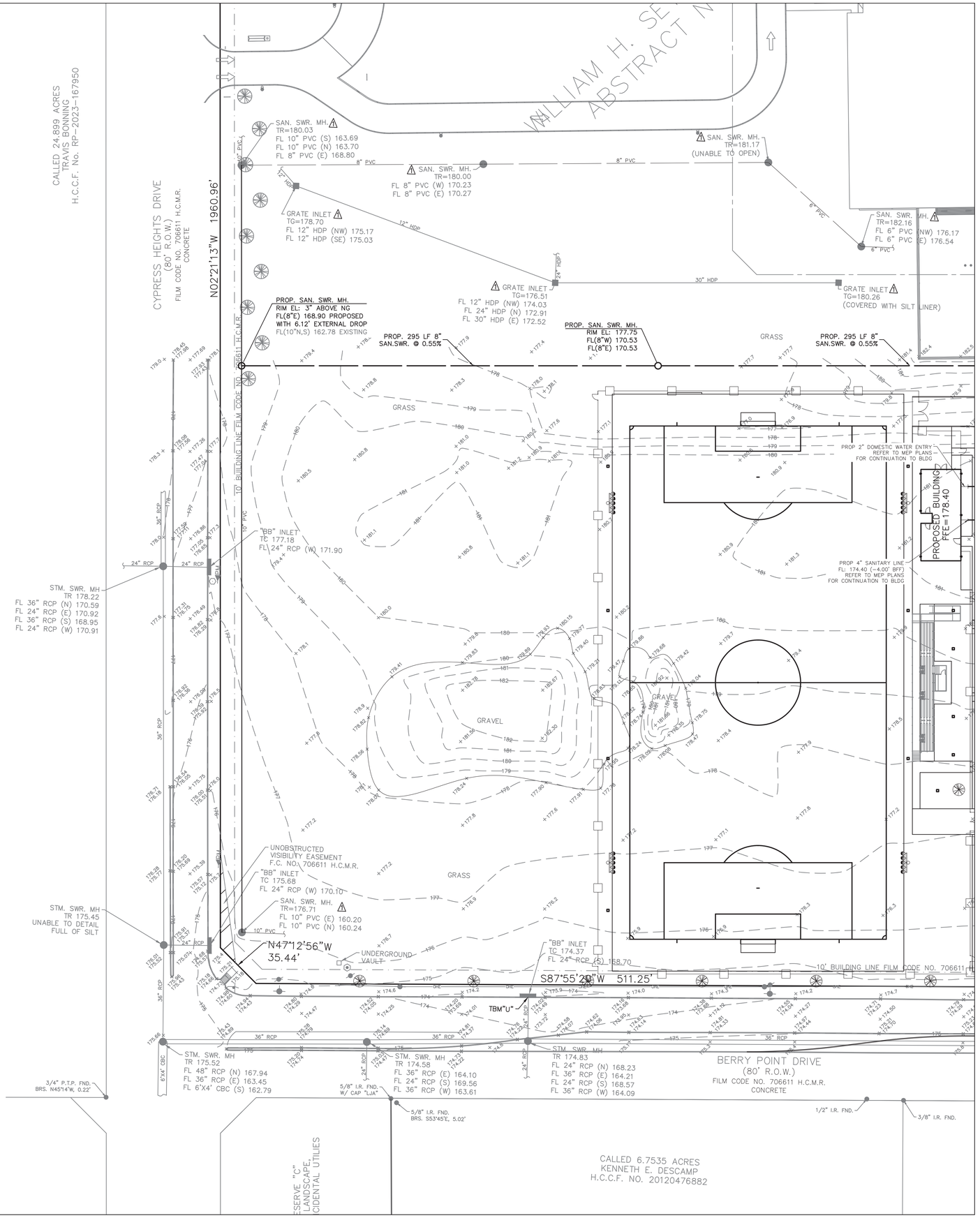

STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C4.01

WATER LINE & SANITARY SEWER LAYOUT (SHEET 1 OF 2)




SCALE: 1"= 30'

LEGEND:

- PROPOSED MANHOLE
- PROPOSED CLEANOUT
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED T.S.&V.
- FL FLOW LINE
- DIRECTION OF FLOW

GENERAL NOTES TO SHEET

1. CONTRACTOR SHALL CENTER JOINT OF WATER LINE AT PROPOSED SANITARY SEWER CROSSING. CONTRACTOR SHALL MAINTAIN MINIMUM OF 2' VERTICAL CLEARANCE.
2. CONTRACTOR SHALL CENTER JOINT OF SANITARY SEWER LINE AT PROPOSED WATER LINE CROSSING. CONTRACTOR SHALL MAINTAIN MINIMUM OF 2' VERTICAL CLEARANCE.
3. REFER TO PLUMBING PLANS FOR DOMESTIC AND FIRE WATER DESIGN INSIDE BUILDING.


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
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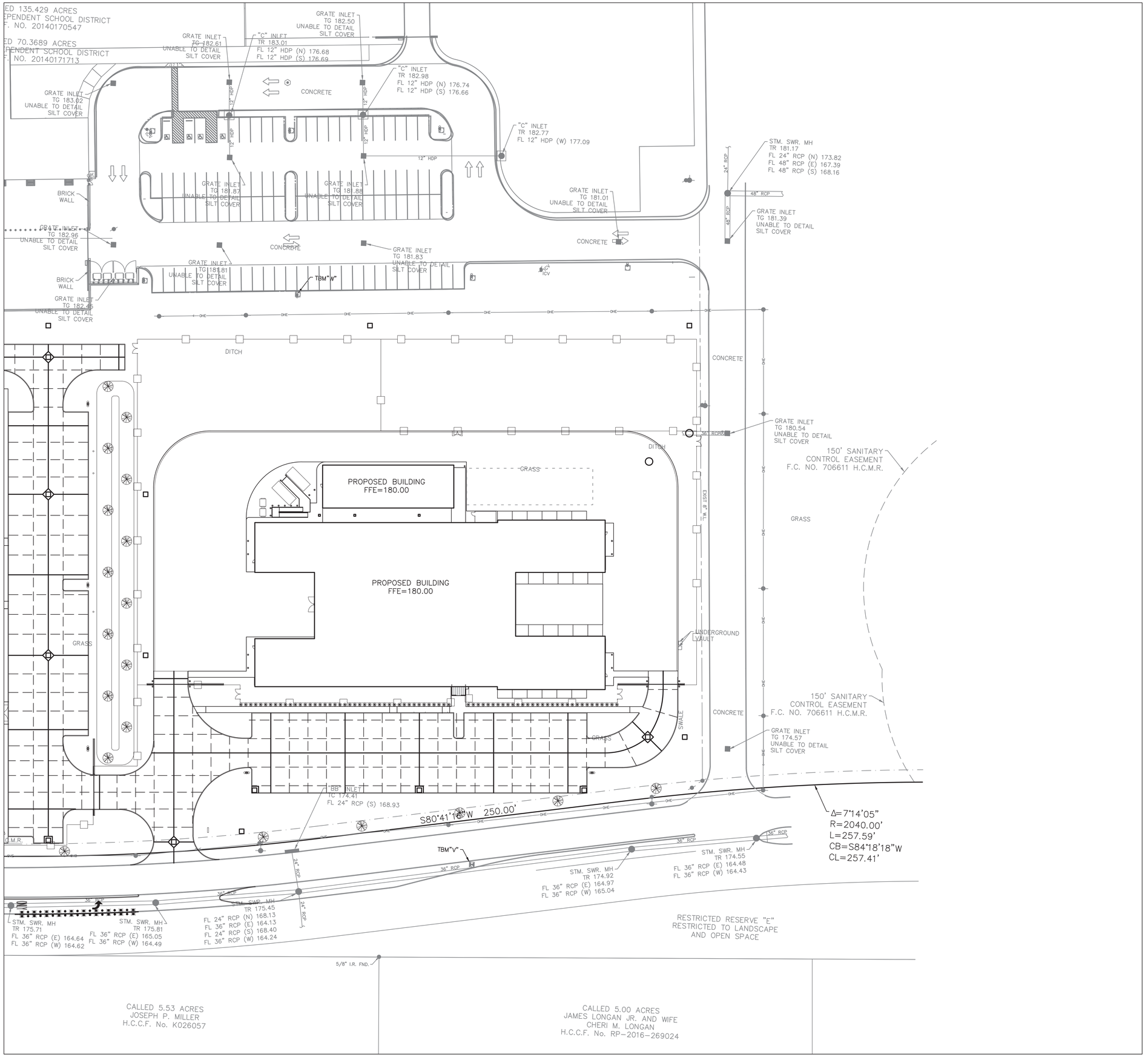
C4.02

WATER LINE & SANITARY SEWER LAYOUT (SHEET 1 OF 2)




30 0 15 30

SCALE: 1"= 30'

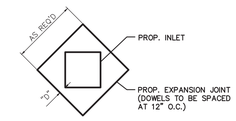
LEGEND:

SAWED JOINT

EXPANSION JOINT

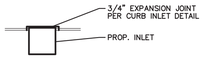
NOTES:

1. LOCATE EXPANSION JOINTS AS SHOWN. SAWED JOINTS SHALL BE SPACED EVENLY BETWEEN EXPANSION JOINTS AT 15' MAXIMUM SPACING.
2. ALL CURBS TO BE 6" UNLESS OTHERWISE NOTED.
3. LINE UP JOINTS IN SIDEWALK W/ JOINTS IN PARKING LOT.
4. INSTALL EXPANSION JOINTS IN ALL DRIVEWAYS AT ROW LINE.
5. SEE ARCHITECT'S PLANS FOR WHEELSTOP LOCATIONS AND SIDEWALK JOINTING.
6. CONTRACTOR TO DRILL 9" INTO EXISTING CONCRETE PAVEMENT AND EMBED 18" LONG #5 BAR (MATCHING EXISTING REBAR SPACING) AND EPOXY IN PLACE LEAVING 9" OF 18" LONG REBAR EXPOSED TO FACILITATE CONNECTION TO PROPOSED PAVEMENT.




D = 24" FOR MANHOLES & GRATE INLETS
D = 12" FOR AREA INLETS & AREA DRAINS

STORM SEWER INLET
W/ EXPANSION JOINT
N.T.S.




CURB INLET
W/ EXPANSION JOINT
N.T.S.

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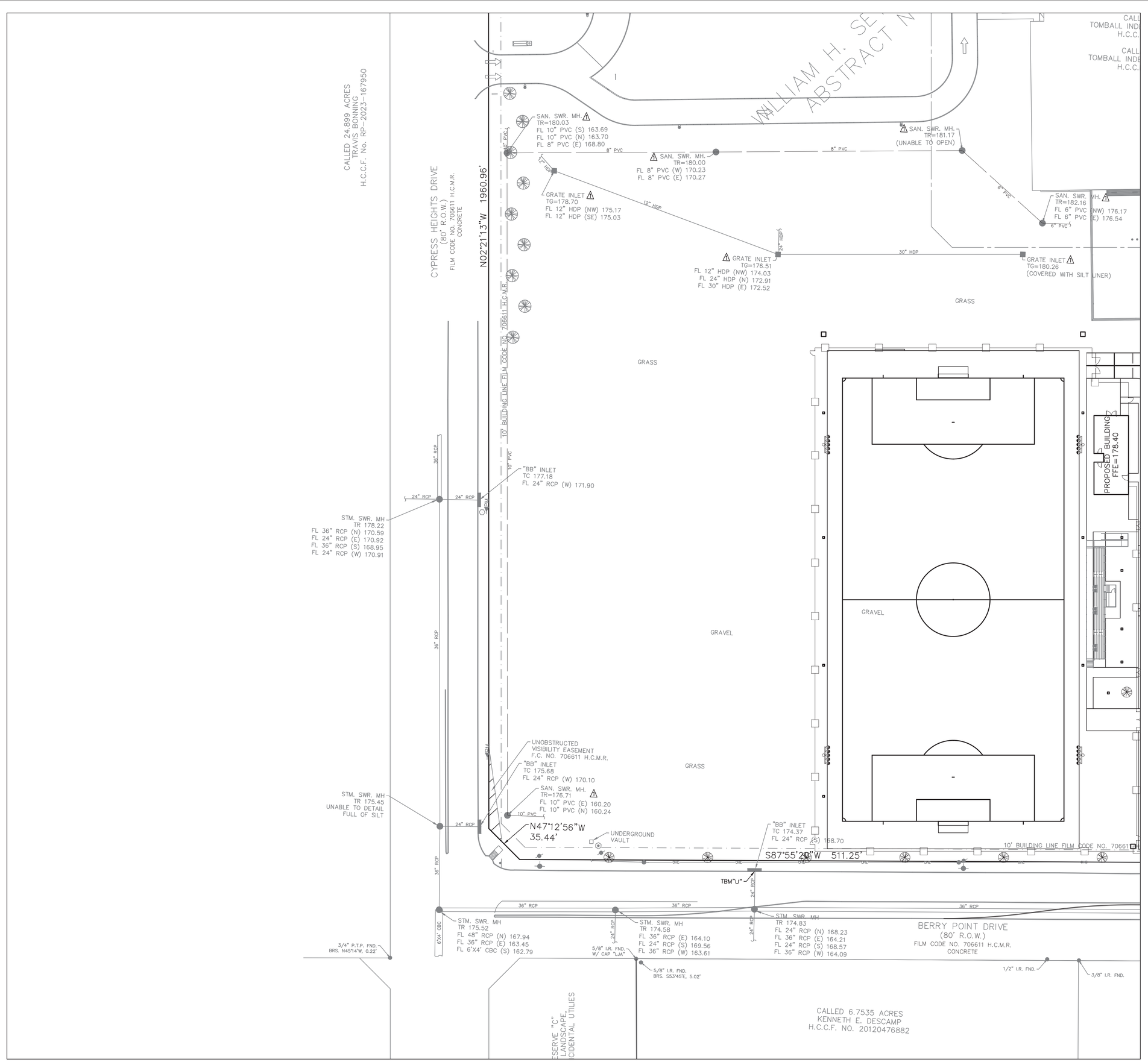
C5.01

JOINT LAYOUT PLAN
(SHEET 1 OF 2)




30 0 15 30

SCALE: 1"= 30'

LEGEND:

SAWED JOINT

EXPANSION JOINT

NOTES:

1. LOCATE EXPANSION JOINTS AS SHOWN. SAWED JOINTS SHALL BE SPACED EVENLY BETWEEN EXPANSION JOINTS AT 15' MAXIMUM SPACING.
2. ALL CURBS TO BE 6" UNLESS OTHERWISE NOTED.
3. LINE UP JOINTS IN SIDEWALK W/ JOINTS IN PARKING LOT.
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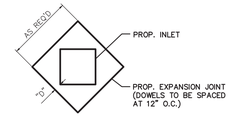


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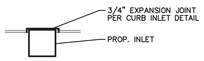
D = 12" FOR AREA INLETS & AREA DRAINS

STORM SEWER INLET
W/ EXPANSION JOINT
N.T.S.




CURB INLET
W/ EXPANSION JOINT
N.T.S.

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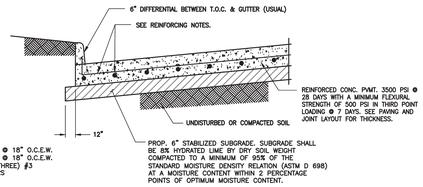
C5.02

JOINT LAYOUT PLAN
(SHEET 2 OF 2)

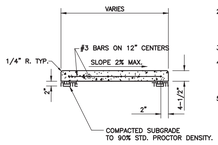



FOR CONCRETE REINFORCEMENT

- 5" CONCRETE – #3 BARS @ 18" O.C.E.W.
- 7" CONCRETE – #4 BARS @ 18" O.C.E.W.
- ENTRANT CORNERS – 3 (THREE) #3 DIAGONAL OR CORNER BARS

NOTE: WHERE A DISCREPANCY EXISTS BETWEEN THE ENGINEER'S PLANS AND THE GEOTECHNICAL REPORT, THE GEOTECHNICAL REPORT SHALL GOVERN.

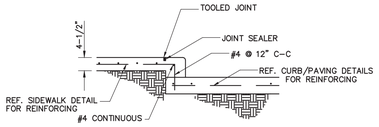
## TYPICAL CONCRETE PAVEMENT
N.T.S.




NOTES:

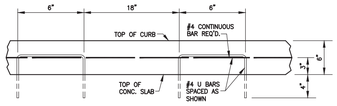
1. 1/2" FIBERBOARD EXPANSION MATERIAL REQUIRED WHERE SIDEWALK ABUTS BUILDING. 3/4" REDWOOD MATERIAL REQUIRED WHERE SIDEWALK ABUTS CURBS, DRIVEWAYS OR EXISTING SIDEWALKS.
2. WHERE NEW SIDEWALK IS PLACED AGAINST EXISTING SIDEWALK, SAWCUT EXISTING SIDEWALK TO AN EVEN STRAIGHT LINE PRIOR TO INSTALLATION OF THE NEW SIDEWALK AND INSTALL EXPANSION JOINT.
3. 1" MAX AGGREGATE.
4. CONTRACTOR SHALL INSTALL SIDEWALK EXPANSION JOINTS AT 20' MAX. INTERVALS AND CONSTRUCTION (SAWED JOINTS) ON 5' CENTERS FOR 5' WIDE SIDEWALKS AND 10' FOR ALL OTHER SIDEWALKS WIDER THAN 5'.
5. LINE UP JOINTS IN SIDEWALK W/ PAVING JOINTS.

## TYPICAL CONCRETE SIDEWALK
N.T.S.

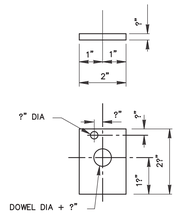



SIDEWALK SHALL BE DOWELED INTO CURB WITH #4 REBAR @ 12" C-C

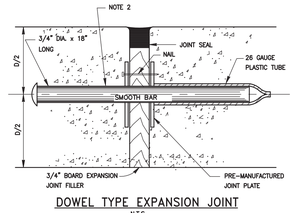
## SIDEWALK AT PAVEMENT
N.T.S.




## TYPICAL CONCRETE CURB REINFORCING
N.T.S.



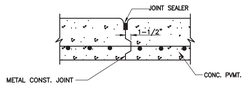

## DOWEL FITTING
N.T.S.



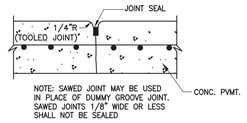

NOTES:

1. STEEL TO MEET ASTM STANDARD SPECIFICATIONS FOR CONCRETE REINFORCING BARS. UNITS TO BE SPACED ON 12" CENTERS
2. CENTER DOWEL HORIZONTALLY ON JOINT
3. CENTER DOWEL VERTICALLY IN CONCRETE BASE.

## DOWEL TYPE EXPANSION JOINT
N.T.S.

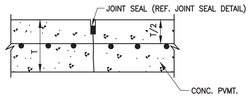



## KEYED CONSTRUCTION JOINT WITH TIE BARS
N.T.S.



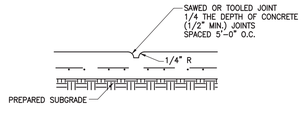

NOTE: SAWED JOINT MAY BE USED IN PLACE OF DUMMY GROOVE JOINT. SAWED JOINTS 1/8" WIDE OR LESS SHALL NOT BE SEALED

## DUMMY GROOVE JOINT
N.T.S.

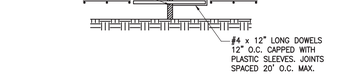



SAWED JOINTS 1/8" WIDE OR LESS SHALL NOT BE SEALED.

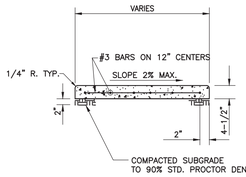
## SAWED JOINT
N.T.S.




## CONCRETE SIDEWALK CONTROL JOINT
N.T.S.




## CONCRETE SIDEWALK EXPANSION JOINT
N.T.S.




NOTES:

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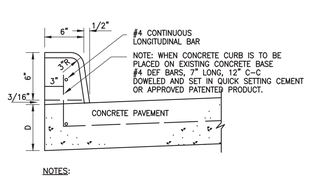
2. WHERE NEW SIDEWALK IS PLACED AGAINST EXISTING SIDEWALK, SAWCUT EXISTING SIDEWALK TO AN EVEN STRAIGHT LINE PRIOR TO INSTALLATION OF THE NEW SIDEWALK AND INSTALL EXPANSION JOINT.
3. 1" MAX AGGREGATE.
4. CONTRACTOR SHALL INSTALL SIDEWALK EXPANSION JOINTS AT 20' MAX. INTERVALS AND CONSTRUCTION (SAWED JOINTS) ON 5' CENTERS FOR 5' WIDE SIDEWALKS AND 10' FOR ALL OTHER SIDEWALKS WIDER THAN 5'.
5. LINE UP JOINTS IN SIDEWALK W/ PAVING JOINTS.

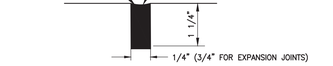
## TYPICAL CONCRETE SIDEWALK
N.T.S.




NOTES:

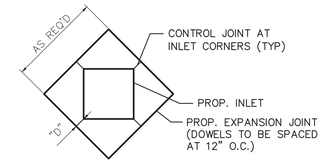
1. MORTAR FINISH NOT REQUIRED WHEN CURB IS POURED BY A MACHINE, BUT CURB SHALL HAVE THE SAME OUTSIDE DIMENSIONS.
2. PROP. VERTICAL JOINT IN CURB TO BE SEALED WITH VERTICAL SEALANT MATCHING COLOR OF JOINT SEALANT IN PAVEMENT.

## CONCRETE CURB
N.T.S.



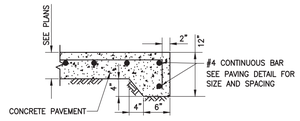

## JOINT SEAL
N.T.S.

NOTE:
WHERE THE DEPTH DOES NOT PERMIT THE USE OF BACKER ROD, A BOND BREAKER (POLYETHYLENE STRIP) MUST BE USED TO PREVENT THREE-POINT BONDING

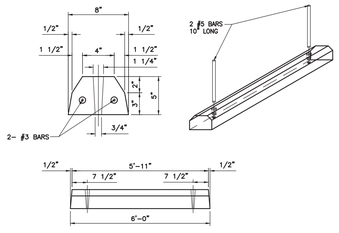



D = 24" FOR MANHOLES & GRATE INLETS
D = 12" FOR AREA INLETS & AREA DRAINS

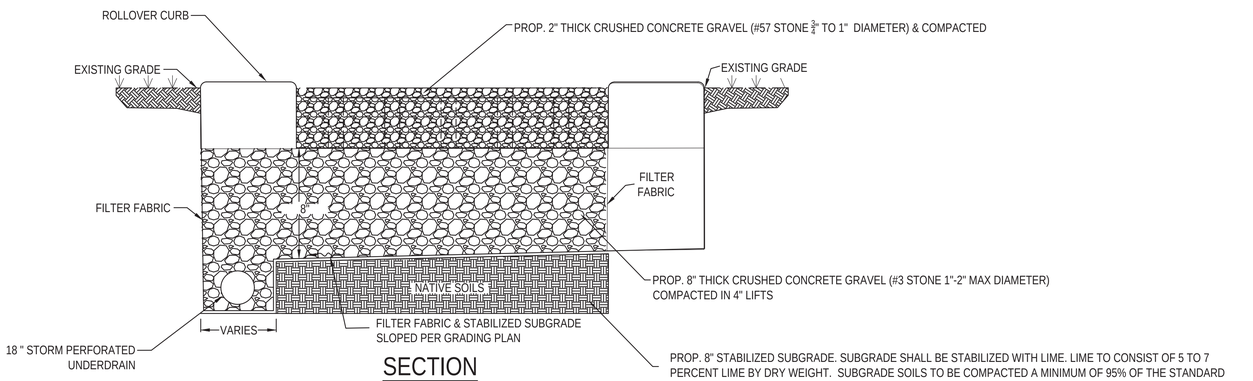
## EXPANSION JOINT AT GRATE INLET
N.T.S.




## STANDARD CONCRETE PAVING HEADER
N.T.S.




## PRECAST CONCRETE WHEEL STOP
NTS




## SECTION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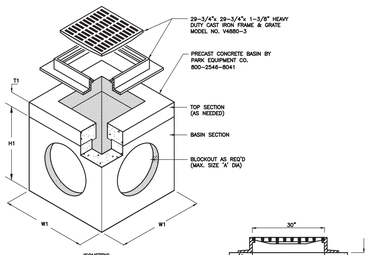
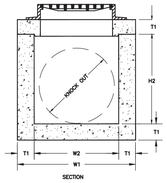
C7.01

PAVING DETAILS




ISOMETRIC

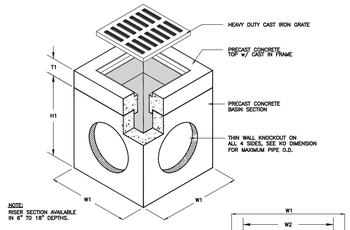
| DIMENSIONS | | | | | | |
|---|---|---|---|---|---|---|
| W1 | W2 | H1 | H2 | T1 | K.O. | GRATE SIZE |
| 42" | 30" | 36" | 30" | 6" | 30" | 30"X30" |
| 48" | 36" | 42" | 36" | 6" | 36" | 30"X30" |
| 60" | 48" | 54" | 48" | 6" | 48" | 30"X30" |
| 72" | 60" | 66" | 60" | 6" | 60" | 30"X30" |
| 84" | 72" | 78" | 72" | 6" | 72" | 30"X30" |
| 96" | 83" | 78" | 72" | 6" | 84" | 30"X30" |




SECTION

SPECIFICATIONS
CONCRETE : Class 5 concrete with design strength of 4,500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.
REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

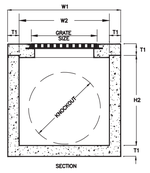
## GRATE INLET IN PAVEMENT
N.T.S.




NOTE: RISER SECTION AVAILABLE IN 6" TO 18" DEPTHS.

| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| W1 | W2 | H1 | H2 | T1 | KO |
| 24" | 18" | 24" | 30" | 4" | 15" |
| 28" | 18" | 24" | 30" | 4" | 17" |
| 32" | 22" | 41" | 36" | 5" | 20" |
| 37" | 25" | 42" | 36" | 6" | 24" |
| 42" | 30" | 42" | 36" | 6" | 24" |
| 48" | 36" | 42" | 36" | 6" | 30" |
| 60" | 48" | 54" | 48" | 6" | 36" |
| 72" | 60" | 66" | 60" | 6" | 48" |
| 84" | 72" | 78" | 72" | 6" | 60" |
| 96" | 83" | 78" | 72" | 6" | 72" |

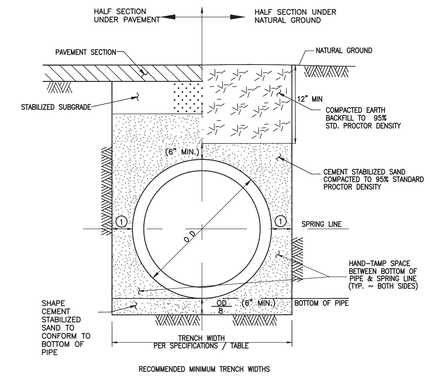
1. LARGER GRATES SIZES ARE AVAILABLE.




SECTION

SPECIFICATIONS
CONCRETE : Class 1 concrete with design strength of 4,500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.
REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

## GRATE INLET IN GRASS/LANDSCAPED AREAS
N.T.S.



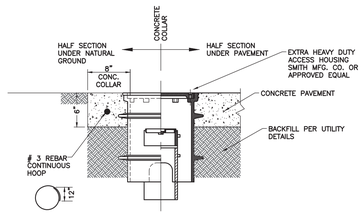

RECOMMENDED MINIMUM TRENCH WIDTHS

① 4" THRU 24" PIPE DIA. = 12" MIN. WIDTH.
30" AND GREATER PIPE DIA. = 18" MIN. WIDTH.

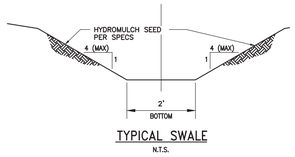
NOTES:

1. WHERE SOIL CONDITIONS REQUIRE, THE ENGINEER MAY ORDER USE OF GRANULAR MATERIAL IN LIEU OF CEMENT STABILIZED SAND BEDDING.
2. WHERE WET SAND IS ENCOUNTERED, REINFORCED CONCRETE PIPE SEWERS SHALL BE CONSTRUCTED USING APPROVED SPECIAL DESIGN AS SHOWN ON DRAWINGS.
3. MAX TRENCH WIDTH SHALL NOT BE GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. CEMENT-SAND BACKFILL SHALL CONSIST OF NOT LESS THAN 1.5 SACKS OF CEMENT PER TON OF SAND WITH SUFFICIENT WATER TO HYDRATE THE CEMENT. THE MATERIAL SHALL BE PLACED IN LIFTS 8 INCHES THICK MAXIMUM AND COMPACTED TO 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE TO THE BOTTOM OF THE PAVEMENT SUBGRADE.
5. ALL BEDDING AND BACKFILL SHALL BE INCLUDED IN THE COST OF THE PIPE.

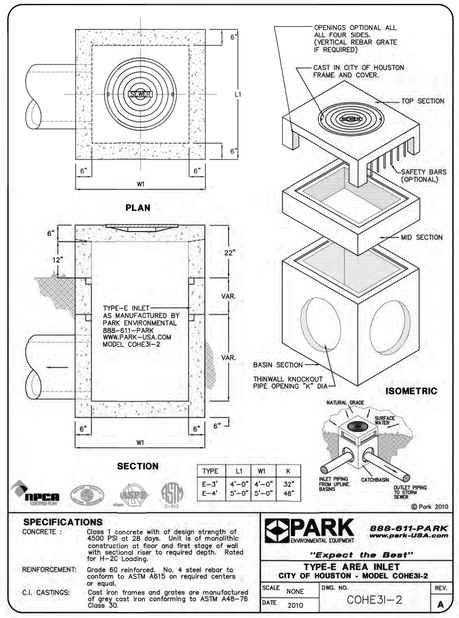
## BEDDING FOR STORM SEWER
N.T.S.




## STORM SEWER CLEANOUT
N.T.S.




## TYPICAL SWALE
N.T.S.




| TYPE | L1 | W1 | K |
|---|---|---|---|
| E-3' | 4'-0" | 4'-0" | 32" |
| E-4' | 5'-0" | 5'-0" | 48" |

© Park 2010

**SPECIFICATIONS**

CONCRETE : Class 1 concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced. No. 4 steel rebar to conform to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

PARK ENVIRONMENTAL EQUIPMENT — 888-611-PARK www.park-USA.com

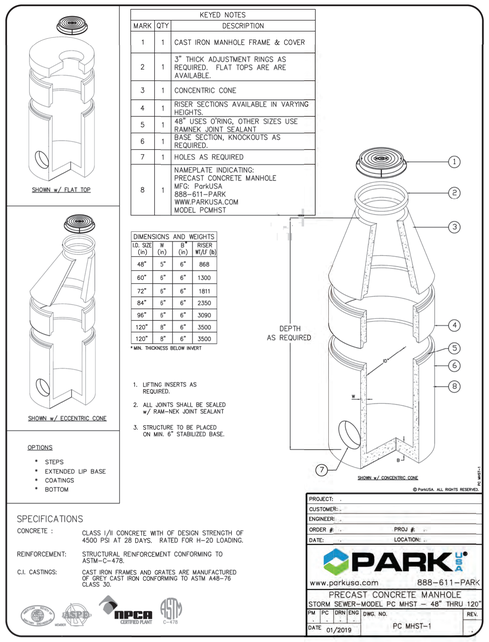
"Expect the Best"

**TYPE-E AREA INLET**
**CITY OF HOUSTON - MODEL COHE3I-2**

| SCALE | NONE | DWG. NO. | REV. |
|---|---|---|---|
| DATE | 2010 | COHE3I-2 | A |

All drawings are available for download at www.park-usa.com in .dwg & .pdf formats

3-25




| KEYED NOTES | | |
|---|---|---|
| MARK | QTY | DESCRIPTION |
| 1 | 1 | CAST IRON MANHOLE FRAME & COVER |
| 2 | 1 | 3" THICK ADJUSTMENT RINGS AS REQUIRED. FLAT TOPS ARE ARE AVAILABLE. |
| 3 | 1 | CONCENTRIC CONE |
| 4 | 1 | RISER SECTIONS AVAILABLE IN VARYING HEIGHTS. |
| 5 | 1 | 48" USES O'RING, OTHER SIZES USE RAMNEK JOINT SEALANT |
| 6 | 1 | BASE SECTION, KNOCKOUTS AS REQUIRED. |
| 7 | 1 | HOLES AS REQUIRED |
| 8 | 1 | NAMEPLATE INDICATING: PRECAST CONCRETE MANHOLE MFG: ParkUSA 888-611-PARK WWW.PARKUSA.COM MODEL PCMHST |

| DIMENSIONS AND WEIGHTS | | | |
|---|---|---|---|
| I.D. SIZE (in) | W (in) | R* (in) | RISER W.I.P. (lb) |
| 48" | 5" | 6" | 868 |
| 60" | 5" | 6" | 1300 |
| 72" | 5" | 6" | 1811 |
| 84" | 5" | 6" | 2350 |
| 96" | 5" | 6" | 3090 |
| 120" | 8" | 6" | 3500 |
| 120" | 8" | 8" | 3500 |

* MIN. THICKNESS BELOW INVERT

1. LIFTING INSERTS AS REQUIRED.
2. ALL JOINTS SHALL BE SEALED w/ RAM-NEK JOINT SEALANT
3. STRUCTURE TO BE PLACED ON MIN. 6" STABILIZED BASE.

SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. RATED FOR H-20 LOADING.

REINFORCEMENT: STRUCTURAL REINFORCEMENT CONFORMING TO ASTM-C-478.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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PROJECT: ...
CUSTOMER: ...
ENGINEER: ...
ORDER #: ... PROJ #: ...
DATE: ... LOCATION: ...

PARK — www.parkusa.com 888-611-PARK

PRECAST CONCRETE MANHOLE
STORM SEWER-MODEL PC MHST – 48" THRU 120"

| PM | PC | DRN | ENG | DWG. NO. | REV. |
|---|---|---|---|---|---|
| | | | | PC MHST-1 | |

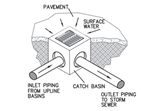
DATE: 01/2019




| KEYED NOTES | | |
|---|---|---|
| MARK | QTY | DESCRIPTION |
| 1 | 1 | GRATE OR COVER AS REQUESTED. SEE OPTIONS |
| 2 | 1 | CAST-IN STEEL FRAME |
| 3 | 1 | OPTIONAL TOP/EXTENSION 4" TO 18" |
| 4 | 1 | PRECAST CONCRETE BASIN SECTION |
| 5 | 1 | KNOCKOUTS (STD) AND PENETRATIONS AS REQUIRED. SEE KO DIMENSION FOR MAXIMUM PIPE O.D.S |
| 6 | 1 | NAMEPLATE INDICATING: PRECAST CONCRETE MFG: ParkUSA WWW.PARKUSA.COM MODEL: CB-GP DATE MANUFACTURED |

| MODEL | W1 | W2 | H1 | H2 | T1 | T2 | K.O. | GRATE SIZE *±3/8 | OPEN AREA | WEIGHT LBS |
|---|---|---|---|---|---|---|---|---|---|---|
| CB-12 | 12" | 12" | 21" | 18" | 3" | 3" | 10" | 12"x12"x1" | 90 | 180 |
| CB-14 | 28" | 12" | 28" | 24" | 4" | 4" | 12" | 14"x14"x1" | 120 | 400 |
| CB-18 | 24" | 18" | 24" | 30" | 4" | 4" | 15" | 18"x18"x1" | 160 | 1,000 |
| CB-20 | 28" | 18" | 34" | 30" | 4" | 4" | 17" | 20"x20"x1" | 175 | 1,330 |
| CB-24 | 32" | 22" | 41" | 36" | 5" | 5" | 22" | 24"x24"x1" | 268 | 2,240 |
| CB-27 | 37" | 25" | 42" | 36" | 6" | 6" | 24" | 27"x27"x1" | 350 | 2,870 |
| CB-30 | 42" | 30" | 42" | 36" | 6" | 6" | 30" | 32"x32"x1" | 490 | 3,670 |
| CB-36 | 48" | 36" | 42" | 36" | 6" | 6" | 36" | 38"x38"x1" | 693 | 5,000 |
| CB-48 | 60" | 48" | 54" | 48" | 6" | 6" | 48" | 50"x38"x1" | 693 | 7,250 |
| *CB-60 | 72" | 60" | 66" | 60" | 6" | 6" | 60" | 38"x38"x1" | 693 | 10,500 |
| *CB-72 | 84" | 72" | 78" | 72" | 6" | 6" | 72" | 38"x38"x1" | 693 | 13,250 |
| *CB-84 | 96" | 78" | 78" | 72" | 6" | 6" | 72" | 38"x38"x1" | 693 | 16,500 |

*KNOCKOUTS NOT AVAILABLE




SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

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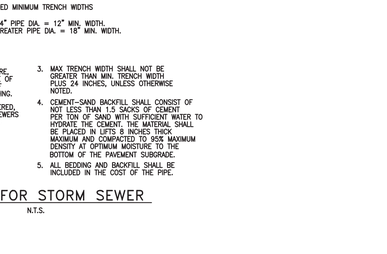
PROJECT: ...
CUSTOMER: ...
ENGINEER: ...
ORDER #: ... PROJ #: ...
DATE: ... LOCATION: ...

PARK — www.parkusa.com 888-611-PARK

CATCH BASIN
MODEL CB – 12" THRU 84"

| PM | PC | DRN | ENG | DWG. NO. | REV. |
|---|---|---|---|---|---|
| | | | | CB-1 | |

DATE: 01/2019




| PART # | PIPE SIZE | A |
|---|---|---|
| 1267AA | 12 in (300 mm) | 5.8 in (146 mm) |
| 1567AA | 15 in (375 mm) | 7.8 in (197 mm) |
| 1867AA | 18 in (450 mm) | 8.0 in (204 mm) |
| 2467AA | 24 in (600 mm) | 9.5 in (240 mm) |

| PART # | PIPE SIZE | A |
|---|---|---|
| 1201AN | 12 in (300 mm) | 11.5 in (292 mm) |
| 1501AN | 15 in (375 mm) | 13.0 in (329 mm) |
| 1801AN | 18 in (450 mm) | 13.4 in (340 mm) |
| 2101AN | 21 in (525 mm) | 12.0 in (305 mm) |
| 2401AN | 24 in (600 mm) | 12.6 in (320 mm) |
| 3001AN | 30 in (750 mm) | 12.4 in (314 mm) |
| 3601AN | 36 in (900 mm) | 15.5 in (394 mm) |
| 4201AN | 42 in (1050 mm) | 15.6 in (395 mm) |
| 4801AN | 48 in (1200 mm) | 15.8 in (400 mm) |
| 6001AN | 60 in (1500 mm) | 18.0 in (457 mm) |

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

ADS ADVANCED DRAINAGE SYSTEMS, INC.

| | | |
|---|---|---|
| DRAWING #: | 2120 | |
| DRAWN BY: | JCB | 09.05.06 |
| APPROVED BY: | JCB | 06.25.07 |
| REVISIONS: | TJR | 4/20/2016 |


CONSULTANTS

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Tel: 832.287.9874

STRUCTURAL
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Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

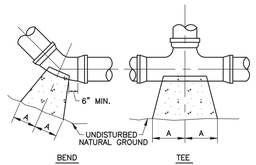

STATE OF TEXAS
BRIAN W. REED
LICENSED
12893
PROFESSIONAL ENGINEER
07/25/2025

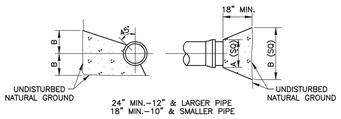
| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C7.02

STORM SEWER DETAILS

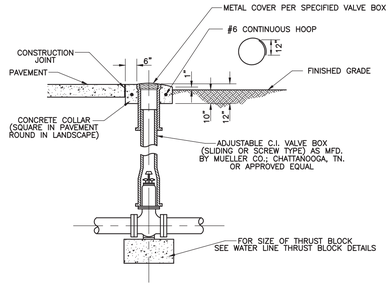


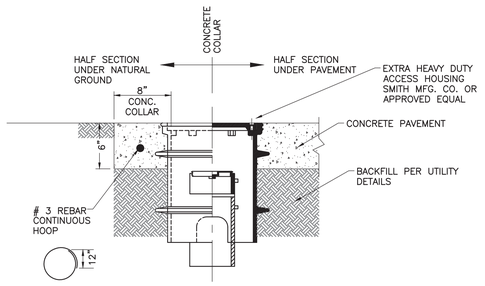

| SIZE | 90° BEND | | 45° BEND | | 22 1/2° BEND | | TEES | | PLUGS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B | A | B |
| 2 1/2" | 12" | 7" | 6" | 7" | 6" | 6" | 7" | 8" | 8" | 14" |
| 6" | 16" | 10" | 9" | 10" | 6" | 12" | 10" | 12" | 10" | 21" |
| 8" | 22" | 13" | 12" | 13" | 8" | 10" | 13" | 16" | 12" | 29" |
| 10" | 26" | 17" | 14" | 17" | 10" | 13" | 16" | 20" | 14" | 36" |
| 12" | 29" | 21" | 16" | 21" | 11" | 16" | 18" | 24" | 16" | 41" |
| 14" | 35" | 24" | 19" | 24" | 12" | 20" | 22" | 27" | 18" | 48" |
| 16" | 38" | 27" | 21" | 27" | 12" | 24" | 24" | 30" | 20" | 54" |

ALL CONCRETE SHALL BE MIN. 5SK, 3,000 P.S.I.

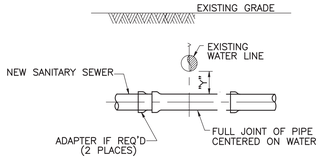
## WATER LINE THRUST BLOCK
N.T.S.




## VALVE BOX
N.T.S.

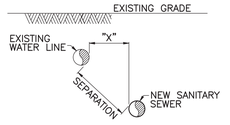



## SANITARY SEWER CLEANOUT
N.T.S.




| INSTALLATION REQUIREMENTS |
|---|
| 1. IF "Y" IS GREATER THAN 6" AND "Y" IS LESS THAN 2', USE MINIMUM 18 FT JOINT OF PRESSURE–RATED PIPE PER TABLE 02730–04. |
| 2. IF "Y" IS GREATER THAN 2' AND "Y" IS LESS THAN 9', USE GRAVITY SEWER PIPE IN CEMENT–STABILIZED SAND EMBEDMENT. |
| 3. IF "Y" IS GREATER THAN 9', USE STANDARD EMBEDMENT AND NORMAL JOINT SPACING. |

NEW SANITARY SEWER CROSSING EXISTING WATER LINE

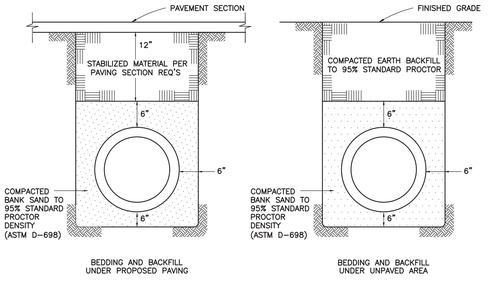



| INSTALLATION REQUIREMENTS |
|---|
| 1. IF "X" IS LESS THAN 9' AND SEPARATION IS LESS THAN 9', USE PRESSURE–RATED PIPE MH TO MH. "X" MUST BE AT LEAST 4 FT. |
| 2. IF "X" IS GREATER THAN OR EQUAL TO 4' AND SEPARATION IS 9' OR GREATER, USE STANDARD PIPE AND EMBEDMENT. |

NEW SANITARY SEWER PARALLEL TO EXISTING WATER LINE

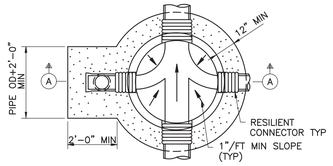
NOTES:
1. SANITARY SEWER MUST BE BELOW WATER LINE WHEREVER POSSIBLE. WHEN WATERLINE IS BELOW THE SANITARY SEWER PROVIDE MINIMUM 2 FT SEPARATION AND INSTALL PIPE SAME AS FOR SEWER BELOW WATER.
2. WHEN PRESSURE–RATED PIPE IS REQUIRED, PROVIDE PIPE WITH MINIMUM 150 psi PRESSURE RATING.
3. ADAPTERS MUST BE FACTORY MOLDED OR FABRICATED, WITH RING STIFFNESS AT LEAST EQUAL TO THE ADJOINING SANITARY SEWER PIPE, AND USING RESILIENT GASKET OR SEAL MATERIAL. FLEXIBLE RUBBER "BOOT" TYPE ADAPTERS WILL NOT BE ACCEPTED.
4. INSTALL FORCE MAINS SAME AS FOR GRAVITY SEWER, USING SPECIFIED PRESSURE PIPE.
5. "Y" MUST ALWAYS BE GREATER THAN OR EQUAL 6".
6. "X" MUST BE GREATER THAN OR EQUAL TO 4 FT.
7. ALTERNATIVES MAY BE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
8. SEPARATION REQUIREMENTS SHOWN HERE DO NOT APPLY TO SERVICE CONNECTIONS – REFER TO PLUMBING CODE FOR APPLICABLE REQUIREMENTS.
9. CEMENT–STABILIZED SAND SHALL BE 1½ SACKS OF CEMENT PER CUBIC YARD OF SAND.

| TABLE 02730–04<br>SEWER LINE CROSSING BELOW WATER LINE WITHIN 2 FT SEPARATION | | |
|---|---|---|
| GRAVITY SANITARY SEWER PIPE SIZE | PRESSURE–RATED PIPE SIZE & TYPE (NOTE 2) | ADAPTERS REQUIRED |
| 6" TO 12" (ASTM D–3034) | SAME SIZE ASTM D–2241, SDR 26 | ASTM D–3034 TO D–2665 (SEWER TO D.W.V.) ADAPTER COUPLING |
| 15" (ASTM D–3034) | 14" LINED DUCTILE IRON OR AWWA C–905, DR–25 | NONE REQUIRED |
| 18" AND 24" | SAME SIZE AWWA C–905, PRESSURE–RATED FRP, OR LINED DUCTILE IRON, MANHOLE TO MANHOLE | NONE REQUIRED |
| 21" AND 27" | PRESSURE PIPE NOT AVAILABLE, SEE CASING ALTERNATIVE | NOT APPLICABLE |
| 30" AND LARGER | SAME SIZE PRESSURE–RATED FRP OR LINED DUCTILE IRON, MANHOLE TO MANHOLE | NOT APPLICABLE |
| CASING ALTERNATIVE:<br>ANY SIZE AND TYPE | INSTALL AS CASING PIPE MIN 18 FT JOINT OF PRESSURE PIPE AT LEAST 2 NOMINAL SIZES LARGER THAN SAN. SEWER CARRIER PIPE. GROUT ANNULAR SPACE WITH TUNNEL GROUT | NOT APPLICABLE |

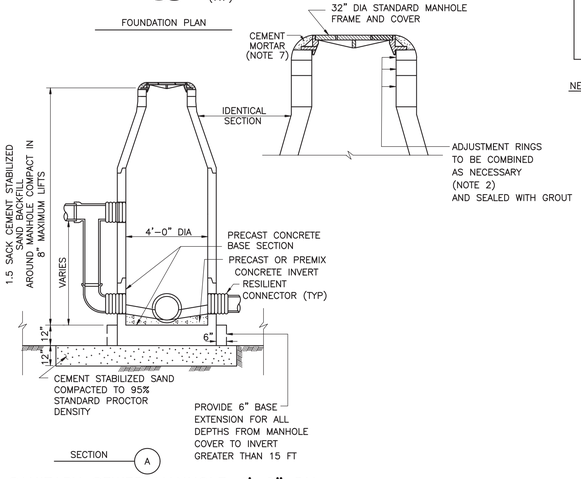



## WATER LINE TRENCH
N.T.S.

NOTES:
1. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
2. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'–6".
3. MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'–0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
4. MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR ON DRAWINGS OR WHEN DIFFERENCE IN FLOW LINE ELEVATIONS OF MANHOLE EXCEEDS 24".
5. SEAT MANHOLE FRAME IN SEALANT.
6. ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
7. OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
8. MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8" EW.
9. INTERIOR SURFACE OF MANHOLE SHALL BE SEALED WITH THANE COAT OR APPROVED EQUAL AS PER MANUFACTURERS SPECIFICATIONS.

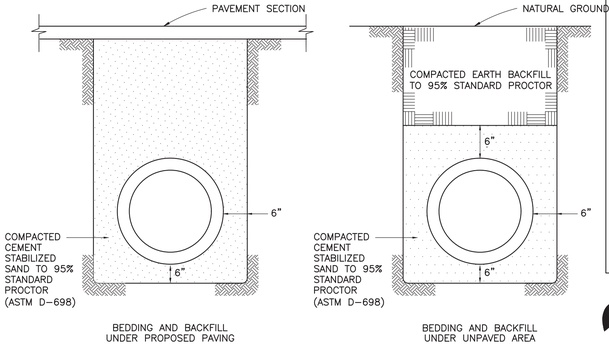



FOUNDATION PLAN

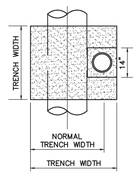



## SANITARY SEWER MANHOLE 4'–0" DIA
N.T.S.

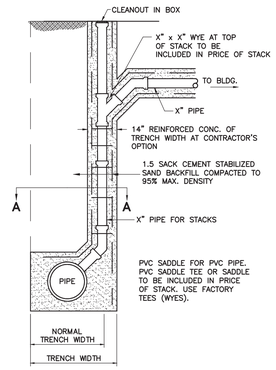
## INSTALLATION OF SANITARY SEWER LINES CROSSING OR PARALLEL TO WATER LINES
N.T.S.



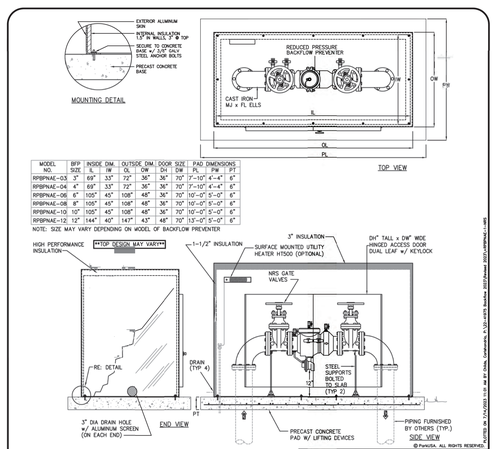

## SANITARY SEWER TRENCH
N.T.S.




SECTION "A–A"
N.T.S.




## SANITARY SEWER STACK FOR BUILDING CONNECTIONS
N.T.S.




| MODEL NO. | BFP SIZE | INSIDE DIM. IL | INSIDE DIM. IW | OUTSIDE DIM. OL | OUTSIDE DIM. OW | DOOR SIZE DH | PAD DIMENSIONS PL | PW | PT |
|---|---|---|---|---|---|---|---|---|---|
| RPBPNAE–03 | 3" | 69" | 33" | 72" | 36" | 70" | 7'–10" | 4'–4" | 8" |
| RPBPNAE–04 | 4" | 69" | 33" | 72" | 36" | 70" | 7'–10" | 4'–4" | 8" |
| RPBPNAE–06 | 6" | 105" | 45" | 108" | 48" | 70" | 10'–0" | 5'–0" | 8" |
| RPBPNAE–08 | 8" | 105" | 45" | 108" | 48" | 70" | 10'–0" | 5'–0" | 8" |
| RPBPNAE–10 | 10" | 105" | 45" | 108" | 48" | 70" | 10'–0" | 5'–0" | 8" |
| RPBPNAE–12 | 12" | 144" | 40" | 147" | 43" | 48" | 70" | 13'–0" | 5'–0" | 8" |

NOTE: SIZE MAY VARY DEPENDING ON MODEL OF BACKFLOW PREVENTER




Specifications

GENERAL
The Model ERP aluminum enclosure is pre engineered to provide protection to backflow preventers, meters, pumps, and other devices installed above ground. These water conveying devices are subject to freezing and vandalism. The enclosure is designed to be installed over the equipment after installation. The enclosure is equipped with access doors to provide adequate access to the equipment.

CONSTRUCTION
The enclosure shall be manufactured from all new materials. The exterior shall be fabricated with 0.090 aluminum, continuously welded. The access door(s) shall be of like material and hinged with a continuous hinge. The door shall be equipped with a 3–point locking mechanism. The interior of the enclosure shall be structurally lined with high performance, non–wicking insulation.

HEATER
Interior heaters (if required) shall be thermostatically controlled and be mounted to the interior wall of the enclosure. A GFI receptacle shall be provided by others to provide power to the electric heater.

| REV. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| A | - | - | - |

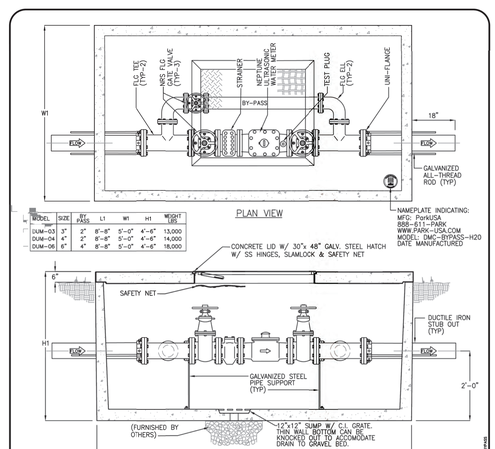
PROJECT: -
CUSTOMER: -
ENGINEER: -
ORDER #: - PROJ #: -
DATE: - LOCATION: -

PARK USA — A Northwest Pipe Company

WEATHERPROOF ENCLOSURE
REDUCED PRESSURE BACKFLOW PREVENTER

| PM | PC | DRN | ENG | DWG. NO. | REV. |
|---|---|---|---|---|---|
| - | - | - | - | RPBPNAE–1 | A |
| DATE 04/2023 | | | | | |

DRAWN BY: JDK/BWR 3:11:01 PM BY: Emily Hutchinson, P.E. CAD DATE: Business: 2023\Planset (ERP)\ARPBPNAE-1.dwg




| MODEL NO. | SIZE | BFP SIZE | L1 | W1 | H1 | WEIGHT LBS |
|---|---|---|---|---|---|---|
| DUM–03 | 3" | 2" | 8'–8" | 5'–0" | 4'–6" | 13,000 |
| DUM–04 | 4" | 2" | 8'–8" | 5'–0" | 4'–6" | 14,000 |
| DUM–06 | 6" | 4" | 8'–8" | 5'–0" | 4'–6" | 18,000 |

Specifications

CONCRETE: Class 1/3 concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

GALV STEEL HATCH: Galvanized, bolt down hatchway. Door leafs shall be a ¼" thick steel diamond plate reinforced with 2½"x2½"x¼" angle to an AASHTO H–20 wheel load.

Engineering Data
The meter assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

FM AWWA UL NSF CSA IAPMO CERTIFIED PLANT

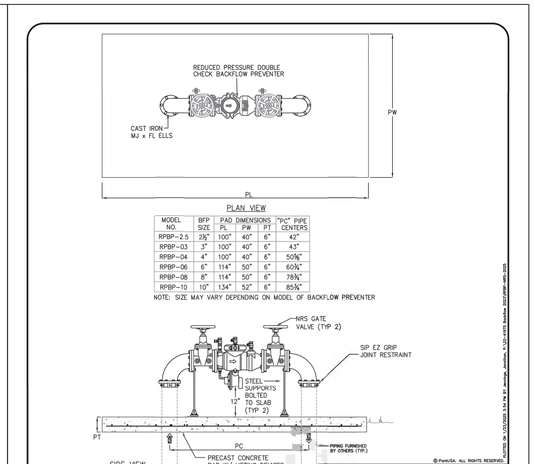
| REV. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| A | - | - | - |

PROJECT: -
CUSTOMER: -
ENGINEER: -
ORDER #: - PROJ #: -
DATE: - LOCATION: -

PARK USA
www.parkusa.com 888–611–PARK
DOMESTIC ULTRASONIC WATER METER ASSEMBLY w/ BYPASS – 3" THRU 6"

| PM | PC | DRN | ENG | DWG. NO. | REV. |
|---|---|---|---|---|---|
| - | - | - | - | DUM–BYPASS | A |
| DATE 2021 | | | | | |

DRAWN BY: JDK/BWR 3:11:01 PM BY: Emily Hutchinson, P.E. CAD DATE: Business: 2023\Planset (ERP)\ADUM-BYPASS.dwg




| MODEL NO. | BFP SIZE | PAD DIMENSIONS PL | PW | PT | "PC" PIPE CENTERS |
|---|---|---|---|---|---|
| RPBP–2.5 | 2½" | 100" | 40" | 6" | 42" |
| RPBP–03 | 3" | 100" | 40" | 6" | 43" |
| RPBP–04 | 4" | 100" | 40" | 6" | 50⅝" |
| RPBP–06 | 6" | 114" | 50" | 6" | 60⅜" |
| RPBP–08 | 8" | 114" | 50" | 6" | 78⅜" |
| RPBP–10 | 10" | 134" | 52" | 6" | 85⅜" |

NOTE: SIZE MAY VARY DEPENDING ON MODEL OF BACKFLOW PREVENTER

Specifications

GENERAL
The Model ERP aluminum enclosure is pre engineered to provide protection to backflow preventers, meters, pumps, and other devices installed above ground. These water conveying devices are subject to freezing and vandalism. The enclosure is designed to be installed over the equipment after installation. The enclosure is equipped with access doors to provide adequate access to the equipment.

CONSTRUCTION
The enclosure shall be manufactured from all new materials. The exterior shall be fabricated with 0.090 aluminum, continuously welded. The access door(s) shall be of like material and hinged with a continuous hinge. The door shall be equipped with a 3–point locking mechanism. The interior of the enclosure shall be structurally lined with high performance, non–wicking insulation.

HEATER
Interior heaters (if required) shall be thermostatically controlled and be mounted to the interior wall of the enclosure. A GFI receptacle shall be provided by others to provide power to the electric heater.

| REV. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| A | - | - | - |

PROJECT: -
CUSTOMER: -
ENGINEER: -
ORDER #: - PROJ #: -
DATE: - LOCATION: -

PARK USA — A Northwest Pipe Company

REDUCED PRESSURE BACKFLOW PREVENTER
MODEL SIZE 2.5" THRU 10"

| PM | PC | DRN | ENG | DWG. NO. | REV. |
|---|---|---|---|---|---|
| - | - | - | - | RPBP–1 | A |
| DATE 01/2025 | | | | | |

DRAWN BY: JDK/BWR 3:11:01 PM BY: Emily Hutchinson, P.E. CAD DATE: Business: 2023\Planset (ERP)\ARPBP-1.dwg

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

# WEST AGRICULTURAL SCIENCE FACILITY
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433

ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

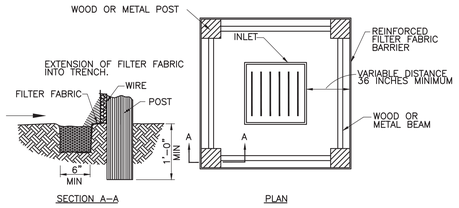
STATE OF TEXAS — BRIAN W. REED — 128933 — LICENSED PROFESSIONAL ENGINEER
07/28/2025

| PROJECT #: | 202414 |
|---|---|
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

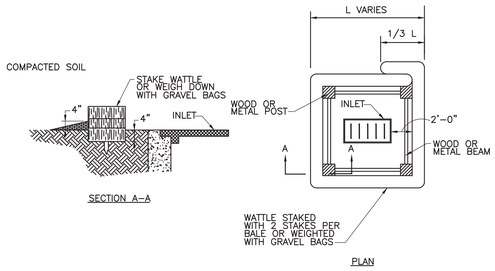
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C7.03

WATER & SANITARY SEWER DETAILS



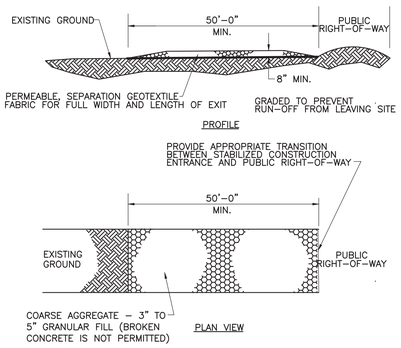

SEE REINFORCED FILTER FABRIC BARRIER DETAIL FOR REINFORCED FILTER FABRIC BARRIER REQUIREMENTS




NOTE:
TYPICALLY STRAW BALES ARE NOT RECOMMENDED FOR INLET PROTECTION BARRIERS.

## INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB
SYMBOL

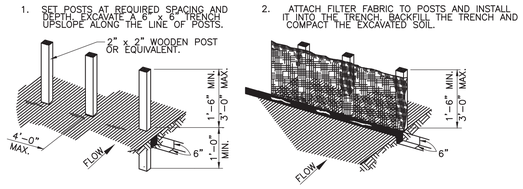



GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. ALTERNATIVE METHODS OF CONSTRUCTION INCLUDE
   –CEMENT STABILIZED SOIL: COMPACTED CEMENT STABILIZED SOIL, LIMESTONE AGGREGATE, OR OTHER FILL MATERIAL IN AN APPLICATION OF THICKNESS OF 8 INCHES.
   –WOOD MATS: OAK OR OTHER HARDWOOD TIMBERS PLACED EDGE TO EDGE AND ACROSS SUPPORT WOODEN BEAMS WHICH ARE PLACED ON TOP OF EXISTING SOIL IN AN APPLICATION THICKNESS OF 6 INCHES.
   –STEEL MATS: PERFORATED MATS PLACED ACROSS PERPENDICULAR SUPPORT MEMBERS.

## STABILIZED CONSTRUCTION ACCESS

SC

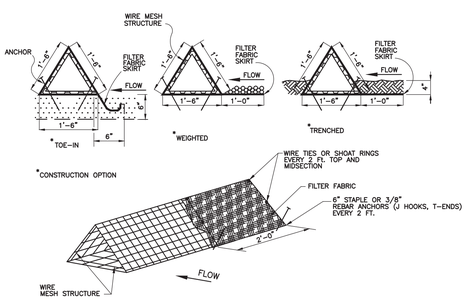



GENERAL NOTES:

1. SET POSTS AT 4–FEET MAXIMUM SPACING. IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAXIMUM.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT THE POST, FOLD TOGETHER, AND ATTACH TO THE POSTS.
3. REMOVE SEDIMENT DEPOSITS WHEN SILT DEPTH REACHES ONE–THIRD OF THE HEIGHT OF THE FENCE.

## FILTER FABRIC FENCE

FF
SYMBOL

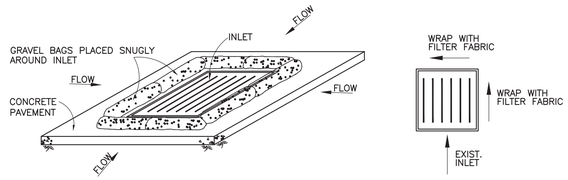


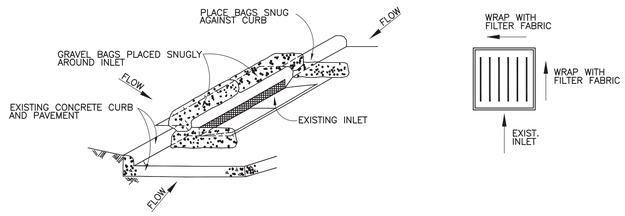

GENERAL NOTES:

1. PLACE BARRIER IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BARRIER.
2. USING ONE CONTINUOUS SECTION OF FILTER FABRIC, WRAP FABRIC AROUND WIRE MESH AND EXTEND FABRIC TO FORM SKIRT ON THE UPSTREAM SIDE.
3. WEIGHT SKIRT WITH A CONTINUOUS LAYER OF 3–INCH TO 5–INCH OPEN GRADED ROCK, OR TOE IN SKIRT WITH SIX INCHES WITH MECHANICALLY COMPACTED MATERIAL.
4. SECURELY ANCHOR BARRIER AND SKIRT IN PLACE USING 6–INCH WIRE STAPLES ON 2–FOOT CENTERS ON BOTH EDGES, OR STAKE USING 18–INCH BY 3/8 INCH REBARS (T–ENDS, J–HOOKS).
5. FILTER FABRIC SHALL BE LAPPED OVER ENDS 6 INCHES TO COVER SEGMENT JOINTS. FASTEN JOINTS WITH GALVANIZED SHOAT RINGS OR EQUIVALENT.
6. THE BARRIER STRUCTURE SHALL BE WELDED WIRE MESH, 18 INCHES ON EACH SIDE.

## TRIANGULAR FILTER FABRIC FENCE

TFF
SYMBOL



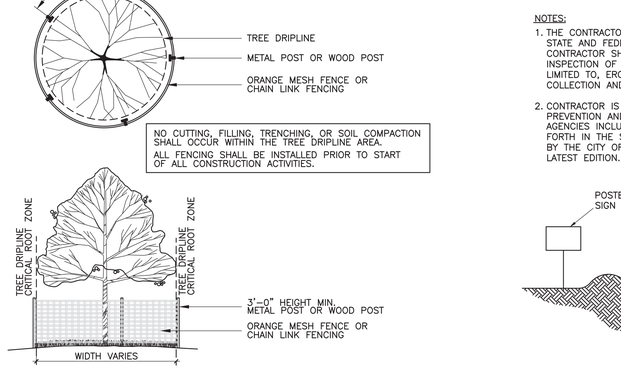




GENERAL NOTES:

1. GRAVEL BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE GRAVEL FOR BAGS.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE–THIRD THE HEIGHT OF THE BARRIER.

## INLET PROTECTION BARRIERS FOR STAGE II INLETS

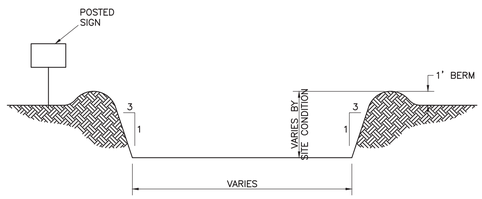
IPB
STAGE II
SYMBOL




## TREE PROTECTION DETAIL

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION AND SUBMISSION OF ALL APPLICABLE STATE AND FEDERAL FORMS REQUIRED FOR STORM WATER POLLUTION PREVENTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION, IMPLEMENTATION, MAINTENANCE, AND INSPECTION OF STORM WATER POLLUTION PREVENTION CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROLS, STORM WATER MANAGEMENT PLANS, WASTE COLLECTION AND DISPOSAL, OFF–SITE VEHICLE TRACKING, AND OTHER PRACTICES.
2. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL ADDITIONAL STORM WATER POLLUTION PREVENTION AND STORM WATER CONTROL MEASURES AND SUBMITTALS TO ALL GOVERNING AGENCIES INCLUDING THE EPA REQUIRED DURING CONSTRUCTION TO MEET THE GUIDELINES SET FORTH IN THE STORM WATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES PREPARED BY THE CITY OF HOUSTON, HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT, LATEST EDITION.




SECTION A–A
N.T.S.

GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASH OUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASH OUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASH OUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN–SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASH OUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASH OUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS AND EQUIPMENT.

## CONCRETE TRUCK WASH OUT AREA

CTW


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

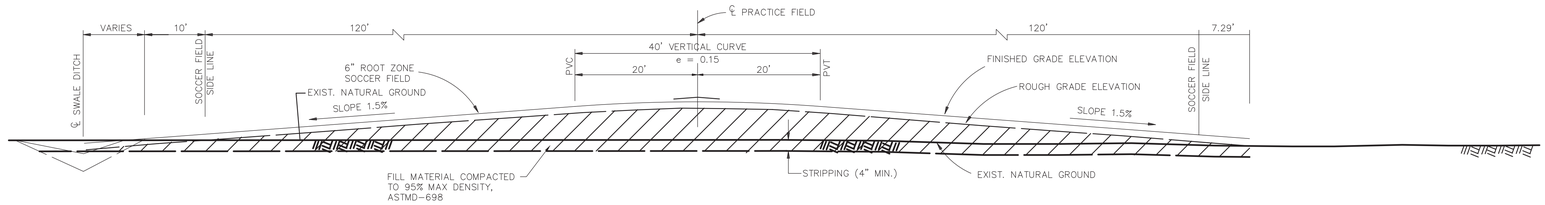

STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

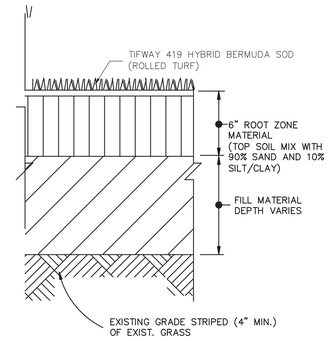
# C7.04

STORM WATER POLLUTION PREVENTION DETAILS




## TYPICAL TRANSVERSE SECTION
## PROPOSED NATURAL GRASS SOCCER & FOOTBALL FIELD

N.T.S.




NOTE:
SUITABLE FILL MATERIAL SHALL CONSIST OF THE ON-SITE EXCAVATED LEAN CLAY SOILS THAT ARE FREE OF ORGANICS AND DELETERIOUS SUBSTANCES. FILL MATERIAL SHALL BE PLACED IN 8 INCH THICK LOOSE LIFTS AND COMPACTED TO AN IN-PLACE DRY DENSTIY, ASTM D-698 WITHIN ±2% OF OPTIMUM MOISTURE CONTENT.

## PROPOSED ROOT ZONE ATHLETIC FIELDS

N.T.S.

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
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6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

**WEST AGRICULTURAL SCIENCE FACILITY**
TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433

ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
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tel 281.286.6605, fax 713.977.4620

STATE OF TEXAS
BRIAN W. REED
128933
LICENSED PROFESSIONAL ENGINEER
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
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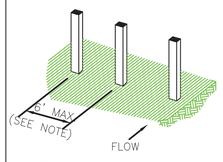
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

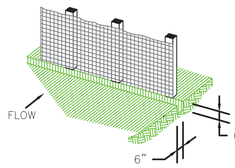
# C7.05

GRASS FIELD DETAILS

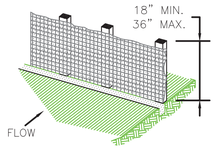
1. SET POSTS AT REQUIRED SPACING

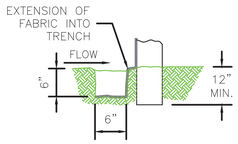


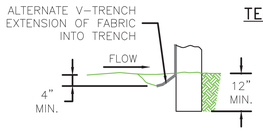

2. EXCAVATE A 6"x6" TRENCH UPSTREAM ALONG THE LINE OF POSTS AND SECURE WIRE FENCE TO POSTS.



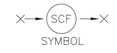

3. ATTACH FILTER FABRIC TO POSTS AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.



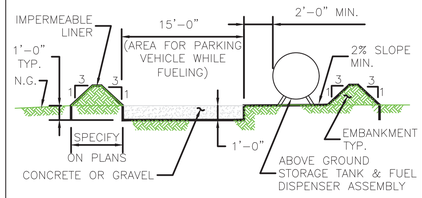

## TEMPORARY SEDIMENT CONTROL FENCE




SYMBOL

**GENERAL NOTES:**

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES, TIE WIRES, OR RINGS.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.



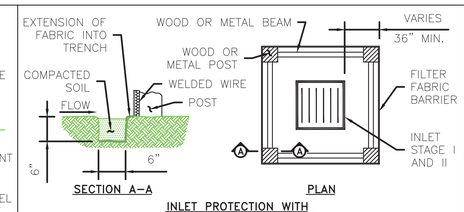

## ABOVE GROUND TEMPORARY VEHICLE AND EQUIPMENT FUELING AREA WITH TANK

TFA

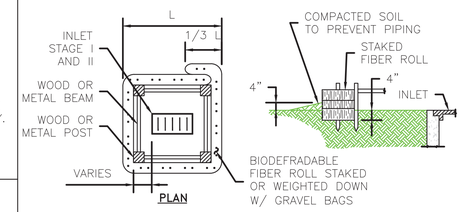
SYMBOL

**GENERAL NOTES:**

1. THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
2. PROVIDE A MINIMUM SLOPE OF 2% TOWARD THE SUMP PIT.
3. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.




**INLET PROTECTION WITH SEDIMENT CONTROL FENCE**




**INLET PROTECTION WITH BIODEGRADABLE FILTER ROLLS**

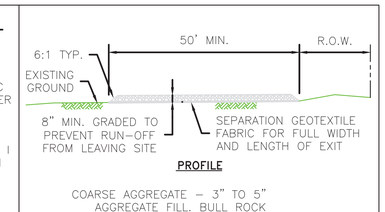
**GENERAL NOTES:**

1. BIODEGRADABLE FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER AND AS APPROVED BY THE ENGINEER.

## INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB

SYMBOL



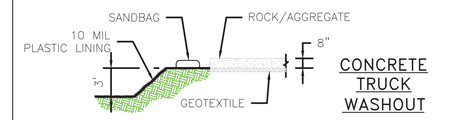

## CONSTRUCTION EXIT

CE-1

SYMBOL

**GENERAL NOTES:**

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. MINIMUM 14 FEET WIDTH FOR ONE WAY TRAFFIC AND 20 FEET WIDTH FOR TWO WAY TRAFFIC.




## BARREL STORAGE AREA

BSA

SYMBOL

**GENERAL NOTES:**

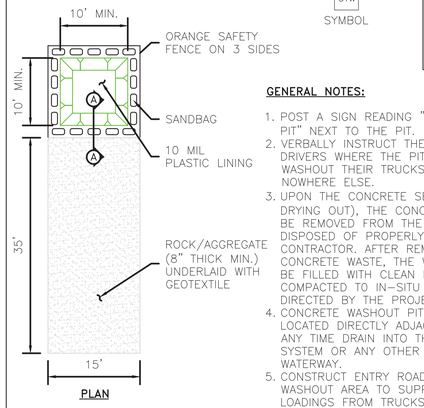
1. ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
2. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
3. CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.




## CONCRETE TRUCK WASHOUT

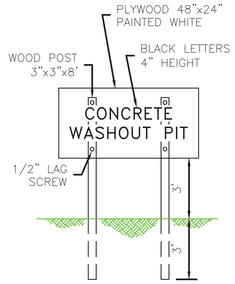
CTW

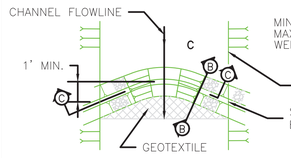
SYMBOL




**GENERAL NOTES:**

1. POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.




**IN-CHANNEL FILTER DAM PLAN**

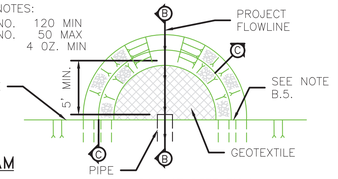
GEOTEXTILE NOTES:

| | | | |
|---|---|---|---|
| MIN. AOS | SIEVE NO. | 120 MIN | |
| MAX. AOS | SIEVE NO. | 50 MAX | |
| WEIGHT | OZ/SY | 4 OZ. MIN | |

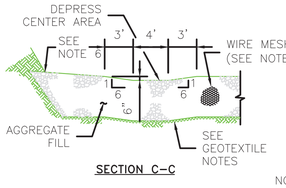
## FILTER DAM

RFD-TYPE

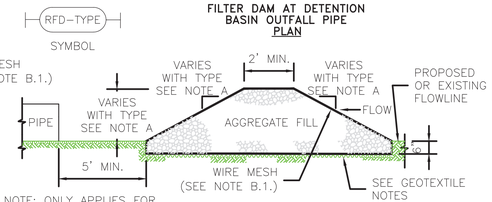
SYMBOL




**FILTER DAM AT DETENTION BASIN OUTFALL PIPE PLAN**




**SECTION C-C**




NOTE: ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

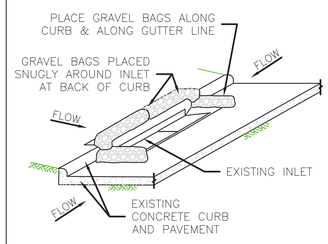
**SECTION B-B**

A. TYPES OF FILTER DAMS

1. TYPE 1 (NON-REINFORCED)
   a. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM)
   c. SLOPES - 2:1 (MAXIMUM).
2. TYPE 2 (REINFORCED).
   a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 2:1 (MAXIMUM).
3. TYPE 3 (REINFORCED)
   a. HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 3:1 (MAXIMUM).
4. TYPE 4 (GABION)
   a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. PLACE AGGREGATE FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   a. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
   b. 4-8 INCHES FOR ROCK FILTER DAM TYPE 3.
3. FOLD WIRE MESH AT UPSTREAM SIDE OVER AGGREGATE FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR RINGS.
4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.




## INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB-II

SYMBOL

**GENERAL NOTES:**

1. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
2. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.

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HARRIS COUNTY ENGINEERING DEPARTMENT

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DRAWN BY: DRAWN_BY

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SCALE: SCALE

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| CHECKED: | BWR |

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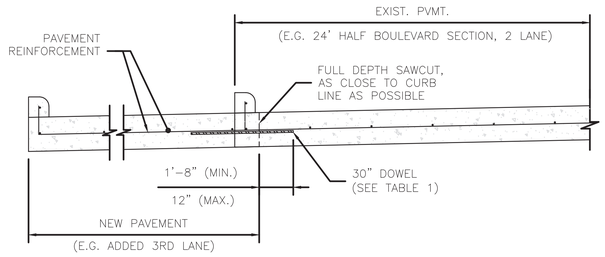
HARRIS COUNTY SWP DETAIL

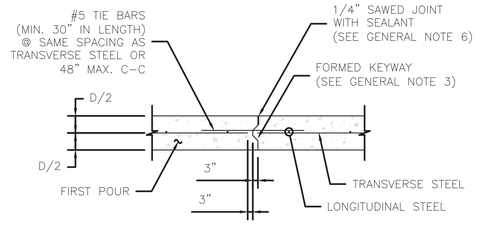



## TYPICAL CONCRETE ROADWAY WIDENING DETAIL

SCALE: 1" = 3'-0"

**TABLE 1**
**(CONSTRUCTION JOINT DOWELS)**

| DOWEL SIZE | PAVEMENT DEPTH |
|---|---|
| #5 BAR | 7" |
| #6 BAR | ≥9" |
| DOWEL SHALL BE DRILLED INTO EXISTING PAVEMENT (MIN. 10", MAX. 12") AND EPOXIED. (SEE ITEM 361.3) | |

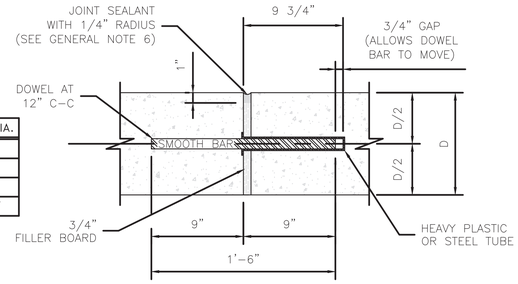



## LONGITUDINAL CONSTRUCTION JOINT

SCALE: 1" = 3'-0"

**EXPANSION JOINT DOWELS**

| PAVEMENT THICKNESS (D) | DOWEL DIA. |
|---|---|
| 6" | 3/4" |
| 7" | 1" |
| 8' | 1" |
| 9" & 10" | 1 1/4" |

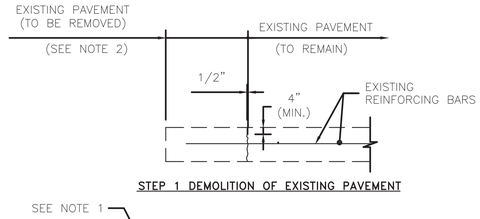



## DOWEL TYPE EXPANSION JOINT

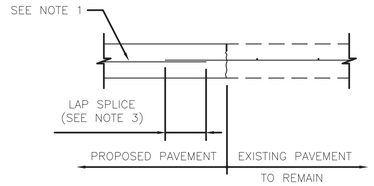
SCALE: 1" = 6"

**NOTES FOR DOWEL EXPANSION JOINT:**

1. EXPANSION JOINT SHALL BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 80 FEET.
2. CENTER DOWEL HORIZONTALLY ON JOINT.
3. EXPANSION JOINT BARS SHALL BE HELD PARALLEL TO THE FINISHED CONCRETE SURFACE.




**STEP 1 DEMOLITION OF EXISTING PAVEMENT**



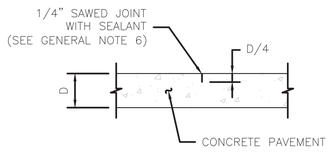

**STEP 2 CONSTRUCTION OF NEW PAVEMENT**

## CONCRETE TO CONCRETE STANDARD PAVEMENT TIE-IN

SCALE: 1" = 3'-0"

**NOTES FOR STANDARD PAVEMENT TIE-IN:**

1. REINFORCING CENTERED IN PROPOSED PAVEMENT, 3" CLEAR AT EDGES.
2. SAWCUT 2" DEEP MINIMUM AND REMOVE 2'-0" EXISTING PAVEMENT OR PAVEMENT WITH CURB. EXPOSE AND CLEAN EXISTING REINFORCING.
3. 24 BAR DIAMETER LAP SPLICE OR WELD, IF DIRECTED.
4. IF NO EXPOSED REINFORCING STEEL EXISTS, HORIZONTAL DOWELS SHALL BE GRADE 60, 30" LONG DRILLED AND EMBEDDED 15" INTO THE CENTER OF THE EXISTING CONCRETE SLAB WITH EPOXY OR APPROVED EQUAL.
   SIZE OF DOWEL BARS SHALL CONFORM TO TABLE 1. DOWELS SHALL BE PLACED 24" CENTER TO CENTER.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN DOWELS (AS SHOWN IN THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" ON THIS SHEET. IF THE CONTRACTOR SO CHOOSES, THE SAWCUTTING AND DOWELS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF THE COUNTY REQUIRES THE FULL DEPTH SAWCUT AND DOWELS).

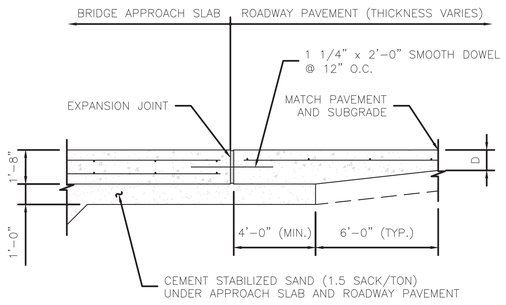



## CONTRACTION JOINT (SAWED)

SCALE: 1" = 3'-0"

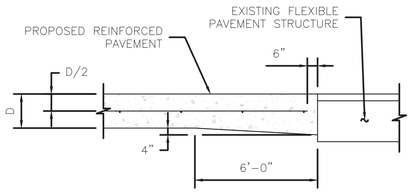
**NOTE FOR CONTRACTION JOINT:**

1. 20'-0" MAXIMUM SPACING BETWEEN JOINTS.




## TYPICAL SECTION PAVING TIE-IN TO BRIDGE APPROACH SLAB

SCALE: 1" = 3'-0"




## TYPICAL PAVING HEADER

SCALE: 1" = 3'-0"

**NOTES FOR PAVING HEADER:**

1. ADDITIONAL CONCRETE FOR PAVING HEADER SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.
2. DISTURBED MATERIAL IN THE FLEXIBLE PAVEMENT WILL BE BACKFILLED WITH ASPHALT CONCRETE PAVEMENT (ACP). THE ACP WILL BE CONSIDERED INCIDENTAL TO VARIOUS PAVING BID ITEMS.

## GENERAL NOTES:

1. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND REINFORCING, REFER TO THE GOVERNING SPECIFICATION ITEM 360 "CONCRETE PAVEMENT".
2. THE CHAIRS USED TO SUPPORT THE BAR MATS SHALL BE OF SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO HOLD THE MAT WITHIN THE PLACEMENT HEIGHT, AND SHALL BE OF A TYPE APPROVED BY THE ENGINEER. SPACING OF BAR SUPPORT CHAIRS SHALL BE 3'-0" MAXIMUM.
3. SAWED CONTRACTION JOINTS SHALL BE USED FOR LONGITUDINAL JOINTS WHEREVER MORE THAN ONE LANE WIDTH IS PLACED IN A SINGLE POUR. KEYED CONSTRUCTION JOINTS SHALL BE USED AT ALL OTHER JOINTS.
4. ALL SAW CUTTING SHOWN ON THIS DETAIL SHALL BE INCIDENTAL TO ITEM 360 "CONCRETE PAVEMENT".
5. D = THICKNESS OF CONCRETE PAVEMENT.
   - FOR DEVELOPMENT PROJECTS SEE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE."
   - FOR PUBLIC PROJECTS SEE HCED 1988 DESIGN GUIDELINES.
6. JOINT SEALANT SHALL CONFORM TO THE REQUIREMENTS OF ITEM 360 "CONCRETE PAVEMENT".

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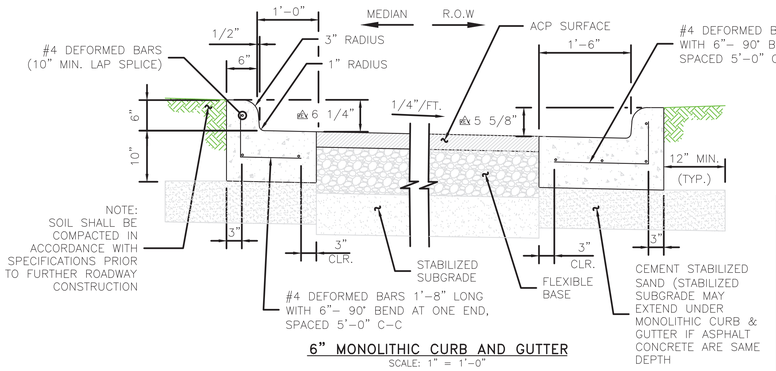
HARRIS COUNTY CONCRETE PAVEMENT DETAIL 1

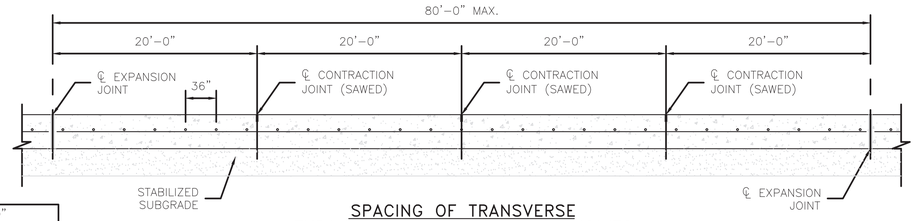



## 6" MONOLITHIC CURB AND GUTTER

SCALE: 1" = 1'-0"

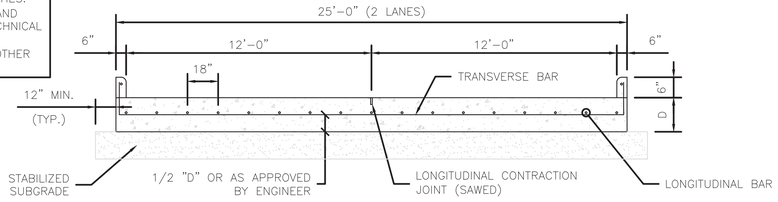
**SLAB AND REBAR NOTES:**

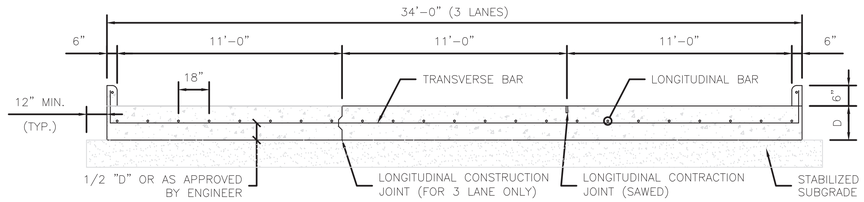
1. TYPICAL SLAB THICKNESS D=10"
2. TYPICAL REBAR SIZE AND SPACING ARE:
   a. #5 BAR @ 18" C-C LONGITUDINAL
   b. #5 BAR @ 36" C-C TRANSVERSE
3. REBAR SHALL NOT BE PLACED WITHIN 3" FROM THE EDGE OF PAVEMENT.
4. TYPICAL STABILIZED SUBGRADE THICKNESS IS 8 INCHES.
5. FOR HEAVY INDUSTRIAL TRAFFIC, SLAB THICKNESS AND REBAR SIZE AND SPACING WILL BE AS PER GEOTECHNICAL RECOMMENDATION.
6. ALL BENT BARS SHALL BE GRADE 40 STEEL, ALL OTHER SHALL BE GRADE 60.




## SPACING OF TRANSVERSE EXPANSION AND CONTRACTION JOINTS

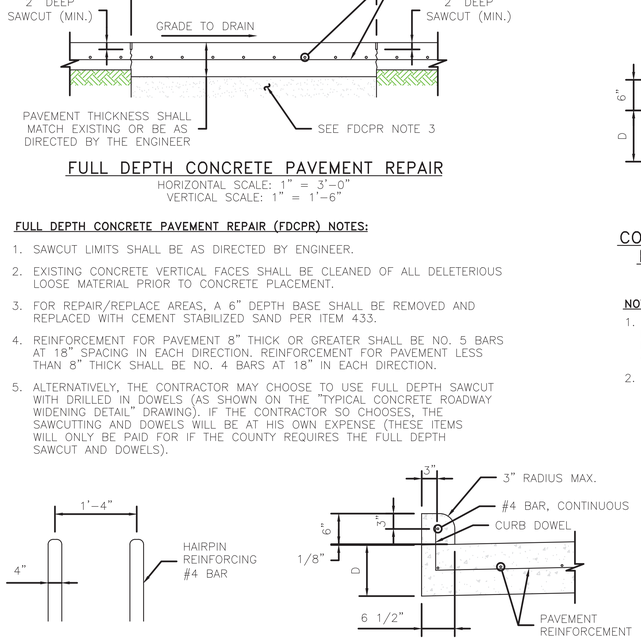
HORIZONTAL SCALE: 1" = 6'-0"
VERTICAL SCALE: 1" = 1'-6"




## TYPICAL STEEL REBAR REPLACEMENT AND SPACING OF LONGITUDINAL JOINTS (NEW CONSTRUCTION)

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

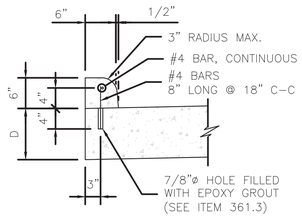



## FULL DEPTH CONCRETE PAVEMENT REPAIR

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

**FULL DEPTH CONCRETE PAVEMENT REPAIR (FDCPR) NOTES:**

1. SAWCUT LIMITS SHALL BE AS DIRECTED BY ENGINEER.
2. EXISTING CONCRETE VERTICAL FACES SHALL BE CLEANED OF ALL DELETERIOUS LOOSE MATERIAL PRIOR TO CONCRETE PLACEMENT.
3. FOR REPAIR/REPLACE AREAS, A 6" DEPTH BASE SHALL BE REMOVED AND REPLACED WITH CEMENT STABILIZED SAND PER ITEM 433.
4. REINFORCEMENT FOR PAVEMENT 8" THICK OR GREATER SHALL BE NO. 5 BARS AT 18" SPACING IN EACH DIRECTION. REINFORCEMENT FOR PAVEMENT LESS THAN 8" THICK SHALL BE NO. 4 BARS AT 18" IN EACH DIRECTION.
5. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO USE FULL DEPTH SAWCUT WITH DRILLED IN DOWELS (AS SHOWN ON THE "TYPICAL CONCRETE ROADWAY WIDENING DETAIL" DRAWING). IF THE CONTRACTOR SO CHOOSES, THE SAWCUTTING AND DOWELS WILL BE AT HIS OWN EXPENSE (THESE ITEMS WILL ONLY BE PAID FOR IF THE COUNTY REQUIRES THE FULL DEPTH SAWCUT AND DOWELS).




## CONCRETE DOWELED ON CURB FOR CONCRETE PAVEMENT

SCALE: 1" = 1'-0"

**NOTES FOR CURB:**

1. AT EACH PAVEMENT CONTRACTION JOINT, PROVIDE A 1/4" THICK PRE-MOLDED EXPANSION JOINT AT THE FULL WIDTH AND HEIGHT OF THE CURB.
2. FOR EACH PAVEMENT EXPANSION JOINT, THE PRE-MOLDED EXPANSION JOINT FILLER MATERIAL SHALL BE THE FULL WIDTH AND HEIGHT OF THE CURB.



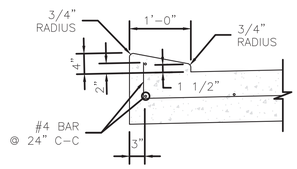

## ALTERNATE VERTICAL REINFORCEMENT

SCALE: 1" = 1'-6"



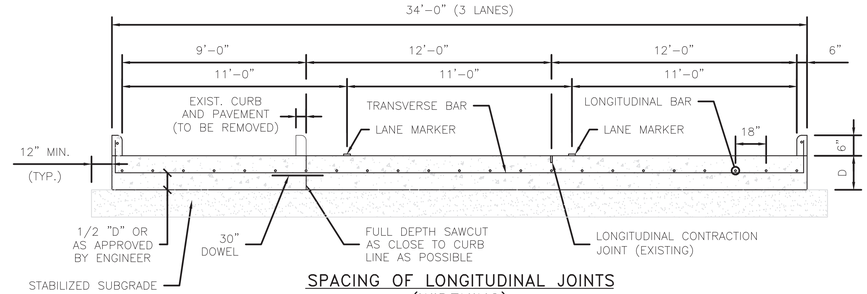

## TYPICAL CONCRETE CURB REINFORCING DETAILS

SCALE: 1" = 1'-0"




## 4" X 12" MONOLITHIC CURB

SCALE: 1" = 1'-0"




## SPACING OF LONGITUDINAL JOINTS (WIDENING)

HORIZONTAL SCALE: 1" = 3'-0"
VERTICAL SCALE: 1" = 1'-6"

| NO. | REVISIONS | DATE | NAME |
|---|---|---|---|
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| # | REVISION_TEXT | DATE | INIT |
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HARRIS COUNTY
ENGINEERING DEPARTMENT

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STATE OF TEXAS
BRIAN W. REED
128933
LICENSED
PROFESSIONAL ENGINEER
07/28/2025

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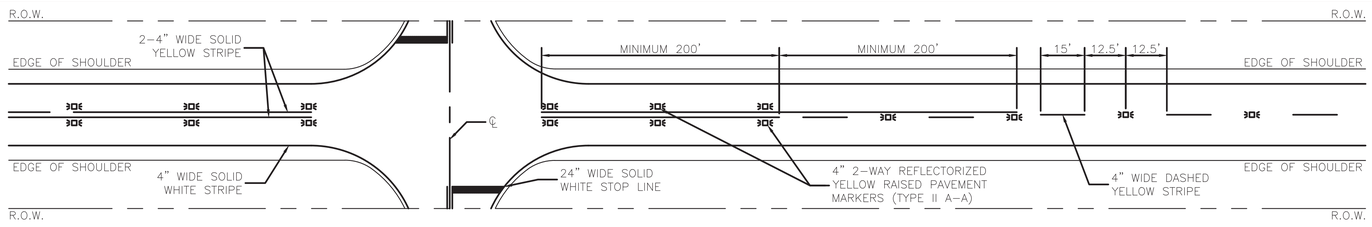
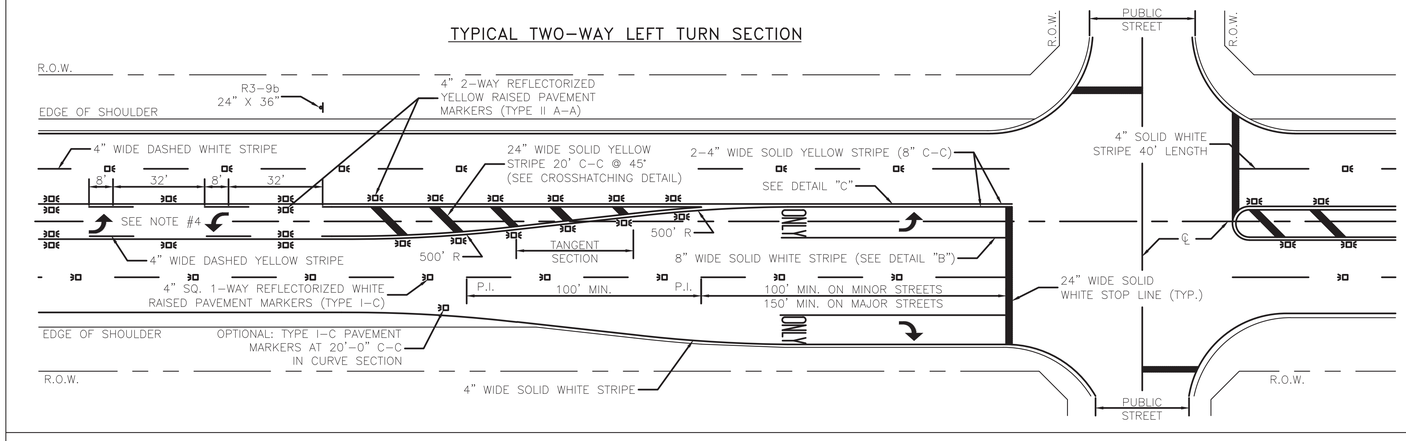
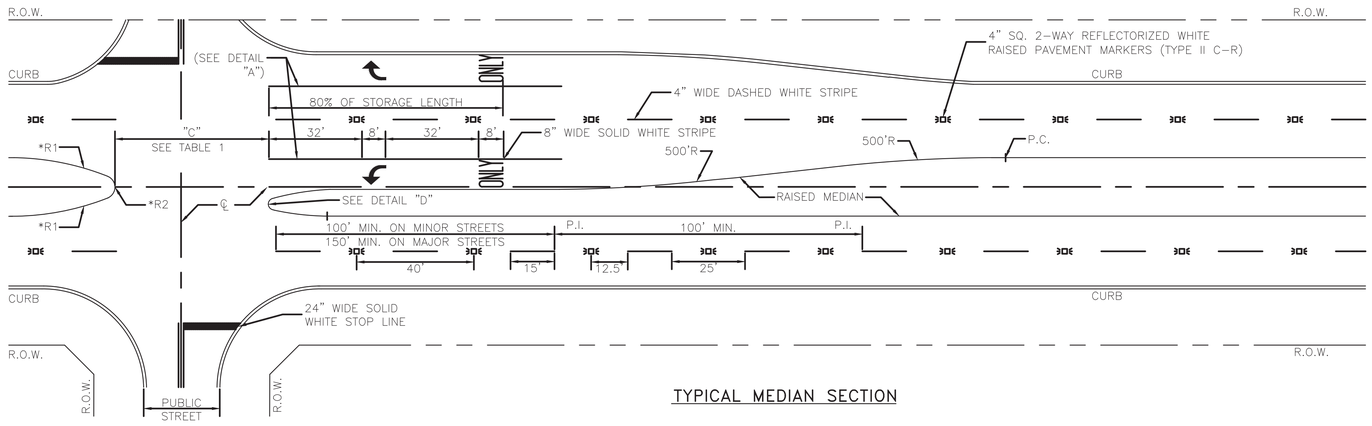
HARRIS COUNTY CONCRETE PAVEMENT DETAIL 2




TYPICAL TWO LANE TWO–WAY ROAD

## TYPICAL TWO–WAY LEFT TURN SECTION



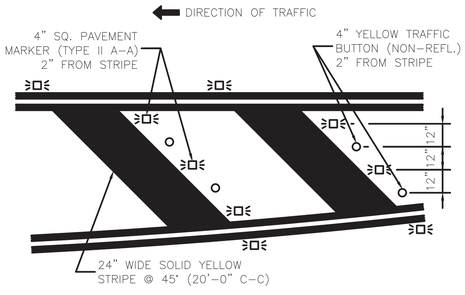




TYPICAL MEDIAN SECTION

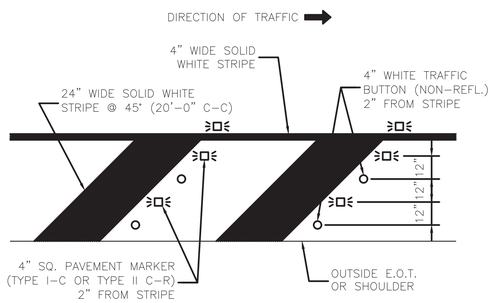
## NOTES:

1. ALL PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (TMUTCD).
2. ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED ADJACENT TO STRIPES (APPROXIMATELY 2").
3. LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' ON MINOR STREETS AND A MIN. 150' ON MAJOR STREETS.
4. REPEAT ARROWS AT APPROXIMATELY 1000' INTERVALS WITHIN TWO–WAY LEFT TURN SECTION.
5. WHEN PAVEMENT MARKINGS EXTEND INTO OR CONTINUE THROUGH AN INTERSECTION AREA, THEY SHALL BE THE SAME COLOR AND AT LEAST THE SAME WIDTH AS THE LINE MARKINGS THEY EXTEND.
6. WHEN CROSSWALK MARKINGS ARE USED WITHIN AN ESTABLISHED SCHOOL ZONE AREA, CONTINENTAL TYPE MARKINGS SHALL BE USED.
7. ADDITIONAL SET OF "WORD" AND "ARROW" PAVEMENT MARKINGS SHALL BE USED WHEN TURN LANE STORAGE LENGTH IS 160 FEET OR GREATER.

## CROSSHATCHING DETAIL




## OUTSIDE EDGE CROSSHATCHING DETAIL

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STATE OF TEXAS — BRIAN W. REED — 128933 — LICENSED PROFESSIONAL ENGINEER
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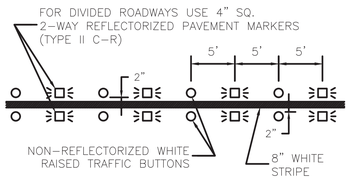
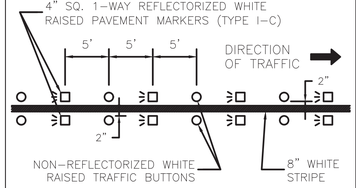
HARRIS COUNTY PAVEMENT MARKING DETAIL 1

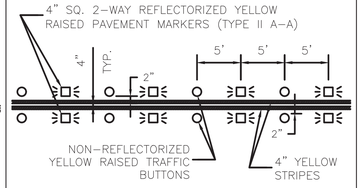
## DETAIL "A"
(FOR DIVIDED ROADWAYS)




## DETAIL "B"
(FOR UNDIVIDED ROADWAYS)

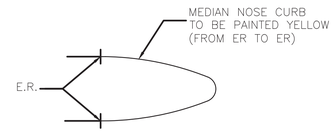



## DETAIL "C"

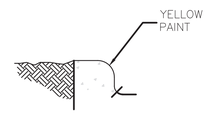



## DETAIL "D"

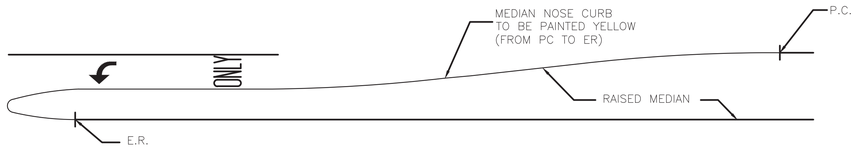
* PAINT FROM THE BACK OF CURB TO THE GUTTER LINE




TYPICAL MEDIAN NOSE




TYPICAL CURB SECTION




RAISED MEDIAN WITH TURN BAY

## PAVEMENT MARKER LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| ⋗□⋖ | 4" x 4" REFLECTORIZED RAISED PAVEMENT MARKER |
| □⋖ | INDICATED DIRECTION OF TRAFFIC FLOW |
| ○ | NON-REFLECTIVE 4" DIA. RAISED TRAFFIC BUTTON |

## RADIUS DIMENSIONS

| MEDIAN | *R1 | *R2 |
|---|---|---|
| ≤10' | N/A | W/2 |
| >10' ≤40' | 90' | W/5 |
| >40' | N/A | N/A |

## TABLE 1

TYPICAL MEDIAN OPENING "C"

| MEDIAN INTERRUPTION | (1) NO LTB | (1) 1 LTB | (1) 2 LTB |
|---|---|---|---|
| PRIVATE DRIVE | 45' | 52.5' | 60' |
| UNDIVIDED STREET <40' | 45' | 52.5' (2) | 60' |
| UNDIVIDED STREET 44' | 50' | 55' (2) | 60' |
| DIVIDED STREET | D+22' | D+22' | D+22' |

**NOTES:**

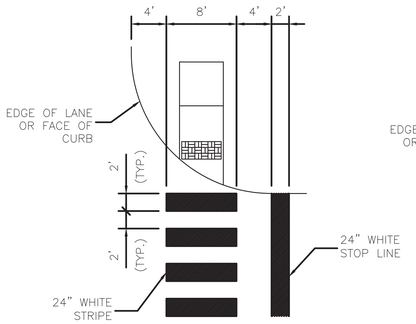
(1) LTB = LEFT TURN BAY

(2) DISTANCE FROM CENTERLINE OF OPENING TO MEDIAN NOSE WITH LEFT TURN LANE IS 30' FOR RIGHT ANGLE INTERSECTIONS, FOR INTERSECTIONS OTHER THAN 90°, APPLY DESIGN VEHICLE TURNING TEMPLATE TO DETERMINE DIMENSION TO MEDIAN NOSE CUT OFF.

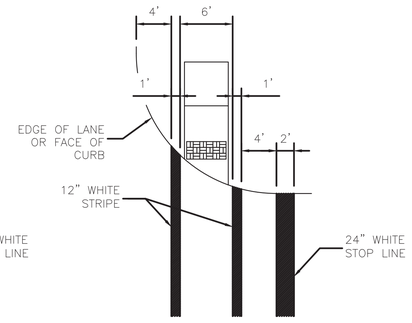
(3) D = WIDTH OF DIVIDED STREET

## TYPICAL CROSSWALK PLACEMENT

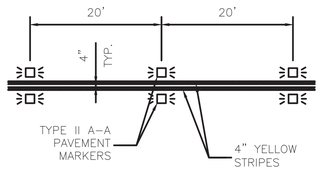
### CONTINENTAL TYPE



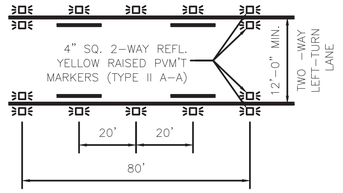

### STANDARD TYPE



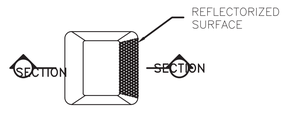

## CENTER LINE DETAIL CURVE SECTION



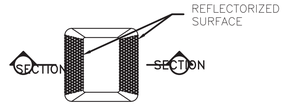

## TWO-WAY LEFT TURN CURVE SECTION



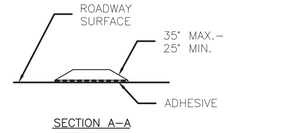

## RAISED PAVEMENT MARKERS




TYPE I (TOP VIEW)

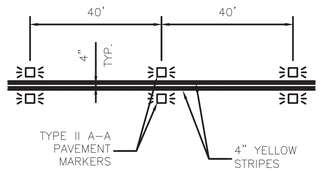



TYPE II (TOP VIEW)

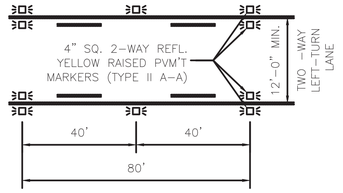



SECTION A-A

## CENTER LINE DETAIL TANGENT SECTION




## TWO-WAY LEFT TURN TANGENT SECTION

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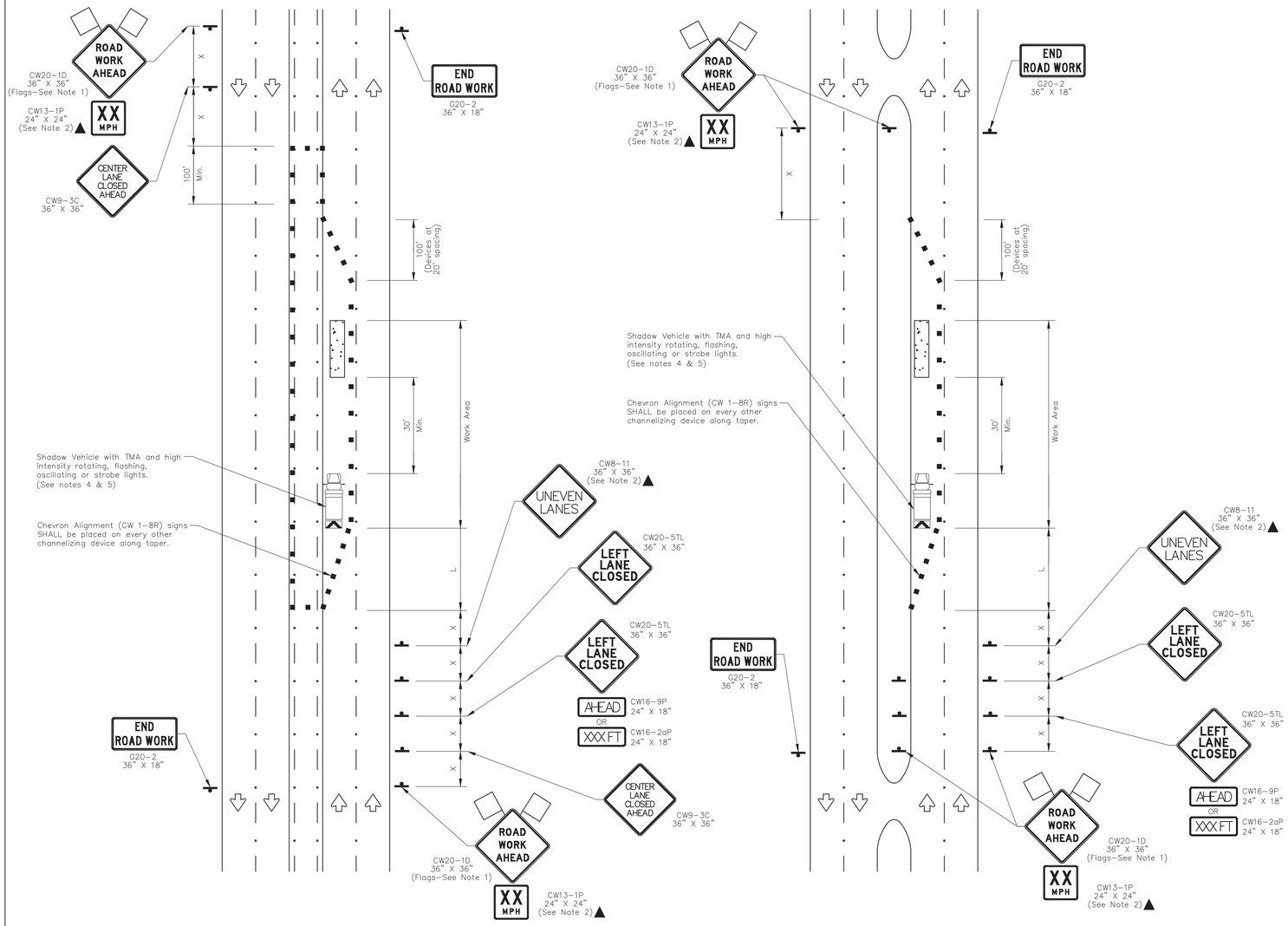
HARRIS COUNTY
PAVEMENT MARKING
DETAIL 2




LEFT LANE CLOSURE (5 LANE ROAD)

LEFT LANE CLOSURE (4 LANE BOULEVARD ROAD)

## TRAFFIC CONTROL PLAN SECTION SHALL BE COMPLETED BY ENGINEER

| ROADWAY | POSTED SPEED | TAPER LENGTH | SPACING CHANNELIZING DEVICES | | SIGN SPACING | BUFFER SPACE |
|---|---|---|---|---|---|---|
| | | | TAPER | TANGENT | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

LEGEND

| | | | |
|---|---|---|---|
| | Type 3 Barricade | | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed * | Formula | Minimum Desirable Taper Lengths "L" ** | | | Suggested Maximum Spacing of Channelizing Devices | | Minimum Sign Spacing "X" Distance | Suggested Longitudinal Buffer Space "B" |
|---|---|---|---|---|---|---|---|---|
| | | 10' Offset | 11' Offset | 12' Offset | On a Taper | On a Tangent | | |
| 30 | $L=\frac{WS^2}{60}$ | 150' | 165' | 180' | 30' | 60' | 120' | 90' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' |
| 40 | | 265' | 295' | 320' | 40' | 80' | 240' | 155' |
| 45 | L=WS | 450' | 495' | 540' | 45' | 90' | 320' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 800' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 900' | 540' |

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

## GENERAL NOTES

1. Flags attached to signs where shown are OPTIONAL.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. Contractor shall provide and install traffic control devices in conformance with part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD – Latest edition with revisions) during construction.
7. No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru Friday.
8. Off duty uniformed law enforcement officers/flaggers are required to direct traffic when applicable.
9. If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

| NO. | REVISIONS | DATE | NAME |
|---|---|---|---|
| # | REVISION_TEXT | DATE | INIT |
| # | REVISION_TEXT | DATE | INIT |
| # | REVISION_TEXT | DATE | INIT |
| # | REVISION_TEXT | DATE | INIT |
| # | REVISION_TEXT | DATE | INIT |

HARRIS COUNTY ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

PROJECT TITLE:

SHEET DESCRIPTION:

TRAFFIC STANDARD NO.

DRAWN BY: DRAWN_BY

DATE: DATE

CK'D BY: CK'D_BY

SCALE: SCALE

SHEET NO: PAGE/PAGE


CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


# NORTHWEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS, TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


STATE OF TEXAS
BRIAN W. REES
128933
LICENSED
PROFESSIONAL ENGINEER

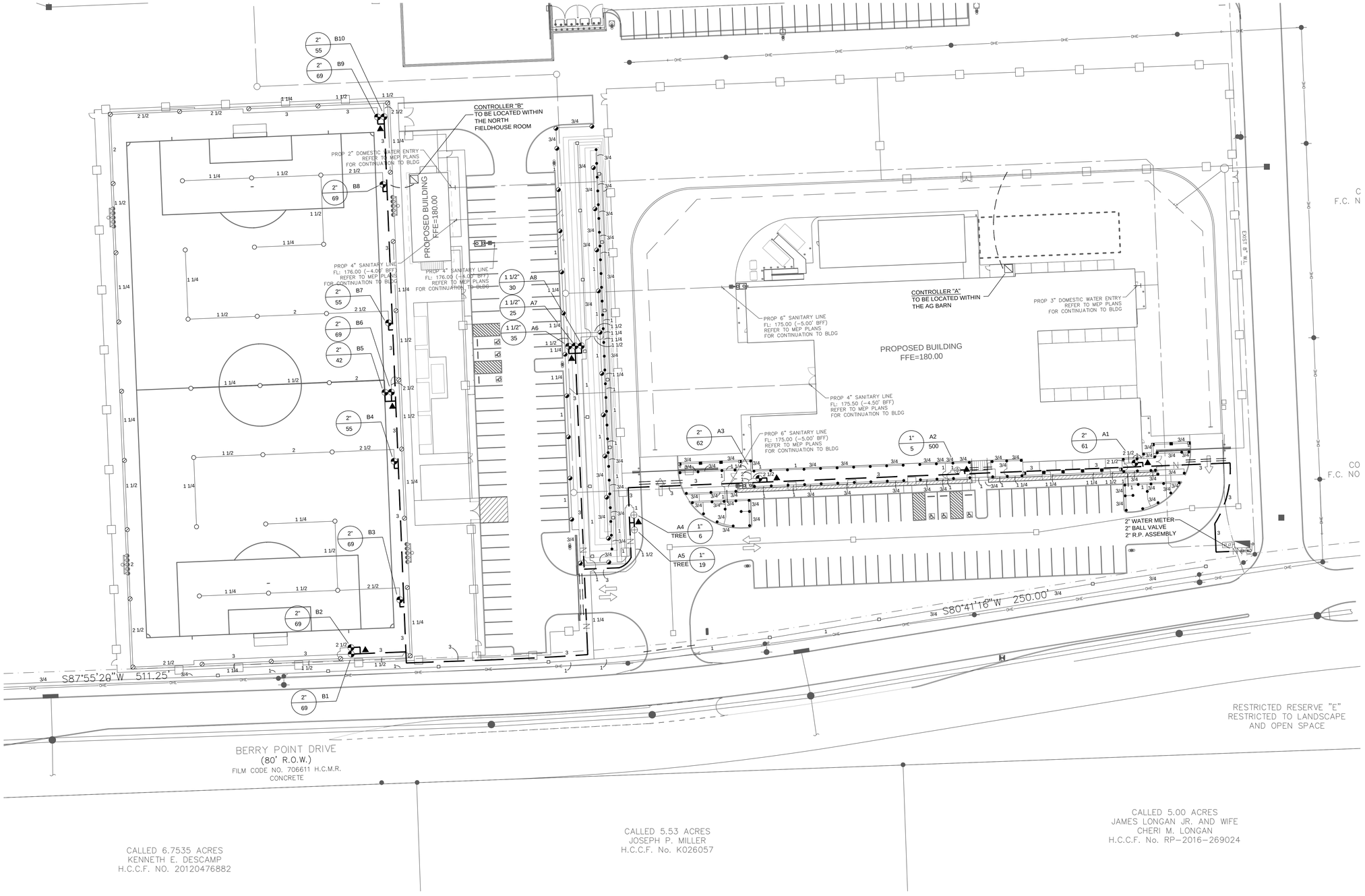
07/28/2025

| PROJECT #: | 202414 |
|---|---|
| DATE: | 2025-07-28 |
| DRAWN: | JDK; BWR |
| CHECKED: | BWR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

C7.11

HARRIS COUNTY TRAFFIC CONTROL DETAIL




## 01 IRRIGATION PLAN

SCALE: 1" = 30'-0"

0 15 30 60

### TEMPORARY IRRIGATION

THE CONTRACTOR SHALL COORDINATE WITH THE PLANTING PLAN AND PROVIDE TEMPORARY IRRIGATION FOR THE ESTABLISHMENT OF ALL PROPOSED PLANT MATERIALS LOCATED OUTSIDE THE LIMITS OF COVERAGE PROVIDED BY THE PERMANENT SYSTEM.

IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ( TCEQ ) ( MC-178 ) P.O. BOX 13087. T.C.E.Q.'S WEB SITE IS: WWW.TCEQ.STATE.TX.US


James Pole
IRRIGATION CONSULTANTS
IRRIGATION DESIGN, CONSULTING, AND LANDSCAPE WATER MANAGEMENT
TEXAS L.I.C. #658
P.O. BOX 1845
DENTON, TEXAS 76202
OFFICE: 940.243.2364
FAX: 940.382.2475
james@jamespoleirrigation.com


ASIC PROFESSIONAL MEMBER

STATE OF TEXAS · CHRISTOPHER DIGGS · 10311 · LICENSED IRRIGATOR · 07 / 28 / 2025


CONSULTANTS

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Tel: 832.287.9874

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Tel: 713.780.3345

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Houston, TX 77042
Tel: 713.914.0888


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT

---- BERRY POINT DR. CYPRESS, TX, 77433


ARCADIS

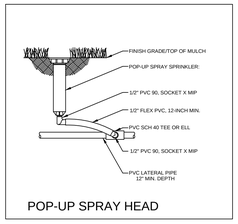
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620
TALON ENGINEERING, LLC F-24281


| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | CD |
| CHECKED: | CD |

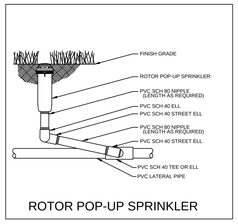
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

LI1.1

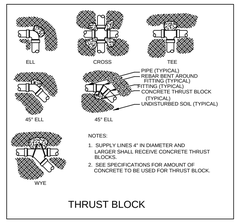
IRRIGATION PLAN
(SHEET 1 OF 2)



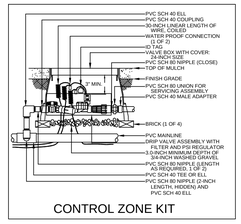

POP-UP SPRAY HEAD



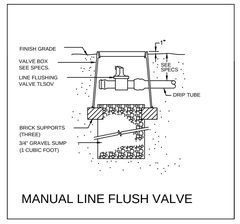

ROTOR POP-UP SPRINKLER



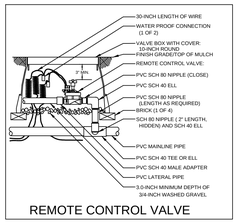

THRUST BLOCK



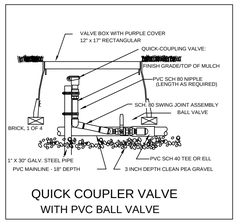

CONTROL ZONE KIT



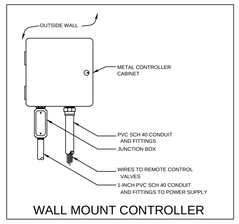

MANUAL LINE FLUSH VALVE



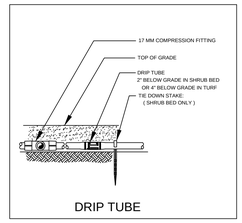

REMOTE CONTROL VALVE



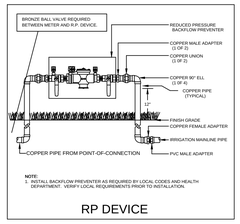

QUICK COUPLER VALVE
WITH PVC BALL VALVE



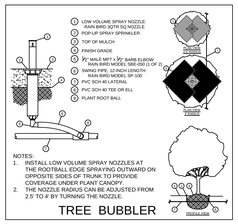

WALL MOUNT CONTROLLER



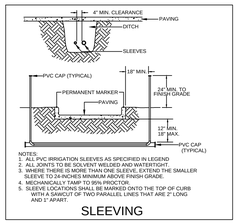

DRIP TUBE



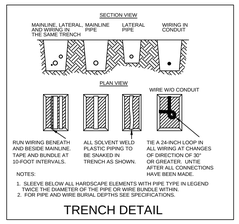

RP DEVICE



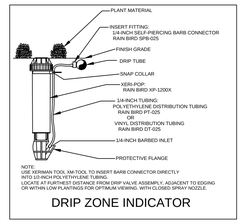

TREE BUBBLER



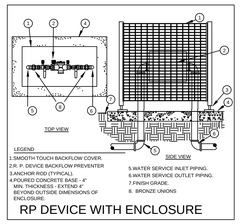

SLEEVING



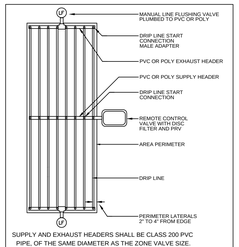

TRENCH DETAIL




DRIP ZONE INDICATOR



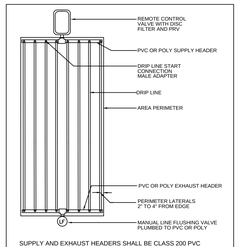

RP DEVICE WITH ENCLOSURE




SUPPLY AND EXHAUST HEADERS SHALL BE CLASS 200 PVC PIPE, OF THE SAME DIAMETER AS THE ZONE VALVE SIZE.

USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

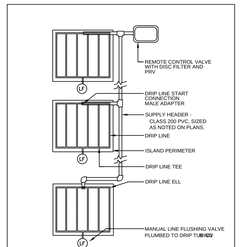
DRIP CENTER FEED LAYOUT




SUPPLY AND EXHAUST HEADERS SHALL BE CLASS 200 PVC PIPE, OF THE SAME DIAMETER AS THE ZONE VALVE SIZE.

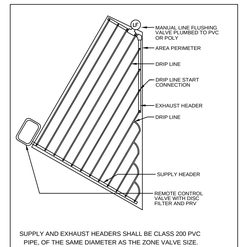
USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

DRIP END FEED LAYOUT




USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

DRIP ISLAND LAYOUT




SUPPLY AND EXHAUST HEADERS SHALL BE CLASS 200 PVC PIPE, OF THE SAME DIAMETER AS THE ZONE VALVE SIZE.

USE DRIP TUBE FOR SUPPLY AND EXHAUST HEADERS ON GRIDS WITH FLOW SMALLER THAN 5 GPM ONLY.

IRREGULAR AREA DRIP LAYOUT

# INSTALLATION NOTES

1. COORDINATE IRRIGATION INSTALLATION WITH PLANTING PLAN AND SITE CONDITIONS TO PROVIDE COMPLETE COVERAGE WITH MINIMUM OVERSPRAY. THE IRRIGATION CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS TO ENSURE PROPER COVERAGE AT NO ADDITIONAL COST TO THE OWNER. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE MANDATED IRRIGATION ORDINANCES AND CODES, AND WILL SECURE ALL REQUIRED PERMITS. L.I.C. SHALL PAY ANY ASSOCIATED FEES UNLESS OTHERWISE NOTED. ALL LOCAL CODES SHALL PREVAIL OVER ANY DISCREPANCIES HEREIN AND SHALL BE ADDRESSED BEFORE ANY CONSTRUCTION BEGINS.
2. NO MACHINE TRENCHING SHALL BE PERMITTED WITHIN THE ROOT ZONE OF EXISTING TREES. HAND-DIG ONLY, WITHIN THE ROOT ZONES OF EXISTING TREES. NO ROOTS OVER 1" DIAMETER SHALL BE CUT. STAKE ALL PROPOSED TRENCH ROUTES NEAR EXISTING TREES FOR APPROVAL BY THE LANDSCAPE ARCHITECT BEFORE DIGGING BEGINS.
3. CONFIRM MINIMUM STATIC WATER PRESSURE OF 65 PSI AT THE HIGHEST ELEVATION OF THE SYSTEM LIMITS, AND MAXIMUM STATIC WATER PRESSURE OF 90 P.S.I. AT THE LOWEST ELEVATION OF THE SYSTEM LIMITS AT LEAST 7 DAYS BEFORE BEGINNING WORK. IF STATIC WATER PRESSURE IS OUTSIDE THE RANGE STATED ABOVE, DO NOT PROCEED UNTIL DIRECTED BY THE LANDSCAPE ARCHITECT.
4. LATERAL PIPE SHALL BE INSTALLED AT A MINIMUM DEPTH OF 12 INCHES. MAINLINE PIPE AND WIRES SHALL BE INSTALLED AT A MINIMUM DEPTH OF 18 INCHES. NO MACHINE TRENCHING SHALL BE PERMITTED WITHIN EXISTING TREE ROOT ZONES. WHEN HAND - TRENCHING WITHIN EXISTING TREE ROOT ZONES, NO ROOTS LARGER THAN 1" DIAMETER SHALL BE CUT.
5. IRRIGATION PLANS ARE DIAGRAMMATIC ONLY. IRRIGATION EQUIPMENT MAY BE SHOWN IN IMPERVIOUS SURFACES FOR GRAPHIC CLARITY PURPOSES. L.I.C. SHALL MAKE MINOR ADJUSTMENTS, AT NO ADDITIONAL COST TO THE OWNER, OF THE LOCATIONS OF THE IRRIGATION EQUIPMENT IN ORDER TO AVOID UTILITIES OR IMPERVIOUS SURFACES. R.F.I.S MAY BE SUBMITTED FOR APPROVAL OF CHANGES. UNSLEEVED PIPES MAY BE SHOWN UNDER PAVEMENT FOR GRAPHIC CLARITY ONLY. INSTALL THESE PIPES IN ADJACENT LANDSCAPED AREAS.
6. ELECTRIC POWER SHALL BE PROVIDED WITHIN FIVE FEET OF CONTROLLER LOCATION BY GENERAL CONTRACTOR. L.I.C. TO PROVIDE FINAL HARD-WIRE TO CONTROLLER.
7. 24 VOLT VALVE WIRE SHALL BE A MINIMUM OF #14 GAUGE, U.F. APPROVED FOR DIRECT BURIAL, SINGLE CONDUCTOR "IRRIGATION WIRE". WIRE SPLICES SHALL INCLUDE DBY CONNECTORS AS MANUFACTURED BY 3M COMPANY. ALL FIELD SPLICES SHALL BE LOCATED IN A ROUND VALVE BOX OF SUFFICIENT SIZE TO ALLOW INSPECTION.
8. VALVE BOXES SHALL BE INSTALLED FLUSH WITH GRADE, SUPPORTED BY BRICKS IF NEEDED, WITH 3 INCHES OF CLEAN PEA GRAVEL LOCATED BELOW THE VALVE. USE 12" x 17" RECTANGULAR VALVE BOXES WITH PURPLE LID FOR QUICK COUPLING VALVES, AND 10" ROUND BOXES FOR ELECTRIC VALVES UNLESS NOTED OTHERWISE.
9. USE RIGID SCH. 80 PVC SWING JOINT ASSEMBLIES TO CONNECT ALL ROTARY HEADS AND QUICK COUPLERS.
10. ALL SPRAY HEADS SHALL BE CONNECTED WITH A 12" MINIMUM LENGTH OF 1/2" FLEX PVC. THE FLEX PVC SHALL BE SOLVENT WELDED TO SCHEDULE 40 PVC FITTINGS WITH WELD-ON #795 SOLVENT AND #P-70 PRIMER.
11. PROVIDE ONE QUICK COUPLER KEY WITH SWIVEL HOSE ELL FOR EVERY SIX Q.C. VALVES. ( MINIMUM ONE SET ).
12. CONTRACTOR IS TO CONTACT APPROPRIATE AUTHORITIES AND LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
13. LATERAL PIPE TO TREE STREAM BUBBLER HEADS IS OMITTED FOR GRAPHIC CLARITY. CONNECT TREE BUBBLER HEADS TO VALVES AS SHOWN WITH CLASS 200 PVC PIPE SIZED TO ALLOW A MAXIMUM FLOW VELOCITY OF 5 FEET PER SECOND
14. THE PROPOSED LOCATIONS OF ALL ABOVE- GROUND EQUIPMENT INCLUDING BACKFLOW PREVENTORS, CONTROLLERS AND WEATHER SENSORS SHALL BE STAKED BY THE CONTRACTOR FOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE BEFORE THESE ITEMS ARE INSTALLED.
15. ALL HEADS SHALL BE INSTALLED A MINIMUM OF 4" FROM PAVEMENT EDGES. ( 6" OR GREATER WHERE REQUIRED BY LOCAL CODE ) FINAL HEAD ADJUSTMENTS BY THE CONTRACTOR SHALL INCLUDE THE ADDITION OF CHECK VALVES WHERE NEEDED TO PREVENT EXCESSIVE LOW HEAD DRAINAGE. THE CONTRACTOR SHALL BUDGET FOR, AND INSTALL CHECK VALVES FOR UP 10 % OF THE TOTAL NUMBER OF HEADS WHEN NEEDED, WITH NO ADDITIONAL COST TO THE OWNER.
16. WHERE SHOWN ON THE PLANS, MASS SHRUB / GROUNDCOVER BEDS SHALL INCLUDE RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE WITH PRE-INSTALLED .6 GPH DRIP EMITTERS AT 12" INTERVALS ( XFS-CV-06-12 ), INSTALLED IN CENTER-FED GRIDS WITH ROWS SPACED 18" APART. INDIVIDUAL DRIP TUBE RUNS SHALL NOT EXCEED 150 L.F. PVC LATERAL "TRUNK" LINES SHALL BE INSTALLED 10" DEEP. DRIP TUBE SHALL BE SET 2" BELOW FINISHED SOIL GRADE ( NOT INCLUDING MULCH LAYER ), SECURELY STAKED EVERY 18". FLUSH VALVES SHALL BE INSTALLED AT THE FARTHEST POINTS FROM THE ZONE VALVE. USE 17 MM BARBED FITTINGS FOR DRIP LINE CONNECTIONS WITH 40 PSI MAX. PRESSURE REGULATOR. USE RAINBIRD "QF" HEADER FOR HEADER / EXHAUST LINES, WITH TWIST-LOCK FITTINGS. RAINBIRD DRIP TUBE SHALL BE INSTALLED PERPENDICULAR TO SLOPE FACE. INSTALL IN-LINE CHECK VALVES FOR EVERY 10 FEET OF DRIP LINE ELEVATION CHANGE WITHIN THE ZONE. USE STAPLES TO SECURE TUBING EVERY 18" EACH DRIP ZONE SHALL INCLUDE ONE RAINBIRD MAINTENANCE "FLAG" MODEL #OPERIND WHICH SHALL CONSIST OF A 12" POP-UP SPRAY HEAD AND COMPLETELY CLOSED SPRAY NOZZLE. THE POP-UP HEAD SHALL BE CONNECTED TO THE DRIP ZONE PIPE, SET FLUSH WITH GRADE, AND LOCATED AT THE FARTHEST DISTANCE FROM THE DRIP VALVE ASSEMBLY. INSTALL THE "FLAG" HEAD ADJACENT TO EDGING OR IN LOW PLANTINGS FOR EASE OF VIEWING. LATERAL PIPE CONNECTING SEPARATE DRIP GRIDS ON THE SAME ZONE IS OMITTED FOR GRAPHIC CLARITY. SIZE LATERAL PIPE JOINING SEPARATE DRIP GRIDS ON THE SAME ZONE VALVE WITH 3/4" CLASS 200 PVC PIPE SPARSLEY SPACED, INDIVIDUAL SHRUB PLANTINGS MAY INCLUDE RAINBIRD #XBT-10 SINGLE-OUTLET EMITTERS OR RAINBIRD #XBT-10-6 MULTI-OUTLET EMITTERS INSTALLED AS DETAILED. PROVIDE MINIMUM TWO, 1 G.P.H. OUTLETS PER INDIVIDUAL SHRUB. SINGLE / MULTI-OUTLET EMITTERS MAY BE CONNECTED TO THE SAME DRIP ZONE VALVE WHICH SERVES ADJACENT DRIP TUBE GRIDS, UNLESS NOTED OTHERWISE.

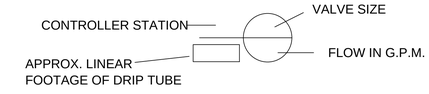
# IRRIGATION LEGEND

- □ RAINBIRD 1806-SAM-PRS SERIES POP UP SPRAY HEADS WITH RAINBIRD SQ NOZZLES, MODEL #3QTR, SET TO 2.5' THROW ( TWO PER LARGE CANOPY TREE )
- ■/◪ RAINBIRD 1804-SAM-PRS SERIES POP UP SPRAY HEAD WITH SST / EST SERIES NOZZLE AS NOTED BELOW
- ● RAINBIRD 1804-SAM-PRS SERIES POP UP SPRAY HEAD WITH U-SERIES NOZZLE AS NOTED BELOW
- ◪ RAINBIRD 5004PCSAMR, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #2.5 NOZZLE UNLESS NOTED OTHERWISE
- ⊘ RAINBIRD 6504-PC, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, PART CIRCLE, #18 NOZZLE AT 40 PSI, UNLESS NOTED OTHERWISE
- ○ RAINBIRD 6504-FC, ADJUSTABLE ARC 4" POP UP ROTARY HEAD, FULL CIRCLE, #18 NOZZLE AT 40 PSI, UNLESS NOTED OTHERWISE
- ▨ RAINBIRD XFS-CV-06-12 SERIES DRIP TUBE IN SHRUB BED INSTALLED AT 2" DEPTH
  SEE INSTALLATION NOTE #16 REGARDING DRIP TUBE LAYOUT IN SHRUB BEDS.
- RAINBIRD PEB SERIES ELECTRIC REMOTE CONTROL VALVE
- RAINBIRD PEB SERIES ELECTRIC REMOTE CONTROL "TREE BUBBLER ZONE" VALVE
  SEE INSTALLATION NOTE #13 REGARDING TREE BUBBLER LATERAL PIPE
- RAINBIRD XCZ-100-PRB-COM / XCZ-150-LCS SERIES AUTOMATIC DRIP VALVE ASSEMBLY WITH 40 PSI PRESSURE REGULATOR AND COMMERCIAL BASKET FILTER WITH STAINLESS STEEL SCREEN
- RAINBIRD 33-DNP QUICK COUPLING VALVE WITH LOCKING PURPLE COVER AND 3/4" PVC BALL VALVE
- ZURN 375XLB SERIES REDUCED PRESSURE TYPE BACKFLOW PREVENTOR INSTALLED PER CITY CODE WITH SMOOTH TOUCH BACKFLOW ENCLOSURE AND SAME SIZE BRONZE BALL VALVE INSTALLED ON THE UP-STREAM SIDE.
- ISOLATION VALVE
  WHERE MAINLINE IS 3" OR SMALLER, INSTALL LASCO "V" SERIES SCH. 80 PVC TRUE UNION BALL VALVE, MAINLINE SIZE
  WHERE MAINLINE IS 4" OR LARGER, INSTALL CAST IRON PUSH-ON TYPE GATE VALVE WITH GASKET FITTINGS, MAINLINE SIZE
- IRRIGATION WATER METER AND TAP, SIZE AS NOTED ON THE PLAN
- RAINBIRD ESP12LXME2 SERIES AUTOMATIC CONTROLLER WITH ONE ESPLXMSM12 MODULES AND WR2-RFC RAIN / FREEZE SENSOR LOCATE SENSOR AS FIELD DIRECTED BY THE LANDSCAPE ARCHITECT RAINBIRD IQ AND REQUIRED EQUIPMENT INCLUDING CELLULAR COMMUNICATION REQUIRED ON BOTH CONTROLLERS.
- CLASS 200 PVC MAINLINE PIPE
- CLASS 200 ( EXCEPT 1/2 INCH #315 ) PVC LATERAL PIPE
- ONE 4" CLASS 200 SLEEVE PIPE
- ONE 6" AND ONE 4" CLASS 200 SLEEVE PIPE AT PAVEMENT CROSSINGS WITH 3" MAINLINE UNLESS NOTED OTHERWISE
- 1 1/2" PVC CONDUIT WITH LONG RADIUS SWEEP FITTINGS

L.I.C. SHALL SELECT SPRAY NOZZLES FOR "HEAD-TO-HEAD" COVERAGE, ADJUSTED FOR NO OVERSPRAY ONTO WALLS AND WALKS. NO OVERSPRAY INTO STREETS IS PERMITTED.

## TEMPORARY IRRIGATION

THE CONTRACTOR SHALL COORDINATE WITH THE PLANTING PLAN AND PROVIDE TEMPORARY IRRIGATION FOR THE ESTABLISHMENT OF ALL PROPOSED PLANT MATERIALS LOCATED OUTSIDE THE LIMITS OF COVERAGE PROVIDED BY THE PERMANENT SYSTEM.





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| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | CD |
| CHECKED: | CD |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

ASIC PROFESSIONAL MEMBER

STATE OF TEXAS — CHRISTOPHER DODD — 10311 — LICENSED IRRIGATOR
07 / 28 / 2025


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IRRIGATION IN TEXAS IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ( TCEQ ) ( MC-178 ) P.O. BOX 13087 T.C.E.Q.'S WEB SITE IS: WWW.TCEQ.STATE.TX.US

# LI1.2

IRRIGATION PLAN
(SHEET 2 OF 2)

## GENERAL NOTES

A. THE NOTES AND SPECIFICATIONS PROVIDED ON THE STRUCTURAL DRAWINGS ARE EXCERPTS FROM THE RELATING PROJECT SPECIFICATIONS. THEY ARE NEITHER COMPLETE NOR DO THEY REPLACE THE CONTRACT SPECIFICATIONS.

B. MEANS AND METHODS: THE STRUCTURAL DRAWINGS DEPICT THE STRUCTURE IN ITS FINAL CONSTRUCTED CONFIGURATION UNLESS SO STATED OR NOTED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND PROVIDE ALL TEMPORARY SUPPORTS REQUIRED FOR THE EXECUTION OF THE CONTRACT INCLUDING BUT NOT LIMITED TO: GUYS, BRACES, SHORES, RE-SHORES, FALSEWORK, ANY TEMPORARY SUPPORTS OR TEMPORARY ANCHORS. NEITHER CONSTRUCTION MEANS AND METHODS NOR CONSTRUCTION SAFETY ARE PART OF THE STRUCTURAL ENGINEER'S EXPERTISE OR SCOPE OF WORK. THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS ARE FULLY RESPONSIBLE FOR THE MEANS AND METHODS USED TO CONSTRUCT THE STRUCTURE AND FOR FULL COMPLIANCE WITH ALL JOB SAFETY RELATED REGULATIONS AND CONDITIONS AT THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS RELATING TO THE SPECIFIC STRUCTURAL ERECTION ITEMS ADDRESSED IN THE LATEST OSHA REGULATIONS.

C. LIMITED SITE VISITS IF ANY BY THE STRUCTURAL ENGINEER OF RECORD (SER) ARE SOLELY TO OBSERVE COMPLETED PARTS OF THE STRUCTURE. THE STRUCTURAL ENGINEER OF RECORD (SER) IS NEITHER QUALIFIED TO OBSERVE NOR COMMENT ON CONSTRUCTION MEANS AND METHODS AND JOB SITE SAFETY.

D. PRINCIPAL OPENINGS ARE SHOWN ON THE DRAWINGS. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS, SLEEVES, CURBS, INSERTS, DEPRESSIONS, ETC., NOT SHOWN.

E. TYPICAL DETAILS: GENERAL DETAILS AND NOTES ON THESE SHEETS SHALL APPLY UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. CONSTRUCTION DETAILS NOT FULLY SHOWN OR NOTED SHALL BE SIMILAR TO DETAILS SHOWN FOR SIMILAR CONDITIONS. ALL WORK OR CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATION AND SAFETY REQUIREMENTS. ALL DETAILS ARE TYPICAL UNLESS NOTED OTHERWISE. DETAILS SHALL APPLY TO ALL SIMILAR AND LIKE CONDITIONS.

F. DISCREPANCIES: THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS. UPON RECEIPT OF SUCH INFORMATION, THE ENGINEER WILL SEND WRITTEN INSTRUCTIONS TO ALL CONCERNED. ANY SUCH DISCREPANCY, OMISSION, OR VARIATION NOT REPORTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND WORK SHALL BE PERFORMED IN A MANNER AS DIRECTED BY THE ENGINEER AT NO COST TO THE PROJECT.

G. EXCAVATION: THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT

H. COORDINATION AND OTHER TRADES: IT IS NOT THE INTENT THAT THE STRUCTURAL DRAWINGS BE VIEWED AS STAND ALONE DRAWINGS WITH RESPECT TO PROJECT DIMENSIONS OR ANY OTHER COMPONENT OF THE CONSTRUCTION THAT CAN AND MAY BE IDENTIFIED IN OTHER PARTS OF THE CONTRACT DOCUMENTS. IT REQUIRES THE ENTIRE SET OF CONTRACT DOCUMENTS TO PROPERLY CONSTRUCT THE STRUCTURE AS WELL AS OTHER COMPONENTS OF THE BUILDING. ANCHORS REQUIRED FOR ANCHORING MEP EQUIPMENT AND / OR PIPING ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL DETERMINE AND COORDINATE REQUIREMENTS FROM OTHER DISCIPLINES AND SHALL PROVIDE APPROPRIATE ALLOWANCES INTO THE BID. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSEMBLE AND COORDINATE THE REQUIREMENTS OF ALL COMPONENTS OF THE CONTRACT DOCUMENTS IN ORDER TO PROPERLY IMPLEMENT THE REQUIREMENTS OF THE CONTRACT. SEE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF PIPES, VENTS, CHASES, DUCTS AND OTHER OPENINGS AND DETAILS NOT SHOWN ON THESE STRUCTURAL DRAWINGS. ALL DIMENSIONS ARE TO BE CHECKED AND VERIFIED WITH THE ARCHITECTURAL DRAWINGS.

I. SEE ARCHITECTURAL DRAWINGS FOR ELEVATIONS NOT SHOWN. THE CONTRACTOR SHALL COMPARE THE STRUCTURAL SECTIONS WITH THE ARCHITECTURAL SECTIONS AND REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO FABRICATING OR INSTALLING STRUCTURAL MEMBERS.

J. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE GRADES WITH THE CIVIL ENGINEER'S GRADING PLAN AND THE LANDSCAPE ARCHITECT'S PLAN.

K. THE DRAWINGS IN THE STRUCTURAL DOCUMENTS ARE NOT TO BE SCALED FOR ANY PURPOSE, INCLUDING THE DETERMINATION OF QUANTITIES AND THE FIT UP OF MATERIALS.

L. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST ADDENDA AND TO PROVIDE SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF ANY STRUCTURAL MEMBERS AND ERECTION IN THE FIELD.

M. PRECONSTRUCTION MEETINGS: THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING PRECONSTRUCTION MEETINGS FOR THE FOUNDATION AND SUPERSTRUCTURE ELEMENTS OF THE PRIMARY FRAME WITH A MINIMUM OF TWO WEEKS OF NOTICE PRIOR TO START OF THE RELEVANT WORK. ATTENDEES SHALL INCLUDE THE CONTRACTORS, APPROPRIATE SUBCONTRACTORS, FABRICATORS, INSPECTORS, ARCHITECT/ENGINEERS. THE MEETING AGENDA SHALL INCLUDE THE FOLLOWING ITEMS: REVIEW OF WORK SCOPE, PROJECT SCHEDULE FOR THE ELEMENTS BEING DISCUSSED, CONTACT INFORMATION OF RESPONSIBLE PARTIES, INSPECTION POINTS FOR BOTH SER AND SPECIAL INSPECTOR, REVIEW OF MATERIALS AND ANY SPECIAL DESIGN ISSUES, CLARIFICATIONS, TESTING AND ACCEPTANCE, AND ANY OTHER TOPIC DEEMED APPROPRIATE BY THE CONTRACTOR, ARCHITECT OR STRUCTURAL ENGINEER.

N. COLD-FORMED WALL STUDS AND CONNECTIONS SHALL BE DESIGNED AND SEALED BY A LICENSED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. THE CALCULATIONS AND DETAILED DRAWINGS SHALL BE SUBMITTED FOR APPROVAL SHOWING ALL CALCULATIONS, INCLUDING DESIGN LOADS, MEMBER SIZES AND CONNECTIONS.

O. SHOP DRAWINGS SHALL BE NEW DRAWINGS PRODUCED BY THE CONTRACTOR. ILLEGIBLE REPRODUCTIONS OF THE DESIGN DRAWINGS WILL BE REJECTED. THE USE OF REPRODUCTIONS OR ELECTRONIC FILES OF THE STRUCTURAL DRAWINGS FOR THE PREPARATION OF SHOP DRAWINGS IS NOT ACCEPTABLE WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD. IF SUCH AUTHORIZATION IS OBTAINED, DO NOT SUBMIT SHOP DRAWINGS WITH THE CONTRACT DOCUMENT TITLE BLOCK AND/OR THE SEAL OF THE REGISTERED ENGINEER OF RECORD AFFIXED. ALTERATION OF A SEALED DOCUMENTS WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE OF THE ENGINEERING PRACTICE ACT. THE USE OF REPRODUCTIONS OR ELECTRONIC FILES OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS OR OMISSIONS THAT MAY OCCUR HEREON. DRAWINGS REQUIRING A SPECIALTY STRUCTURAL ENGINEER (SSR) SHALL HAVE CALCULATIONS AND DRAWINGS SEALED BY A LICENSED ENGINEER IN THE STATE OF THE PROJECT.

P. SHOP DRAWINGS ARE AN AID FOR FIELD PLACEMENT, AND ARE SUPERSEDED BY THE STRUCTURAL DRAWINGS. IT IS NOT THE INTENT THAT THE STRUCTURAL DRAWINGS BE VIEWED AS DETAILED SHOP OR ERECTION DRAWINGS. VARIOUS DIMENSIONS REQUIRED FOR PROPER FIT-UP OF THE COMPONENTS OF THE STRUCTURE MUST BE DETERMINED FROM THE INFORMATION THAT IS PROVIDED ELSEWHERE IN THE CONTRACT DOCUMENTS. IT IS THE CONTRACTOR'S AND THEIR DETAILER'S OR SUBCONTRACTOR'S RESPONSIBILITY TO ESTABLISH AND TO CALCULATE AND VERIFY THESE DIMENSIONS AS REQUIRED TO ACHIEVE PROPER FIT-UP OF MATERIALS AND TO ACHIEVE COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO MAKE CERTAIN THAT ALL CONSTRUCTION IS IN FULL AGREEMENT WITH THE LATEST STRUCTURAL DRAWINGS.

Q. OMISSION FROM THE SHOP DRAWINGS OF ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLYING WITH THE OMITTED REQUIREMENTS, EVEN IF THE SHOP DRAWINGS HAVE BEEN REVIEWED, APPROVED AND RETURNED.

R. SHOP DRAWING REVIEW PROCESS - ALL SHOP DRAWINGS WILL BE REVIEWED AND RETURNED IN THE ORDER RECEIVED UNLESS OTHER SPECIFIC INSTRUCTIONS ARE RECEIVED. FOR PROJECTS WITH MULTIPLE WORK AREAS, THE SHOP DRAWINGS MUST BE DIVIDE INTO THE SAME OR SIMILAR AREAS WITH EACH AREA SUBMITTED INDIVIDUALLY UNDER A SEPARATE TRANSMITTAL. IF THE SHOP DRAWINGS ARE NOT DIVIDED INTO AREAS PER THE CONTRACT DOCUMENTS, THAT SUBMITTAL WILL BE REJECTED. EACH SUBMITTAL WILL BE REVIEWED INDIVIDUALLY AND REQUIRE AN INDIVIDUAL TIME FRAME OF TEN (10) WORKING DAYS PER SUBMITTAL. IF MULTIPLE SUBMITTALS ARE RECEIVED WITHIN THE REVIEW TIME FRAME OF A PRIOR SUBMITTAL, THEY WILL BE REVIEWED CONSECUTIVELY EACH WITH ITS OWN INDIVIDUAL REVIEW TIME FRAME THAT BEGINS ONCE THE PRIOR SUBMITTAL IS RETURNED. THIS GIVES EACH SUBMITTAL A TEN (10) WORKING DAY REVIEW WINDOW.

S. RETURNED SHOP DRAWINGS STAMPED "NOTE MARKINGS" OR "APPROVED AS NOTED" ARE ASSUMED TO BE APPROVED ONCE ALL THE COMMENTS HAVE BEEN INCORPORATED. THE SER WILL ONLY REVIEW SUBMITTALS ONE ADDITIONAL TIME AND ONLY IF THEY ARE MARKED "REVISE AND RESUBMIT" OR "REJECTED". ANY FURTHER REVIEWS OF THE SAME OR SIMILAR SUBMITTALS WILL BE AT THE GENERAL CONTRACTORS EXPENSE WITH PAYMENT FOR SERVICES RENDERED PRIOR TO THE RETURN OF THE APPROVAL DRAWINGS.

T. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DELAYS CAUSED BY REJECTION OF INADEQUATE, INCOMPLETE OR INCORRECT SHOP DRAWINGS.

U. SHOP DRAWINGS THAT ARE NOT SPECIFICALLY REQUIRED BY THE GENERAL NOTES OR SPECIFICATIONS WILL NOT BE REVIEWED OR RETURNED.

V. MINIMUM SHOP DRAWING SUBMITTAL REQUIREMENTS INCLUDE:

- CONCRETE MIX DESIGNS FOR EACH CLASS OF CONCRETE WITH TEST DATA
- CONCRETE ACCESSORIES (VAPOR RETARDER, REINFORCING SUPPORT CHAIRS, VOID FORMS, ETC.)
- CONCRETE REINFORCING SHOP DRAWINGS
- CMU GROUT, CMU UNITS MORTAR AND ACCESSORIES SHOP DRAWINGS
- PRE-ENGINEERED METAL BUILDING SHOP DRAWINGS (SEALED BY A LICENSED ENGINEER)
- WOOD OR COLD-FORMED TRUSS SHOP DRAWINGS AND CALCULATIONS (SEALED BY LICENSED ENGINEER)
- COLD-FORMED METAL STUDS AND CONNECTION SHOP DRAWINGS AND CALCULATIONS (SEALED BY LICENSED ENGINEER)
- GLAZED ALUMINUM FRAMING SYSTEMS SHOP DRAWINGS AND CALCULATIONS (SEALED BY LICENSED ENGINEER)
- PRE-FABRICATED CANOPY FRAMING SYSTEMS SHOP DRAWINGS AND CALCULATIONS (SEALED BY A LICENSED ENGINEER)
- ATHLETIC FIELD LIGHTING POLES AND FOUNDATIONS SHOP DRAWINGS AND CALCULATIONS (SEALED BY LICENSED ENGINEER)

W. CRANES, CONCRETE TRUCKS AND ALL OTHER HEAVILY LOADED VEHICLES ARE NOT TO BE DRIVEN ACROSS GRADE BEAMS OR BUILDING SLABS.

X. ALL SHORING REQUIRED TO TEMPORARILY SUPPORT CONSTRUCTION LOADS DURING THE CONSTRUCTION OF THE PROJECT SHALL BE DESIGNED AND SEALED BY A LICENSED ENGINEER. ALL EXISTING STRUCTURES AND NEW STRUCTURES SUPPORTING SHORING LOADS SHALL ALSO BE ANALYZED TO DETERMINE IF THEY ARE CAPABLE OF SUPPORTING THE REQUIRED LOADS AND SHALL BE REVIEWED BY A LICENSED ENGINEER. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.

Y. ERECTION OF STRUCTURAL STEEL MAY NOT BEGIN UNTIL CONCRETE FOUNDATION HAS CURED FOR A MINIMUM OF THREE DAYS. STRUCTURAL STEEL OR OTHER HEAVY LOADS SHALL NOT BE STOCKPILED ON ANY SLAB UNTIL IT HAS CURED FOR A MINIMUM OF THREE DAYS.

Z. NON-CONFORMING WORK, REMEDIAL REPAIRS, AND FIELD MODIFICATIONS — ALL NON CONFORMING WORK AND ASSOCIATED REMEDIAL REPAIRS OR FIELD MODIFICATIONS, INCLUDING ENGINEERING, QUALITY REVIEW AND DRAFTING OF ANY NEW DETAILS OR DOCUMENT REVISIONS, SUBMITTED AS A REQUEST FOR INFORMATION (RFI) AND DEEMED TO REQUIRE ADDITIONAL ENGINEERING OR DRAFTING SERVICES MAY BE BILLED AS AN ADDITIONAL SERVICE AT THE CONTRACTORS EXPENSE AT THE SOLE DISCRETION OF THE SER. THE SER MAY WITHHOLD FUTURE SERVICES UNTIL PAYMENT IS RECEIVED.

AA. NOTE THAT THE GROUND FLOOR SLAB IS A GROUND SUPPORTED SLAB AT GRADE AS PER THE DESIGN RECOMMENDED IN THE GEOTECHNICAL REPORT. IT IS NOT A STRUCTURAL SLAB AND AS SUCH IT IS NOT DESIGNED FOR ANY EXTERNAL UPWARD OR DOWNWARD LOADS, IT IS INTENDED TO BE ENTIRELY SUPPORTED BY THE PREPARED GROUND UNDER THE SLAB. THE CONTRACTOR SHOULD NOTE THAT THE PERFORMANCE OF THE SLAB AS DESIGNED AND INTENDED BY THE GEOTECHNICAL ENGINEER IS HIGHLY DEPENDENT ON HOW WELL THE CONTRACTOR FOLLOWS THE SITE PREPARATION INSTRUCTIONS IN THE GEOTECHNICAL REPORT. THE ARCHITECT SHALL ADVISE THE OWNER THAT THE PERFORMANCE OF THE SLAB INVOLVES SOME RISK, AND THAT SLAB ON GRADE MAY EXPERIENCE VERTICAL MOVEMENTS OF 1-1/2 INCHES OR MORE DEPENDING ON CLIMATIC FACTORS AND IS DEPENDENT ON ENVIRONMENTAL CONDITIONS OVER WHICH THE OWNER HAS CONTROL OF AFTER OCCUPANCY OF THE BUILDING. FURTHERMORE, A SLAB ON GRADE CAN EXPERIENCE VERTICAL MOVEMENT BASED ON CHANGES IN THE MOISTURE CONTENT OF THE UNDERLYING SOILS AND THAT STRUCTURAL SLABS WOULD LIMIT THIS RISK AT A GREATER UP-FRONT COST TO THE PROJECT. THE ARCHITECT, CONTRACTOR AND THE OWNER SHOULD CONSULT WITH THE GEOTECHNICAL ENGINEER IF THERE ARE ANY QUESTIONS CONCERNING CONSTRUCTION, PERFORMANCE AND RISKS INVOLVED WITH GROUND SUPPORTED SLAB AT GRADE CONSTRUCTION.

## DESIGN CRITERIA:

BUILDING CODE: INTERNATIONAL BUILDING CODE, 2021 EDITION, ASCE 7-16

**LIVE LOAD:**

| | |
|---|---|
| ROOF: | 20 PSF |
| FLOORS: | |
| CLASSROOMS | 40 PSF + 15 PSF PARTITION |
| CORRIDORS | 100 PSF (80 PSF ABOVE THE FIRST LEVEL) |
| STORAGE | 125 PSF (LIGHT) |
| MECHANICAL | 150 PSF |
| STAIRS AND EXITS | 100 PSF + 300 LBS. CONCENTRATED LOAD AT TREAD MIDSPAN ON 2"x2" AREA |
| HANDRAILS & GUARDRAILS | 200 LBS. ANY DIRECTION OR 50 PLF |
| FIXED LADDERS | 300 LBS. CONCENTRATED LOAD ON RUNG EVERY 10'-0" OC |
| VEHICLE BARRIERS | 6000 LBS. AT 18 INCHES ABOVE FLOOR OR RAMP (MIN.) IN ANY DIRECTION ON AN AREA NO MORE THAN ONE SQUARE FOOT<br>NOTE: THIS CRITERIA APPLIES ONLY TO PASSENGER CAR RESTRAINT SYSTEMS AND BOLLARDS SHOWN ON THE STRUCTURAL DRAWINGS |
| ARCHITECTURAL BARRIER ACT | |
| GRAB BAR | 250 LBS. ANY DIRECTION |
| TUB OR SHOWER SEAT | 250 LBS. ANY DIRECTION |
| FASTENERS & MOUNTING DEVICES | 250 LBS. ANY DIRECTION |

**WIND LOAD:**

| | | |
|---|---|---|
| VELOCITY (BASIC) | 126 MPH | THREE SECOND GUST ASCE 7-16 |
| EXPOSURE | C | |
| RISK CATEGORY | II | |
| INTERNAL PRESSURE COEFFICIENT, $G_{CPI}$ | +/- 0.18 | |

**MAIN BUILDING**

| MAIN WIND FORCE RESISTING SYSTEM (MWFRS): | |
|---|---|
| MAXIMUM HORIZONTAL INTERIOR PRESSURE | 21 PSF |
| MAXIMUM HORIZONTAL EXTERIOR PRESSURE | 28 PSF |
| MAXIMUM GROSS UPLIFT INTERIOR ZONE | 29 PSF |
| MAXIMUM GROSS UPLIFT EXTERIOR ZONE | 41 PSF |
| CORNER ZONE WIDTH | 20'-0" FROM EACH CORNER |

| COMPONENTS AND CLADDING — GROSS ROOF UPLIFT IN PSF | | |
|---|---|---|
| ZONE | EFFECTIVE WIND AREA (SQUARE FEET) | |
| | 50 | 200 |
| INTERIOR AND EXTERIOR EDGE/ZONES 1 AND 2e | 43 | 23 |
| EDGE ZONES/ZONES 2n, 2r, AND 3e | 71 | 43 |
| GABLE PEAK CORNERS/ZONE 3r | 82 | 65 |
| RELIABLE DEAD LOAD | 5 PSF | |
| CORNER ZONE WIDTH | SEE UPLIFT KEY MAP | |

| COMPONENTS AND CLADDING — WALLS IN PSF | | |
|---|---|---|
| ZONE | EFFECTIVE WIND AREA (SQUARE FEET) | |
| | 50 | 200 |
| INTERIOR ZONE/ZONE 4 | 35 | 32 |
| EXTERIOR (CORNER) ZONE/ZONE 5 | 40 | 34 |
| CORNER ZONE WIDTH | 10'-0" FROM EACH CORNER | |

**POULTRY BUILDING**

| MAIN WIND FORCE RESISTING SYSTEM (MWFRS): | |
|---|---|
| MAXIMUM HORIZONTAL INTERIOR PRESSURE | 22 PSF |
| MAXIMUM HORIZONTAL EXTERIOR PRESSURE | 30 PSF |
| MAXIMUM GROSS UPLIFT INTERIOR ZONE | 27 PSF |
| MAXIMUM GROSS UPLIFT EXTERIOR ZONE | 39 PSF |
| CORNER ZONE WIDTH | 6'-0" FROM EACH CORNER |

| COMPONENTS AND CLADDING — GROSS ROOF UPLIFT IN PSF | | |
|---|---|---|
| ZONE | EFFECTIVE WIND AREA (SQUARE FEET) | |
| | 50 | 200 |
| INTERIOR AND EXTERIOR EDGE/ZONES 1 AND 2e | 41 | 21 |
| EDGE ZONES/ZONES 2n, 2r, AND 3e | 67 | 41 |
| GABLE PEAK CORNERS/ZONE 3r | 77 | 61 |
| RELIABLE DEAD LOAD | 5 PSF | |
| CORNER ZONE WIDTH | 3'-0" FROM EACH CORNER | |

| COMPONENTS AND CLADDING — WALLS IN PSF | | |
|---|---|---|
| ZONE | EFFECTIVE WIND AREA (SQUARE FEET) | |
| | 50 | 200 |
| INTERIOR ZONE/ZONE 4 | 36 | 32 |
| EXTERIOR (CORNER) ZONE/ZONE 5 | 41 | 35 |
| CORNER ZONE WIDTH | 3'-0" FROM EACH CORNER | |

**ALLOWABLE SOIL BEARING CAPACITY:**

DRILLED AND UNDERREAMED FOOTINGS
(AT 12'—0" BELOW EXISTING GRADE)

| | |
|---|---|
| TOTAL LOAD | 5400 PSF |
| DEAD LOAD | 3600 PSF |

STRAIGHT SHAFT FOOTINGS
(AT 12'—0" TO 25'-0" BELOW EXISTING GRADE)

| | |
|---|---|
| TOTAL LOAD | 5700 PSF |

ALLOWABLE SKIN FRICTION CAPACITY

| DEPTH | SKIN FRICTION |
|---|---|
| 0 TO 4 FT | NEGLECT |
| 4 TO 10 FT | 275 PSF |
| 10 TO 25 FT | 480 PSF |

## EARTHWORK

1. SITE PREPARATION FOR THE BUILDING PAD SHALL CONSIST OF THE REMOVAL OF EXISTING PAVEMENT, VEGETATION, ORGANIC MATTER AND ANY ADDITIONAL MATERIAL AS NECESSARY TO PROVIDE THE REQUIRED AMOUNT OF FILL UNDER THE BUILDING.
2. THE SUBGRADE SHALL BE PROOFROLLED WITH A HEAVY, RUBBER-TIRED VEHICLE (STATIC WEIGHT OF AT LEAST 20 TONS AND WITH TIRE PRESSURES OF AT LEAST 90 PSI). THE CONTRACTOR SHALL MAKE AT LEAST TWO COMPLETE PASSES OVER THE AREA WITH THE SECOND PASS PERPENDICULAR TO THE FIRST PASS. AREAS OF THE SUBGRADE THAT ARE OBSERVED TO BE SOFT OR WEAK SHALL BE OVEREXCAVATED AND REPLACED WITH PROPERLY COMPACTED SELECT FILL.
3. SUBGRADE SHALL THEN BE SCARIFIED AND MOISTURE CONDITIONED TO MATCH THE BUILDING PAD PERIMETER TO A [SIX (6)] INCH DEPTH AND THEN RECOMPACTED TO BETWEEN 95 AND 100 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR DENSITY TEST (ASTM D698). THE MOISTURE CONTENT SHALL BE BETWEEN OPTIMUM AND +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT. PROVIDE A MINIMUM OF FOUR (4) FIELD DENSITY TESTS ON THE SUBGRADE OR ONE (1) FOR EVERY 2,500 SQUARE FEET WHICHEVER IS GREATER.
4. SELECT FILL MATERIAL FOR THE BUILDING PAD SHALL BE AN INORGANIC SANDY CLAY WITH A LIQUID LIMIT BETWEEN 26 AND 40 AND PLASTICITY INDEX BETWEEN 10 AND 20. STRUCTURAL SELECT FILL PAD MATERIAL SHALL BE TESTED FOR ACCEPTABILITY AND A MOISTURE DENSITY CURVE SHALL BE ESTABLISHED.
5. SELECT FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED TO BETWEEN 95 AND 100 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR DENSITY TEST (ASTM D698). THE MOISTURE CONTENT SHALL BE BETWEEN OPTIMUM AND +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT FOR SELECT FILL. SELECT FILL MATERIAL SHALL EXTEND TO 5'-0" BEYOND THE BUILDING PERIMETER. PROVIDE A MINIMUM OF FOUR (4) FIELD DENSITY TESTS ON EACH LIFT OF SELECT FILL OR ONE (1) FOR EVERY 2,500 SQUARE FEET WHICHEVER IS GREATER.
6. SELECT FILL MATERIAL SHALL BE TESTED DURING PLACEMENT OF EACH LIFT FOR THE ATTERBERG LIMITS IN ACCORDANCE WITH ASTM D4318-98 METHOD B "STANDARD TEST METHOD FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS" TO VERIFY THAT THE SELECT FILL MATERIAL IS IN ACCORDANCE WITH THE ORIGINALLY APPROVED SELECT FILL MATERIAL. PROVIDE A MINIMUM OF ONE (1) TEST PER LIFT OR ONE (1) FOR EVERY 2,500 SQUARE FEET WHICHEVER IS GREATER WITH A MAXIMUM OF TEN (10) PER LIFT.
7. CONTRACTOR SHALL MAINTAIN A CLEAN EXCAVATION THAT IS FREE OF WATER 100% OF THE TIME. CONTRACTOR SHALL PROVIDE PUMPS AS REQUIRED TO REMOVE ANY WATER AT ALL TIMES.
8. THE SITE SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING PAD DURING BUILDING PAD INSTALLATION AND WHEN THE BUILDING PAD AND BUILDING ARE COMPLETED.
9. PLUMBING AND UTILITY TRENCHES WITHIN THE BUILDING PAD SHALL HAVE PIPING BEDDED ON 6" MINIMUM OF CEMENT STABILIZED SAND WITH 4" MINIMUM ALL AROUND. BACKFILL IN UTILITY TRENCHES SHALL CONSIST OF COMPACTED SELECT FILL. PROVIDE A 1'-0" WIDE BENTONITE CLAY PLUG OR FAT CLAY (PI>50) FOR THE FULL DEPTH AND WIDTH OF THE UTILITY TRENCH TO A MINIMUM OF 1'-0" ABOVE THE BOTTOM OF THE FOUNDATION AT THE EXTERIOR FACE OF BUILDING FOUNDATIONS WHERE UTILITY TRENCHES ENTER THE BUILDING.
10. PROVIDE A MINIMUM [TWELVE (12)] INCH FAT CLAY CAP (PI>50) FOR A MINIMUM OF 5'-0" AROUND THE PERIMETER OF THE BUILDING. THE CAP SHALL EXTEND AS REQUIRED TO COVER THE LIMITS OF THE BUILDING PAD EXCAVATION AND SELECT FILL BUILDING PAD MATERIALS.

## SITE DRAINAGE

1. GRADE THE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS AND SLABS. WATER SHALL NOT BE ALLOWED TO POND ADJACENT TO THE BUILDING FOUNDATIONS OR SLABS.
2. AS A MINIMUM REQUIREMENT, ALL DOWNSPOUTS FROM ROOF DRAINS AND GUTTERS SHALL BE COLLECTED AND PIPED AWAY FROM THE BUILDING. WHEN WATER IS NOT PIPED AWAY FROM THE BUILDING, DOWNSPOUTS SHALL DUMP ONTO A CAST IN PLACE 4" THICK X 3'-0" WIDE CONCRETE SWALE REINFORCED WITH #4 AT 12" ON CENTER EACH WAY AND EXTENDING 10'-0" OUT FROM THE BUILDING. REFER TO ARCHITECTURAL AND CIVIL FOR PAVING AND DRAINGAGE.
3. TREES AND VEGETATION SHALL NOT BE ALLOWED WITHIN A DISTANCE EQUAL TO THREE QUARTERS THEIR ULTIMATE HEIGHT AWAY FROM THE BUILDING.
4. IRRIGATE VEGETATION AND SOILS ADJACENT TO BUILDING (NO MORE THAN 15 MINUTES THREE TIMES A WEEK) ON AN AS NEEDED BASIS TO MAINTAIN UNIFORM SOIL MOISTURE CONDITIONS AROUND THE PERIMETER OF THE BUILDING FOLLOWING CONSTRUCTION.

## FOUNDATIONS

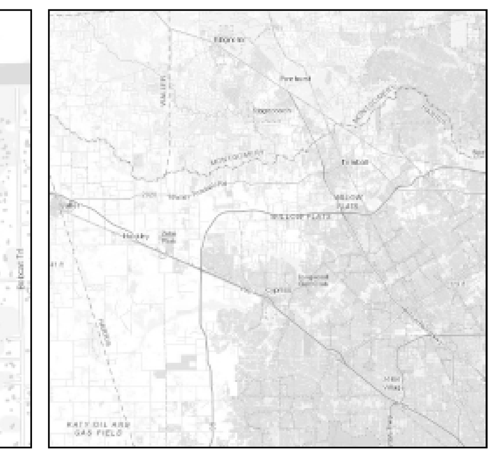
1. PREPARED GRADE AREA UNDER ALL BUILDING SLABS AND GRADE BEAMS SHALL BE COVERED WITH A 15 MIL WATER VAPOR RETARDER MEETING THE REQUIREMENTS OF ASTM E 1745 (LATEST EDITION), CLASS A OR BETTER WITH MAXIMUM WATER PERMEANCE OF 0.01 PERMS WHEN TESTED IN ACCORDANCE WITH ASTM E96. THE WATER VAPOR RETARDER SHALL BE INSTALLED, LAPPED AND TAPED WITH MANUFACTURER'S APPROVED PRODUCT IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM E 1643 (LATEST EDITION). PENETRATIONS SHALL SEALED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
2. FOUNDATION DETAILING SHOWN ON THE DRAWINGS IS BASED ON A FOUNDATION DESIGN SPECIFIED IN THE SOIL REPORT BY TERRACON, REPORT NO.92255211, DATED JUNE 18, 2025. THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT SHALL NOT SUPERSEDE THE REQUIREMENTS SHOWN ON THE DESIGN DRAWINGS OR IN THE SPECIFICATIONS WHEN THE REQUIREMENTS SHOWN ON THE DRAWINGS ARE GREATER THAN THOSE SHOWN IN THE GEOTECHNICAL REPORT. THE CONTRACTOR IS REQUIRED TO SECURE A COPY OF THE GEOTECHNICAL REPORT FROM THE OWNER AND TO HAVE A COPY ON THE JOB SITE AT ALL TIMES FOR HIS USE AND REFERENCE.
3. FOUNDATION DETAILING SHOWN ON THE DRAWINGS IS BASED ON A MINIMUM OF ONE FOOT OF SELECT FILL MATERIAL BENEATH THE FLOOR SLAB AND SHALL EXTEND TO 5'-0" BEYOND THE BUILDING PERIMETER. PROVIDE ADDITIONAL SELECT FILL MATERIAL AS REQUIRED TO BRING THE SLAB UP TO THE FINISH FLOOR ELEVATION SHOWN IN THE CONSTRUCTION DOCUMENTS.
4. ALL BACKFILL FOR BURIED PIPES AND CONDUIT WITHIN THE BUILDING PAD AND EXTENDING OUT MINIMUM 5'-0" BEYOND THE BUILDING SHALL BE BACKFILLED WITH SELECT FILL BACKFILL. DO NOT USE SAND BACKFILL. A 2'-0" WIDE BENTONITE PLUG SHALL BE PROVIDED IN ALL UTILITY TRENCHES AT THE FACE OF THE BUILDING FOUNDATION. SEE TYPICAL DETAILS FOR DETAIL AT PIPE BUILDING ENTRY.
5. CONDUITS SHALL NOT BE PLACED IN THE CONCRETE SLAB. CONDUITS SHALL BE PLACED IN THE SELECT FILL MATERIAL BENEATH THE VAPOR RETARDER. ALL PENETRATIONS OF THE VAPOR RETARDER SHALL BE SEALED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS. CONDUIT TRENCHES WITHIN THE BUILDING PAD SHALL BE LIMITED TO A MAXIMUM WIDTH OF TWO FEET AND BE SPACED NO CLOSER THAN FOUR FEET CENTER TO CENTER. CONDUITS STACKED WITHIN A SINGLE TRENCH SHALL BE SEPARATED VERTICALLY BY TWO TIMES THE DIAMETER OF THE LARGEST CONDUIT OR 12 INCHES MINIMUM. COMPACTED SELECT FILL OR OTHER APPROPRIATE COMPACTED FILL MATERIAL SHALL BE USED BETWEEN STACKED CONDUITS.
6. THE FLOOR SLAB SUBGRADE SHALL BE PROPERLY COMPACTED, PROOF ROLLED AND SHALL BE FREE OF STANDING WATER, MUD AND FROZEN SOILS.
7. SLABS ON GROUND SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS (REFER TO TYPICAL DETAILS) AT EACH COLUMN LINE AND IN EACH DIRECTION. ADDITIONAL CRACK CONTROL JOINTS SHALL BE PROVIDED SUCH THAT NO AREA BOUNDED BY CONSTRUCTION AND/OR CRACK CONTROL JOINTS CONTAINS MORE THAN 250 SQUARE FEET AND THE RESULTING ASPECT RATIO OF LONG SIDE TO SHORT SIDE DIMENSIONS OF THE BOUNDED SLAB AREA DOES NOT EXCEED 1.5 TO 1. CRACK CONTROL JOINTS SHALL BE MADE USING A "SOFT-CUT" CONCRETE SAW AS SOON AS THE SLAB WILL SUPPORT THE WEIGHT OF THE SAW AND OPERATOR WITHOUT DISTURBING THE FINAL FINISH. THIS SHOULD BE WITHIN THE FIRST SIX HOURS AFTER PLACEMENT. THE CRACK CONTROL JOINTS SHALL BE CUT A MAXIMUM WIDTH OF 1/8 INCH AND A MINIMUM DEPTH OF 1/3 THE SLAB THICKNESS. REFER TO THE TYPICAL DETAILS AND DRAWINGS FOR INFORMATION ON CONTROL JOINTS, CONSTRUCTION JOINTS, REINFORCING DETAILS, JOINT SEALANT, AND TYPICAL JOINT LAYOUT.
8. WHERE SLABS ARE TO RECEIVE SENSITIVE ARCHITECTURAL FLOOR FINISHES, ALL JOINTS IN THE SLAB CONSTRUCTION SHALL BE PLACED TO ALIGN WITH JOINTS IN THE FLOOR FINISHES.
9. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY SHORING OF WALLS WHICH ARE ULTIMATELY SUPPORTED TOP AND BOTTOM. SUCH SHORING SHALL NOT BE REMOVED UNTIL ALL SUPPORTING ELEMENTS ARE IN PLACE, THE COMPACTION OF ALL BACKFILL AGAINST THE WALL HAS BEEN COMPLETED, AND THE CONCRETE IN THE WALLS AND SUPPORTING ELEMENTS HAS ATTAINED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH (Fc'),
10. EXCAVATIONS FOR SPREAD FOOTING, COMBINED FOOTING, CONTINUOUS FOOTINGS AND/OR MAT FOUNDATIONS SHALL BE CLEANED AND HAND TAMPED TO A UNIFORM SURFACE. FOOTING EXCAVATIONS SHALL HAVE THE SIDE AND BOTTOM TEMPORARILY LINED WITH 6 MIL VAPOR BARRIER IF CONCRETE PLACEMENT DOES NOT OCCUR WITHIN 24 HOURS OF FOOTING EXCAVATION. SEAL SLABS MAY BE REQUIRED BASED ON GROUND WATER CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, AND COST ASSOCIATED WITH ALL SEAL SLABS. REFER TO THE GEOTECHNICAL REPORT FOR GROUND WATER OR POTENTIAL PERCHED WATER CONDITIONS.
11. REINFORCEMENT PLACEMENT SEQUENCE FOR FOOTINGS AND MATS IS NOTED FOR MAJOR REINFORCEMENT BAR LAYERS ONLY. IN SPREAD FOOTINGS OR MATS, THE CONTRACTOR SHALL COORDINATE AND SEQUENCE ALL OTHER BAR PLACEMENTS AS REQUIRED TO CONFORM TO THE CONTRACT DOCUMENTS.
12. FOUNDATION CONDITIONS THAT DIFFER FROM THOSE NOTED IN THE CONTRACT DOCUMENTS OR AS DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT, GEOTECHNICAL ENGINEER AND SER BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.
13. CONTRACTOR SHALL NOTIFY THE ARCHITECT AND SER AT LEAST 48 HOURS PRIOR TO PLACEMENT OF CONCRETE IN FOOTINGS.
14. CONTRACTOR SHALL PROVIDE A UNIT COST FOR REPLACING DRILLED FOOTINGS SHOWN WITH STRAIGHT SHAFT DRILL FOOTINGS IN THE EVENT FOOTING BELLS CAVE BEFORE CONCRETE CAN BE PLACED. UNIT COST SHALL INCLUDE EXCAVATION AND CONCRETE PLACEMENT. STRAIGHT SHAFTS SHALL HAVE THE SAME DIAMETER AS BELL SIZE SHOWN ON THE PLANS. VERTICAL REINFORCING SHALL BE THE SAME AS SCHEDULED FOR THE BELLED FOOTING.
15. CONTRACTOR SHALL BE PREPARED TO USE TEMPORARY CASING AS REQUIRED TO FINISH THE DRILLED FOOTINGS. CASING SIZE SHALL HAVE AN INTERIOR DIAMETER EQUAL TO THE SPECIFIED SHAFT SIZE SHOWN ON THE PLANS. CONTRACTOR SHALL PROVIDE A UNIT PRICE FOR A DRY DRILLED SHAFT AND FOR A CASED DRILLED SHAFT.
16. CONTRACTOR SHALL INSTALL TWO TEST FOOTINGS PRIOR TO INSTALLING THE REQUIRED FOOTINGS FOR THE PURPOSE OF DETERMINING IF A STABLE BELL CAN BE FORMED OR WHETHER STRAIGHT SIDED FOOTINGS WILL BE REQUIRED. TEST FOOTINGS SHALL BE LOCATED AS INDICATED ON THE KEY PLAN ON THIS SHEET OR AS DIRECTED BY THE ARCHITECT. TEST FOOTING SHALL NOT BE INSTALLED AT A REQUIRED FOOTING LOCATION. TEST FOOTINGS SHALL EQUAL THE LARGEST SIZE OF THE REQUIRED FOOTINGS. THE TEST FOOTINGS SHALL BE BACKFILLED AFTER COMPLETION WITH EITHER CEMENT-STABILIZED SAND, FLOWABLE FILL, OR LEAN CONCRETE.
17. THE BUILDING SITE MAY HAVE SOME BURIED EXISTING FOUNDATIONS AND UTILITIES. IF THESE FOUNDATIONS OR UTILITIES ARE ENCOUNTERED DURING DRILLING OPERATIONS, THE SINGLE DRILLED FOOTING SHALL BE REPLACED WITH TWO SYMMETRICALLY PLACED FOOTINGS AND A STRAP BEAM AS SHOWN IN TYPICAL DETAILS. THE CONTRACTOR SHALL PROVIDE A UNIT COST FOR EACH OCCURRENCE. SEAL ANY UTILITY LINES DISCOVERED WITH CONCRETE.
18. ALL FOOTINGS SHALL BE CONSOLIDATED WITH A CONCRETE VIBRATOR AS PER THE REQUIREMENTS OF ACI 318 AND ACI 308R, LATEST EDITION.
19. DRILLED FOOTINGS SHALL BE POURED IMMEDIATELY UPON COMPLETION OF EXCAVATION AND CLEANING OF FOOTING BEARING SURFACE. UNDER NO CIRCUMSTANCES SHOULD DRILLED FOOTINGS/PIERS SHOULD NOT REMAIN OPEN OVER NIGHT. ALL SPOILS FROM THE DRILLED FOOTING EXCAVATIONS SHALL BE REMOVED FROM THE BUILDING PAD.
20. IF DRILLED AND UNDERREAMED FOOTINGS CANNOT BE FORMED DUE TO CAVING SOILS, THE ARCHITECT, GEOTECHNICAL ENGINEER AND SER SHALL BE NOTIFIED IMMEDIATELY BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.
21. WHERE A DRILLED FOOTING IS SHOWN ON THE PLAN CLOSER THAN 6'-0 FROM ANOTHER FOOTING, DRILL ONE FOOTING, FILL WITH CONCRETE AND LET CURE 24 HOURS PRIOR TO DRILLING THE ADJACENT FOOTING. (6'-0" DIMENSION IS MEASURED BETWEEN EDGE OF BELL NOT CENTER TO CENTER.)
22. TOPS OF DRILLED FOOTINGS SHALL NOT HAVE "MUSHROOMED" OR FLARED TOPS. CONTRACTOR SHALL USE SONUTUBE, SURETOP OR APPROVED EQUAL TO FORM TOP OF PIERS TERMINATED AT GRADE LEVEL. CONCRETE OF FLARED TOP FOOTINGS SHALL BE REMOVED PRIOR TO FORMING AND PLACING OF THE CONCRETE IN PIER CAPS OR GRADE BEAMS. TOPS OF ALL PIERS SHALL BE CLEANED PRIOR TO THE PLACEMENT OF CONCRETE.
23. PROVIDE A TREMIE TO PLACE CONCRETE IN DRILLED FOOTINGS SO THAT CONCRETE DOES NOT FREE FALL OVER 10'-0".
24. PROVIDE PIER SLEDS TO MAINTAIN 3" MINIMUM CLEAR COVER ON FOOTING SHAFT REINFORCING, PIERS SLEDS SHALL BE STAGGERED ALONG THE VERTICAL REINFORCING. DO NOT PLACE SLEDS AT THE SAME LOCATION.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

### ASCE Hazards Report

**Address:**
Berry Point Dr
Cypress, Texas
77433

| | | | |
|---|---|---|---|
| **Standard:** | ASCE/SEI 7-16 | **Latitude:** | 30.038377 |
| **Risk Category:** | II | **Longitude:** | -95.697554 |
| **Soil Class:** | D - Default (see Section 11.4.3) | **Elevation:** | 167.72029191888643 ft (NAVD 88) |



### Wind

**Results:**

| | |
|---|---|
| Wind Speed | 126 Vmph |
| 10-year MRI | 75 Vmph |
| 25-year MRI | 86 Vmph |
| 50-year MRI | 97 Vmph |
| 100-year MRI | 105 Vmph |

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Jul 23 2025

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

https://ascehazardtool.org/ Page 1 of 2 Wed Jul 23 2025

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TX Engineering Firm No. F-170

MEP
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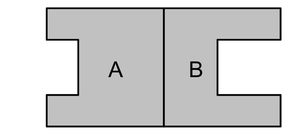


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS

**ARCADIS INC.**
**1330 POST OAK BOULEVARD, SUITE 2250**
**HOUSTON, TX 77056**
**tel 281.286.6605, fax 713.977.4620**

24 July 2025
Texas Engineering Firm No. F-170

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JG |
| CHECKED: | MB/HK |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# S0.00

GENERAL NOTES

## CONCRETE

1. ALL CONCRETE REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT WHERE NOTED. NO. 10 THROUGH NO. 18 BARS SHALL CONFORM TO ASTM A615, GRADE 75. DEFORMED BAR ANCHORS SHALL CONFORM TO ASTM A496, GR 70. ALL BARS SHALL BE NEW OR RECYCLED DOMESTIC BILLET STEEL OF A DOMESTIC MANUFACTURER.

2. CONCRETE IN THE FOLLOWING AREAS SHALL HAVE SAND AND CRUSHED CARBONATE AGGREGATE CONFORMING TO ASTM C33 FOR NORMAL WEIGHT CONCRETE AND LIGHT WEIGHT AGGREGATES CONFORMING TO ASTM C330, TYPE I PORTLAND CEMENT CONFORMING TO ASTM C150, AND THE FOLLOWING DESIGNATED COMPRESSIVE STRENGTH (f'c) IN 28 DAYS:

| CONCRETE USE OR CLASS | MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c) | MAXIMUM WATER CEMENT RATIO | SLUMP (INCHES) |
|---|---|---|---|
| FOOTINGS/PIERS | 3000 PSI | 0.50 | 5 TO 8 |
| SLABS ON GROUND SEE NOTE 4 | 3500 PSI | 0.45 | 4 TO 6 |
| ALL OTHER CONCRETE | 3000 PSI | 0.50 | 4 TO 6 |
| SLUMP SHALL BE MEASURED FROM SAMPLES TAKEN AT THE POINT OF DISCHARGE UNLESS AGREED TO IN WRITING PRIOR TO CONCRETE PLACEMENT | | | |

NOTE: CONCRETE SUPPLIER SHALL BE AWARE OF CEMENTS THAT CAN CAUSE LATE ETTRINGITE FORMATION IN THE CEMENT PASTE AND BE PREPARED TO SHOW THAT THE CEMENTS USED WILL NOT CAUSE THIS PROBLEM.

3. FLY ASH MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIXTURE, SUBJECT TO THE APPROVAL OF THE ARCHITECT AND SER. FLY ASH, WHEN USED, SHALL CONFORM TO ASTM C618 TYPE 'C'. CONCRETE MIXTURES CONTAINING FLY ASH SHALL BE PROPORTIONED TO ACCOUNT FOR THE PROPERTIES OF THE SPECIFIC FLY ASH AND TO ACCOUNT FOR THE SPECIFIC PROPERTIES OF THE FLY ASH CONCRETE THUS RESULTING, INCLUDING BUT NOT LIMITED TO WATER CEMENT RATION AND MINIMUM 28 DAY COMPRESSIVE STRENGTH. THE RATIO OF THE AMOUNT BY VOLUME OF FLY ASH TO THE TOTAL AMOUNT BY VOLUME OF CEMENTITIOUS MATERIAL (INCLUDING THE FLY ASH) SHALL NOT EXCEED 25 PERCENT.

4. FLY ASH IS NOT PERMITTED IN SLABS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND SER.

5. AIR ENTRAINMENT IS REQUIRED ONLY IN HARD ROCK CONCRETE PERMANENTLY EXPOSED TO WEATHER CONDITIONS. WHERE LIGHTWEIGHT CONCRETE IS SPECIFIED, AIR ENTRAINMENT IS REQUIRED FOR ALL EXPOSURE CONDITIONS. PERCENT AIR ENTRAINMENT LISTED IS PLUS/MINUS 1.5%. DO NOT AIR-ENTRAIN INTERIOR FLOOR SLABS THAT RECEIVE HARD TROWEL FINISH.

6. ALL WELDED WIRE FABRIC SHALL BE SMOOTH ROUND WIRE IN FLAT SHEETS AND SHALL CONFORM TO ASTM A185.

7. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AS FOLLOWS; SEE SEC. 7.7 ACI 318, LATEST EDITION FOR CONDITIONS NOT NOTED. PROVIDE CHAIR SUPPORTS (AZTEC CASTLE CHAIR, WHC SERIES 'E' OR EQUAL) TO ADEQUATELY SUPPORT BARS FOR PROPER CLEARANCE AS RECOMMENDED BY THE AMERICAN CONCRETE INSTITUTE AND THE CONCRETE REINFORCING STEEL INSTITUTE. SLAB ON GRADE REINFORCEMENT SHALL BE SUPPORTED AT 45-INCH MAXIMUM INTERVALS OR EVERY THIRD BAR. UTILITY OR CONCRETE BRICKS ARE NOT ALLOWED AS REINFORCING SUPPORTS.

| MINIMUM CONCRETE COVER REQUIREMENTS | |
|---|---|
| LOCATION | MINIMUM COVER |
| FOOTINGS | 3 INCHES |
| GRADE BEAMS | 3 INCHES BOTTOM<br>2 INCHES SIDES — FORMED SURFACE<br>3 INCHES SIDES — EARTH FORMED<br>1 — 1/2 INCHES TOP |
| SLAB ON GROUND | 1 INCH TOP |

8. NO HORIZONTAL JOINTS WILL BE PERMITTED IN CONCRETE EXCEPT WHERE THEY NORMALLY OCCUR OR WHERE NOTED. NO JOINTS BETWEEN PILASTERS AND GRADE BEAM THAT ARE MEANT TO BE MONOLITHIC. VERTICAL JOINTS SHALL OCCUR AT CENTER SPANS OR AT LOCATIONS APPROVED BY THE STRUCTURAL ENGINEER.

9. CONSTRUCTION JOINTS BETWEEN PIERS AND PIER CAPS OR GRADE BEAMS, FOOTINGS AND WALLS OR COLUMNS, OR WALLS, COLUMNS, BEAMS AND THE FLOOR SYSTEM THEY SHALL SUPPORT SHALL BE PREPARED BY ROUGHENING THE SURFACE CONTACT SURFACE TO A FULL AMPLITUDE ON 1/4" LEAVING THE CONTACT SURFACE CLEAN AND FREE OF ALL LAITANCE.

10. DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI PUBLICATION 315, LATEST EDITION "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND ACI SP -66 "DETAILING MANUAL". PLACING OF REINFORCING BARS SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 315R "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES" AND CRSI "MANUAL OF STANDARD PRACTICE". ALL HOOKED BARS SHOWN IN THE DETAILS SHALL HAVE STANDARD HOOKS UNLESS NOTED OTHERWISE.

11. REINFORCING BARS SHALL NOT BE WELDED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. REINFORCING STEEL THAT REQUIRES WELDING SHALL CONFORM TO ASTM A706, WITH GRADES AS SHOWN ABOVE.

12. UNLESS BARS ARE SPECIFICALLY SHOWN IN THE BAR BENDING DIAGRAMS ON THE SCHEDULES, PROVIDE BARS AS FOLLOWS:

    A) PROVIDE STANDARD 90 DEGREE HOOK ON TOP BARS AT CANTILEVER ENDS.

    B) SPLICE BOTTOM BARS DIRECTLY OVER MEMBER SUPPORTS, UNLESS NOTED OTHERWISE.

    C) SPLICE TOP AND INTERMEDIATE BARS AT THE CENTER LINE BETWEEN MEMBER SUPPORTS, UNLESS NOTED OTHERWISE.

    D) SPLICE VERTICAL BARS IN WALLS ONLY AT FLOOR LINES, UNLESS NOTED OTHERWISE. HORIZONTAL BARS SHALL BE SPLICED AS SPECIFIED FOR TOP, BOTTOM, AND INTERMEDIATE BARS OF BEAMS.

    E) CENTER BARS NOTED AS "AT SUPT'S." OVER MEMBER SUPPORTS, AND CENTER BARS NOTES AS "BTWN. SUPT'S," BETWEEN SUPPORTS.

    F) PLACE BARS NOTED AS "2ND LAYER" BELOW THE PRIMARY TOP BARS (OR ABOVE THE PRIMARY BOTTOM BARS) AND PROVIDE #11 SPACER BARS PLACED AT INTERVALS OF 4'-0" BETWEEN THE TWO LAYERS OF BARS.

    G) SPLICE VERTICAL BARS IN COLUMNS ONLY AT FLOOR LINES, UNLESS NOTED OTHERWISE. COLUMN BAR SPLICES SHALL BE AS SHOWN IN THE COLUMN SCHEDULE.

    H) PROVIDE CORNER BARS FOR EACH HORIZONTAL BAR AT THE INSIDE AND OUTSIDE FACES OF INTERSECTING BEAMS OR WALLS. REFER TO CORNER BAR DETAILS IN THE TYPICAL DETAILS.

    I) REFER TO THE COLUMN REINFORCING DIAGRAMS FOR ADDITIONAL TIES ABOVE AND BELOW THE FLOOR FRAMING MEMBERS.

13. BARS SHOWN IN THE SCHEDULE TO HOOK AT DISCONTINUOUS ENDS SHALL HAVE THE HOOK PLACED HORIZONTALLY AT EXTERIOR CORNERS.

14. PROVIDE NO, 3 DOWELS X 2'-0" AT 1'-6" ON CENTER, WITH A 90 DEGREE HOOK AT ALL EDGES OF CONCRETE SLABS, UNLESS DETAILED OTHERWISE.

15. PROVIDE FOUNDATION DOWELS TO MATCH MASONRY WALL REINFORCEMENT. DOWELS SHALL EXTEND INTO THE CONCRETE AND CMU PER THE LAP SCHEDULES.

16. ALL CONTINUOUS REINFORCEMENT SHALL LAP 40 BAR DIAMETERS AT SPLICES. PROVIDE (1) NO. 6 x 6'-0" TOP AND BOTTOM (TWO 36" LEGS WITH 90 DEGREE BEND) AT EACH FACE OF GRADE BEAMS AT CORNERS AND INTERSECTIONS, AND AT 18" ON CENTER VERTICALLY AT WALLS.

17. PROVIDE (1) NO. 4 BAR x 4'-0" FOR ELEVATED SLABS AND (2) NO. 5 BARS x 4'-0" FOR SLAB ON GROUND AT ALL RE-ENTRANT CORNERS. PROVIDE (1) NO. 4 BAR x 4'-0" AROUND ALL RECTANGULAR OPENINGS OR COLUMN BLOCK OUTS UNLESS NOTED OTHERWISE. FOR ELEVATED SLABS, PLACE THE DIAGONAL BARS WITH 1 INCH OF CLEARANCE FROM TOP AND THE SIDES OF THE SLAB AT THE CORNERS. FOR SLAB ON GRADE, PLACE THE BARS AT MID DEPTH OR BELOW THE REINFORCING MAT AND 3 INCHES CLEAR FROM THE CORNER.

18. CONDUITS ARE NOT ALLOWED IN SLABS, BEAMS, WALLS OR COLUMNS. ALL CONDUITS SHALL BE SUSPENDED FROM OR ATTACHED TO THE CONCRETE STRUCTURE.

19. PROVIDE SLEEVES, MECHANICAL OPENINGS, CONDUITS, PIPES, RECESSES, DEPRESSIONS, CURBS AND ALL EMBEDDED ITEMS AS SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS OR AS REQUIRED BY EQUIPMENT MANUFACTURERS. MINIMUM CONCRETE BETWEEN SLEEVES SHALL BE 6". SHOP DRAWINGS SHALL CLEARLY INDICATE THE INSTALLATION OF THESE ITEMS. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED TO 3/4"x3/4" MINIMUM UNLESS NOTED OTHERWISE. DO NOT PROVIDE CHAMFERS AT INSIDE FACE OF OVERHEAD DOORS OR AT STOREFRONT OPENINGS.

20. BESIDES FOLLOWING ARTICLE 6.3 OF ACI 318 FOR EMBEDDED ITEMS FOLLOWING REQUIREMENTS SHALL BE MET:

    A) THE MINIMUM CLEAR DISTANCE BETWEEN CONDUITS AND PIPES SHALL BE 6".

    B) NONE PERMITTED IN COLUMNS WITHOUT PRIOR APPROVAL

21. ALL CONSTRUCTION JOINTS IN BEAMS AND WALLS SHALL BE PROVIDED WITH SHEAR KEYS AS SHOWN IN THE DETAILS.

22. SLEEVES PASSING HORIZONTALLY THROUGH GRADE BEAMS:

    A) LOCATE AT MIDDLE THIRD OF BEAM SPAN - MINIMUM 6" AWAY FROM AN INTERIOR MEMBER.

    B) LOCATE AT MIDDLE THIRD OF BEAM DEPTH.

    C) MAXIMUM DIAMETER OF SLEEVE TO BE ONE THIRD OF BEAM DEPTH OR 8" (WHICHEVER IS LESS).

    D) SPACING TO BE AT LEAST THREE SLEEVE DIAMETERS OR 6" (WHICHEVER IS GREATER).

    E) ADD ONE ADDITIONAL SCHEDULED STIRRUP ON EITHER SIDE OF THE SLEEVE. ADD (2) #5 x 5'-0" TOP AND BOTTOM CENTERED AT SLEEVE.

    F) NO SLEEVES LONGITUDINALLY IN BEAMS. PASS SLEEVES ONLY AT RIGHT ANGLES TO BEAMS.

23. ALL MIXING, TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE, ACI 301, LATEST EDITION.

24. ALL CONCRETE SHALL BE CONSOLIDATED WITH A CONCRETE VIBRATOR AS PER THE REQUIREMENTS OF ACI 318 AND ACI 308R, LATEST EDITION.

25. HOT WEATHER CONCRETING SHALL CONFORM TO ACI305 AND COLD WEATHER CONCRETING SHALL CONFORM TO ACI 306.

26. ALL BASE PLATES AND ANCHOR RODS SHALL BE PROTECTED WITH 3" (MIN.) OF CONCRETE. ANCHOR RODS SHALL BE FABRICATED FROM FULL BODIED STEEL RODS CONFORMING TO ASTM F1554, WASHERS CONFORMING TO ASTM F884 AND NUTS CONFORMING TO ASTM A194 OR A563 AND HAVING THE SAME DIAMETER AS THE BOLT DIAMETER. BOLTS SHALL BE SET USING RIGID TEMPLATES.

27. HIGH DENSITY STYROFOAM SHALL BE PANELIZED POLYSTYRENE RIGID FORM INSULATION WITH MINIMUM COMPRESSIVE STRENGTH OF 40 PSI (EPS19) PER ASTM D6817. THICKNESS SHALL BE AS INDICATED IN DETAILS AND DRAWINGS. AVAILABLE MANUFACTURERS INCLUDE: U.C. INDUSTRIES, INC, DOW CHEMICAL COMPANY, AND AMOCO PRODUCTS COMPANY.

## POST INSTALLED ANCHORS

### ANCHOR MATERIALS

1. MECHANICAL ANCHORS SHALL BE TESTED AND ASSESSED IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI 355.2 QUALIFICATION OF POST-INSTALLED MECHANICAL ANCHORS IN CONCRETE AND COMMENTARY. ACCEPTABLE MECHANICAL ANCHORS ARE AS FOLLOWS:

   EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT TZ

| ANCHOR DIAMETER | MINIMUM EMBEDMENT |
|---|---|
| 1/2 INCH | 3-1/4" |
| 5/8 INCH | 4" |
| 3/4 INCH | 4-3/4" |

2. ADHESIVE ANCHOR SYSTEMS SHALL BE TESTED AND ASSESSED IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI 355.4 QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE (355.4) AND COMMENTARY. ACCEPTABLE ADHESIVE ANCHORS ARE AS FOLLOWS:

   CHEMICAL ADHESIVE ANCHORS FOR CONCRETE SHALL BE HILTI HIT-HY 100 SYSTEM

| ANCHOR DIAMETER OR BAR SIZE | MINIMUM EMBEDMENT |
|---|---|
| NO. 3 BAR | 4" |
| 1/2 INCH OR NO. 4 BAR | 4-1/2" |
| 5/8 INCH OR NO. 5 BAR | 6" |
| 3/4 INCH OR NO. 6 BAR | 7" |
| 7/8 INCH OR NO. 7 BAR | 8" |

   CHEMICAL ADHESIVE ANCHORS FOR MASONRY SHALL BE HILTI HIT-HY 100 SYSTEM

| ANCHOR DIAMETER OR BAR SIZE | MINIMUM EMBEDMENT |
|---|---|
| NO. 3 BAR | 4" |
| 1/2 INCH OR NO. 4 BAR | 4-1/2" |
| 5/8 INCH OR NO. 5 BAR | 5-3/4" |
| 3/4 INCH OR NO. 6 BAR | 6-3/4" |

3. AN APPROVED EQUAL TESTED AND ASSESSED IN ACCORDANCE WITH ACI 355.4 AND PROVIDING THE MINIMUM BOND STRESS VALUES BELOW FOR THE SPECIFIED CONDITIONS. BULK-MIXED (E.G., BUCKET-MIXED) ADHESIVES ARE NOT PERMITTED.

4. ADHESIVE ANCHORS SELECTED FROM PARAGRAPH ABOVE SHALL BE SUPPLIED AS AN ENTIRE SYSTEM. THE SYSTEM SHALL INCLUDE, BUT IS NOT LIMITED TO, MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII) AS SUPPLIED WITH THE ADHESIVE, ADHESIVE CARTRIDGE, MIXING NOZZLE, EXTENSION TUBE, DISPENSER, AND ALL REQUIRED EQUIPMENT FOR PROPERLY CLEANING THE DRILLED HOLE.

5. ALL-THREADED ROD (EYEBOLTS, THREADED STUDS, INTERNAL THREADED PARTS) TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES SHALL CONFORM TO ASTM A36, A193 (GRADE B7), A307, B348 (BD), F1554 OR OTHER APPROVED ANCHOR ASSEMBLY TYPES. (STAINLESS STEEL ANCHOR RODS SHALL BE AISI TYPE 304 OR TYPE 316.) THREADS SHALL BE UNC COARSE THREADS, UNLESS NOTED OTHER-WISE.

6. COMPATIBLE NUTS AND WASHERS SHALL BE FURNISHED WITH THE ALL-THREAD ROD AND CONSIDERED PART OF THE ASSEMBLY. THE COST OF THE HARDWARE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLED ADHESIVE ANCHOR ASSEMBLY.

7. NUTS, WASHERS, AND OTHER HARDWARE USED WITH AN ALL-THREADED BAR ADHESIVE ANCHOR SYSTEM OR WITH A MECHANICAL EXPANSION ANCHOR SHALL HAVE A MATERIAL OR AN ALLOY DESIGNATION THAT IS COMPATIBLE WITH THE ANCHOR ROD/ALLOY. GALVANIZED ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. ELECTROPLATE GALVANIZING IS NOT ACCEPTABLE. DISSIMILAR METAL ASSEMBLIES SHALL BE SEPARATED BY NYLON, EPDM, OR OTHER APPROVED NON-METALLIC WASHERS.

8. REINFORCING BARS TO BE USED IN ADHESIVE ANCHOR ASSEMBLIES (E.G., AS ANCHOR REINFORCEMENT) OR AS POST-INSTALLED REINFORCING SHALL CONFORM TO ASTM A615, A706, A995, OR A1035.

### GENERAL INSTALLATION GUIDELINES

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 2,500 PSI AT THE TIME OF ADHESIVE ANCHOR INSTALLATION.

2. CONCRETE AT TIME OF ADHESIVE ANCHOR INSTALLATION SHALL HAVE A MINIMUM AGE OF 21 DAYS. FOR INSTALLATION OF ADHESIVE ANCHORS IN CONCRETE HAVING AN AGE LESS THAN 21 DAYS, TESTS SHALL BE CONDUCTED TO VERIFY THE PERFORMANCE OF THE PRODUCT IN ACCORDANCE WITH ACI 355.4.

3. THE CONCRETE TEMPERATURE AT THE TIME OF ADHESIVE ANCHOR INSTALLATION SHALL BE AT LEAST 50°F UNLESS TESTING HAS BEEN CONDUCTED IN ACCORDANCE WITH RECOGNIZED CRITERIA TO VERIFY PERFORMANCE IN CONCRETE AT LOWER TEMPERATURES.

4. EMBEDMENT DEPTH AND MINIMUM ANCHOR PROJECTION OF THE ANCHOR ELEMENT FROM THE CONCRETE SURFACE SHALL BE AS SHOWN ON THE DRAWING OR DETAIL FOR THE PARTICULAR ANCHOR OR GROUP OF ANCHORS BEING INSTALLED.

5. ADHESIVE CARTRIDGES SHALL BE STORED UNDER CONDITIONS IN COMPLIANCE WITH MANUFACTURER RECOMMENDATIONS REGARDING TEMPERATURE, EXPOSURE TO SUNLIGHT, ETC. AND EVIDENCE OF COMPLIANCE SHALL BE MADE AVAILABLE UPON REQUEST. THE USE OF EXPIRED ADHESIVE, AS INDICATED BY THE EXPIRATION DATE ON THE CARTRIDGE, IS PROHIBITED.

### INSTALLATION

1. ADHESIVE ANCHORS SHALL BE INSTALLED BY QUALIFIED PERSONNEL TRAINED TO INSTALL ADHESIVE ANCHORS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. BOTH POST-INSTALLED EXPANSION AND ADHESIVE ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII). ADHESIVE ANCHORS WITH DIAMETER GREATER THAN 3/8-INCH INSTALLED IN ORIENTATIONS FROM HORIZONTAL TO VERTICAL SHALL EMPLOY A PISTON PLUG FOR THE ADHESIVE INJECTION.

2. INSTALLATION OF ADHESIVE ANCHORS IN ORIENTATIONS FROM HORIZONTAL TO VERTICAL TO SUPPORT SUSTAINED TENSION LOADS SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE ACI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR EQUIVALENT. THESE ANCHORS ARE DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALLOUT. NOTE: SOME DOWN-HOLE INSTALLATIONS SHOWN ON DRAWINGS SUPPORT SUSTAINED TENSION LOADS AND ARE SO DESIGNATED WITH A (CERT) AFTER THE ANCHOR CALLOUT.

3. THE INSTALLER'S QUALIFICATIONS SHALL BE SUBMITTED AND APPROVED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

4. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT REQUIRED TO INSTALL THE EXPANSION AND/OR ADHESIVE ANCHOR INCLUDING, BUT NOT LIMITED TO, DRILLS, SETTING TOOLS, CLEAN OUT BRUSHES, BLOWOUT BULBS, OIL FREE COMPRESSED AIR, VACUUMS, WRENCHES, ETC.

5. UNLESS OTHERWISE SPECIFIED, ANCHORS SHALL BE INSTALLED IN HOLES DRILLED WITH A ROTARY IMPACT HAMMER DRILL OR, WHERE NOT OTHERWISE PRESCRIBED, A ROCK DRILL. WHERE SPECIFIED AND WHERE PERMITTED BY THE MPII, HOLES MAY BE DRILLED WITH A DIAMOND CORE DRILL. IN ALL CASES, THE BIT DIAMETER SHALL BE IN ACCORDANCE WITH THE MPII.

6. ANCHOR HOLES SHALL BE THOROUGHLY CLEANED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN THE MPII PRIOR TO ADHESIVE INJECTION.

7. DRILLED AND CLEANED ANCHOR HOLES SHALL BE PROTECTED FROM CONTAMINATION AND WATER (E.G. RAIN) UNTIL THE ADHESIVE IS INSTALLED.

8. A DRILLED ANCHOR HOLE SHALL BE RE-CLEANED JUST PRIOR TO ADHESIVE INJECTION IF, IN THE OPINION OF THE ENGINEER, INSPECTOR, OR ARCHITECT'S REPRESENTATIVE, THE HOLE HAS BECOME CONTAMINATED AFTER INITIAL CLEANING.

9. ADHESIVE SHALL BE INJECTED IN ACCORDANCE WITH THE MPII USING EQUIPMENT AND PROCEDURES AS SPECIFIED THEREIN FOR THE SPECIFIC CONDITIONS ASSOCIATED WITH THE INJECTION. THIS SHOULD BE CLEARLY SPECIFIED IN THE MPII, IF NOT, ANOTHER PRODUCT SHOULD BE SPECIFIED.

10. ANCHOR ELEMENTS TO BE INSTALLED IN THE ADHESIVE SHALL BE CLEAN, OIL FREE, AND FREE OF LOOSE RUST, PAINT, OR OTHER COATINGS. THREADS ON THE PROJECTING PORTION OF THE ANCHOR ELEMENT SHALL BE PROTECTED FROM ADHESIVE CONTAMINATION.

11. INSTALLED ADHESIVE ANCHORS SHALL BE SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE CONCRETE SURFACE. ANCHORS DISPLACED BEFORE FULL ADHESIVE CURE SHALL BE CONSIDERED DAMAGED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

POST-INSTALLED REINFORCING BARS OR ALL-THREADED BARS SHALL NOT BE BENT AFTER BEING INSTALLED UNLESS PERMITTED BY THE SER

## MASONRY WALL NOTES

1. THE STRUCTURAL PLANS ONLY SHOW THE LOAD BEARING "STRUCTURAL" MASONRY.

2. MASONRY CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PART 3 OF ACI 531 "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY CONSTRUCTION".

3. ALL CONCRETE MASONRY UNITS SHALL BE HOLLOW LOAD BEARING UNITS CONFORMING TO THE REQUIREMENTS OF ASTM C90, TYPE I AND THE QUALITY CONTROL STANDARDS OF THE CONCRETE MASONRY ASSOCIATION.

4. NORMAL WEIGHT CONCRETE MASONRY UNITS (CMU) SHALL CONFORM TO ASTM C90, TYPE II, WITH A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 3,750 PSI. CONCRETE MASONRY UNITS USED BELOW GRADE SHALL BE COMPOSED OF NORMAL WEIGHT AGGREGATE. LIGHT WEIGHT CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C331 WITH A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 3,750 PSI. CONCRETE MASONRY UNITS USED ABOVE GRADE SHALL BE COMPOSED OF LIGHTWEIGHT AGGREGATE.

5. ALL MASONRY UNITS SHALL HAVE A MINIMUM NET COMPRESSIVE STRENGTH OF 3,750 PSI AND A MINIMUM NET TENSILE STRENGTH OF NOT LESS THAN 125 PSI, WHEN TESTED IN ACCORDANCE WITH THE METHODS SET FORTH IN THE QUALITY CONTROL STANDARDS OF THE CONCRETE MASONRY ASSOCIATION.

6. MASONRY UNITS SHALL HAVE CURED FOR NOT LESS THAN 28 DAYS WHEN PLACED IN THE STRUCTURE.

7. ALL MASONRY UNITS SHALL HAVE A MAXIMUM LINEAR SHRINKAGE OF .065 OF 1% FROM THE SATURATED TO THE OVEN DRY CONDITION, WHEN TESTED IN ACCORDANCE WITH THE METHODS SET FORTH IN THE QUALITY CONTROL STANDARDS OF THE CONCRETE MASONRY ASSOCIATION.

8. MASONRY MORTAR SHALL BE FRESHLY PREPARED, UNIFORMLY MIXED AND SHALL CONFORM TO ASTM C270, TYPE 'S' WITH A MINIMUM COMPRESSIVE STRENGTH OF 1,800 PSI AT 28 DAYS. MASONRY CEMENT AND MORTAR CEMENT SHALL NOT BE USED. USE ASTM C270 TYPE 'M' MORTAR WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS IS REQUIRED IN BELOW GRADE APPLICATIONS. FOR MULTI WYTHE WALLS USE THE SAME TYPE OF MORTAR FOR EACH WYTHE.

9. BRICK MORTAR SHALL BE FRESHLY PREPARED, UNIFORMLY MIXED, AND SHALL CONFORM TO ASTM C270, TYPE 'N' WITH A MINIMUM COMPRESSIVE STRENGTH OF 1,800 PSI AT 28 DAYS.

10. GROUT MIXTURES SHALL CONFORM TO ASTM C476 WITH A 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI AND A MAXIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

11. CONCRETE MASONRY CONSTRUCTION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF THE MASONRY (f'm) SHALL BE 2500 PSI ON THE NET CROSS SECTIONAL AREA AT 28 DAYS.

12. ALL CELLS WITH REINFORCING BARS SHALL BE GROUTED SOLID AND CONCRETE MASONRY UNITS LOCATED BELOW GRADE SHALL HAVE ALL CELLS FULLY GROUTED. REINFORCING STEEL SHALL CONSIST OF DEFORMED GRADE 60 BARS CONFORMING TO ASTM A615. BARS SHALL BE NEW BILLET STEEL OF A DOMESTIC MANUFACTURE. ALL CELLS TO BE GROUTED SHALL BE CLEAN AND FREE OF EXCESS MORTAR AND FOREIGN MATERIALS.

13. ALL CELLS SHOWN TO HAVE DRILLED EXPANSION ANCHORS, EMBEDDED HEADED STUDS OR OTHER EMBEDDED ANCHORS SHALL BE GROUTED SOLID.

14. HORIZONTAL JOINT REINFORCEMENT SPACED AT 16 INCHES ON CENTER MAX. VERTICALLY SHALL CONFORM TO ASTM A951 WITH A MINIMUM YIELD STRENGTH OF 70,000 PSI AND A MINIMUM SIZE OF 9 GAGE FOR SIDE RODS AND 9 GAGE FOR TRUSS RODS.

15. BOND BEAM BLOCKS SHALL BE OPEN BOTTOM UNITS AND ARE TO BE USED AT THE TOPS OF WALLS AND AT THE MID-HEIGHT OF WALL OR AT 8'-0" ON CENTER VERTICALLY MAXIMUM UNLESS NOTED OTHERWISE ON THE DRAWINGS. PROVIDE (2) NO. 4 BARS IN A SOLID GROUTED BOND BEAM UNLESS NOTED OTHERWISE. LINTEL BLOCKS SHALL NOT BE USED IN PLACE OF BOND BEAM BLOCKS. BOND BEAMS TO STOP AND START AT EVERY THIRD VERTICAL CONTROL JOINT. BOND BEAM TO BE CUT AT EVERY VERTICAL CONTROL JOINT BUT REINFORCING TO REMAIN CONTINUOUS.

16. OPENINGS IN MASONRY WALLS SHALL HAVE EITHER MASONRY OR STEEL LINTELS AS DETAILED ON THE DRAWINGS. WHEN NO LINTEL IS DETAILED A MINIMUM OF (2) NO. 4 BARS IN A SOLID GROUTED LINTEL BLOCK SHALL BE INSTALLED. THE BARS SHALL EXTEND A MINIMUM OF EIGHT INCHES BEYOND THE EDGE OF THE OPENING AND THE JAMB AT EACH SIDE OF THE OPENING SHALL BE GROUTED SOLID FOR A DISTANCE OF EIGHT INCHES WITH A NO. 5 VERTICAL MINIMUM AT EACH JAMB. LAP BARS 2'-0" MIN. OR 40 BAR DIAMETERS AT SPLICES, INTERSECTIONS AND CORNERS.

17. LINTEL BLOCKS SHALL BE "U" SHAPED UNITS WITH SOLID BOTTOMS AND ARE TO BE USED OVER WINDOW AND DOOR OPENINGS. BOND BEAM BLOCKS SHALL BE OPEN BOTTOM UNITS AND ARE TO BE USED AT THE TOPS OF WALLS AND AT THE MID-HEIGHT OF WALL OR AT 8'-0" ON CENTER VERTICALLY MAXIMUM UNLESS NOTED OTHERWISE ON THE DRAWINGS. PROVIDE (2) NO. 4 BARS IN A SOLID GROUTED BOND BEAM UNLESS NOTED OTHERWISE. LINTEL BLOCKS SHALL NOT BE USED IN PLACE OF BOND BEAM BLOCKS. VERTICAL REINFORCING SHALL EXTEND THROUGH ALL BOND BEAMS. BOND BEAMS TO STOP AND START AT EVERY THIRD VERTICAL CONTROL JOINT. BOND BEAM TO BE CUT AT EVERY VERTICAL CONTROL JOINT BUT REINFORCING TO REMAIN CONTINUOUS THRU THE CONTROL JOINT.

18. STEEL LINTELS SHALL BEAR 8 INCHES MINIMUM AT EACH END ON FLASHING ABOVE AND BELOW THE ANGLE. VERTICAL CONTROL JOINTS SHALL EXTEND UP FROM THE END OF THE STEEL LINTEL, UNLESS 15# FELT OR FLASHING IS PROVIDED TOP AND BOTTOM OF LINTEL ANGLE WHERE ANGLE BEARS ON BRICK.

19. MASONRY WALLS SHALL HAVE VERTICAL CONTROL JOINTS AT APPROXIMATELY SIXTEEN (16) FEET TO TWENTY-FOUR (24) FEET ON CENTER AND FOUR (4) FEET MAXIMUM FROM CORNERS OR AT A MAXIMUM HEIGHT/LENGTH RATIO OF 1.5 FOR UNREINFORCED WALLS AND H/L OF 2 FOR REINFORCED WALLS. COORDINATE THE LOCATION OF JOINTS WITH THE ARCHITECT. PROVIDE HECKMANN NO. 351 CONTROL JOINT ANCHORS AT 16 INCHES ON CENTER VERTICALLY AT BRICK MASONRY AND HECKMANN NO. 350 CONTROL JOINT ANCHORS AT 16 INCHES ON CENTER VERTICALLY AT CONCRETE MASONRY UNITS.

20. AT FREE VERTICAL EDGES, CORNERS AND INTERSECTIONS OF WALLS PROVIDE AT LEAST (1) NO. 5 DOWEL AND VERTICAL IN GROUT FILLED END CORE, UNLESS NOTED OTHERWISE ON THE DRAWINGS. PROVIDE AT LEAST (1) NO. 5 DOWEL AND VERTICAL IN GROUT FILLED CORE AT ALL JOIST AND BEAM BEARING LOCATIONS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

21. PROVIDE A MINIMUM OF NO. 4 AT 48 INCHES ON CENTER VERTICAL WALL REINFORCING AND DOWELS IN FULLY GROUTED CELLS AT ALL EXTERIOR AND INTERIOR WALLS UNLESS A GREATER REINFORCING IS SHOWN ON THE PLANS OR IN THE DETAILS. PROVIDE 1/2 INCH DIAMETER DEFORMED BAR ANCHORS AT 48 INCHES ON CENTER WELDED TO STEEL MEMBERS SUPPORTING MASONRY ABOVE UNLESS NOTED OTHERWISE ON THE DRAWINGS.

22. PROVIDE HOHMAN AND BARNARD RB-8 REBAR POSITIONERS OR EQUAL AT EVERY THIRD COURSE AND AT SPLICE LOCATIONS.

23. ALL MASONRY TIES TO BACKUP STRUCTURE SHALL BE HOT DIP GALVANIZED. PROVIDE A HECKMANN NO. 315 ANCHOR WITH NO. 316 TRIANGULAR TIE-ON COLUMNS AT 16 INCHES (15 INCHES AT KING SIZE BRICK) ON CENTER VERTICALLY AND A HECKMANN NO. 191 OR 192 ANCHORS ON EACH SIDE OF ALL BEAMS AT 16 INCHES ON CENTER HORIZONTALLY UNLESS NOTED OTHERWISE ON THE DRAWINGS. MASONRY TIES TO WALL STUDS SHALL BE A HECKMANN NO. 316 TRIANGULAR TIE WITH A HECKMANN NO. 315-C SCREW ON ANCHOR STRAP OR HECKMANN #77 WING NUT POS-I-TIE ANCHOR SPACED 16 INCHES (15 INCHES AT KING SIZE BRICK) ON CENTER HORIZONTALLY AND 16 INCHES ON CENTER VERTICALLY. AT TOP OF WALLS AND AT WALL CORNERS AND INTERSECTIONS PROVIDE TWO VERTICAL ROWS OF ANCHORS SPACED 16 INCHES APART AND 16 INCHES ON CENTER VERTICALLY. TRIANGULAR TIES SHALL EXTEND 3/4 INCH FROM FACE OF MASONRY. ANCHOR STRAPS SHALL BE ATTACHED TO METAL STUDS WITH TWO (2) #10-16x 1-1/2 INCHES CADMIUM PLATED HEX HEAD SHEET METAL SCREWS WITH NEOPRENE WASHER.

24. ANCHOR WOOD SILLS (PRESSURE TREATED) TO CMU WITH 1/2 INCH DIA. x 9 INCHES LONG HOT-DIP GALVANIZED, HOOKED ANCHOR BOLTS WITH 9/16-INCH-WIDE TYPE 'B' HOT-DIP GALVANIZED WASHERS EMBEDDED 7 INCH MINIMUM AT 24 INCHES MAX. ON CENTER. AT CORNERS AND DOOR OPENINGS PROVIDE ONE ANCHOR BOLT AT 8 INCHES IN EACH DIRECTION FROM CORNER. PROVIDE TWO BOLTS MINIMUM PER PIECE OF SILL PLATE.

25. ALL MASONRY DESIGN IS BASED CHAPTER 21 OF INTERNATIONAL BUILDING CODE, LATEST EDITION AND ACI 530/TMS 402, LATEST EDITION.

26. TOPS OF ALL NON-LOAD BEARING INTERIOR WALLS SHALL BE BRACED ACCORDING TO THE SPECIFIC SECTION INDICATED ON PLAN OR THE TYPICAL DETAILS.

## METAL BUILDING NOTES

1. THE METAL BUILDING FRAME AND COMPONENTS SHALL BE DESIGNED BY A METAL BUILDING MANUFACTURER EXPERIENCED IN METAL BUILDING SYSTEM DESIGN. THE DESIGN SHALL BE IN ACCORDANCE WITH THE "RECOMMENDED DESIGN PRACTICE MANUAL" OF THE METAL BUILDING MANUFACTURER'S ASSOCIATION, THE AISI "SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STRUCTURAL MEMBERS", AND THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

2. METAL BUILDING FRAMES AND COMPONENTS SHALL BE DESIGNED TO COMPLY WITH THE CITY OF HOUSTON BUILDING CODE AND ANY OTHER GOVERNING CODES.

3. AT A MINIMUM OF THREE WEEKS BEFORE SCHEDULED FOUNDATION CONSTRUCTION, THE METAL BUILDING MANUFACTURER SHALL SUBMIT ANCHOR BOLT LAYOUT AND METAL BUILDING FOUNDATION REACTIONS FOR VERIFICATION OF FOUNDATION DESIGN. THE METAL BUILDING MANUFACTURER SHALL CAREFULLY EXAMINE THE FOUNDATION DRAWINGS TO VERIFY THAT SUFFICIENT CONCRETE EXISTS IN ALL CASES TO EMBED HIS ANCHOR BOLTS.

4. THE METAL BUILDING MANUFACTURER SHALL SUBMIT FOR REVIEW AND PERMIT APPLICATION, THE STRUCTURAL DESIGN CALCULATIONS AND DRAWINGS STAMPED BY A LICENSED ENGINEER IN THE DISCIPLINE OF STRUCTURAL ENGINEERING, LICENSED IN THE STATE OF TEXAS. THIS ENGINEER SHALL BE THE ENGINEER OF RECORD FOR THE METAL BUILDING SYSTEM

5. ITEMS TO BE DESIGNED, DETAILED AND SUPPLIED BY THE METAL BUILDING MANUFACTURER INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING ITEMS:

   A. WIND FRAMES - TO BE RIGID FRAMES DESIGNED WITH PINNED COLUMN BASES
   B. ROOF PURLINS AND WALL GIRTS
   C. ROOF AND WALL PANELS
   D. OTHER ESSENTIAL STRUCTURAL ITEMS SUCH AS ROOF X-BRACING, FLANGE BRACES, ANCHOR BOLTS, ALL CONNECTIONS, ETC.
   E. HORIZONTAL WIND MEMBERS TO SUPPORT THE TOP OF TILT WALL PANELS OR MASONRY WALLS AS DETAILED
   F. ROOF OPENING FRAMING FOR MECHANICAL UNITS AND ROOF PENETRATIONS
   G. THE METAL BUILDING MANUFACTURER SHALL REVIEW THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND DESIGN HIS STRUCTURE TO SUPPORT ALL HANGING LOADS FROM THE STRUCTURE INCLUDING BUT NOT LIMITED TO, MECHANICAL UNITS, FOLDING PARTITIONS AND BASKETBALL GOALS.

6. ANY SIZE SHOWN ON THE DRAWINGS IS A MINIMUM SIZE. THE METAL BUILDING SUPPLIER MAY INCREASE SIZE, IF REQUIRED, FOR THE METAL BUILDING DESIGN.

7. X-BRACING SHALL BE ROD BRACING WITH TURNBUCKLES ----- NOT CABLE.

8. SEE PLAN FOR REACTIONS IN KIPS FOR OTHER ITEMS CONNECTING TO THE METAL BUILDING COMPONENTS FOR WHICH THE METAL BUILDING STRUCTURE IS TO BE DESIGNED TO SUPPORT. THE METAL BUILDING MANUFACTURER IS TO MAKE PROVISIONS FOR THIS CONNECTION AND COORDINATE AS REQUIRED.

9. THE METAL BUILDING MANUFACTURER IS TO PROVIDE THE DESIGN AND DETAILING FOR OTHER MATERIALS WHICH CONNECT THE METAL BUILDING COMPONENTS AND COORDINATE AS REQUIRED.

10. THE MAXIMUM ALLOWED HORIZONTAL MOVEMENT PARALLEL OR PERPENDICULAR TO THE RIGID FRAME AT THE FRAME EAVE UNDER MAXIMUM WIND LOADS SHALL BE THE EAVE HEIGHT DIVIDED BY 180.

11. THE MAXIMUM ALLOWED VERTICAL MOVEMENT AT THE CENTER OF THE RIGID FRAME UNDER FULL LIVE LOAD SHALL BE THE SPAN OF THE FRAME DIVIDED BY 180. IF THE ROOF SUPPORTS PLASTER OR SHEETROCK CEILINGS, LIMIT THE LIVE LOAD DEFLECTION TO THE SPAN OF THE FRAME DIVIDED BY 360.

12. THE BUILDING SHALL BE DESIGNED FOR A MINIMUM COLLATERAL LOAD OF 3 PSF. THE BUILDING SHALL BE DESIGNED FOR A MINIMUM 10 PSF COLLATERAL LOAD FOR CEILINGS AND MECHANICAL AND ELECTRICAL SYSTEMS WHEN THE BUILDING HAS CONDITIONED SPACE WITH CEILINGS AND LIGHTING.

13. THE METAL BUILDING ENGINEER IS TO PROVIDE SPECIAL INSPECTION WORK AND THE FINAL LETTER OF COMPLIANCE FOR THEIR PORTION OF THE WORK IN COMPLIANCE WITH THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE SECTION 1705.2.

14. THE CONTRACT OR PURCHASE ORDER BETWEEN THE METAL BUILDING SUPPLIER AND THE CONTRACTOR OR OWNER SHALL BE REVIEWED BY OUR OFFICE PRIOR TO SIGNING, TO ASSURE THAT ALL ITEMS REQUIRED IN THE NOTES AND ON THE DRAWINGS, ARE PROVIDED BY THE METAL BUILDING MANUFACTURER. IF OUR OFFICE DOES NOT REVIEW THE PURCHASE ORDER PRIOR TO SIGNING, WE WILL NOT BE RESPONSIBLE FOR ITEMS REQUIRED IN THE NOTES AND ON THE DRAWINGS THAT ARE EXCLUDED BY THE METAL BUILDING SUPPLIER.

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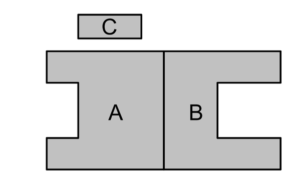


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Texas Engineering Firm No. F-170

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# S0.01

GENERAL NOTES

# STRUCTURAL TESTING AND INSPECTIONS

## EARTHWORK TESTING

1. DURING EARTHWORK OPERATIONS KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT. SERVICES PROVIDED SHALL INCLUDE:

   A) OBSERVE STRIPPING OPERATIONS AND EVALUATE THE REQUIRED STRIPPING DEPTH DURING THESE OPERATIONS.

   B) OBSERVE PROOFROLLING OPERATIONS AFTER SITE STRIPPING. DETERMINE IF ANY SOFT SPOTS NEED TO BE UNDERCUT TO FIRM SOILS, REPLACED WITH SELECT FILL AND RECOMPACTED.

   C) VERIFY THAT THE SUBGRADE SHALL THEN BE SCARIFIED AND MOISTURE CONDITIONED TO A SIX (6) INCH DEPTH AND THEN RECOMPACTED TO BETWEEN 95 AND 100 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR DENSITY TEST (ASTM D698). THE MOISTURE CONTENT SHALL BE BETWEEN[OPTIMUM AND +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT. PROVIDE A MINIMUM OF FOUR (4) FIELD DENSITY TESTS ON THE SUBGRADE OR ONE (1) FOR EVERY 2,500 SQUARE FEET WHICHEVER IS GREATER.

   D) STRUCTURAL SELECT FILL PAD MATERIAL SHALL BE TESTED FOR ACCEPTABILITY AND A MOISTURE DENSITY CURVE SHALL BE ESTABLISHED. SELECT FILL MATERIAL SHALL BE AN INORGANIC SANDY CLAY WITH LIQUID LIMIT BETWEEN 26 AND 40 AND PLASTICITY INDEX BETWEEN 10 AND 20.

   E) SELECT FILL SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED TO BETWEEN 95 AND 100 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR DENSITY TEST (ASTM D698). THE MOISTURE CONTENT SHALL BE BETWEEN OPTIMUM AND +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT FOR SELECT FILL.

   F) SELECT FILL MATERIAL SHALL BE TESTED DURING PLACEMENT OF EACH LIFT FOR THE ATTERBERG LIMITS IN ACCORDANCE WITH ASTM D4318-98 METHOD B "STANDARD TEST METHOD FOR LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS" TO VERIFY THAT THE SELECT FILL MATERIAL IS IN ACCORDANCE WITH THE ORIGINALLY APPROVED SELECT FILL MATERIAL. PROVIDE A MINIMUM OF ONE (1) TEST PER LIFT OR ONE (1) FOR EVERY 2,500 SQUARE FEET WHICHEVER IS GREATER WITH A MAXIMUM OF TEN (10) PER LIFT.

   G) OBSERVE THE EXCAVATION DAILY AND ENSURE THAT THE CONTRACTOR MAINTAINS A CLEAN EXCAVATION THAT IS FREE OF WATER 100% OF THE TIME. CONTRACTOR SHALL PROVIDE PUMPS AS REQUIRED TO REMOVE ANY WATER AT ALL TIMES.

   H) OBSERVE GRADING OPERATIONS TO ENSURE THAT PROPER DRAINAGE AWAY FROM THE BUILDING PAD IS PROVIDED.

## DRILLED FOOTINGS TESTING

1. DURING DRILLED FOOTING OPERATIONS KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT. SERVICES PROVIDED SHALL INCLUDE:

   A) OBSERVING THE BOTTOM OF SHAFT FOR CLEANLINESS.

   B) CHECKING SHAFT FOR CONFORMANCE TO REQUIRED TOLERANCES. FOOTINGS SHALL BE WITHIN 3" OF THEIR REQUIRED LOCATIONS AND SHAFTS SHALL NOT BE OUT OF PLUMB BY MORE THAN 2 PERCENT OF THE SHAFT LENGTH.

   C) CHECKING SHAFT BOTTOM FOR PROPER BEARING MATERIAL.

   D) NOTING DEPTH AND DIAMETER OF ALL FOOTINGS.

   E) VERIFY QUANTITY, SIZE AND LOCATION OF REINFORCEMENT.

   F) CHECK FOR CAVING OF SHAFT OR BELL WALLS.

   G) CHECKING THAT THE BELL IS CONCENTRIC WITH THE SHAFT.

2. ENSURE THAT THE SPOILS FROM THE DRILLED FOOTING EXCAVATIONS ARE REMOVED FROM THE BUILDING PAD AND THAT THE PAD IS MOISTURE CONDITIONED AND RECOMPACTED AS SPECIFIED.

## CONCRETE TESTING

1. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW INDICATING CONFORMANCE WITH ACI 318, LATEST EDITION, CHAPTER 5, SECTION 5.3.

2. SLUMP TESTS, CONFORMING TO ASTM C143, SHALL BE TAKEN AT THE POINT OF DISCHARGE AT THE SAME RATE AS NOTED BELOW IN NOTE NUMBER 5.

3. AIR CONTENT TESTS CONFORMING TO ASTM C173, VOLUMETRIC METHOD FOR LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE; ASTM C231 PRESSURE METHOD FOR NORMAL WEIGHT CONCRETE; SHALL BE TAKEN FOR EACH DAY'S POUR OF EACH TYPE OF AIR-ENTRAINED CONCRETE.

4. CONCRETE TEMPERATURE SHALL BE TESTED HOURLY WHEN AIR TEMPERATURE IS 40 DEG F (4 DEG C) AND BELOW, WHEN 80 DEG F (27 DEG C) AND ABOVE, AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS IS MADE.

5. ONE SET OF FOUR COMPRESSION TEST SPECIMENS CONFORMING TO ASTM C31 SHALL BE MOLDED AND STORED FOR LABORATORY-CURED SPECIMENS. COMPRESSIVE STRENGTH TESTS SHALL CONFORM TO ASTM C39 AND SHALL CONSIST OF ONE SET FOR EACH DAY'S POUR EXCEEDING 5 CU. YDS. PLUS ADDITIONAL SETS FOR EACH 50 CU. YDS. MORE THAN THE FIRST 25 CU. YDS OF EACH CONCRETE CLASS PLACED IN ANY ONE DAY. ONE SPECIMEN SHALL BE TESTED AT 7 DAYS, TWO SPECIMENS SHALL BE TESTED AT 28 DAYS, AND ONE SPECIMEN SHALL BE RETAINED FOR LATER TESTING AS REQUIRED.

6. VERIFY CONCRETE IS BEING CONSOLIDATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF ACI 318 AND ACI 308R, LATEST EDITION.

7. VERIFY THAT POST INSTALLED ANCHORS ARE AS SPECIFIED AND THAT THE ANCHORS ARE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

## REINFORCING STEEL INSTALLATION

1. DURING CAST-IN-PLACE CONCRETE STRUCTURAL MEMBER REINFORCING PLACEMENT OPERATIONS KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT. INSPECT REINFORCING UTILIZING ACI 311.4R "GUIDE FOR CONCRETE INSPECTION" AS A GUIDE. SERVICES PROVIDED SHALL INCLUDE:

   A) VERIFY TYPE AND GRADE OF ALL REINFORCING STEEL.

   B) VERIFY REBAR IS FREE OF OIL, DIRT, EXCESSIVE RUST AND FROM DAMAGE IN SHIPMENT TO SITE.

   C) VERIFY REINFORCING IS ADEQUATELY TIED, CHAIRED AND SUPPORTED TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT.

   D) VERIFY MINIMUM AND MAXIMUM CLEAR DISTANCES BETWEEN BARS AND MINIMUM STRUCTURAL DISTANCE TO OUTSIDE OF CONCRETE.

   E) VERIFY QUANTITY, SIZE AND LOCATION OF REINFORCEMENT.

   F) VERIFY MINIMUM CONCRETE COVER IS MAINTAINED BETWEEN REBAR AND SURFACE OF CONCRETE.

   G) VERIFY SIZE AND PLACEMENT OF REBAR. VERIFY LAP LENGTHS, LOCATIONS AND STAGGERS AND VERIFY BENDS FOR MINIMUM DIAMETER, SLOPE AND LENGTH. VERIFY HOOKED BAR LENGTHS AND LOCATIONS.

## POST INSTALLED ANCHORS — FIELD QUALITY CONTROL

1. THE INTERNATIONAL BUILDING CODE (IBC 2018) REQUIRES SPECIAL INSPECTION OF ALL POST-INSTALLED ANCHORS. ACI 318-19 SECTIONS 26.13.1.5 AND 26.13.1.6 REQUIRE THAT ALL INSPECTIONS OF MECHANICAL AND ADHESIVE ANCHORS, RESPECTIVELY, ARE PERFORMED BY A CERTIFIED FIELD INSPECTOR SPECIFICALLY APPROVED FOR THAT PURPOSE BY THE SER AND THE BUILDING OFFICIAL. CERTIFICATION IS ESTABLISHED THROUGH AN INDEPENDENT ASSESSMENT SUCH AS THE ACI POST-INSTALLED CONCRETE ANCHOR INSTALLATION INSPECTOR PROGRAM OR SIMILAR PROGRAM WITH EQUIVALENT REQUIREMENTS. ADHESIVE ANCHORS INSTALLED IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS SHALL BE CONTINUOUSLY INSPECTED DURING INSTALLATION BY A CERTIFIED INSPECTOR.

2. POST-INSTALLED EXPANSION AND ADHESIVE ANCHORS SHALL BE PROOF LOADED AS REQUIRED IN THE CONTRACT DOCUMENTS. A PERCENTAGE OF EACH TYPE AND SIZE OF EACH TYPE OF SIZE OF ANCHOR ASSEMBLY SHALL BE PROOF LOADED IN TENSION BY AN INDEPENDENT TESTING LABORATORY UNLESS OTHERWISE SHOWN ON THE CONTRACT DOCUMENTS.

   A) PROOF LOADING SHALL BE CONDUCTED AS CONFINED TENSION TESTING FOR ADHESIVE ANCHORS USING A CENTER-HOLE CYLINDER.

   B) THE INDEPENDENT TESTING LABORATORY SHALL SUBMIT AN ANCHORAGE TESTING PLAN TO THE SER TO ENSURE THE TESTING REQUIREMENTS ARE FULFILLED.

   C) PROOF LOAD RANDOM SAMPLE RATES AS FOLLOWS:

| TYPE OF ANCHOR | SAMPLE RATE (PERCENT) |
|---|---|
| REINFORCING FOR SLAB ON GROUND | 5 |
| REINFORCING — GRADE BEAMS | 30 |
| REINFORCING — CONCRETE BEAMS | 50 |
| REINFORCING — CONCRETE COLUMNS | 50 |
| ANCHOR BOLTS NEW OR REPLACEMENT — SHEAR ONLY | 25 |
| ANCHOR BOLTS NEW OR REPLACEMENT — MOMENT FRAMES | 50 |
| ANCHORS FOR SHEAR TABS/PLATES OR ANGLES | 30 |
| ANCHORS IN TENSION — STRUCTURAL MEMBERS | 50 |
| ANCHORS IN TENSION — NON-STRUCTURAL MEMBERS | 25 |
| ANCHORS SUPPORTING LIFE SAFETY DEVICES | 100 |

3. POST-INSTALLED EXPANSION AND ADHESIVE ANCHORS SHALL BE PROOF LOADED TO LOAD LEVELS AS SHOWN ON THE CONTRACT DOCUMENTS. OR AS INDICATED ON THE STRUCTURAL DRAWINGS FOR THE SPECIFIC ANCHOR TYPES ABOVE. PROOF LOADING OF ADHESIVE ANCHORS SHALL BE PERFORMED AFTER A MINIMUM CURING PERIOD SPECIFIED BY THE MANUFACTURER.

4. ANCHORS SHALL HAVE NO VISIBLE INDICATIONS OF DISPLACEMENT OR DAMAGE DURING OR AFTER PROOF LOAD APPLICATION. CONCRETE CRACKING IN THE VICINITY OF THE ANCHOR AFTER LOADING SHALL BE CONSIDERED A FAILURE.

5. IF AN ANCHOR FAILS, MODIFY ALL INSTALLATIONS OF THE SAME TYPE AND RETEST UNTIL SATISFACTORY RESULTS ARE ACHIEVED

6. IF MORE THAN 5 PERCENT OF THE TESTED ANCHORS FAIL TO ACHIEVE THE SPECIFIED PROOF LOAD WITHIN THE LIMITS DEFINED ON THESE DRAWINGS, THEN 100 PERCENT OF THE ANCHORS OF THE SAME DIAMETER AND TYPE AS THE FAILED ANCHOR SHALL BE PROOF TESTED, UNLESS OTHERWISE DIRECTED BY THE SER.

7. PROVIDE WRITTEN FASTENER LOAD TEST REPORTS AND INTERMITTENT SPECIAL INSPECTION REPORTS OF POST INSTALLED FASTENERS AS THE WORK PROGRESSES.

## STRUCTURAL STEEL TESTING

1. CERTIFY WELDERS FOR THE WELD TYPES IN THE PROJECT AND CONDUCT INSPECTIONS AND TESTS AS REQUIRED, AS A MINIMUM, WELDERS SHALL BE AISC CERTIFIED. RECORD TYPES AND LOCATIONS OF DEFECTS FOUND IN WORK. RECORD WORK REQUIRED AND PERFORMED TO CORRECT DEFICIENCIES.

2. VISUALLY INSPECT 100% OF ALL FILLET WELDS.

3. VISUALLY INSPECT 100% OF ALL FULL PENETRATION WELDS, TEST 20% OF ALL FULL PENETRATION WELDS BY ONE OF THE FOLLOWING METHODS: LIQUID PENETRANT INSPECTION (ASTM E165), MAGNETIC PARTICLE INSPECTION (ASTM E709; PERFORMED ON THE ROOT PASS AND ON THE FINISHED WELD; CRACKS AND ZONES OF INCOMPLETE FUSION OR PENETRATION IS NOT ACCEPTABLE), RADIOGRAPHIC INSPECTION (ASTM E94 AND ASTM E142; MINIMUM QUALITY LEVEL OF "2-2T"), OR ULTRASONIC INSPECTION (ASTM E164). IF FAILURE RATE IS 20% OR GREATER, TEST 100% OF WELDS AT CONTRACTOR'S EXPENSE UNTIL FAILURE RATE FALLS BELOW 20%.

4. ALL WELDS THAT FAIL SHALL BE REWELDED AND RETESTED UNTIL THEY PASS THE TEST. TEST TWO ADDITIONAL WELDS AT THE CONTRACTOR'S EXPENSE FOR EVERY WELD FAILURE.

5. VISUALLY INSPECT WELDS ON 100% OF ALL STUDS AND TEST 10% BY THE METHOD DESCRIBED BELOW IN COMPLIANCE WITH AWS D1.1. HEADED STUD SHALL BE TESTED BY ALTERNATELY BENDING 30 DEG. IN OPPOSITE DIRECTIONS FROM ITS ORIGINAL AXIS BY EITHER STRIKING THE STUDS WITH A HAMMER ON THE UNWELDED END OR PLACING A PIPE OR OTHER SUITABLE HOLLOW DEVICE OVER THE STUD AND MANUALLY OR MECHANICALLY BENDING THE STUD. IF FAILURE RATE IS 10% OR GREATER, TEST 100% OF STUDS AT CONTRACTOR'S EXPENSE UNTIL FAILURE RATE FALLS BELOW 10%. IF A VISUAL INSPECTION REVEALS ANY STUD THAT DOES NOT SHOW A FULL 360 DEG. FLASH (AS DEFINED IN AWS D1.1) OR ANY STUD THAT HAS BEEN REPAIRED BY WELDING, SUCH STUD SHALL BE BENT TO AN ANGLE OF APPROXIMATELY 15 DEGREES FROM ITS ORIGINAL AXIS. THE DIRECTION OF BENDING FOR STUDS WITH LESS THAN 360 DEGREES FLASH SHALL BE OPPOSITE TO THE MISSING PORTION OF FLASH.

6. BOLTS SHALL BE VISUALLY INSPECTED WHEN TWIST-OFF SPLINES ARE USED, OTHERWISE BOLTS SHALL BE SNUG TIGHT.

7. ALL FULL PENETRATION WELDS AT MOMENT CONNECTIONS REQUIRING TESTING SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY USING NON-DESTRUCTIVE TESTING METHODS. FOR SHOP WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR TO SHIPPING TO THE JOB SITE. FOR FIELD WELDS, CERTIFICATION SHALL BE SUBMITTED PRIOR FLOOR DECK INSTALLATION AND CONCRETE PLACEMENT AND PRIOR TO COVERING CONNECTIONS WITH FIREPROOFING OR ARCHITECTURAL FINISHES.

## MASONRY TESTING

1. MASONRY TESTING SHALL CONSIST OF A QUALIFIED TESTING LABORATORY PROVIDING THE FOLLOWING SERVICES:

   A) VERIFY QUANTITY, SIZE AND SPACING OF REQUIRED REINFORCING SHOWN ON THE DRAWINGS.
   B) OBSERVE THE INSTALLATION OF MASONRY UNITS.
   C) INSPECTION OF GROUT SPACE, IMMEDIATELY PRIOR TO CLOSING OF CLEANOUTS AND PRIOR TO ALL GROUTING OPERATIONS. VERIFY THAT THE SPECIFIED CELLS HAVE BEEN FULLY GROUTED.
   D) MONITOR THE PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT. PROVIDE 28 DAY COMPRESSIVE STRENGTH TESTS ON EACH GROUT MIX IN ACCORDANCE WITH ASTM C1019. COMPRESSION TEST MASONRY PRISMS FOR EACH TYPE OF WALL CONSTRUCTION IN ACCORDANCE WITH ASTM C1314. CONTRACTOR SHALL PREPARE ONE SET OF PRISMS FOR TESTING AT 28 DAYS. TESTS ARE TO BE CONDUCTED FOR EACH 2000 SQUARE FEET OF WALL INSTALLED, BUT NOT LESS THAN TWO TESTS.

# SPECIAL INSPECTIONS AND STRUCTURAL TESTING

SPECIAL INSPECTION WORK AND THE FINAL LETTER OF COMPLIANCE HAVE NOT BEEN INCLUDED IN THE STRUCTURAL ENGINEER OF RECORD'S SCOPE OF SERVICES. THE OWNER IS RESPONSIBLE FOR OBTAINING THE SERVICES OF THE SPECIAL INSPECTOR AND THE TESTING LABORATORY. SPECIAL INSPECTIONS CAN BE PROVIDED BY AN INDEPENDENT SPECIAL INSPECTOR APPROVED BY THE BUILDING AUTHORITY. THE SPECIAL INSPECTION WORK DOES NOT INCLUDE THE TESTING LABORATORY SERVICES AS CALLED FOR ON THE DRAWINGS. ARRANGEMENTS FOR SPECIAL INSPECTIONS SHOULD BE MADE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE TESTING LABORATORY AND SPECIAL INSPECTOR IN A TIMELY MANNER PRIOR TO PROCEEDING WITH CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK REQUIRING INSPECTIONS WITHOUT THE TESTING LABORATORY'S OR SPECIAL INSPECTOR'S PRESENCE.

## STRUCTURAL STATEMENT OF SPECIAL INSPECTIONS

THE STRUCTURAL SPECIAL INSPECTOR SHALL KEEP RECORDS OF ALL STRUCTURAL INSPECTIONS AND SHALL FURNISH INSPECTION REPORTS TO THE OWNER AND THE STRUCTURAL REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (SRDP). DISCOVERED DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF SUCH DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND THE SRDP. THE SPECIAL INSPECTION PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES.

A FINAL REPORT OF SPECIAL INSPECTION DOCUMENTING COMPLETION OF ALL SPECIAL INSPECTIONS, TESTING AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED TO THE OWNER AND THE SRDP PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY AND USE.

## STRUCTURAL SCHEDULE OF SPECIAL INSPECTIONS

QUALIFICATIONS OF INSPECTORS AND TESTING TECHNICIANS

THE QUALIFICATIONS OF ALL PERSONNEL PERFORMING SPECIAL INSPECTION AND TESTING ACTIVITIES ARE SUBJECT TO THE APPROVAL OF THE OWNER. THE CREDENTIALS OF ALL INSPECTORS AND TESTING TECHNICIANS SHALL BE PROVIDED TO THE SPECIAL INSPECTOR FOR THEIR RECORDS.

**KEY FOR MINIMUM QUALIFICATION OF INSPECTION AGENTS**

WHEN THE REGISTERED DESIGN PROFESSION IN RESPONSIBLE CHARGE OR SPECIAL INSPECTOR OF RECORD DEEMS APPROPRIATE THAT THE INDIVIDUAL PERFORMING THE STIPULATED TEST OR INSPECTION HAVE A SPECIFIC CERTIFICATION, LICENSE OR EXPERIENCE AS INDICATED BELOW. SUCH REQUIREMENT SHALL BE LISTED BELOW AND SHALL BE CLEARLY IDENTIFIED WITHIN THE SCHEDULE UNDER THE AGENT QUALIFICATION DESIGNATION.

PE/SE STRUCTURAL ENGINEER
A LICENSED SE OR PE SPECIALIZING IN THE DESIGN OF BUILDING STRUCTURES

PE/GE GEOTECHNCIAL ENGINEER
A LICENSED PE SPECIALIZING IN SOIL MECHANICS AND FOUNDATIONS

EIT OR ENGINEER IN TRAINING
A GRADUATE ENGINEER WHO HAS PASSED THE FUNDAMENTALS OF ENGINEERING EXAM

**EXPERIENCED TESTING TECHNICIAN**

ETT OR EXPERIENCED TESTING TECHNICIAN
AN EXPERIENCED TESTING TECHNICIAN WITH A MINIMUM OF 5 YEARS EXPERIENCE WITH THE STIPULATED TEST OR INSPECTION

**AMERICAN CONCRETE INSTITUTE (ACI) CERTIFICATION**

| | |
|---|---|
| ACI-CFTT | CONCRETE FIELD-TESTING TECHNICIAN - GRADE I |
| ACI-CCI | CONCRETE CONSTRUCTION INSPECTOR |
| ACI-LTT | LABORATORY TESTING TECHNICIAN - GRADE 1&2 |
| ACI-STT | STRENGTH TESTING TECHNICIAN |

**AMERICAN WELDING SOCIETY (AWS) CERTIFICATION**

| | |
|---|---|
| AWS-CWI | CERTIFIED WELDING INSPECTOR |
| AWS/AISC-SSI | CERTIFIED STRUCTURAL STEEL INSPECTOR |

CHAPTER 17 OF THE 2021 INTERNATIONAL BUILDING CODE IS INTERPRETED TO REQUIRE SPECIAL INSPECTION FOR THE FOLLOWING ITEMS IN THE FOLLOWING TABLES:

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | SOIL/FOUNDATION INSPECTION | | |
|---|---|---|---|
| IBC SECTION 1705.6, TABLE 1705.6 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY | PERIODIC | | ETT |
| 2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL | PERIODIC | | ETT |
| 3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS | PERIODIC | | ETT |
| 4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL | CONTINUOUS | | ETT |
| 5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY | PERIODIC | | ETT |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | CAST-IN-PLACE DEEP FOUNDATIONS INSPECTION | | |
|---|---|---|---|
| IBC SECTION 1705.8, TABLE 1705.8 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT | CONTINUOUS | IBC 1705.8 | ETT |
| 2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), HEIGHTS, EMBEDMENTS INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES | CONTINUOUS | IBC 1705.8 | ETT |
| 3. FOR CONCRETE ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3 | | | ETT |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | CONCRETE INSPECTION | | |
|---|---|---|---|
| IBC SECTION 1705.3, TABLE 1705.3 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT | PERIODIC | ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3 IBC 1908.4 | ETT |
| 2. REINFORCING BAR WELDING: | | AWS D1.4 ACI 318: 26.6.4 | AWS-CWI |
| A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706 | PERIODIC | | |
| B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" | PERIODIC | | |
| C. INSPECT ALL OTHER WELDS | CONTINUOUS | | |
| 3. INSPECT ANCHORS CAST IN CONCRETE | PERIODIC | ACI 318: 17.8.2 | ETT |
| 4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS | | | ETT |
| A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS | CONTINUOUS | ACI 318: 17.8.2.4 | |
| B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A | PERIODIC | ACI 318: 17.8.2 | |
| 5. VERIFY USE OF REQUIRED MIX DESIGN | PERIODIC | ACI 318: Ch. 19, 26.4.3, 26.4.4 IBC 1904.1, 1904.2, 1908.2, 1908.3 | ETT |
| 6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONRETE | CONTINUOUS | ASTM C 172 ASTM C 31 ACI 318: 26.4, 26.12 IBC 1908.8 | ACI-CFTT OR ACI-STT |
| 7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES | CONTINUOUS | ACI 318: 26.5 IBC 1908.6, 1908.7, 1908.8 | ETT |
| 8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES | PERIODIC | ACI 318: 26.5.3-26.5.5 IBC 1908.9 | ETT |
| 9. INSPECT PRESTRESSED CONCRETE FOR: | | ACI 318: 26.10 | ETT |
| A. APPLICATION OF PRESTRESSING FORCES | CONTINUOUS | | |
| B. GROUTING OF BONDED PRESTRESSING TENDONS | CONTINUOUS | | |
| 10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS | PERIODIC | ACI 318: Ch. 26.8 | ETT |
| 11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS | PERIODIC | ACI 318: 26.11.2 | ETT |
| 12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED | PERIODIC | ACI 318: 26.11.1.2(b) | ETT |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | MASONRY LEVEL 1 INSPECTION | | | | |
|---|---|---|---|---|---|
| IBC SECTION 1705.4 TMS 402/ACI 530/ASCE 5 TMS 602/ACI 530.1/ASCE 6 | EXTENT CONTINUOUS, PERIODIC | COMMENTS: IBC SECTION | COMMENTS: TMS 402 ACI 530 ASCE 5 | COMMENTS: TMS 602 ACI 530.1 ASCE 6 | AGENT PE/GE, EIT OR ETT |
| 1. COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED | PERIODIC | | | ART. 1.5 | ETT |
| 2. VERIFICATION OF F'm AND F'AAC PRIOR TO CONSTRUCTION EXCEPT WHERE SPECIFICALLY EXEMPTED BY THIS CODE | PERIODIC | | | ART. 1.4B | ETT |
| 3. VERIFICATION OF SLUMP FLOW AND VSI AS DELIVERED TO THE SITE FOR SELF-CONSOLIDATING GROUT | CONTINUOUS | | | ART. 1.5B.1.b.3 | ETT |
| 4. AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE: | | | | | |
| A. PROPORTIONS OF SITE-PREPARED MORTAR | PERIODIC | | | ART. 2.6A | ETT |
| B. CONSTRUCTION OF MORTAR JOINTS | PERIODIC | | | ART. 3.3B | ETT |
| C. LOCATION OF REINFORCEMENT, CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES | PERIODIC | | | ART. 3.4, 3.6A | |
| D. PRESTRESSING TECHNIQUE | PERIODIC | | | ART. 3.6B | |
| E. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES | PERIODIC | | | ART. 2.4B 2.4H | |
| 5. AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE: | | | | | |
| A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS | PERIODIC | | | ART. 3.3F | ETT |
| B. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION | PERIODIC | | SEC. 1.2.2(e) 1.16.1 | | ETT |
| C. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT, ANCHOR BOLTS, PRESTRESSING TENDONS AND ANCHORAGES | PERIODIC | | SEC. 1.15 | ART. 2.4, 3.4 | ETT |
| D. WELDING OF REINFORCING BARS | CONTINUOUS | | SEC. 2.1.9.7.2 3.3.3.4(b) | | AWS-CWI |
| E. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40F) OR HOT WEATHER (TEMPERATURE ABOVE 90F). | PERIODIC | SEC. 2104.3 2104.4 | | ART. 1.8C 1.8D | ETT |
| F. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE | CONTINUOUS | | | ART. 3.6B | |
| 6. PRIOR TO GROUTING, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE: | | | | | |
| A. GROUT SPACE IS CLEAN | PERIODIC | | | ART. 3.2D | ETT |
| B. PLACEMENT OF REINFORCEMENT AND CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES | PERIODIC | | SEC 1.13 | ART. 3.4 | |
| C. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS. | PERIODIC | | | ART. 2.6B | |
| D. CONSTRUCTION OF MORTAR JOINTS | PERIODIC | | | ART. 3.3B | ETT |
| 7. GROUT PLACEMENT SHALL BE VERIFIED TO ENSURE COMPLIANCE: | CONTINUOUS | | | ART. 3.5 | ETT |
| A. GROUTING OF PRESTRESSING BONDED TENDONS | CONTINUOUS | | | ART. 3.6C | |
| 8. PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED | PERIODIC | | SEC 2105.2.2 2105.3 | ART. 1.4 | ETT |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | STRUCTURAL STEEL INSPECTION | | |
|---|---|---|---|
| IBC SECTION 1705.2, AISC 360-10 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS: | | | |
| A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS | PERIODIC | AISC 360 SECTION A3.3 AND ALL APPLICABLE ASTM MATERIAL STANDARDS | ETT |
| B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED | PERIODIC | | ETT |
| 2. INSPECTION OF HIGH-STRENGTH BOLTING: | | | |
| A. SNUG-TIGHT JOINTS | PERIODIC | AISC 360 SECTION M2.5 IBC 1704.3.3 | AWS/AISC-SSI |
| B. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION | PERIODIC | | |
| C. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITHOUT MATCHMARKING OR CALIBRATED WRENCH METHODS OF INSTALLATION. | CONTINUOUS | | |
| 3. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD- FORMED STEEL DECK | | | |
| A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360 | PERIODIC | AISC 360 SECTION M5.5 | ETT |
| B. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. | PERIODIC | ALL APPLICABLE ASTM MATERIAL STANDARDS | ETT |
| C. MANUFACTURER'S CERTIFIED TEST REPORTS | PERIODIC | | ETT |
| 4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS | | | |
| A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS. | PERIODIC | AISC 360, SECTION A3.5 AND APPLICABLE AWS A5 DOCUMENTS | ETT |
| B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED | PERIODIC | | ETT |
| 5. INSPECTION OF WELDING A. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK | | | |
| 1) COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS | CONTINUOUS | AWS D1.1 IBC 1704.3.1 | AWS-CWI |
| 2) MULTIPASS FILLET WELDS | CONTINUOUS | | |
| 3) SINGLE-PASS FILLED WELDS > 5/16" | CONTINUOUS | | |
| 4) PLUG AND SLOT WELDS | CONTINUOUS | | |
| 5) SINGLE-PASS FILLET WELDS ≤ 5/16" | PERIODIC | | |
| 6) FLOOR AND ROOF DECK WELDS | PERIODIC | AWS D1.3 | AWS-CWI |
| B. REINFORCING STEEL | | | |
| 1) VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706 | PERIODIC | AWS D1.4 ACI 318: SECTION 3.5.2 | AWS-CWI |
| 2) REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT. | CONTINUOUS | | |
| 3) SHEAR REINFORCEMENT | CONTINUOUS | | |
| 4) OTHER REINFORCING STEEL | PERIODIC | | |
| 6. INSPECTION OF STEEL FRAMED JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS: | | | |
| A. DETAILS SUCH AS BRACING AND STIFFENING | PERIODIC | IBC 1704.3.2 | ETT |
| B. MEMBER LOCATIONS | PERIODIC | | |
| C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION | PERIODIC | | |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | OPEN-WEB STEEL JOISTS AND JOIST GIRDERS | | |
|---|---|---|---|
| IBC SECTION 1705.2.3, TABLE 1705.2.3 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS | | SJI SPECIFICATIONS LISTED IN SECTION 2207.1 | ETT |
| A. END CONNECTIONS - WELDING OR BOLTED | PERIODIC | | ETT |
| B. BRIDGING - HORIZONTAL OR DIAGONAL | | | |
| 1. STANDARD BRIDGING | PERIODIC | SJI SPECIFICATIONS LISTED IN SECTION 2207.1 | |
| 2. BRIDGING THAT DIFFERS FROM SJI SPECIFICATIONS LISTED IN SECTION 2207.1 | PERIODIC | | |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | STEEL OTHER THAN STRUCTURAL STEEL INSPECTION | | |
|---|---|---|---|
| IBC SECTION 1705.2 IBC SECTION 1705.3.1 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| 1. MATERIAL VERIFICATION OF STEEL DECK: | | | |
| A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. | PERIODIC | APPLICABLE ASTM MATERIAL STANDARDS | |
| B. MANUFACTURER'S CERTIFIED TEST REPORTS | PERIODIC | | |
| 2. INSPECTION OF WELDING A. COLD-FORMED STEEL DECK 1) FLOOR AND ROOF DECK WELDS | PERIODIC | SDI QA/QC AWS D1.3 IBC 1705.2.2 | |
| B. REINFORCING STEEL | | | |
| 1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A707 | NA | AWS D1.4 ACI 318: SECTION 26.6.4 IBC 1705.3.1 | AWS-CWI |
| 2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT. | NA | | |
| 3. SHEAR REINFORCEMENT | NA | | |
| 4. OTHER REINFORCING STEEL | NA | | |

### SCHEDULE OF SPECIAL INSPECTIONS

| VERIFICATION/INSPECTION | WIND RESISTANCE | | |
|---|---|---|---|
| IBC SECTION 1705.11 | EXTENT CONTINUOUS, PERIODIC | COMMENTS | AGENT PE/GE, EIT OR ETT |
| STRUCTURAL WOOD: DURING FIELD GLUING OPERATIONS OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM | CONTINUOUS | IBC 1705.11.1 | ETT |
| STRUCTURAL WOOD: NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF COMPONENTS WITHIN THE MAIN WIND-FORCE-RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES AND HOLD-DOWNS | PERIODIC | IBC 1705.11.1 | ETT |
| COLD FORMED STEEL LIGHT-FRAME CONSTRUCTION: DURING WELDING OPERATIONS OF ELEMENTS OF THE MAIN WIND-FORCE-RESISTING SYSTEM. SCREW ATTACHMENT, BOLTING, ANCHORING AND OTHER FASTENING OF COMPONENTS WITHIN THE MAIN WIND-FORCE-RESISTING SYSTEM, INCLUDING SHEAR WALLS, BRACES, DIAPHRAGMS, COLLECTORS (DRAG STRUTS) AND HOLD-DOWNS. | PERIODIC | IBC 1705.11.2 | ETT |
| WIND-RESISTING COMPONENTS: 1. ROOF CLADDING 2. WALL CLADDING | PERIODIC | IBC 1705.11.3 | ETT |


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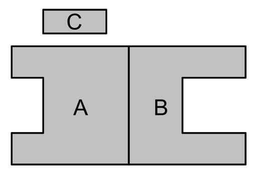


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24 July 2025
Texas Engineering Firm No. F-170

| | |
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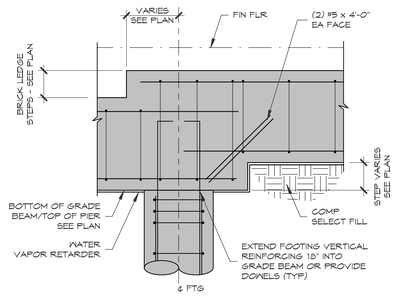
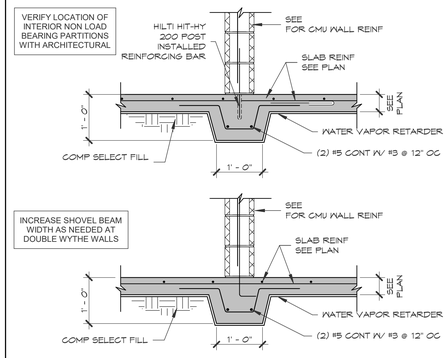
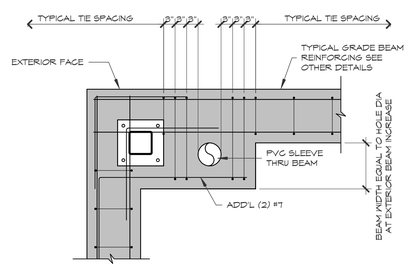
GENERAL NOTES




20 TYPICAL STEP IN GRADE BEAM
SCALE: 3/4" = 1'-0"

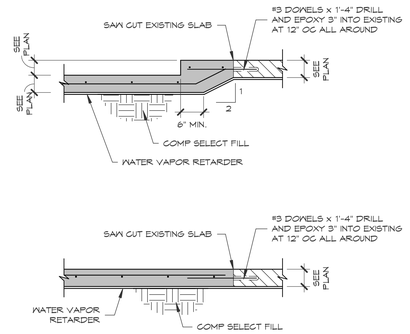



12 SHOVEL BEAM AT CMU WALL DETAIL
SCALE: 3/4" = 1'-0"

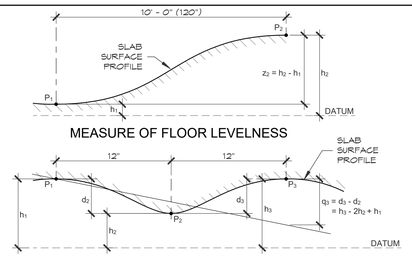



PLAN VIEW
TYPICAL VERTICAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

8 GRADE BEAM PENETRATION DETAIL
SCALE: 3/4" = 1'-0"




4 NEW SLAB AT EXISTING DETAIL
SCALE: 3/4" = 1'-0"



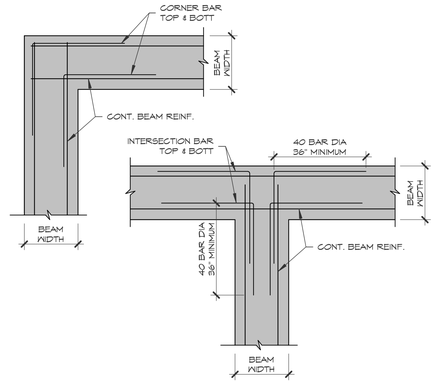

MEASURE OF FLOOR LEVELNESS



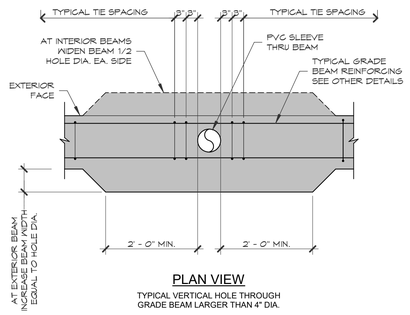

MEASURE OF FLOOR FLATNESS

NOTES:
1. $F_L$ = LEVELNESS F-NUMBER
$F_L = 12.5/(3 \times S_Z) + z$ WHERE $z$ = MEAN VALUE OF ALL $z$ FLOOR READINGS.
$S_Z$ = STANDARD DEVIATION OF ALL $z$ FLOOR READINGS.
2. $F_F$ = LEVELNESS F-NUMBER
$F_F = 4.57/(3 \times S_Q) \pm q$ WHERE $q$ = MEAN VALUE OF $z$ FLOOR READINGS.
$S_Z$ = STANDARD DEVIATION OF ALL q FLOOR READINGS.
3. $F_L$ AND $F_F$ SHALL BE STATISTICALLY DETERMINED ACCORDING TO ASTM E 1155 "STANDARD TEST METHOD FOR DETERMINING FLOOR FLATNESS AND LEVELNESS UNSING THE F-NUMBER SYSTEM."
4. REFER TO CONCRETE SPECIFICATONS FOR REQUIRED $F_F$ AND $F_L$ VALUES.

19 TYPICAL SLAB SURFACE TOLERANCE DETAIL
SCALE: 3/4" = 1'-0"

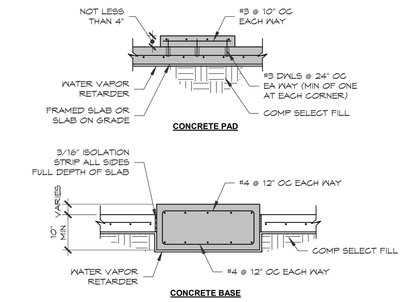



11 TYPICAL CORNER BAR DETAIL
SCALE: 3/4" = 1'-0"




PLAN VIEW
TYPICAL VERTICAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

7 GRADE BEAM PENETRATION DETAIL
SCALE: 3/4" = 1'-0"

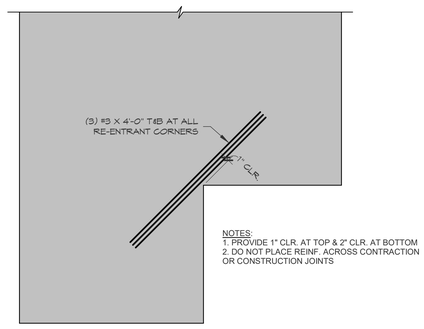



NOTES:

VERIFY ALL PAD AND BASE LOCATIONS, DIMENSIONS, AND ADEQUACY WITH THE MECHANICAL ENGINEER AND THE INDIVIDUAL EQUIPMENT REQUIREMENTS.

MECHANICAL ENGINEER TO SPECIFY ISOLATION DATA.

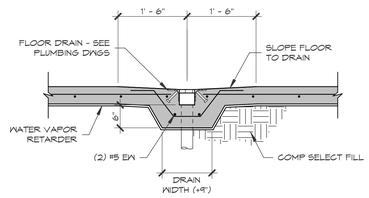
3 PAD AND BASE DETAIL
SCALE: 3/4" = 1'-0"




NOTES:
1. PROVIDE 1" CLR. AT TOP & 2" CLR. AT BOTTOM
2. DO NOT PLACE REINF. ACROSS CONTRACTION OR CONSTRUCTION JOINTS

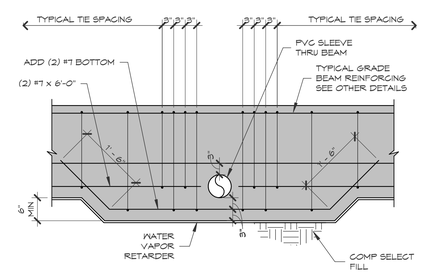
SCHEMATIC SLAB-ON-GRADE

18 TYPICAL DETAIL AT RE-ENTRANT CORNER BARS
SCALE: 3/4" = 1'-0"



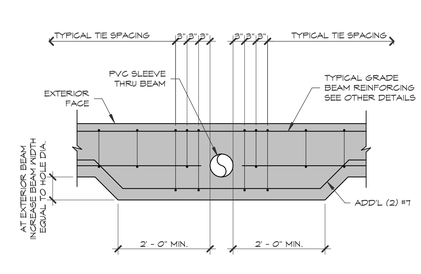

VERIFY LOCATION WITH PLUMBING DRAWINGS

14 FLOOR DRAIN DETAIL
SCALE: 3/4" = 1'-0"



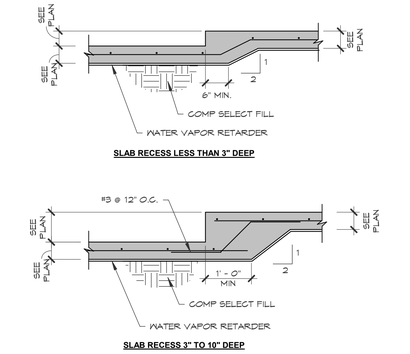

ELEVATION VIEW
TYPICAL HORIZONTAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

10 GRADE BEAM PENETRATION (MAIN REINF INTERRUPTED)
SCALE: 3/4" = 1'-0"

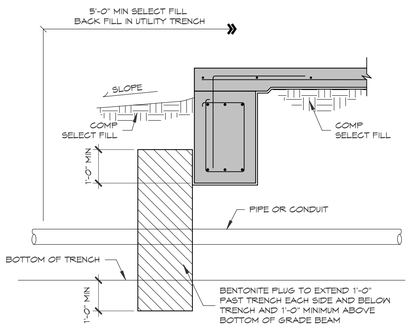



PLAN VIEW
TYPICAL VERTICAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

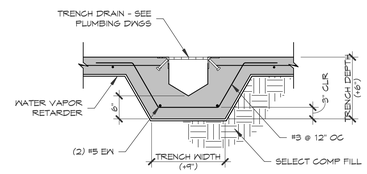
6 GRADE BEAM PENETRATION DETAIL
SCALE: 3/4" = 1'-0"




2 SLAB RECESS
SCALE: 3/4" = 1'-0"

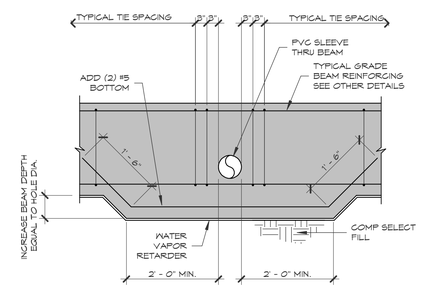



17 PIPE ENTRY DETAIL
SCALE: 3/4" = 1'-0"



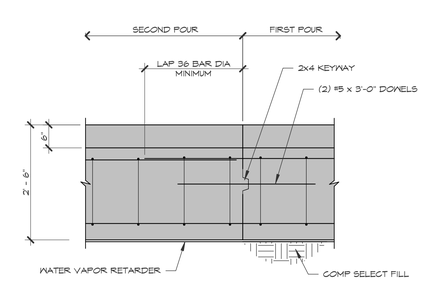

VERIFY LOCATION WITH PLUMBING DRAWINGS

13 TRENCH DRAIN DETAIL
SCALE: 3/4" = 1'-0"



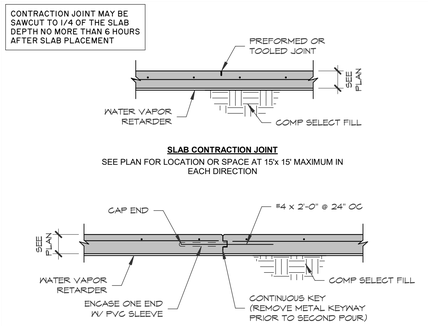

ELEVATION VIEW
TYPICAL HORIZONTAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

9 GRADE BEAM PENETRATION DETAIL
SCALE: 3/4" = 1'-0"




ELEVATION VIEW
LOCATE JOINTS IN MIDDLE THIRD OF BEAM SPAN BETWEEN SUPPORTS

5 GRADE BEAM CONSTRUCTION JOINT
SCALE: 3/4" = 1'-0"




NOTE: AT CONTRACTOR'S OPTION, CONSTRUCTION JOINT MAY BE USED IN LIEU OF CONTRACTION JOINT.

1 SLAB JOINT DETAIL
SCALE: 3/4" = 1'-0"

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A B

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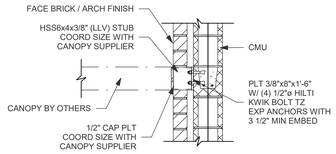
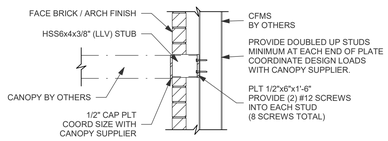
TYPICAL FOUNDATION DETAILS

| CMU WALL SCHEDULE | | |
|---|---|---|
| DESCRIPTION | WALL HEIGHT | VERTICAL REINFORCEMENT |
| INTERIOR WALLS | H ≤ 25'-0" | #4 @ 48" O.C. |
| | 25'-0" < H ≤ 35'-0" | #5 @ 48" O.C. |
| EXTERIOR OR PERIMETER WALLS | H ≤ 20'-0" | #6 @ 24" O.C. |
| | 20'-0" < H ≤ 26'-0" | #7 @ 24" O.C. |

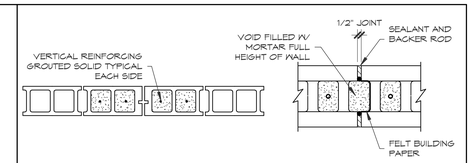
NOTES:
1. WALL HEIGHT, H, SHALL BE CONSIDERED AS THE DISTANCE BETWEEN LATERAL SUPPORTS
2. ALL DOWELS TO FLOOR SLAB SHALL MATCH SIZE & SPACING OF VERTICAL REINFORCEMENT
3. PROVIDE (2) #4 CONT. IN FULLY GROUTED BOND BEAM SPACED @ 8'-0" O.C. VERTICALLY (MAX) ((2) #5 IN 12" CMU WALLS)
4. ALL CELLS WITH REINFORCING SHALL BE FULLY GROUTED
5. f'm = 2500 PSI

20 CMU WALL SCHEDULE
SCALE: 3/4" = 1'-0"




16 CANOPY CONNECTION DETAIL
SCALE: 3/4" = 1'-0"

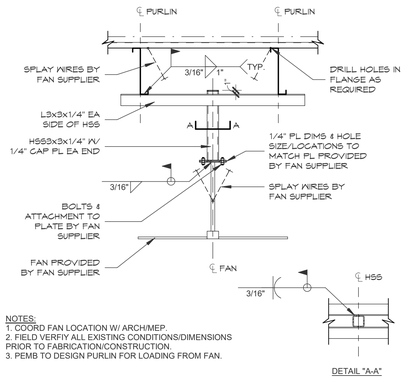



NOTES:

PROVIDE VERTICAL CONTROL JOINTS IN THE CONCRETE MASONRY UNIT PORTION OF ALL WALLS AND PARTITIONS AS FOLLOWS:

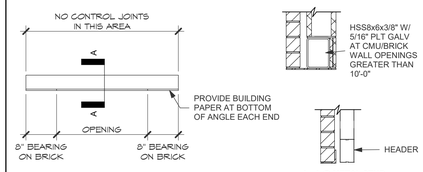
1. WHEN WALL LENGTH EXCEEDS 25 FEET.
2. AT JUNCTIONS OF BEARING AND NON-BEARING WALLS, CHANGES IN WALL HEIGHT OR THICKNESS, JUNCTIONS OF WALL WITH COLUMNS AND PIERS AND INTERSECTING WALL AND PARTITIONJUNCTION WHEN THE PARTITION LENGTH EXCEEDS 12'-0"
3. AT RETURN ANGLES OF "L", "T", "U" SHAPED CONSTRUCTION.
4. AT CHASES, AND RECESSES FOR PIPING OR FIXTURES.
5. AT ONE SIDE OF WALL OPENINGS LESS THAN 6'-0" AND AT BOTH SIDES OF OPENINGS OVER 6'-0" WIDE.
6. CONTROL JOINT SPACING SHALL NOT EXCEED 30'-0" WHEREVER FEASIBLE. CONTROL JOINTS MAY BE BEST LOCATED AT THE ENDS OF LINTELS OVER DOOR OPENINGS AND EXTEND UP FOR THE REMAINDER OF THE WALL HEIGHT.
7. CONTROL JOINTS TO EXTEND THRU ENTIRE WALL THICKNESS AND FOR FULL WALL HEIGHT.
8. SUBMIT CONTROL JOINT LOCATIONS AS A SHOP DRAWING SUBMITTAL.

4 CONTROL JOINT NOTES CONCRETE MASONRY
SCALE: 3/4" = 1'-0"




NOTES:
1. COORD FAN LOCATION W/ ARCH/MEP.
2. FIELD VERFIY ALL EXISTING CONDITIONS/DIMENSIONS PRIOR TO FABRICATION/CONSTRUCTION.
3. PEMB TO DESIGN PURLIN FOR LOADING FROM FAN.

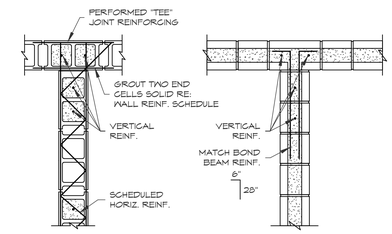
19 FAN DETAIL
SCALE: 3/4" = 1'-0"




| BRICK LOOSE LINTEL SCHEDULE | |
|---|---|
| OPENING | ANGLE SIZE |
| LESS THAN 5'-0" | L 3 1/2 x 3 1/2 x 5/16 |
| 5'-0" TO LESS THAN 6'-0" | L 5 x 3 1/2 x 5/16 (LLV) |
| 6'-0" TO LESS THAN 8'-0" | L 6 x 3 1/2 x 5/16 (LLV) |
| 8'-0" TO LESS THAN 9'-0" | L 7 x 4 x 3/8 (LLV) |

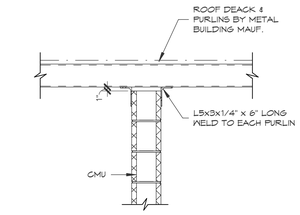
LLV = LONG LEG VERTICAL
GALVANIZE ALL LINTEL ANGLES.
ANGLE SIZES ARE MIN. - SEE ARCHITECTURAL DRAWINGS.

7 BRICK LOOSE LINTEL SCHEDULE
SCALE: 3/4" = 1'-0"

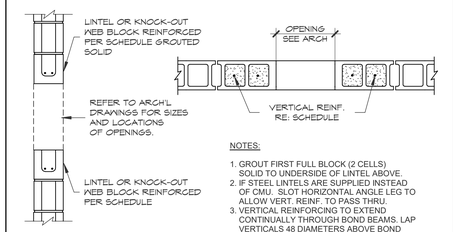



NOTES:
1. NORMAL JOINT AND BOND BEAM REINFORCING NOT SHOWN FOR CLARITY.
2. VERTICAL REINFORCING TO EXTEND CONTINUOUSLY THROUGH BOND BEAMS.
LAP VERTICALS 48 DIAMETERS ABOVE BOND BEAMS.

3 INTERSECTION REINFORCING DETAIL
SCALE: 3/4" = 1'-0"

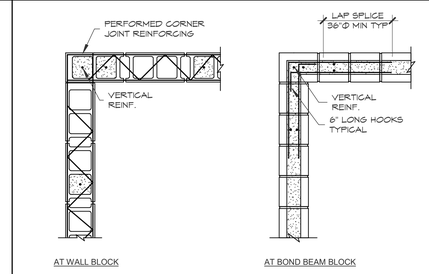



18 DETAIL
SCALE: 3/4" = 1'-0"



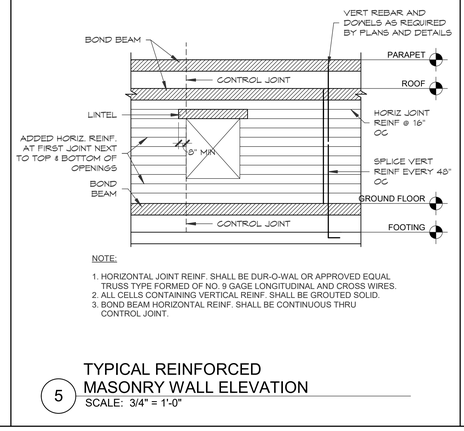

NOTES:
1. GROUT FIRST FULL BLOCK (2 CELLS) SOLID TO UNDERSIDE OF LINTEL ABOVE.
2. IF STEEL LINTELS ARE SUPPLIED INSTEAD OF CMU. SLOT HORIZONTAL ANGLE LEG TO ALLOW VERT. REINF. TO PASS THRU.
3. VERTICAL REINFORCING TO EXTEND CONTINUALLY THROUGH BOND BEAMS. LAP VERTICALS 48 DIAMETERS ABOVE BOND BEAMS.

6 OPENING HEAD/SILL & JAMB MASONRY REINFORCING DETAIL
SCALE: 3/4" = 1'-0"



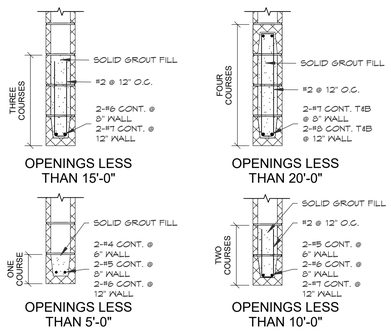

NOTES:
1. NORMAL JOINT AND BOND BEAM REINFORCING NOT SHOWN FOR CLARITY.
2. VERTICAL REINFORCING TO EXTEND CONTINUOUSLY THROUGH BOND BEAMS. LAP VERTICALS 48 DIAMETERS ABOVE BOND BEAMS.

2 CORNER REINFORCING DETAIL
SCALE: 3/4" = 1'-0"




NOTE:
1. HORIZONTAL JOINT REINF. SHALL BE DUR-O-WAL OR APPROVED EQUAL TRUSS TYPE FORMED OF NO. 9 GAGE LONGITUDINAL AND CROSS WIRES.
2. ALL CELLS CONTAINING VERTICAL REINF. SHALL BE GROUTED SOLID.
3. BOND BEAM HORIZONTAL REINF. SHALL BE CONTINUOUS THRU CONTROL JOINT.

5 TYPICAL REINFORCED MASONRY WALL ELEVATION
SCALE: 3/4" = 1'-0"




**NOTES:**

**1. PROVIDE BLOCK LINTELS FOR ALL OPENINGS IN INTERIOR & EXTERIOR BLOCK WALLS FOR WHICH STEEL LINTELS ARE NOT SCHEDULED. SEE ARCHITECTURAL DRAWINGS FOR SIZE & LOCATION OF OPENINGS.**
**2. PROVIDE 8" MIN BEARING EACH END OF LINTEL.**
**3. PROVIDE (2) #5 VERTICALS IN FULLY GROUTED CELLS AT EACH JAMB.**

1 MASONRY LINTEL SCHEDULE
SCALE: 3/4" = 1'-0"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TX Engineering Firm No. F-170

MEP
DBR Engineering Consultants, Inc.
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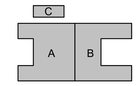


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
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CYPRESS TX, 77433


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ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
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tel 281.286.6605, fax/713.977.4620

24 July 2025
Texas Engineering Firm No. F-170

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JG |
| CHECKED: | MB/HK |

| DATE | ISSUE |
|---|---|
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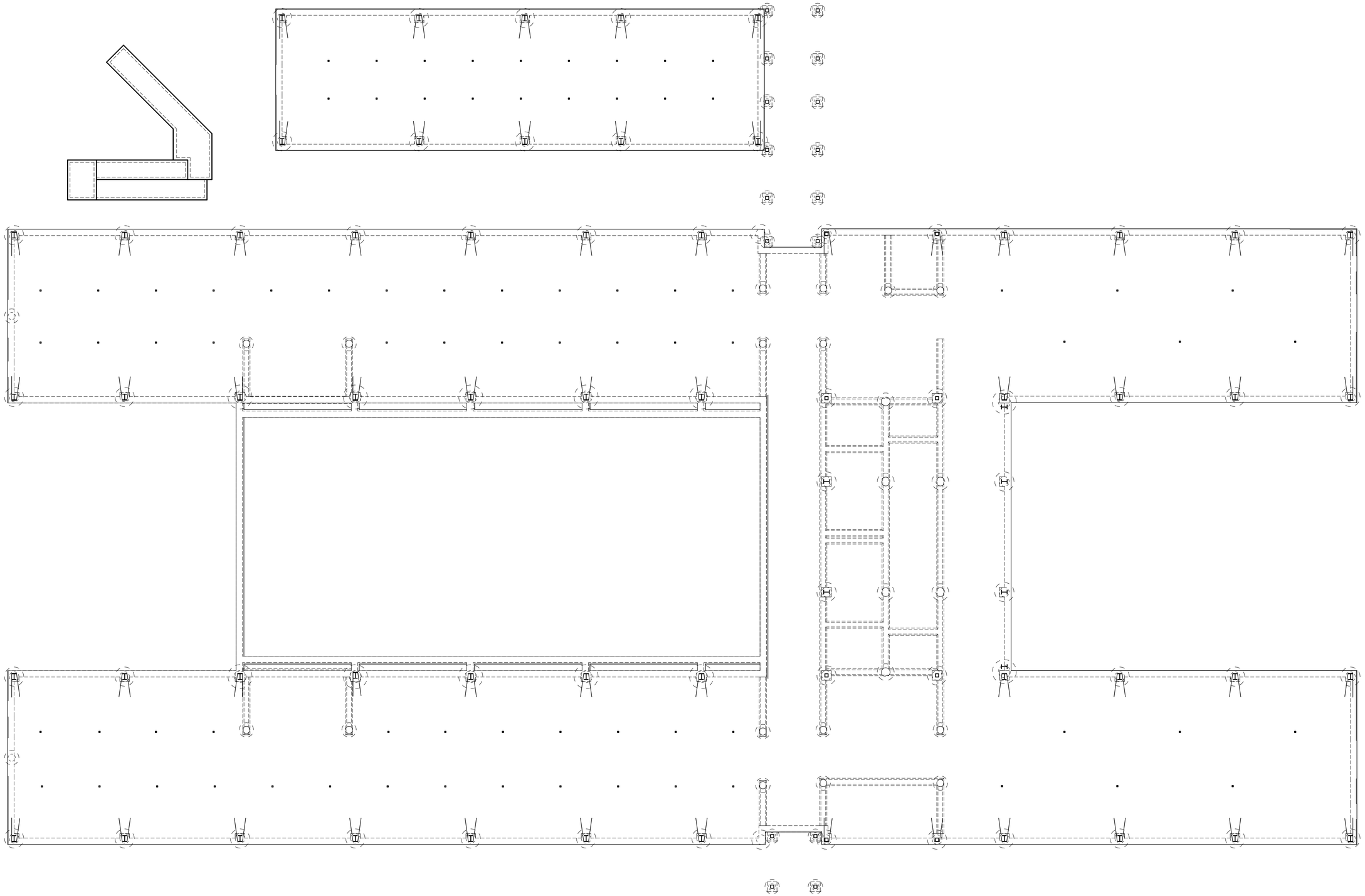
S0.04

TYPICAL FRAMING DETAILS



NORTH

COMPOSITE
FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

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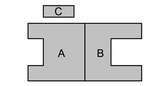


# WEST AGRICULTURAL SCIENCE FACILITY

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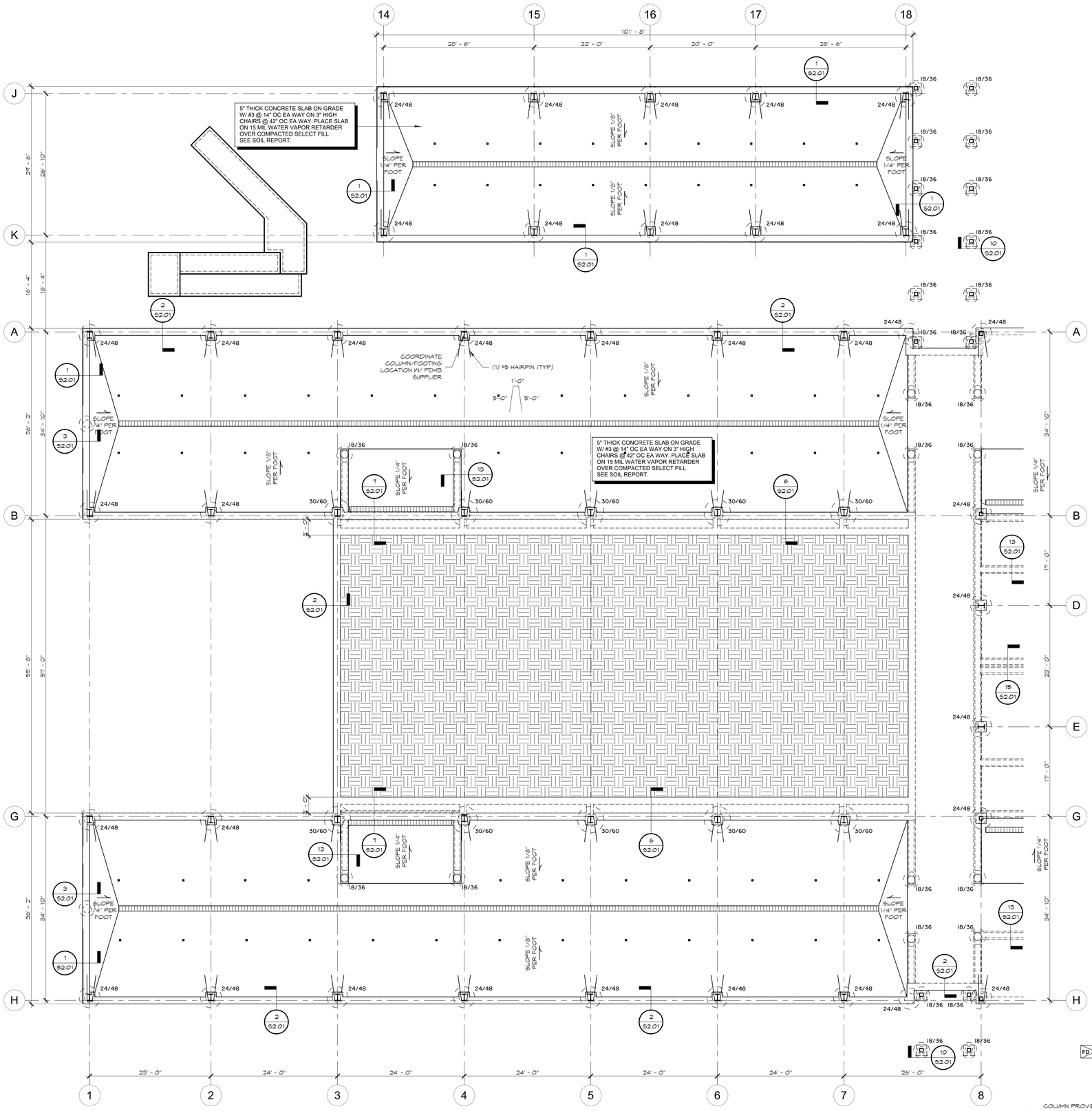
# S1.00

COMPOSITE
FOUNDATION
PLAN




NORTH

# AREA 'A' FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FD INDICATES FLOOR DRAIN SEE 14/S0.03

COLUMN PROVIDED BY MAUNF. SEE 18/S2.02 FOR BASE PLATES

BY MANUF.

14/42

INDICATES SHAFT DIA. SEE 11/S2.02 FOR REINF.

INDICATES BELL DIA. SEE 17/S2.02

**LEGEND**

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STATE OF TEXAS
HUNTER KORNEGAY
91030
LICENSED PROFESSIONAL ENGINEER

24 July 2025

Texas Engineering Firm No. F-170

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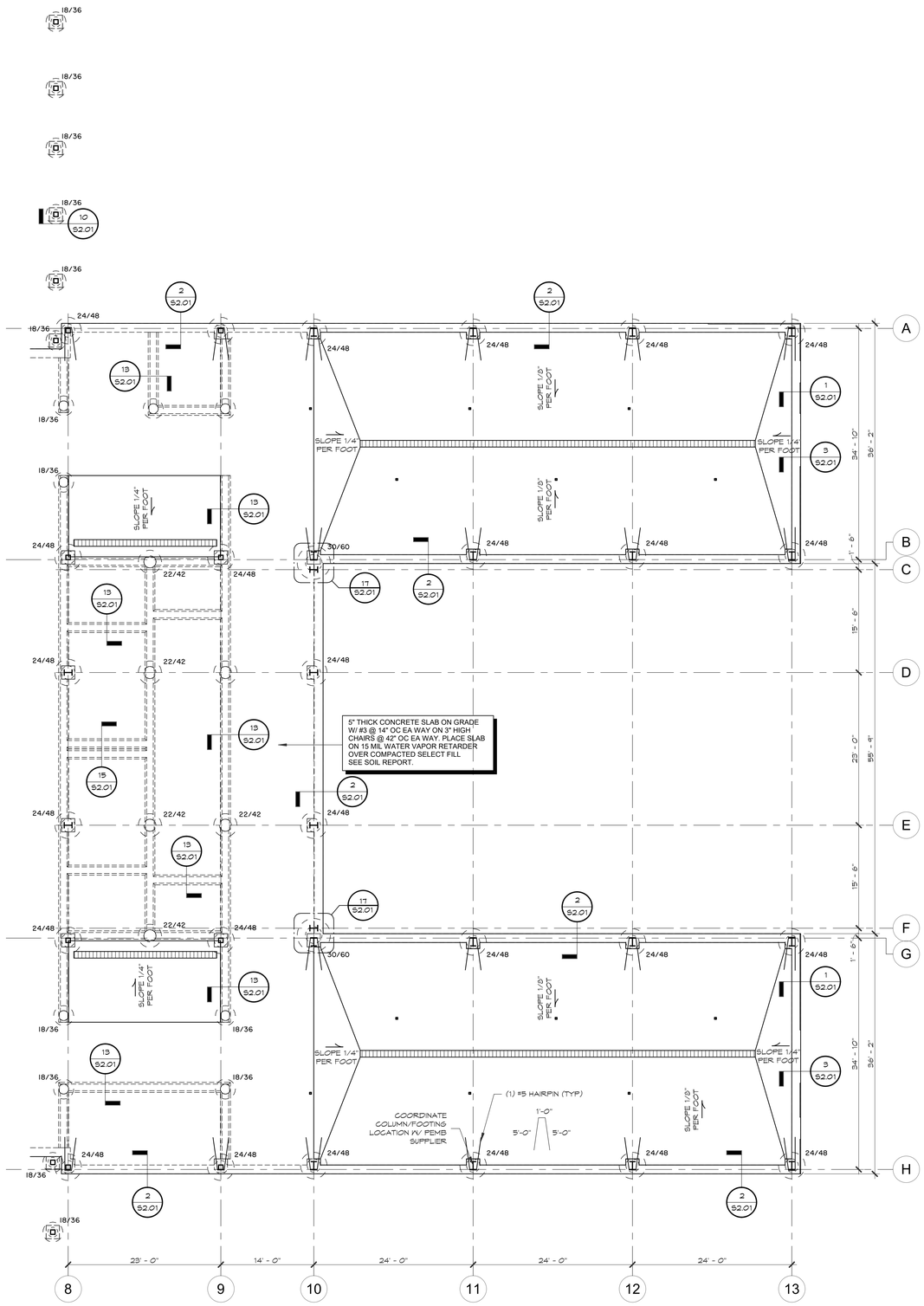
# S1.01

AREA 'A' FOUNDATION PLAN




NORTH

# AREA 'B' FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

FD INDICATES FLOOR DRAIN SEE 14/S0.03

COLUMN PROVIDED BY MANUF. SEE 19/S2.02 FOR BASE PLATES

BY MANUF.

14/42

INDICATES SHAFT DIA. SEE 17/S2.02 FOR REINF.

INDICATES BELL DIA. SEE 17/S2.02

**LEGEND**

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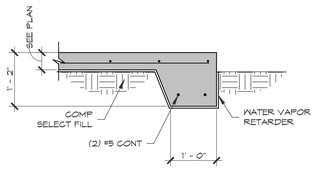
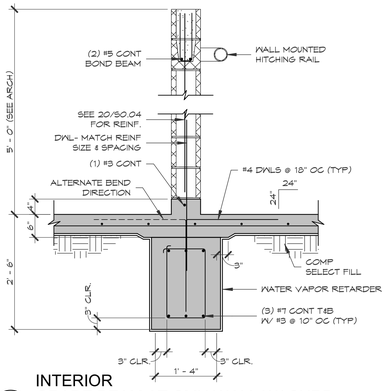
# S1.02

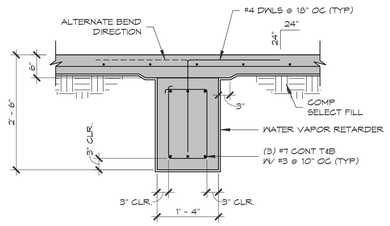
AREA 'B' FOUNDATION PLAN



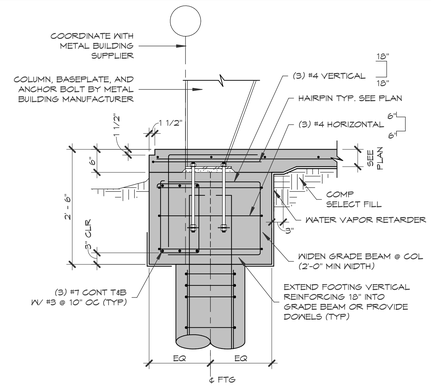

20 TYPICAL EXTERIOR TURNDOWN DETAIL
SCALE: 3/4" = 1'-0"



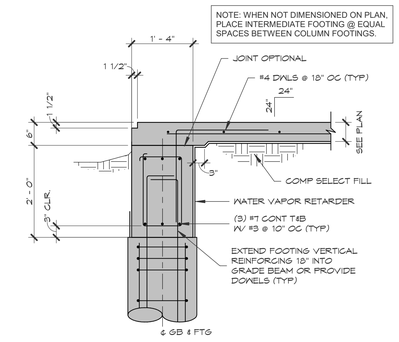

INTERIOR
16 GRADE BEAM AT CMU WALL W/ CURB
SCALE: 3/4" = 1'-0"



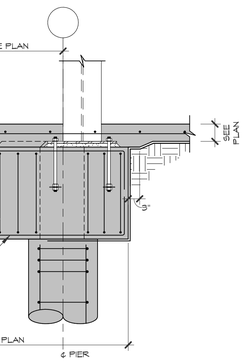

12 INTERIOR GRADE BEAM
SCALE: 3/4" = 1'-0"



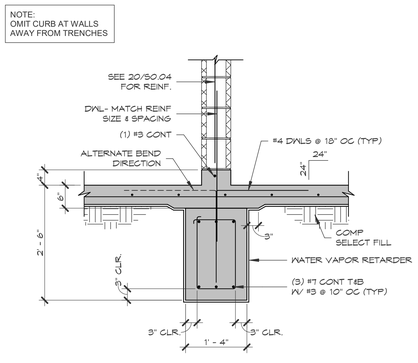

8 METAL BUILDING COLUMN DETAIL
SCALE: 3/4" = 1'-0"



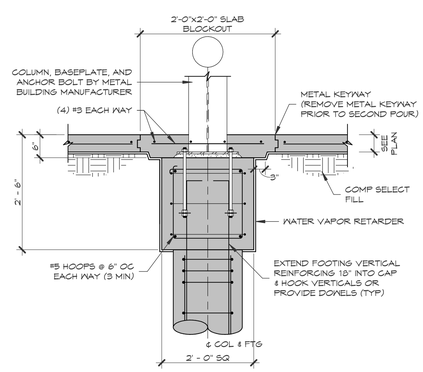

EXTERIOR
4 GRADE BEAM AT BRICK LEDGE
SCALE: 3/4" = 1'-0"



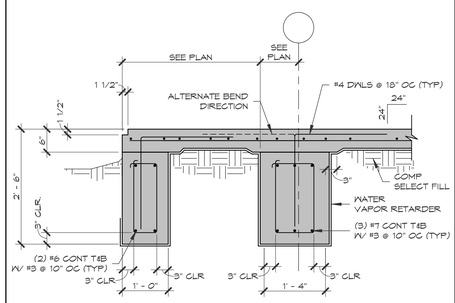

18 METAL BUILDING COLUMN DETAIL
SCALE: 3/4" = 1'-0"



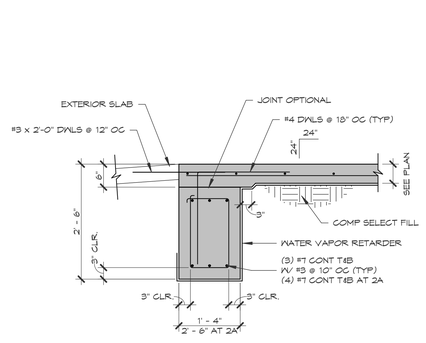

INTERIOR
14 GRADE BEAM AT CMU WALL W/ CURB
SCALE: 3/4" = 1'-0"



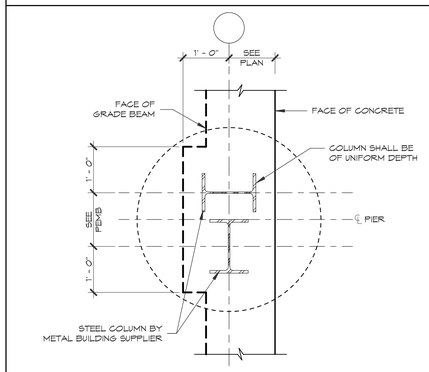

10 COLUMN CAP DETAIL
SCALE: 3/4" = 1'-0"



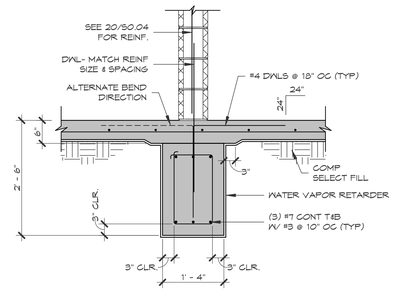

6 DETAIL
SCALE: 3/4" = 1'-0"



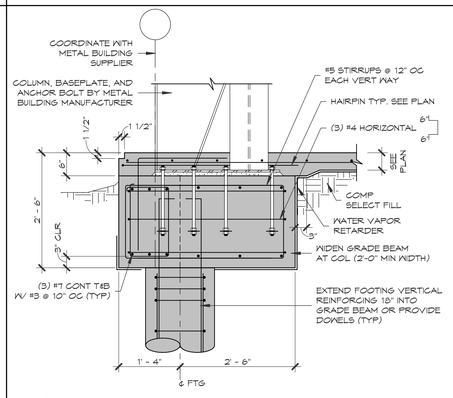

2 GRADE BEAM AT EXTERIOR SLAB
SCALE: 3/4" = 1'-0"



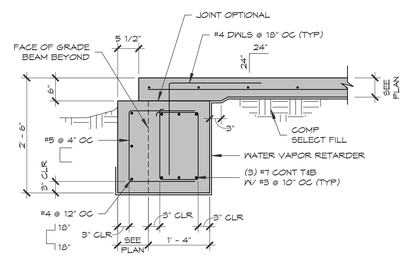

17 TYPICAL PLAN AT MOMENT FRAME DETAIL
SCALE: 3/4" = 1'-0"



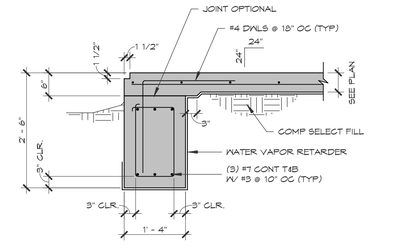

INTERIOR
13 GRADE BEAM AT CMU WALL
SCALE: 3/4" = 1'-0"




9 METAL BUILDING COLUMN DETAIL
SCALE: 3/4" = 1'-0"




5 BUMP OUT DETAIL
SCALE: 3/4" = 1'-0"




EXTERIOR GRADE BEAM
1 AT ATHLETIC STORAGE
SCALE: 3/4" = 1'-0"

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C
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STATE OF TEXAS
HUNTER KORNEGAY
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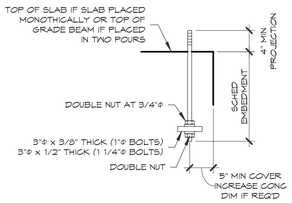
S2.01

FOUNDATION DETAILS

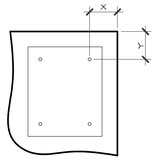
**PEMB ANCHOR BOLT SCHEDULE**

| BOLT DIAMETER (IN) | ALLOWABLE BOLT SPACING (IN) | REQUIRED EMBED (IN) | MINIMUM NUMBERS OF BOLTS | ALLOWABLE SHEAR ONLY LOAD (KIP) | ALLOWABLE SHEAR ONLY LOAD (KIP) | | ALLOWABLE TENSION ONLY LOAD (KIP) | TENSION CONTROLLING EDGE DISTANCE | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | X (IN) | Y (IN) | | X (IN) | Y (IN) |
| 1/2" | 4" | 18" | 4 | 12.5 | 12 | 12 | 22 | 12 | 3.5 |
| | | | | 4 | 12 | 3.5 | 22 | 12 | 3.5 |
| 5/8" | 4" | 18" | 4 | 20 | 13 | 13 | 35 | 12 | 4.5 |
| | | | | 4.75 | 12 | 3.5 | 34 | 12 | 3.5 |
| 3/4" | 4" | 18" | 4 | 30 | 17 | 17 | 51 | 14 | 14 |
| | | | | 5 | 12 | 3.5 | 34 | 12 | 3.5 |
| 7/8" | 4" | 24" | 4 | 41 | 21 | 21 | 68 | 15 | 15 |
| | | | | 5 | 12 | 3.5 | 46 | 12 | 3.5 |
| 1" | 4" | 24" | 4 | 54 | 25 | 25 | 90 | 21 | 21 |
| | | | | 5 | 12 | 3.5 | 46 | 12 | 3.5 |
| 1 1/4" | 5" | 30" | 4 | 87 | 42 | 42 | 140 | 32 | 32 |
| | | | | 5.25 | 12 | 3.5 | 48 | 12 | 3.5 |

**INTERACTION EQUATION FOR SHEAR AND TENSION COMBINED LOADS:**
**B (SHEAR)$^{1.9}$ + B (TENSION)$^{1.9}$ <=1.0 WHERE$^{1.9}$ =(5/3) AND B IS THE UTILIZATION RATIO**




TYPICAL DETAIL



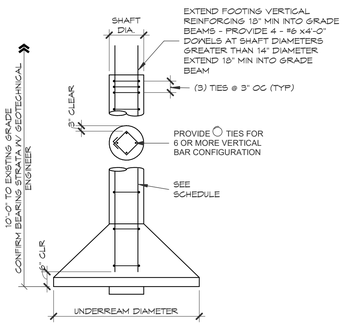

PLAN VIEW

**LOADS ARE LRFD:**

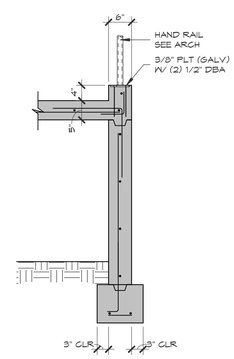
**F' C=3.5 KSI**
**CRACKED CONCRETE**
**NO GROUT REQUIRED**
**CAST IN PLACE HEX HEAD F1554 GRADE 36**
**MIN 3.5 EDGE DISTANCE IN 'Y' DIRECTION**
**AND 12" IN 'X' DIRECTION PER ACI 318.**
**PLATE WASHER AT BOTTOM OF BOLT 3"**
**DIAMETER x 3/8" THICK FOR BOLTS TO 1"**
**DIAMETER. PLATE WASHER FOR 1.25" BOLT**
**IS 3" DIAMETER x 1/2" THICK.**

19 METAL BUILDING ANCHOR ROD SCHEDULE
SCALE: 3/4" = 1'-0"

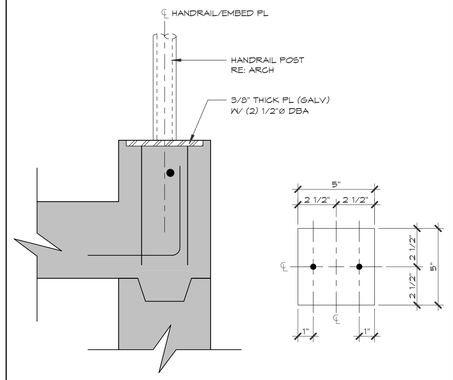
| FOOTING SCHEDULE | | |
|---|---|---|
| SHAFT DIA. | VERT. BARS | TIES |
| 12" | 4 - #5 | #3 @ 10" |
| 14" | 4 - #5 | #3 @ 10" |
| 16" | 4 - #5 | #3 @ 10" |
| 18" | 4 - #6 | #3 @ 12" |
| 20" | 4 - #6 | #3 @ 12" |
| 22" | 6 - #6 | #3 @ 14" |
| 24" | 6 - #6 | #3 @ 14" |
| 26" | 6 - #7 | #3 @ 16" |
| 28" | 6 - #7 | #3 @ 16" |
| 30" | 6 - #8 | #3 @ 18" |
| 32" | 6 - #8 | #3 @ 18" |
| 34" | 8 - #8 | #3 @ 18" |
| 36" | 8 - #10 | #3 @ 18" |
| 42" | 8 - #9 | #3 @ 18" |
| 48" | 8 - #10 | #3 @ 18" |



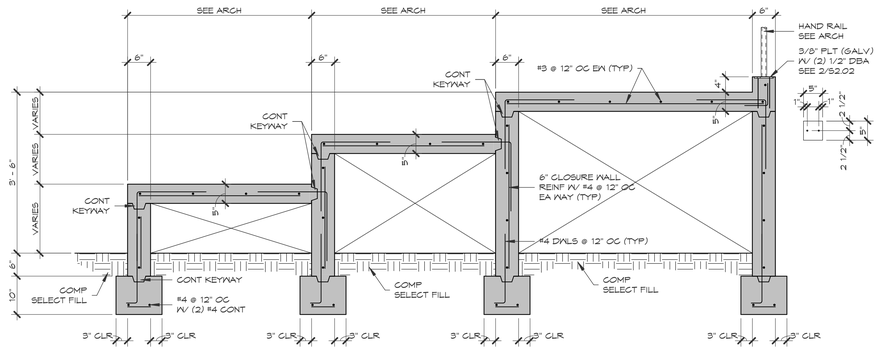

17 DRILLED FOOTING DETAIL
SCALE: 3/4" = 1'-0"




6 RAMP DETAIL AT TRASH BIN
SCALE: 3/4" = 1'-0"




2 PLATE BLOW UP DETAIL
SCALE: 3" = 1'-0"




5 RAMP DETAIL AT TRASH BIN
SCALE: 3/4" = 1'-0"


CONSULTANTS

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16225 Park Ten Place, Suite 500
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TX Engineering Firm No. F-170

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Houston, TX 77042
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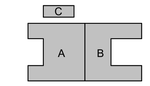


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS

**ARCADIS INC.**
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**tel 281.286.6605, fax/713.977.4620**

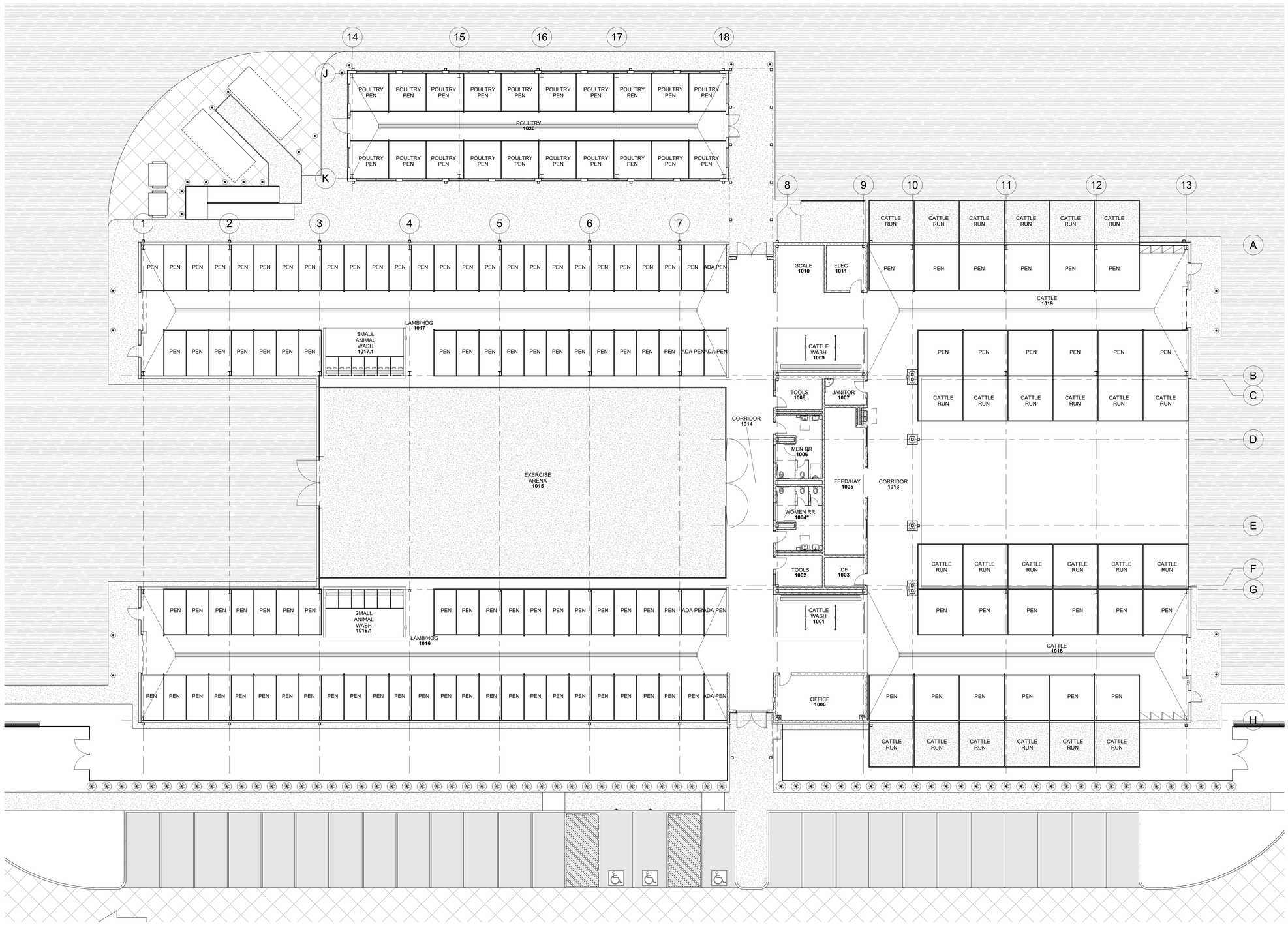
24 July 2025
Texas Engineering Firm No. F-170

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | JG |
| CHECKED: | MB/HK |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# S2.02

FOUNDATION DETAILS




1 1ST FLOOR COMPOSITE PLAN
3/32" = 1'-0"

PLAN NORTH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# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT 25345 STATE OF TEXAS

07/28/2025

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|---|---|
| PROJECT #: | 202414 |
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| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

A1.01

1ST FLOOR COMPOSITE PLAN

1. RE: G1 SERIES SHEETS FOR ACCESSIBLE MOUNTING HEIGHTS
2. RE: A6 SERIES SHEETS FOR PARTITION TYPES
3. RE: A9 SERIES SHEETS FOR DOOR & FRAME ELEVATIONS
4. RE: A11 SERIES SHEETS COLOR SELECTIONS IN FINISH LEGEND
5. ALL INTERIOR STUD PARTITIONS ARE TYPE F10, UNLESS OTHERWISE NOTED
6. ALL MTL. STUD COLUMN FURROUTS ARE TO BE 10" OFF COLUMN CENTER LINE & ALL CMU COLUMN FURROUTS ARE TO BE 1' - 0" OFF COLUMN CENTER LINE, UNLESS NOTED OTHERWISE
7. MASONRY DIMENSIONS ARE NOMINAL
8. ALL DIMENSIONS ARE TO FACE OF STUD @ INTERIOR PARTITIONS UNLESS OTHERWISE NOTED
9. ALL DIMENSIONS ARE TO FINISH FACE OF EXTERIOR WALLS, FOUNDATION, MASONRY, OR TO CENTER LINE OF COLUMN, UNLESS NOTED OTHERWISE
10. ALL WALL FINISH GOES TO DECK IN ROOMS WITHOUT CEILINGS
11. ALL EXTERIOR WALLS EXTEND TO BOTTOM OF ROOF DECK
12. PROVIDE EXPANSION JOINT COVERS ON INTERIOR WALLS @ BUILDING EXPANSION JOINTS
13. ALL SPACES W/ FLOOR DRAINS SHALL HAVE FINISHED FLOOR SLOPE TO DRAIN. VERIFY W/ ARCH. IN FIELD
14. ALL EQUIP. PADS SHALL BE AS PER STRUC. DWGS. COORDINATE SIZES, THICKNESS & LOCATIONS W/ MECH. CHAMFER EDGES
15. ALL EXTERIOR DOORS SHALL RECEIVE A THRESHOLD. THRESHOLD TO BE OF SUFFICIENT WIDTH TO COVER SIDEWALK TO FOUNDATION EXPANSION JOINT TO MAINTAIN ONLY 1/2" RISE & STAY ADA COMPLIANT
16. PROVIDE TRANSITION STRIPS @ ALL FLOOR FINISH TRANSITIONS PER SPECS., UNLESS NOTED OTHERWISE
17. ALL FLOOR MATERIAL CHANGES SHALL OCCUR @ CENTERLINE OF DOOR, UNLESS NOTED OTHERWISE
18. F.E.C. DENOTES FIRE EXTINGUISHER & CABINET
19. DASHED EQUIPMENT/ FURNITURE IS NOT IN CONTRACT (N.I.C.)
20. PROVIDE HORIZONTAL BLINDS @ ALL EXTERIOR WINDOWS, EXCEPT WINDOWS ADJACENT TO EXIT/ ENTRY DOORS. PROVIDE HORIZONTAL BLINDS @ ALL INTERIOR WINDOW LOCATIONS
21. PROVIDE SOAP (TA-1) & PAPER TOWEL (TA-3) DISPENSERS PER SPECS @ ALL SINK LOCATIONS

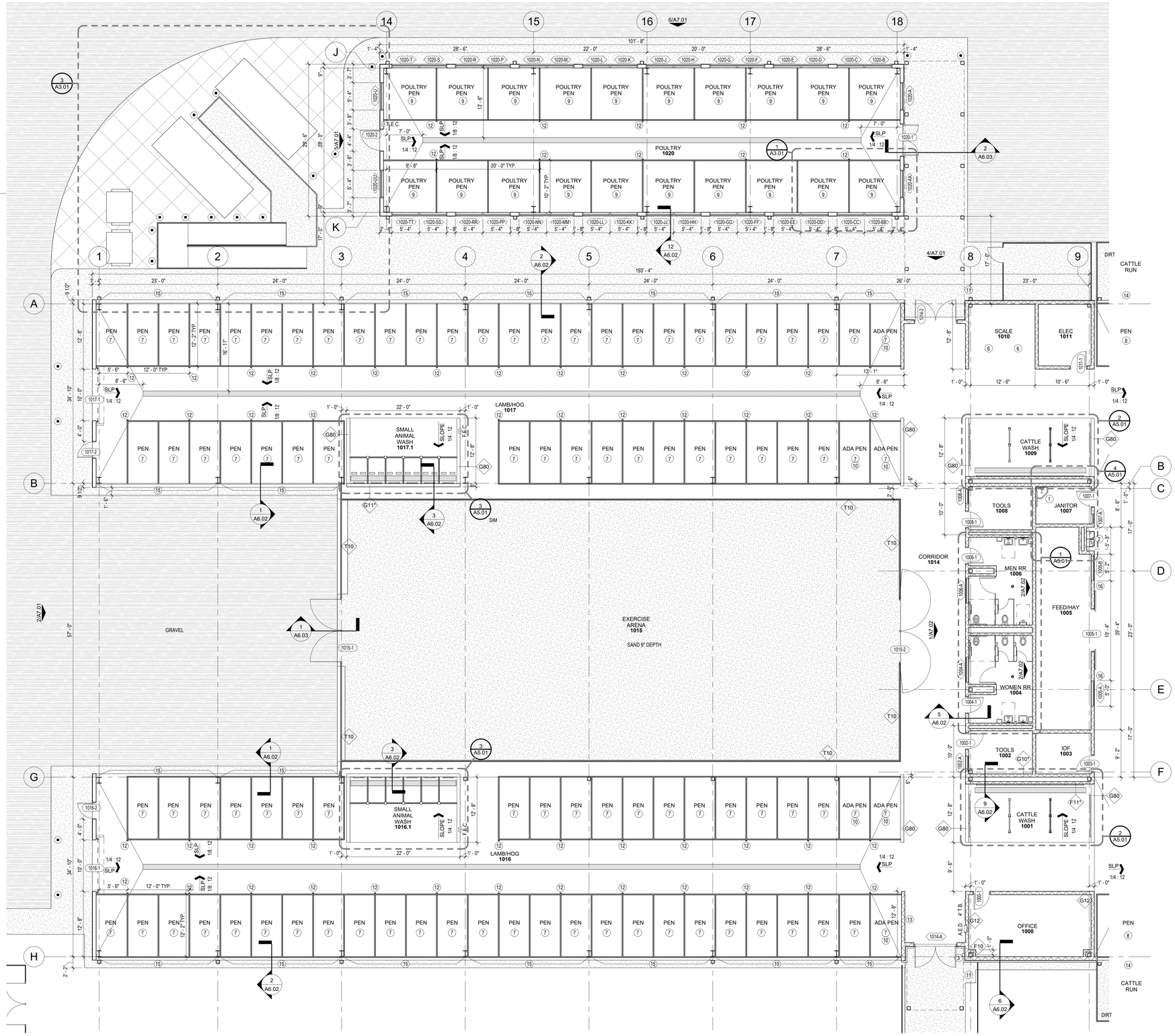
## NOTES - GENERAL FLOOR PLAN

1/4" = 1'-0"

1. MOP SINK, RE: PLUMBING
2. HI/LO ELECTRONIC DRINKING FOUNTAIN, RE: MEP
3. KNOX BOX, RE: SPECS
4. TRENCH DRAIN, RE: PLUMBING
5. INDUSTRIAL METAL SHELVING, RE: SPECS
6. SCALE, O.F.O.F. (N.I.C.)
7. SMALL ANIMAL PEN, ALTERNATE N0.1
8. CATTLE PEN, ALTERNATE N0.1
9. POULTRY PEN, RE: 2 / A3.01
10. ADA ACCESSIBLE PEN, GATE DOOR SILL NOT TO EXCEED 1/2"
11. BOOT CLEANER, RE: 18 / CA1.05
12. 3" X 3" GALVANIZED POST
13. DEDICATION PLAQUE, RE: 1 / A12.00
14. OVERHEAD COILING WINDSCREEN @ CATTLE PENS, RE: SPECS
15. OVERHEAD COILING WINDSCREEN @ SMALL ANIMAL PENS, RE: SPECS
16. HITCHING CLIP, RE: SPECS

## KEYNOTES - FLOOR PLAN

1/4" = 1'-0"




## AREA 'A1' - 1ST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

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# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT BRIAN NEIL
STATE OF TEXAS 23345

07/28/2025

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|---|---|
| PROJECT #: | 202414 |
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| DRAWN: | BN |
| CHECKED: | - |

| DATE | ISSUE |
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# A2.01

AREA 'A1' 1ST FLOOR PLAN

1. RE: G1 SERIES SHEETS FOR ACCESSIBLE MOUNTING HEIGHTS
2. RE: A6 SERIES SHEETS FOR PARTITION TYPES
3. RE: A9 SERIES SHEETS FOR DOOR & FRAME ELEVATIONS
4. RE: A11 SERIES SHEETS COLOR SELECTIONS IN FINISH LEGEND
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11. ALL EXTERIOR WALLS EXTEND TO BOTTOM OF ROOF DECK
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19. DASHED EQUIPMENT/ FURNITURE IS NOT IN CONTRACT (N.I.C.)
20. PROVIDE HORIZONTAL BLINDS @ ALL EXTERIOR WINDOWS, EXCEPT WINDOWS ADJACENT TO EXIT/ ENTRY DOORS. PROVIDE HORIZONTAL BLINDS @ ALL INTERIOR WINDOW LOCATIONS
21. PROVIDE SOAP (TA-1) & PAPER TOWEL (TA-3) DISPENSERS PER SPECS @ ALL SINK LOCATIONS

## NOTES - GENERAL FLOOR PLAN

1/4" = 1'-0"

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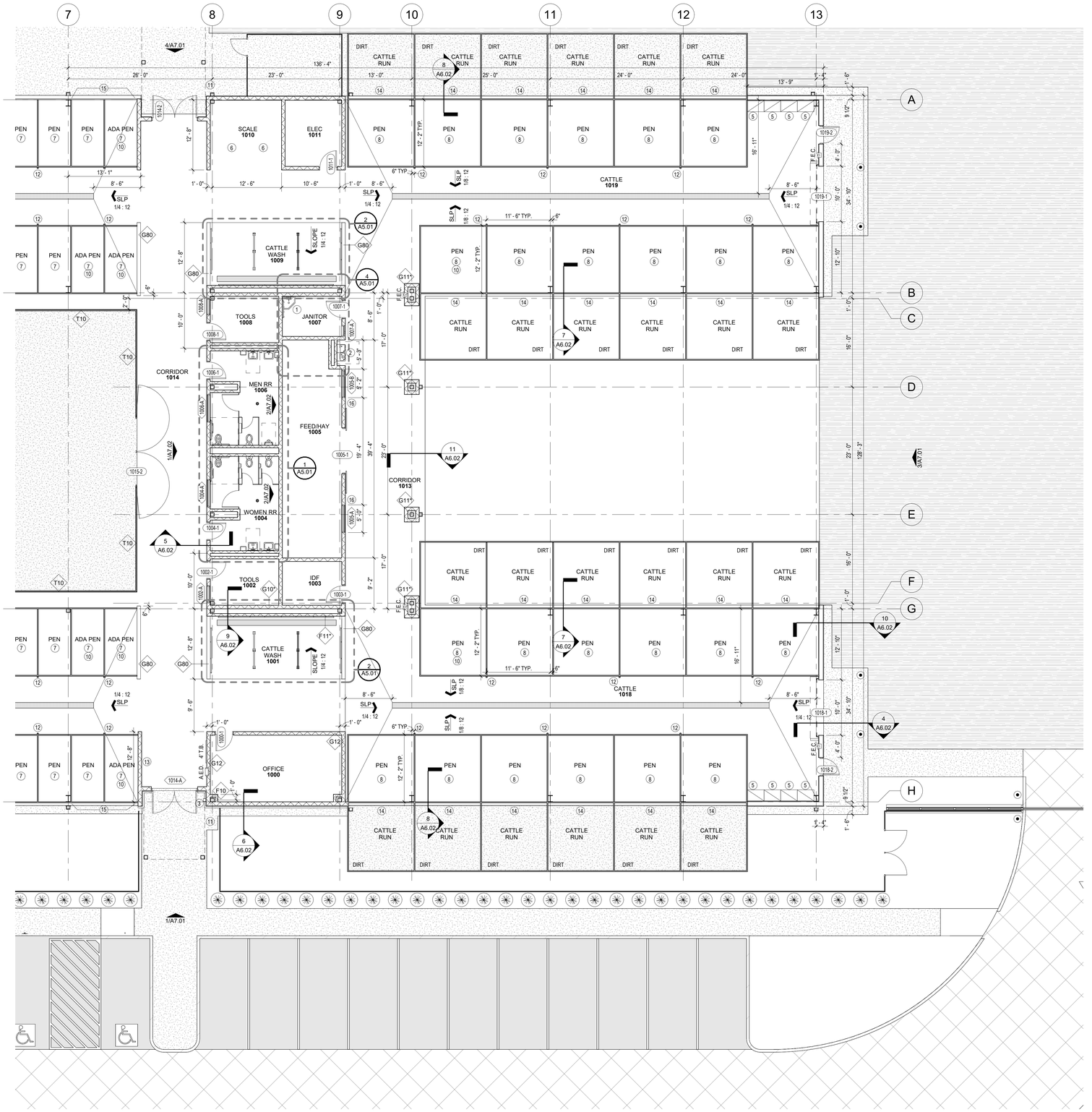
3. KNOX BOX, RE: SPECS
4. TRENCH DRAIN, RE: PLUMBING
5. INDUSTRIAL METAL SHELVING, RE: SPECS
6. SCALE, O.F.O.F. (N.I.C.)
7. SMALL ANIMAL PEN, ALTERNATE NO.1
8. CATTLE PEN, ALTERNATE NO.1
9. POULTRY PEN, RE: 2 / A3.01
10. ADA ACCESSIBLE PEN, GATE DOOR SILL NOT TO EXCEED 1/2"
11. BOOT CLEANER, RE: 19 / CA1.05
12. 3" X 3" GALVANIZED POST
13. DEDICATION PLAQUE, RE: 1 / A12.00
14. OVERHEAD COILING WINDSCREEN @ CATTLE PENS, RE: SPECS
15. OVERHEAD COILING WINDSCREEN @ SMALL ANIMAL PENS, RE: SPECS
16. HITCHING CLIP, RE: SPECS

## KEYNOTES - FLOOR PLAN

1/4" = 1'-0"




1 AREA 'B1' - 1ST FLOOR PLAN

1/8" = 1'-0"

PLAN NORTH

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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT 25340 STATE OF TEXAS

07/28/2025

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|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# A2.02

AREA 'B1' 1ST FLOOR PLAN

## LOUVER SCHEDULE

| MARK | FRAME WIDTH | FRAME DEPTH | ELEV. | MATERIAL | COMMENTS | MARK |
|---|---|---|---|---|---|---|
| 1002-A | 2" | 6" | 3 | ALUM. | LOUVER | 1002-A |
| 1004-A | 2" | 6" | 4 | ALUM. | LOUVER | 1004-A |
| 1005-A | 2" | 6" | 4 | ALUM. | LOUVER | 1005-A |
| 1005-B | 2" | 6" | 4 | ALUM. | LOUVER | 1005-B |
| 1006-A | 2" | 6" | 4 | ALUM. | LOUVER | 1006-A |
| 1007-A | 2" | 6" | 2 | ALUM. | LOUVER | 1007-A |
| 1008-A | 2" | 6" | 3 | ALUM. | LOUVER | 1008-A |
| 1014-A | 2" | 6" | 3-E | H.M. | - | 1014-A |
| 1015-A | 2" | 6" | 4-E | H.M. | LOUVER | 1015-A |
| 1020-A | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-A |
| 1020-AA | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-AA |
| 1020-B | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-B |
| 1020-BB | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-BB |
| 1020-C | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-C |
| 1020-CC | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-CC |
| 1020-D | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-D |
| 1020-DD | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-DD |
| 1020-E | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-E |
| 1020-EE | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-EE |
| 1020-F | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-F |
| 1020-FF | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-FF |
| 1020-G | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-G |
| 1020-GG | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-GG |
| 1020-H | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-H |
| 1020-HH | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-HH |
| 1020-J | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-J |
| 1020-JJ | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-JJ |
| 1020-K | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-K |
| 1020-KK | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-KK |
| 1020-L | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-L |
| 1020-LL | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-LL |
| 1020-M | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-M |
| 1020-MM | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-MM |
| 1020-N | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-N |
| 1020-NN | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-NN |
| 1020-P | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-P |
| 1020-PP | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-PP |
| 1020-R | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-R |
| 1020-RR | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-RR |
| 1020-S | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-S |
| 1020-SS | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-SS |
| 1020-T | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-T |
| 1020-TT | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-TT |
| 1020-U | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-U |
| 1020-UU | 2" | 6" | 2-E | ALUM. | LOUVER | 1020-UU |

## AG FACILITY DOOR SCHEDULE

| MARK | DOOR SLAB WIDTH | HEIGHT | S/ PR | ELEV. | MATERIAL | GLASS | DOOR FRAME WIDTH | DEPTH | ELEV. | MATERIAL | FIRE R. | COMMENTS | MARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000-1 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1000-1 |
| 1002-1 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1002-1 |
| 1003-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | PROVIDE CARD READER | 1003-1 |
| 1004-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | NO DEADBOLT | 1004-1 |
| 1005-1 | 0" | 0" | PR | XX | - | - | 2" | 6" | 1 | H.M. | - | CASED OPENING BARN DOOR | 1005-1 |
| 1006-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | NO DEADBOLT | 1006-1 |
| 1007-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | - | 1007-1 |
| 1008-1 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1008-1 |
| 1011-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | - | 1011-1 |
| 1014-1 | 4' - 0" | 7' - 0" | PR | DD | S.C.P.L. | G4 | | | - | - | - | PROVIDE CARD READER, RE: WINDOW SCHED. FOR FRAME SIZE & MATERIAL | 1014-1 |
| 1014-2 | 4' - 0" | 7' - 2" | PR | CC | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1014-2 |
| 1015-1 | 6' - 0" | 6' - 0" | PR | AA1 | GALV. | | | | | GALV. | | RE: A3.01 FOR GATE ELEVATION DETAIL | 1015-1 |
| 1015-2 | 6' - 0" | 6' - 0" | PR | AA1 | GALV. | | | | | GALV. | | RE: A3.01 FOR GATE ELEVATION DETAIL | 1015-2 |
| 1016-1 | 10' - 0" | 10' - 0" | - | P | RE-SPECS | - | | | - | GALV. | - | MANUAL COILING DOOR | 1016-1 |
| 1016-2 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1016-2 |
| 1017-1 | 10' - 0" | 10' - 0" | - | P | RE-SPECS | - | | | - | GALV. | - | MANUAL COILING DOOR | 1017-1 |
| 1017-2 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1017-2 |
| 1018-1 | 10' - 0" | 10' - 0" | - | P | RE-SPECS | - | | | - | GALV. | - | MANUAL COILING DOOR | 1018-1 |
| 1018-2 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1018-2 |
| 1019-1 | 10' - 0" | 10' - 0" | - | P | RE-SPECS | - | | | - | GALV. | - | MANUAL COILING DOOR | 1019-1 |
| 1019-2 | 3' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1019-2 |
| 1020-1 | 3' - 0" | 7' - 0" | PR | CC | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1020-1 |
| 1020-2 | 4' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | - | 1020-2 |

## AG FACILITY WINDOW SCHEDULE

| MARK | FRAME WIDTH | DEPTH | ELEV. | MATERIAL | COMMENTS | MARK |
|---|---|---|---|---|---|---|
| 1014-A | 2" | 6" | 3-E | H.M. | - | 1014-A |

## AG FACILITY ROOM FINISH SCHEDULE

| ROOM # | ROOM NAME | FLOOR FINISHES FLOOR | BASE | WALL FINISH(S) COOR. W/ A7 & A11 | CEILING FINISH(S) COOR. W/A10 | COMMENTS | ROOM # |
|---|---|---|---|---|---|---|---|
| 1000 | OFFICE | SC-1 | - | PT-1 | | | 1000 |
| 1001 | CATTLE WASH | SC-2 | - | PT-1 | | | 1001 |
| 1002 | TOOLS | SC-1 | - | PT-1 | | | 1002 |
| 1003 | IDF | SC-1 | - | PT-1 | | | 1003 |
| 1004 | WOMEN RR | TF-1 | TB-1 | PT-1,3 | | | 1004 |
| 1005 | FEED/HAY | SC-1 | - | PT-1 | | | 1005 |
| 1006 | MEN RR | TF-1 | TB-1 | PT-1,3 | | | 1006 |
| 1007 | JANITOR | SC-1 | - | PT-1 | | | 1007 |
| 1008 | TOOLS | SC-1 | - | PT-1 | | | 1008 |
| 1009 | CATTLE WASH | SC-2 | - | PT-1 | | | 1009 |
| 1010 | SCALE | SC-1 | - | PT-1 | | | 1010 |
| 1011 | ELEC | SC-1 | - | PT-1 | | | 1011 |
| 1013 | CORRIDOR | SC-1 | - | PT-1 | | | 1013 |
| 1014 | CORRIDOR | SC-1 | - | PT-1,2,3 | | | 1014 |
| 1015 | EXERCISE ARENA | 6" SAND | - | PT-1 | | | 1015 |
| 1016 | LAMB/HOG | SC-1 | - | PT-1 | | | 1016 |
| 1016.1 | SMALL ANIMAL WASH | SC-2 | - | PT-1 | | | 1016.1 |
| 1017 | LAMB/HOG | SC-1 | - | PT-1 | | | 1017 |
| 1017.1 | SMALL ANIMAL WASH | SC-2 | - | PT-1 | | | 1017.1 |
| 1018 | CATTLE | SC-1 | - | PT-1 | | | 1018 |
| 1019 | CATTLE | SC-1 | - | PT-1 | | | 1019 |
| 1020 | POULTRY | SC-1 | - | PT-1 | | | 1020 |

## FIELD HOUSE DOOR SCHEDULE

| MARK | DOOR SLAB WIDTH | HEIGHT | S/ PR | ELEV. | MATERIAL | GLASS | DOOR FRAME WIDTH | DEPTH | ELEV. | MATERIAL | FIRE R. | COMMENTS | MARK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100-1 | 4' - 0" | 7' - 0" | S | C | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | ADD PEEPHOLES, CARD READER | 100-1 |
| 100-2 | 12' - 0" | 4' - 0" | - | R | GALV. SLATS | - | | | - | GALV. | - | MANUAL COILING COUNTER DOOR | 100-2 |
| 101-1 | 3' - 0" | 7' - 0" | S | C | H.M. | G2 | 2" | 6" | 1 | H.M. | - | - | 101-1 |
| 102-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | PROVIDE DEAD BOLT PER SPECS | 102-1 |
| 103-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | PROVIDE DEAD BOLT PER SPECS | 103-1 |
| 104-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | ADD CARD READER | 104-1 |
| 105-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1 | H.M. | - | - | 105-1 |
| 106-1 | 3' - 0" | 7' - 0" | S | B | H.M. | - | 2" | 6" | 1-E | H.M. | - | - | 106-1 |
| 107-1 | 4' - 0" | 7' - 2" | PR | CC | H.M. | G4 | 2" | 6" | 1-E | H.M. | - | ADD CARD READER | 107-1 |

## FIELD HOUSE ROOM FINISH SCHEDULE

| ROOM # | ROOM NAME | FLOOR FINISHES FLOOR | BASE | WALL FINISH(S) COOR. W/ A7 & A11 | CEILING FINISH(S) COOR. W/A10 | COMMENTS | ROOM # |
|---|---|---|---|---|---|---|---|
| 100 | CONCESSIONS | SC-1 | RB-1 | PT-1 | | | 100 |
| 101 | STORAGE | SC-1 | RB-1 | PT-1 | | | 101 |
| 102 | WOMENS RR | TF-1 | TB-1 | PT-1, 2 | | | 102 |
| 103 | MENS RR | TF-1 | TB-1 | PT-1, 2 | | | 103 |
| 104 | MDF | SC-1 | RB-1 | PT-1 | | | 104 |
| 105 | ELEC | SC-1 | RB-1 | PT-1 | | | 105 |
| 106 | CUST | SC-1 | RB-1 | PT-1 | | | 106 |
| 107 | STORAGE | SC-1 | RB-1 | PT-1 | | | 107 |

PLAN NORTH

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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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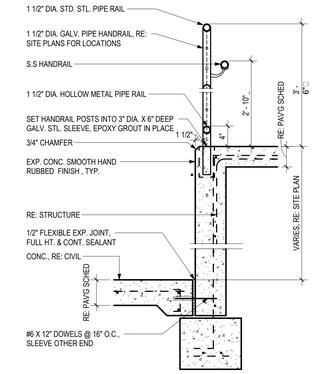
07/28/2025

PROJECT #: 202414
DATE: 2025-07-28
DRAWN: Author
CHECKED: Checker

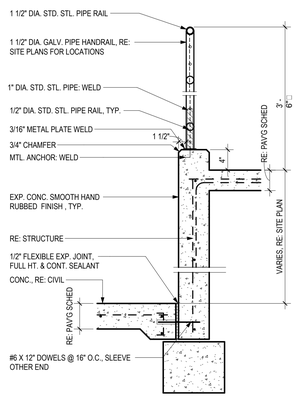
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

A2.03

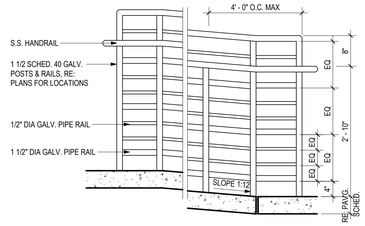
SCHEDULES AND OPENINGS



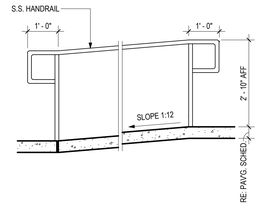

8 RAIL - CONC RAISED @ EDGE - FIXED
1" = 1'-0"



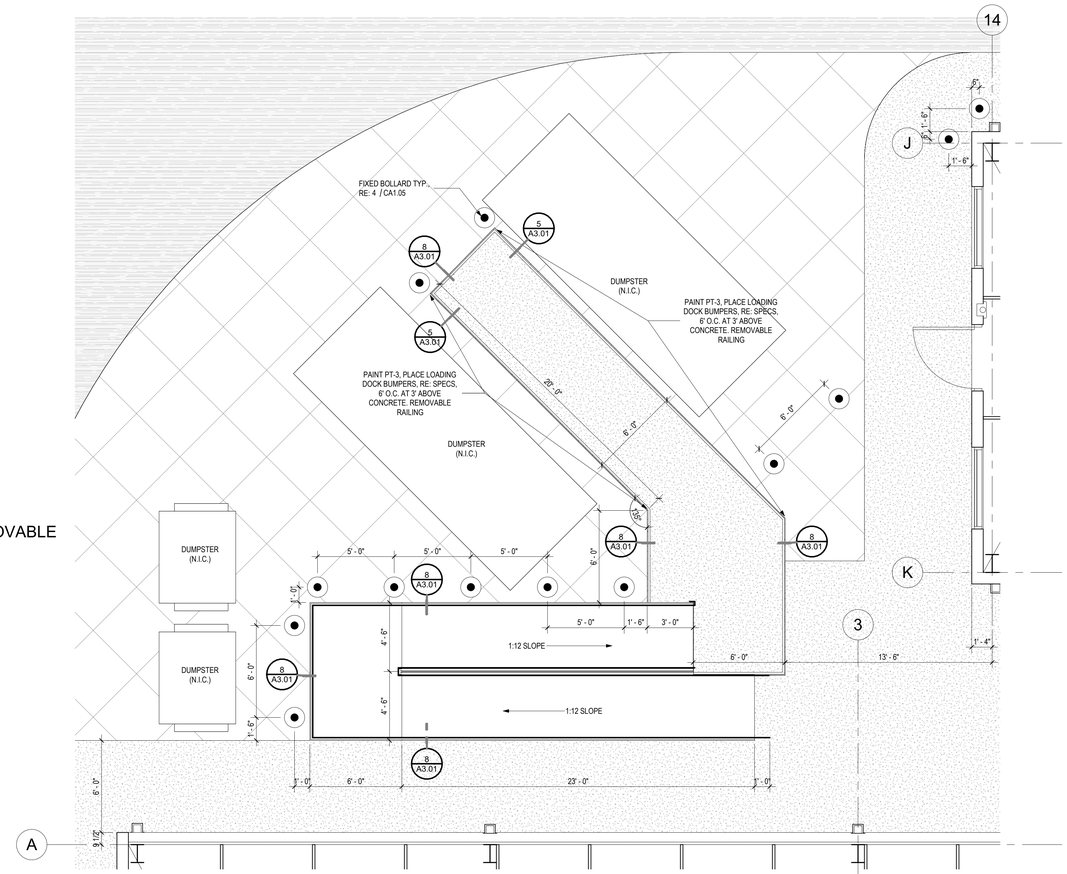

5 RAIL - CONC RAISED @ EDGE - REMOVABLE
1" = 1'-0"



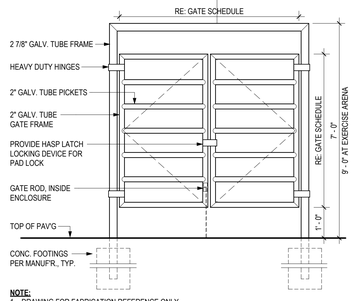

7 RAIL - RAMP ELEV - PIPE
3/4" = 1'-0"




4 RAMP - SECTION @ LNDG
1/2" = 1'-0"

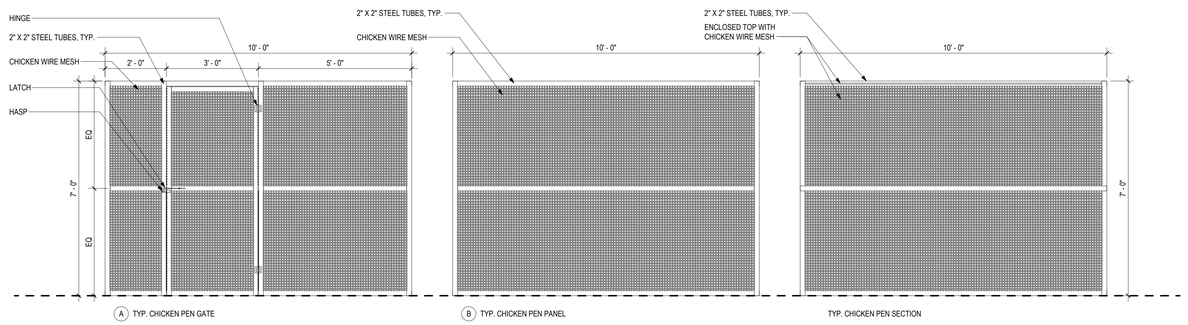



3 DUMPSTER RAMP ENLARGED
1/4" = 1'-0"

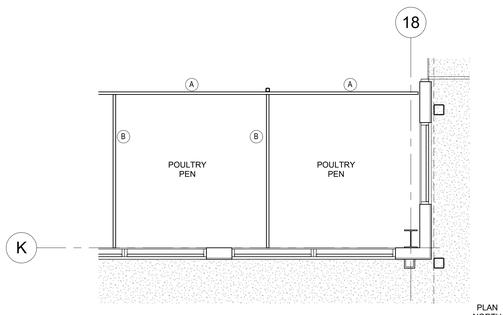



**NOTE:**
1. DRAWING FOR FABRICATION REFERENCE ONLY
2. GRIND ALL WELDS SMOOTH, PREP, GALV. AFTER FABRICATION
3. HEAVY DUTY HINGES SPACED PER MANUF. REQ'MNTS.

6 GATE - AA1 - TUBE HORIZONTAL
1/2" = 1'-0"




2 ENLARGED PEN PLAN ELEVATION DETAILS
1/2" = 1'-0"




1 1ST FLOOR - ENLARGED PEN PLAN TYP.
1/4" = 1'-0"

PLAN NORTH

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# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT — KAREN L. KEITH — 25345 — STATE OF TEXAS

07/28/2025

| | |
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| DATE | ISSUE |
|---|---|
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# A3.01

PLAN DETAILS

1. MEP ITEMS SHOWN ON ROOF PLAN ARE FOR REFERENCE ONLY. RE: MEP DWGS. FOR LOCATIONS OF ROOF MOUNTED EQUIP. & PENETRATING ELEMENTS NOT SHOWN ON THIS SHEET.
2. ROOF IS METAL ROOFING PANEL SYSTEM ON PRE-MANUFACTURED METAL BUILDING UNLESS NOTED OTHERWISE. RE: SPECS.
3. PROVIDE PORTABLE PIPE HANGERS TO SUPPORT ALL ROOF TOP PIPING. RE: MEP DWGS. PROVIDE 18"X18" WALK PAD UNDER ALL PIPE HANGERS.
4. PROVIDE 4" LAP JOINTS FOR ALL SHEET METAL FLASHING RECEIVERS.
5. RE: A4 SERIES FOR TYP. ROOF PENETRATION DETAILS.
6. PROVIDE WALK PADS UNDER ALL LADDERS & EQUIPMENT.
7. ADDITIONAL ROOF SCOPE ON CA1.03 FOR FIELDHOUSE.

## NOTES - GENERAL ROOF PLAN
1/4" = 1'-0"

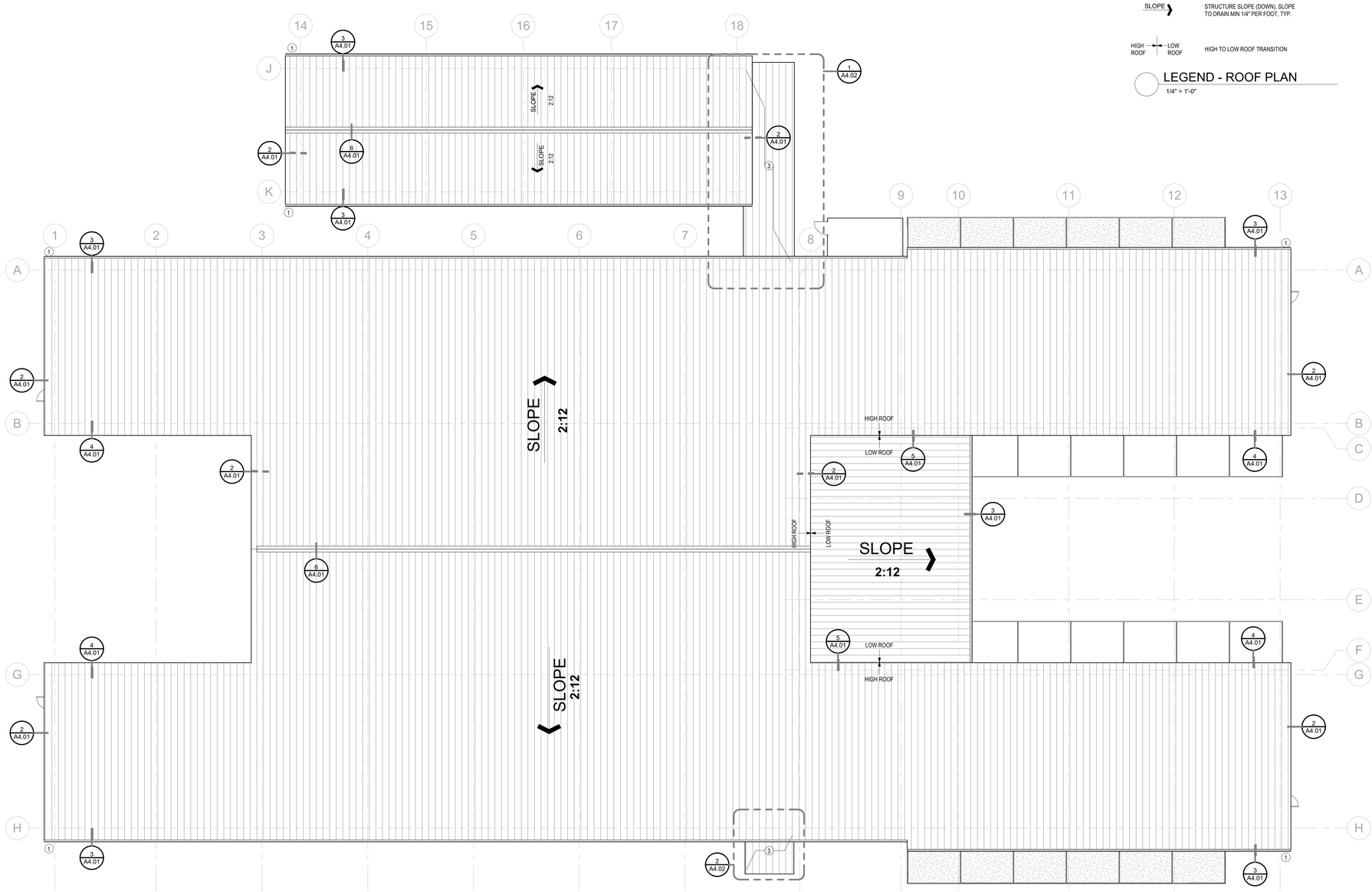
1. PRE-FIN. MTL. GUTTER
2. PRE-FIN. MTL. DOWNSPOUT/ BOOT
3. ALUM. WALKWAY COVER

## KEYNOTES - ROOF PLAN
1/4" = 1'-0"

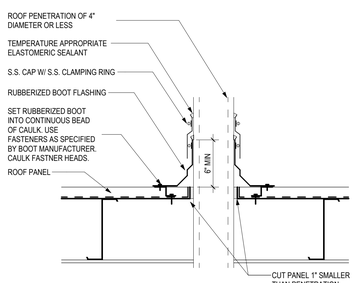
SLOPE — STRUCTURE SLOPE (DOWN), SLOPE TO DRAIN MIN 1/4" PER FOOT, TYP.

HIGH ROOF — LOW ROOF — HIGH TO LOW ROOF TRANSITION

## LEGEND - ROOF PLAN
1/4" = 1'-0"

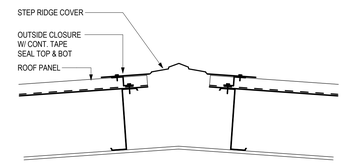



## ROOF PLAN
3/32" = 1'-0"

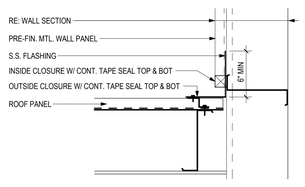



**NOTES:**
1. IF PIPE IS MADE OF METAL, IT MUST BE PAINTED OR GALV. TO PREVENT RUST RUN-OFF WHICH STAINS ROOF PANELS.
2. POSITION SQUARE BASED BOOTS, IF APPROPRIABLE, IN A DIAMOND ORIENTATION WHERE POSSIBLE TO BETTER DIVERT WATER.

## 7 ROOF - MTL BLDG @ PIPE PENETRATION
1 1/2" = 1'-0"

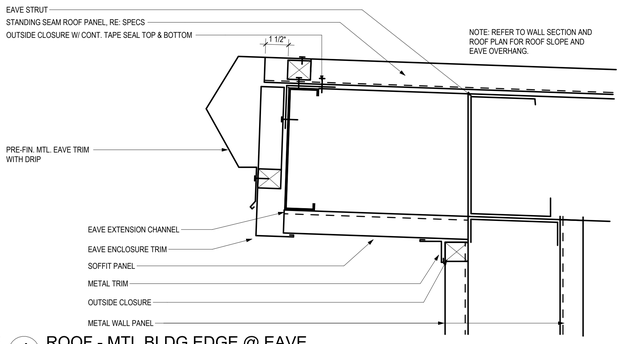



## 6 ROOF - MTL BLDG RIDGE DETAIL
1 1/2" = 1'-0"

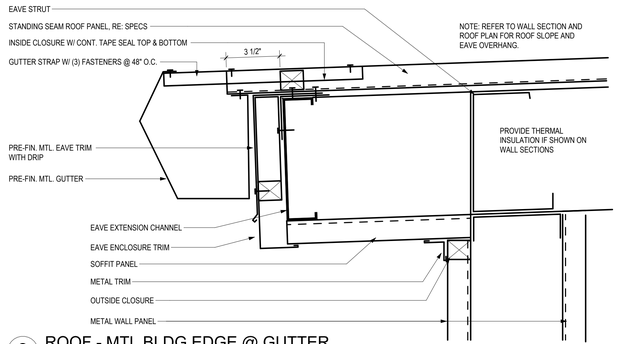



**NOTE:** PROVIDE EXPANSION JOINTS EVERY 10' MAX., EXCEPT @ BENDS OR CORNERS WHERE EXPANSION JOINTS SHALL BE PLACED 48" MAX. FROM CORNER/ BEND. ALL SEAMS & JOINTS SHALL BE SEALED. CORNERS SHALL BE FORMED WATERTIGHT, WELDED, & SEALED

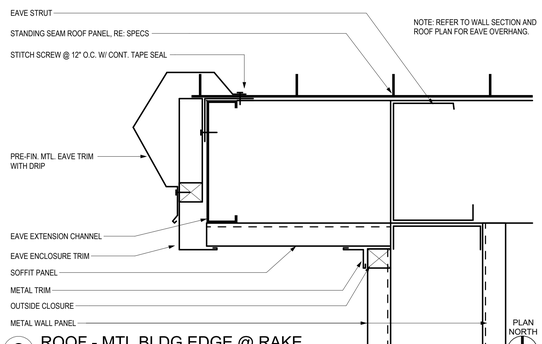
## 5 ROOF - MTL BLDG @ LOW-HIGH MTL RF
1 1/2" = 1'-0"




## 4 ROOF - MTL BLDG EDGE @ EAVE
3" = 1'-0"




## 3 ROOF - MTL BLDG EDGE @ GUTTER
3" = 1'-0"




## 2 ROOF - MTL BLDG EDGE @ RAKE
3" = 1'-0"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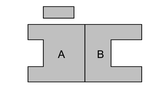


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REGISTERED ARCHITECT — STATE OF TEXAS — 25345

07/28/2025

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| DRAWN: | Author |
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# A4.01

ROOF PLAN

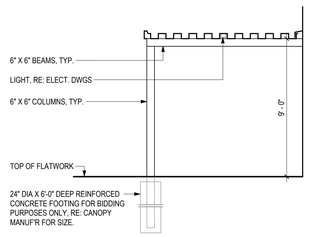
8 WALL - EXT CNPY @ MTL BLDG
1 1/2" = 1'-0"



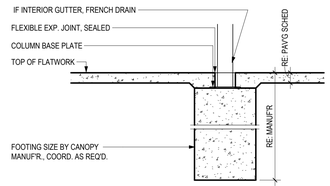

7 CANOPY - CANOPY @ CMU
1 1/2" = 1'-0"



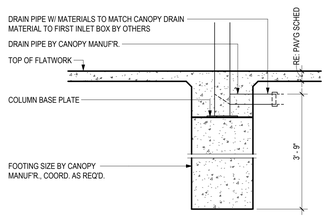

6 CANOPY - TYP CANOPY
1/4" = 1'-0"



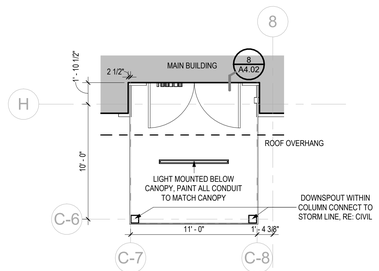

5 CANOPY - TYP CANOPY @ BLDG
1/4" = 1'-0"




4 CANOPY - TYP FOOTING
1/2" = 1'-0"




3 CANOPY - TYP FOOTING @ DRAIN
1/2" = 1'-0"




2 ROOF PLAN - SOUTH (FRONT) CANOPY
3/16" = 1'-0"




1 ROOF PLAN - NORTH (BACK) CANOPY
3/16" = 1'-0"

PLAN NORTH

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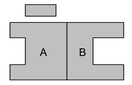


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07/28/2025

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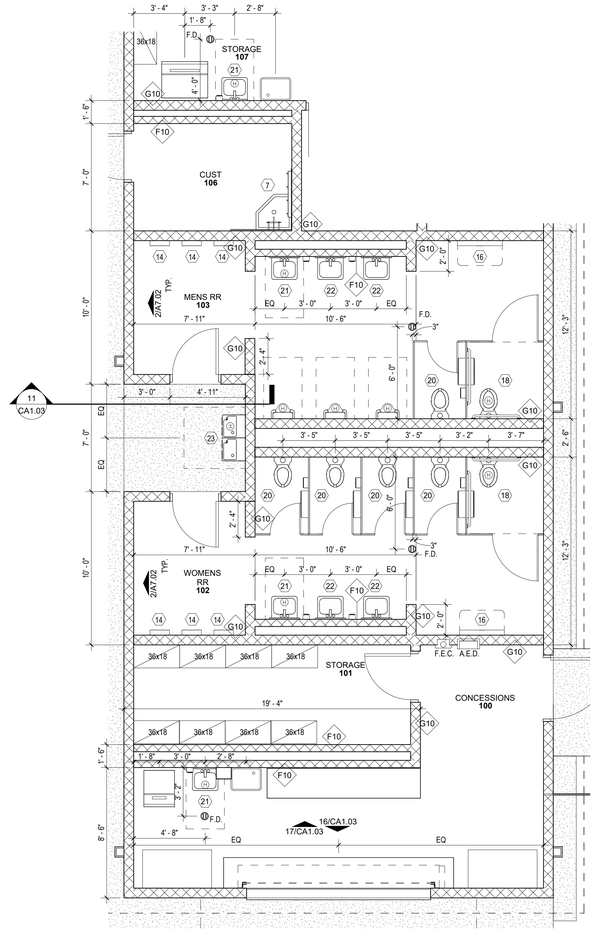
| 2025-07-28 | PERMIT AND PROPOSAL |

# A4.02

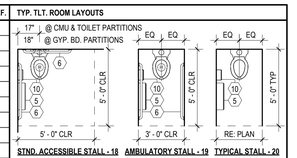
CANOPY PLAN AND DETAILS




5 FIELDHOUSE - ENLARGED PLAN
1/4" = 1'-0"

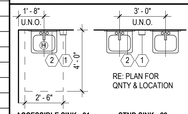
| MARK | DESCRIPTION | SPEC REF. |
|---|---|---|
| 1 | SOAP DISPENSER (O.F.C.I.) | TA-1 |
| 2 | MIRROR | TA-2 |
| 3 | PAPER TOWEL DISPENSER (O.F.C.I.) | TA-3 |
| 4 | RECESSED WASTE RECEPTACLE | TA-4 |
| 5 | TOILET TISSUE DISPENSER (O.F.C.I.) | TA-5 |
| 6 | GRAB BARS | TA-6 |
| 7 | MOP & BROOM HOLDER | TA-7 |
| 8 | CLOTHES/ TOWEL HOOKS | TA-8 |
| 9 | FEMININE NAPKIN DISPENSER | TA-9 |
| 10 | FEMININE NAPKIN DISPOSAL (O.F.C.I.) | TA-10 |
| 11 | SHOWER GRAB BARS | TA-11 |
| 12 | FOLDING BENCH - SHOWER COMPARTMENTS | TA-12 |
| 13 | SHOWER CURTAINS & RODS | TA-13 |
| 14 | ELECTRIC HAIR DRYERS | TA-14 |
| 15 | ELECTRIC HAND DRYERS | TA-15 |
| 16 | BABY CHANGING STATION | TA-16 |
| 17 | SHOWER WATER RETAINER | TA-17 |
| 18 | ACCESSIBLE TOILET STALL | TA-18 |
| 19 | AMBULATORY TOILET STALL | TA-19 |
| 20 | STANDARD TOILET STALL | TA-20 |
| 21 | ACCESSIBLE SINK | TA-21 |
| 22 | STANDARD SINK | TA-22 |
| 23 | HI/LO ELECTRONIC DRINKING FOUNTAIN, RE: MEP | TA-23 |
| 24 | | |
| 25 | | |

TYP. TLT. ROOM LAYOUTS

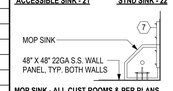



STND. ACCESSIBLE STALL - 18 | AMBULATORY STALL - 19 | TYPICAL STALL - 20

NOTE:
1. TA-10 IN FEMALE RESTROOMS ONLY PER SPECS
2. GYP. BD. PARTITION DIMENSIONS ARE FROM FACE OF STUD




ACCESSIBLE SINK - 21 | STND SINK - 22



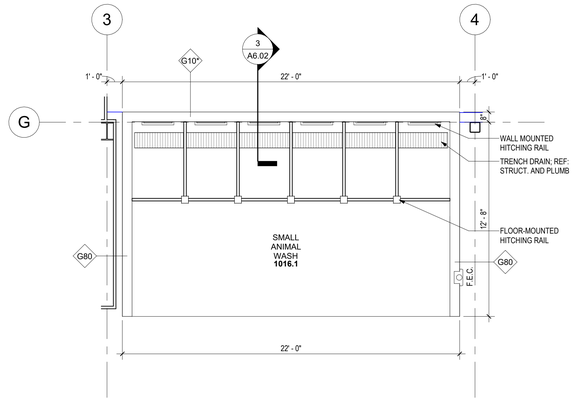

MOP SINK - ALL CUST ROOMS & PER PLANS

1. Ⓗ INDICATES HANDICAP MOUNTING HEIGHT, RE: G1.00 FOR ALL MOUNTING HEIGHTS & LOCATION REQ'MNTS.
2. VERIFY LOCATION OF ACCESSORIES W/ OWNER PRIOR TO INSTALLATION
3. RE: FLOOR PLANS FOR ADDITIONAL TOILET ACCESSORIES
4. "O.F.C.I." INDICATES OWNER FURNISHED, CONTRACTOR INSTALLED ACCESSORIES
5. ALL MOP SINKS TO RECEIVE MOP & BROOM HOLDER (TA-7) @ MOP SINK WHETHER SHOWN IN PLAN OR NOT
6. ========== DENOTES CONCETE CURB, RE: A6.00 FOR DETAILS
7. ========== DENOTES WALL TILE, RE: INTERIOR ELEVATIONS

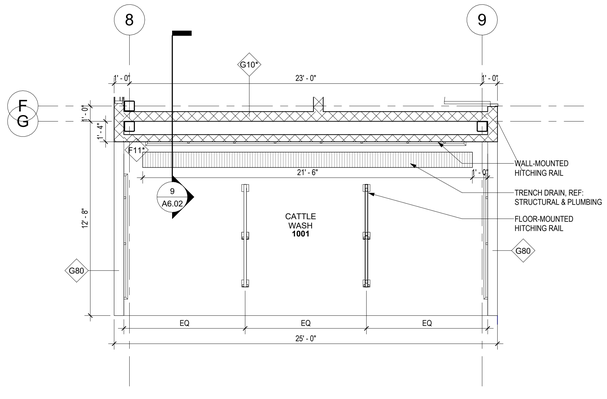
LEGEND - TOILET ACCESSORIES
1/4" = 1'-0"



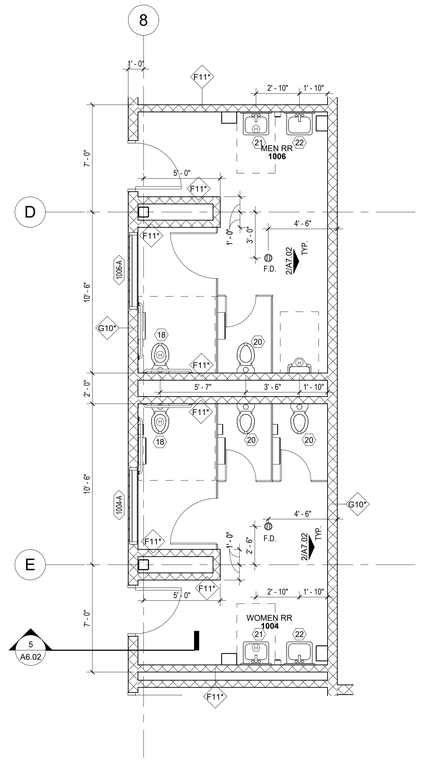

4 1ST FLOOR PLAN - ENLARGED JANITOR
1/4" = 1'-0"




3 1ST FLOOR PLAN - ENLARGED SMALL ANIMAL WASH PLAN
1/4" = 1'-0"




2 1ST FLOOR PLAN - ENLARGED CATTLE WASH PLAN
1/4" = 1'-0"




1 1ST FLOOR PLAN - ENLARGED RESTROOM
1/4" = 1'-0"


CONSULTANTS

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Talon Engineering, LLC
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MEP
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A B

**WEST AGRICULTURAL SCIENCE FACILITY**

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


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REGISTERED ARCHITECT — JUSTIN T. WHITE — 25346 — STATE OF TEXAS

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
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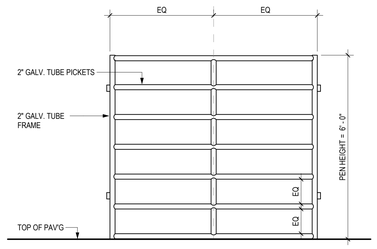
# A5.01

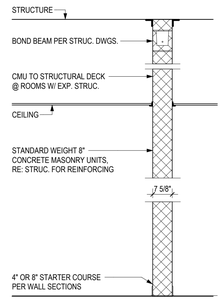
ENLARGED RESTROOM PLANS

PLAN NORTH

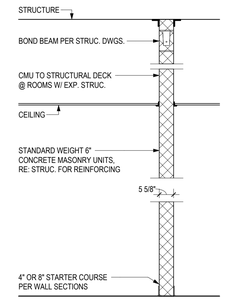



**NOTE:**
1. DRAWING FOR FABRICATION REFERENCE ONLY
2. GRIND ALL WELDS SMOOTH, PREP, GALV. AFTER FABRICATION

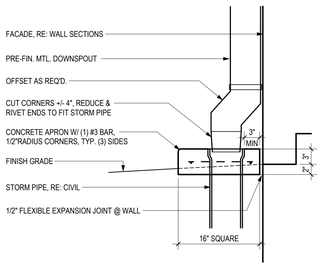
## 17 PARTITION T10 TUBE FENCING
1/2" = 1'-0"



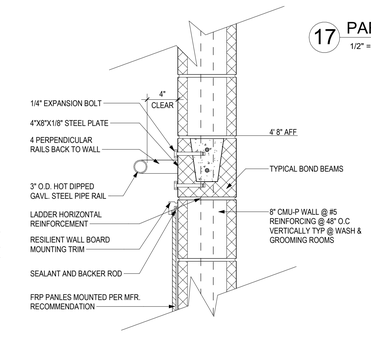

## 16 PARTITION G10
1/2" = 1'-0"



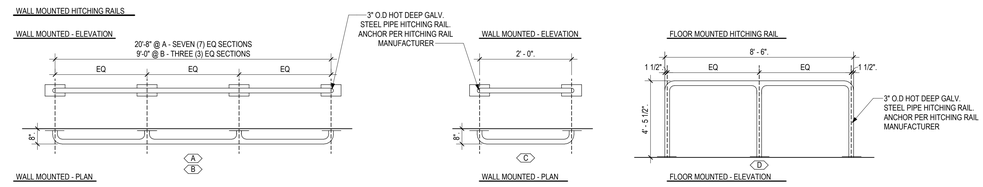

## 15 PARTITION F10
1/2" = 1'-0"



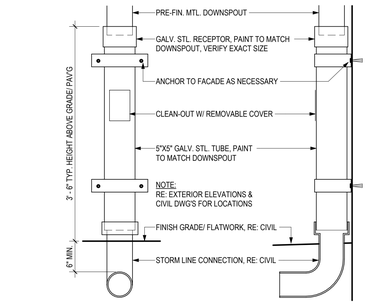

## 14 MISC - DOWNSPOUT @ GRADE
1" = 1'-0"



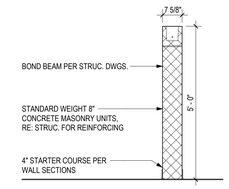

## 13 WALL - MOUNTED HITCHING RAIL
1 1/2" = 1'-0"



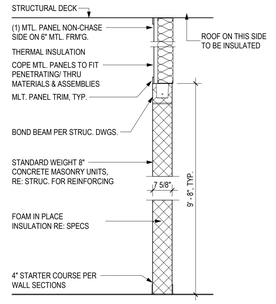

## 12 HITCHING RAILS
1 1/2" = 1'-0"



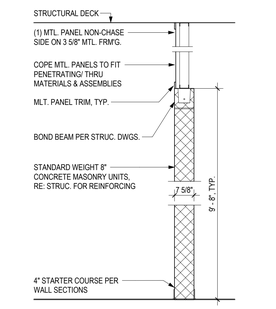

## 11 MISC - DOWNSPOUT BOOT
1" = 1'-0"



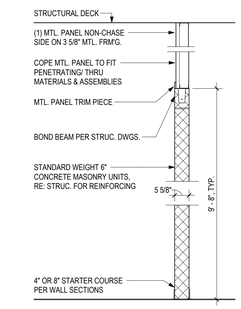

## 10 PARTITION G80
1/2" = 1'-0"



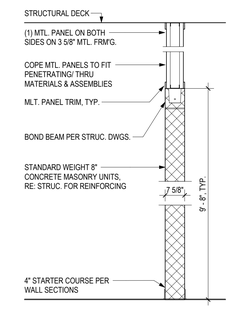

## 9 PARTITION G12*
1/2" = 1'-0"



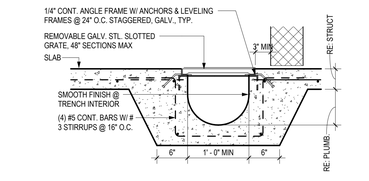

## 8 PARTITION G11*
1/2" = 1'-0"



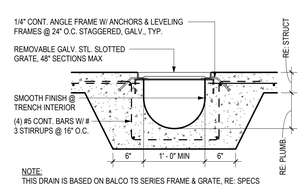

## 7 PARTITION F11*
1/2" = 1'-0"



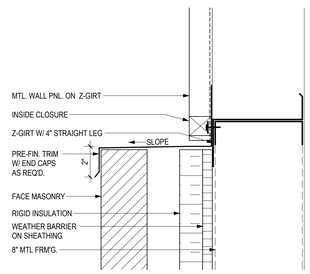

## 6 PARTITION G10*
1/2" = 1'-0"



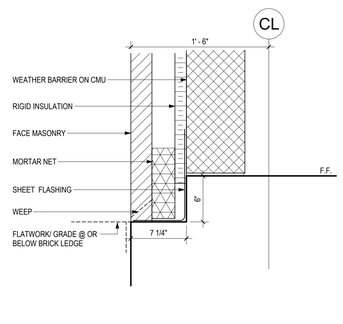

## 5 MISC - TRENCH DRAIN @ WALL
1" = 1'-0"



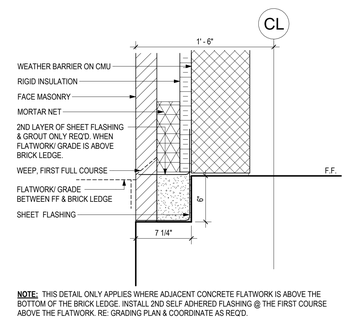

## 4 MISC - TRENCH DRAIN
1" = 1'-0"



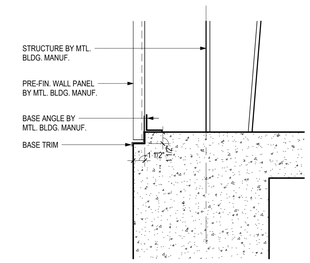

## 3 WALL - EXT MTL TO MAS @ MTL
3" = 1'-0"




## 2 WALL - BRK LEDGE 7.25 @ CMU-MAS
1 1/2" = 1'-0"




**NOTE:** THIS DETAIL ONLY APPLIES WHERE ADJACENT CONCRETE FLATWORK IS ABOVE THE BOTTOM OF THE BRICK LEDGE. INSTALL 2ND SELF ADHERED FLASHING @ THE FIRST COURSE ABOVE THE FLATWORK. RE: GRADING PLAN & COORDINATE AS REQ'D.




## 1 WALL - EXT - MTL BLDG LEDGE
1 1/2" = 1'-0"

PLAN NORTH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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT MICHAEL A. MARTINEZ 25340 STATE OF TEXAS

07/28/2025

| | |
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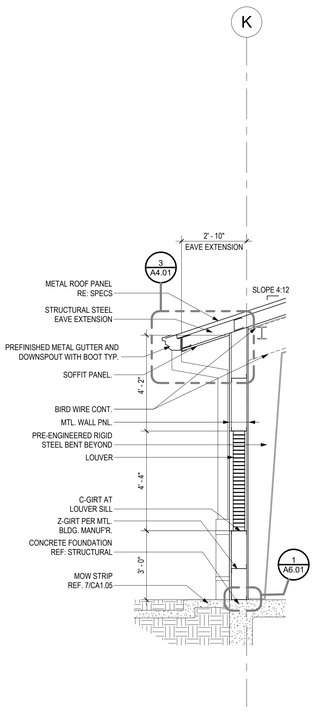
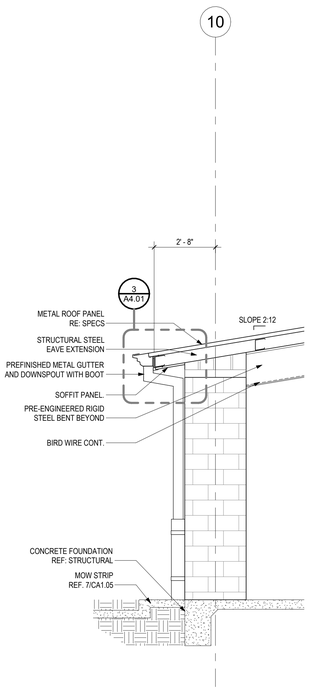
# A6.01

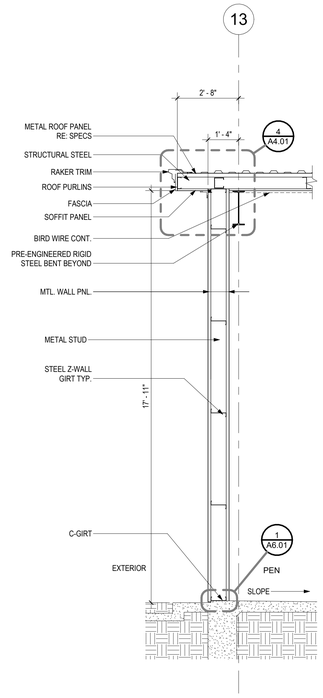
PARTITION TYPES AND WALL DETAILS



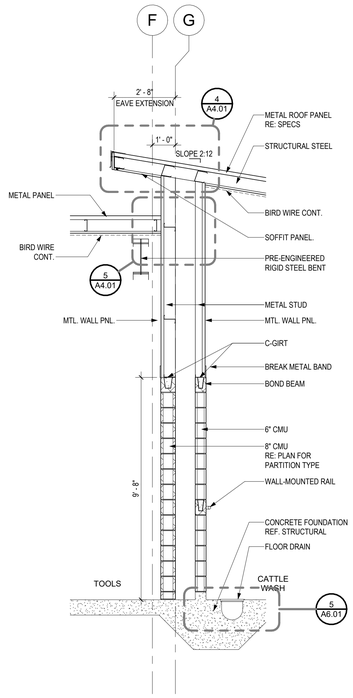

12 SECTION - POULTRY
3/8" = 1'-0"



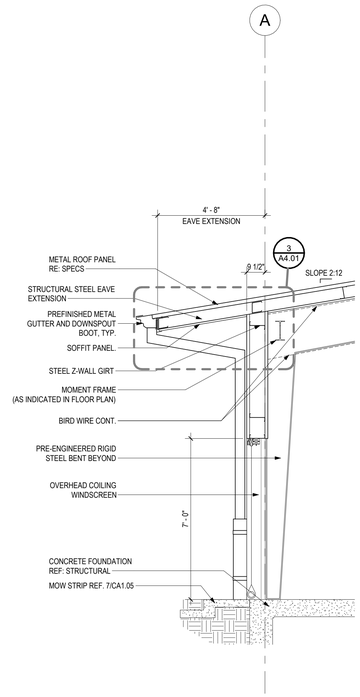

11 SECTION - GROOMING STATION
3/8" = 1'-0"



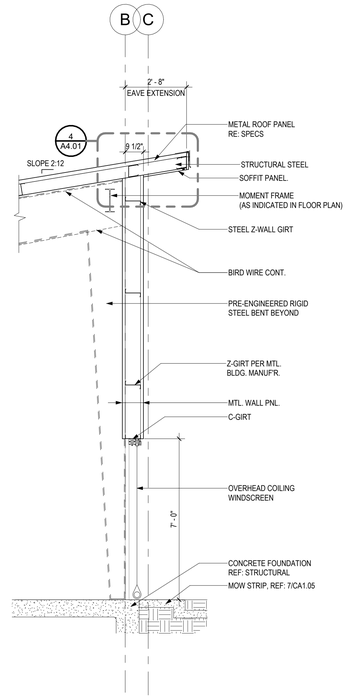

10 SECTION - EAST & WEST WALLS
3/8" = 1'-0"



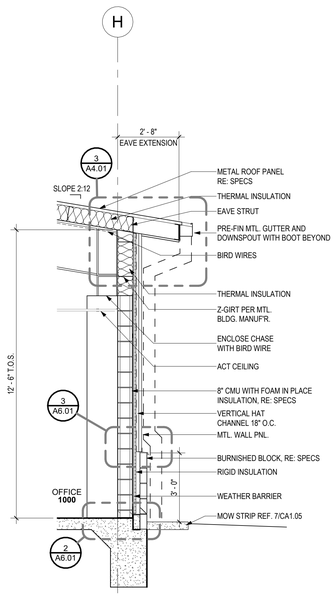

9 SECTION - CATTLE WASH STATION
3/8" = 1'-0"



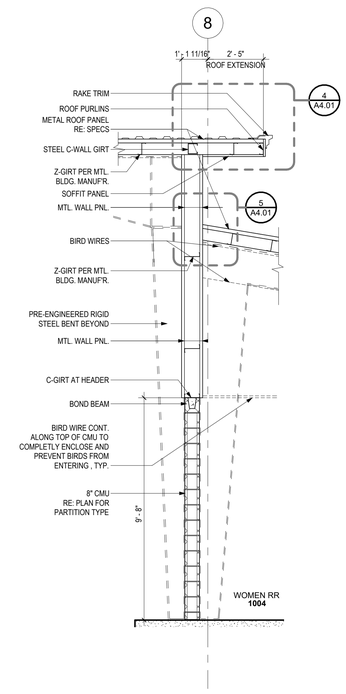

8 SECTION - CATTLE LOW
3/8" = 1'-0"



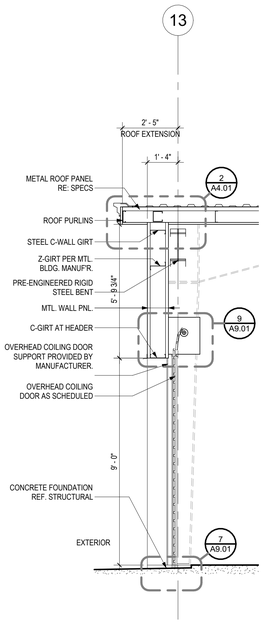

7 SECTION - CATTLE HIGH
3/8" = 1'-0"



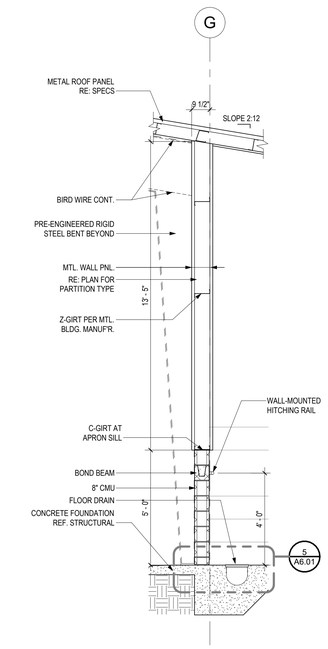

6 SECTION - OFFICE
3/8" = 1'-0"



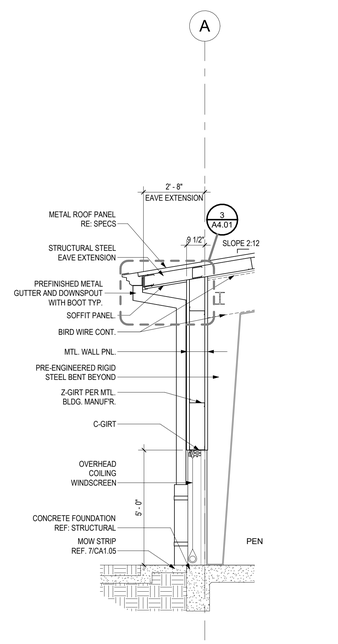

5 SECTION - SERVICE/ BATHROOM AREA
3/8" = 1'-0"



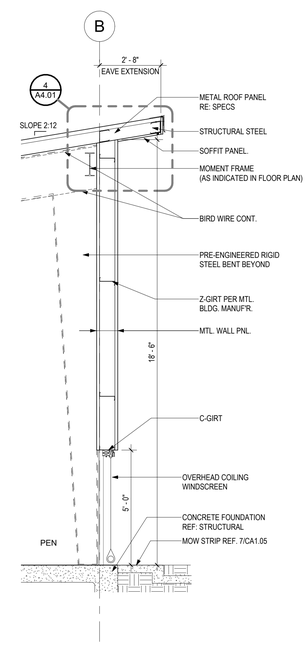

4 SECTION - COILING DOOR TYP.
3/8" = 1'-0"




SECTION - LAMB & HOG
WASH STATION
3/8" = 1'-0"




2 SECTION - LAMB & HOG LOW
3/8" = 1'-0"




1 SECTION - LAMB & HOG HIGH
3/8" = 1'-0"

PLAN
NORTH

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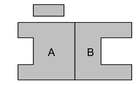


# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
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CYPRESS TX, 77433

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REGISTERED ARCHITECT
JAMES M. ARNOLD
75340
STATE OF TEXAS

07/28/2025

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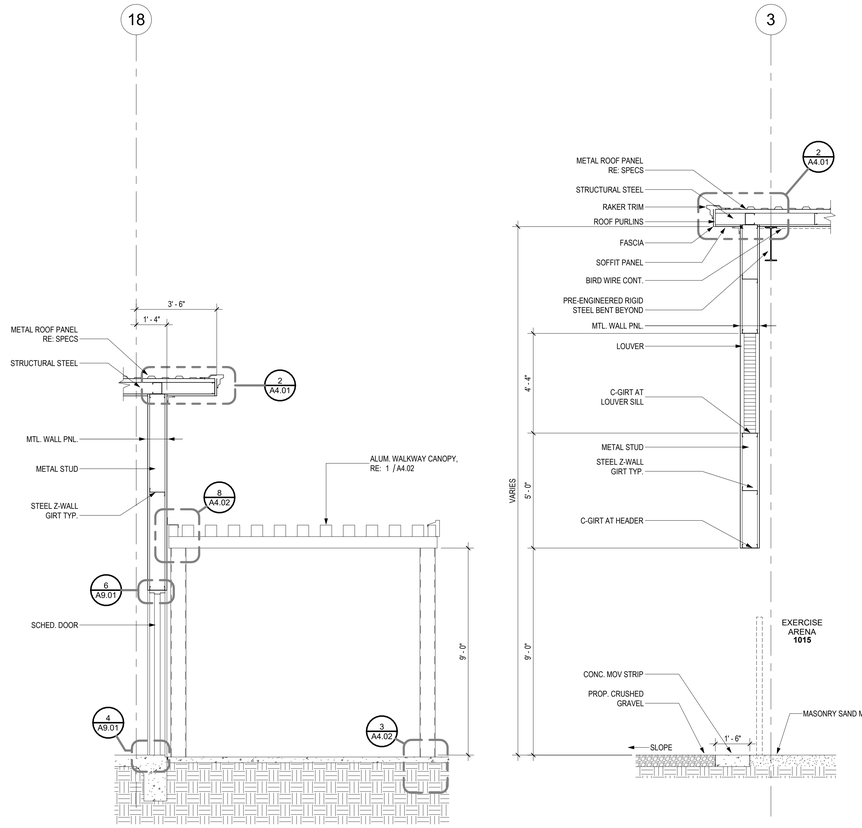
# A6.02

WALL SECTIONS




2 SECTION - POULTRY @ CNPY
3/8" = 1'-0"

1 SECTION - EXERCISE BARN
3/8" = 1'-0"

PLAN
NORTH


CONSULTANTS

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# WEST AGRICULTURAL SCIENCE FACILITY

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REGISTERED ARCHITECT
MATTHEW A. WARD
25346
STATE OF TEXAS

07/28/2025

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| DRAWN: | Author |
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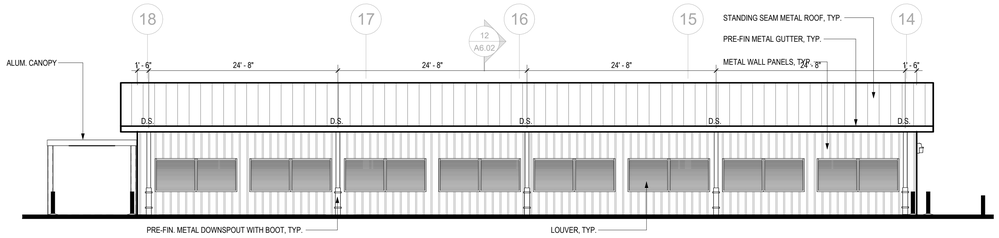
# A6.03

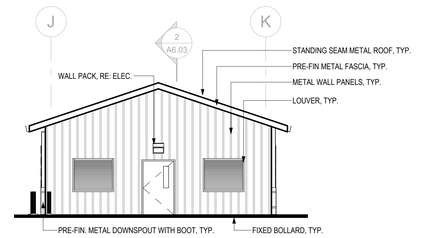
WALL SECTIONS

1. PROVIDE MASONRY CONTROL JOINTS AT ALL WINDOW AND DOOR OPENINGS, COLUMN CENTER LINES, 2'-0"+/- FROM EDGE OF OUTSIDE CORNERS & @ INSIDE CORNERS, WHETHER SHOWN ON ELEVATIONS OR NOT. COLUMN LINES NEAR OPENINGS DO NOT NEED CONTROL JOINTS.
2. SEALANT COLOR TO MATCH COLOR OF ADJACENT WALL FINISH.
3. COORDINATE LOCATION OF EXTERIOR DEVICES INCLUDING BUT NOT LIMITED TO WALL PACKS, SECURITY CAMERAS, SPEAKERS, ALARMS, & HORNS PRIOR TO INSTALLATION.

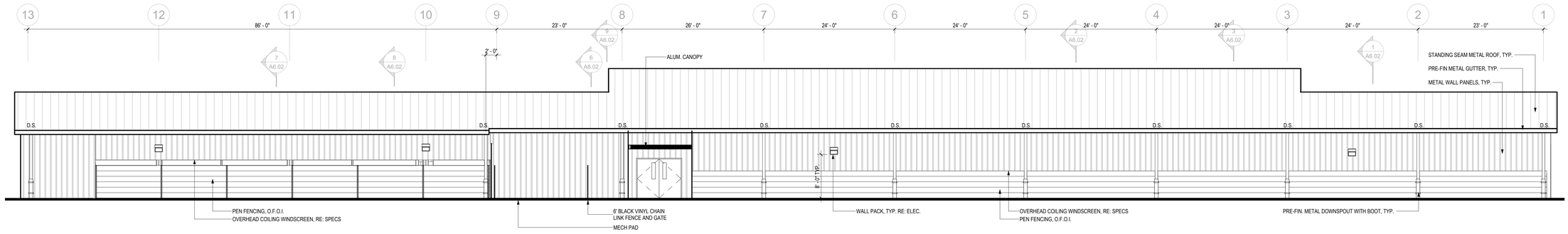
## NOTES - GENERAL ELEVATION
1/4" = 1'-0"



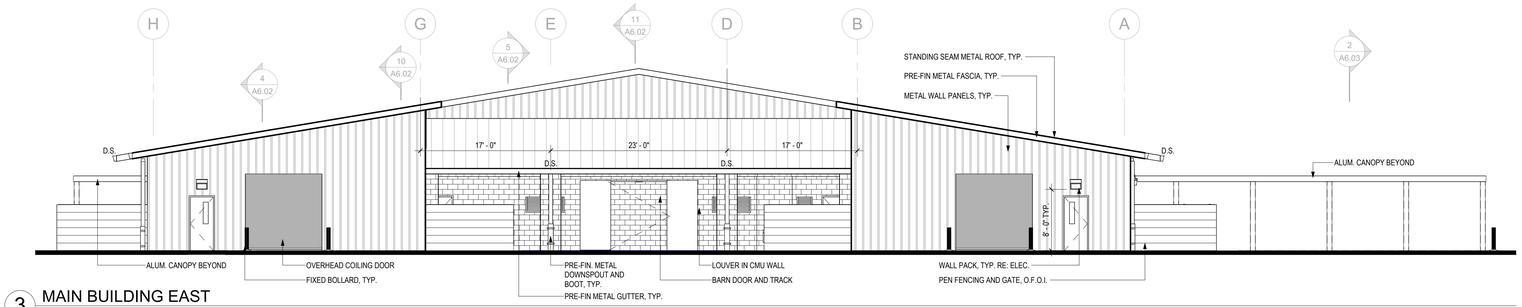

## 6 POULTRY BLDG (N/S)
1/8" = 1'-0"



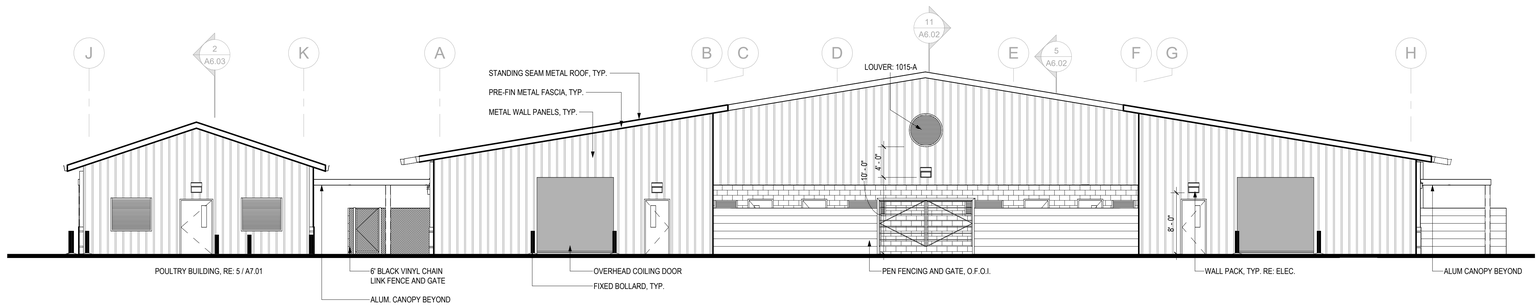

## 5 POULTY (E/W)
1/8" = 1'-0"



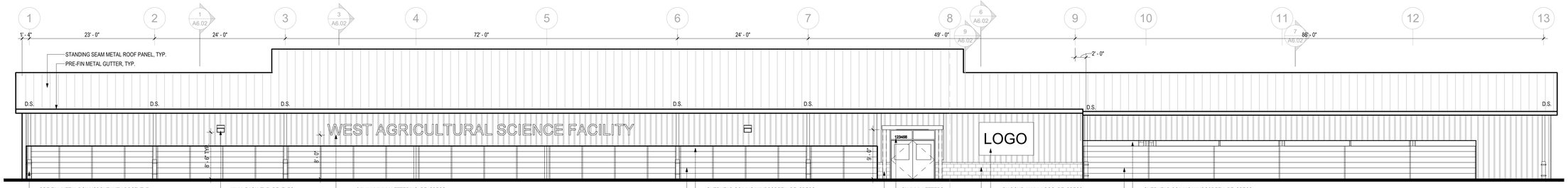

## 4 MAIN BUILDING NORTH
1/8" = 1'-0"




## 3 MAIN BUILDING EAST
1/8" = 1'-0"




## 2 MAIN BUILDING WEST
1/8" = 1'-0"




## 1 MAIN BUILDING SOUTH
1/8" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT — JOSEPH W. MOORE — 25346 — STATE OF TEXAS

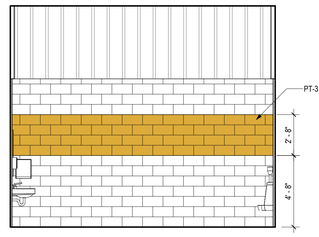
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

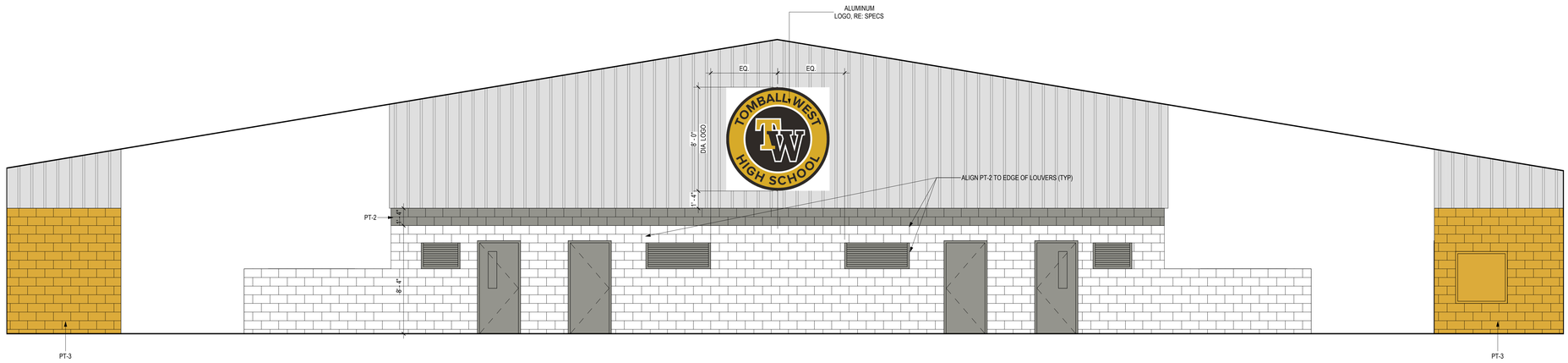
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# A7.01

EXTERIOR ELEVATIONS




2 INT - RESTROOM TYP.
1/4" = 1'-0"




1 INT - CORE WALL - W
1/4" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
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MEP
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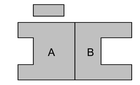
Houston, TX 77042
Tel: 713.914.0888




# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS
ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
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tel 281.286.6605, fax 713.977.4620

REGISTERED ARCHITECT
JOSHUA WILLIAM WEST
25346
STATE OF TEXAS

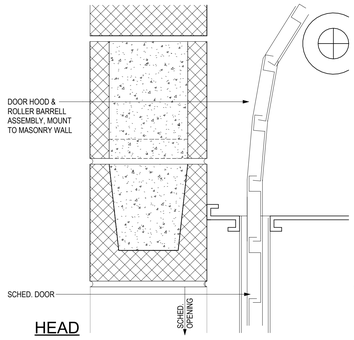
07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

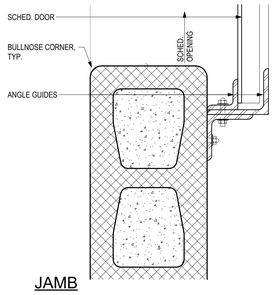
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# A7.02

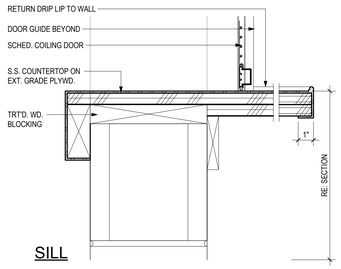
INTERIOR ELEVATIONS




HEAD

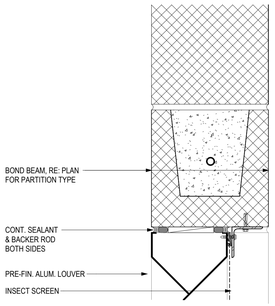



JAMB

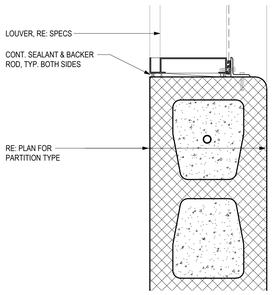



SILL

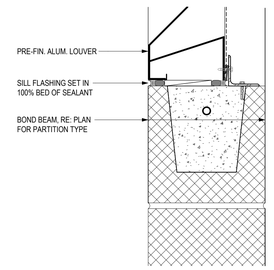
## 19 EXT OVRHD COUNTR DOOR @ CMU
3" = 1'-0"



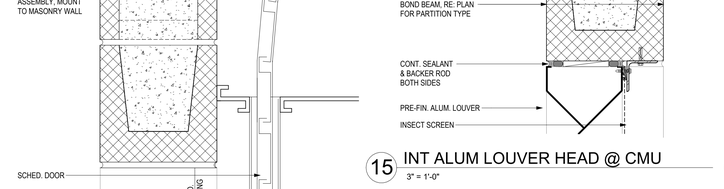

## 15 INT ALUM LOUVER HEAD @ CMU
3" = 1'-0"




## 14 INT ALUM LOUVER JAMB @ CMU
3" = 1'-0"




## 13 INT ALUM LOUVER SILL @ CMU
3" = 1'-0"




| 4-E | | |
|---|---|---|
| SILL | JAMB | HEAD |
| 1 / A9.01 | 2 / A9.01 | 3 / A9.01 |
| CONDITION ALUM @ MTL | | |

| 3-E | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 4 / A9.01 | 10 / A9.01 | 10 / A9.01 | HM @ BLK/MTL/CMU |
| | | | |

| 2-E | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 1 / A9.01 | 2 / A9.01 | 3 / A9.01 | ALUM @ MTL |
| | | | |

| 1-E | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 4 / A9.01 | 5 / A9.01 | 6 / A9.01 | HM @ MTL |
| 4 / A9.01 | 10 / A9.01 | 10 / A9.01 | HM @ MTL/ CMU |
| 4 / A9.01 | 11 / A9.01 | 12 / A9.01 | HM @ CMU |

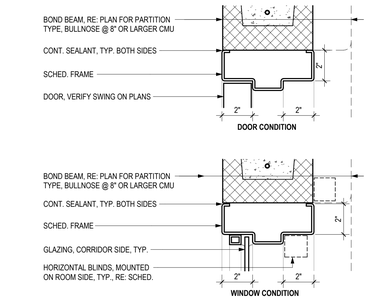
## ELEVATIONS - EXTERIOR FRAMES
1/4" = 1'-0"



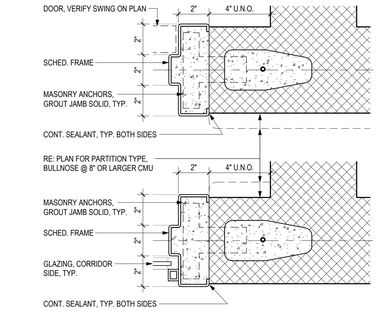

## 18 BARN DOOR HANDLE
1/2" = 1'-0"



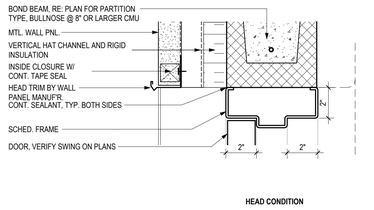

## 17 BARN DOOR HEAD DETAIL
3" = 1'-0"

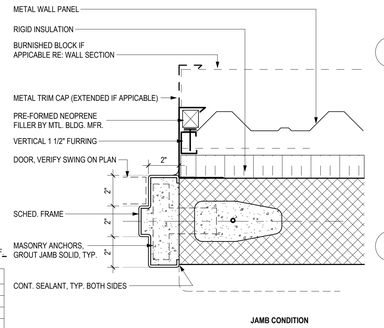



## 12 INT/EXT HM HEAD @ CMU
3" = 1'-0"




## 11 INT/EXT HM JAMB @ CMU
3" = 1'-0"



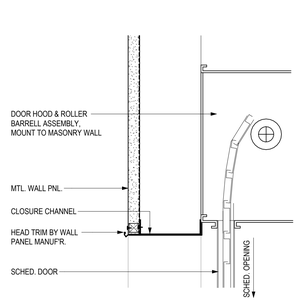




JAMB CONDITION

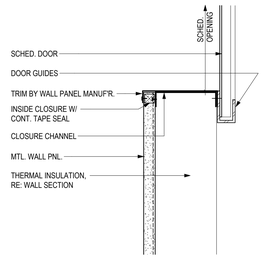
## 10 EXT HM JAMB/ HEAD @ MTL/CMU
3" = 1'-0"



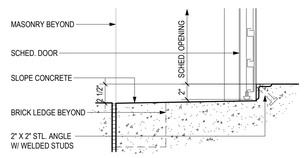

## 16 BARN DOOR SILL DETAIL
3" = 1'-0"




## 9 EXT OVRHD DOOR HEAD @ MTL BLDG
1 1/2" = 1'-0"



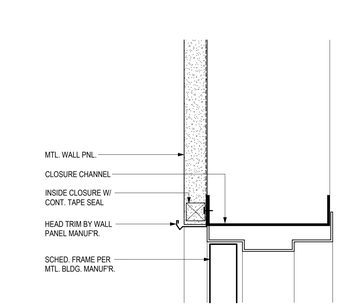

## 8 EXT OVRHD DOOR JAMB @ MTL BLDG
1 1/2" = 1'-0"



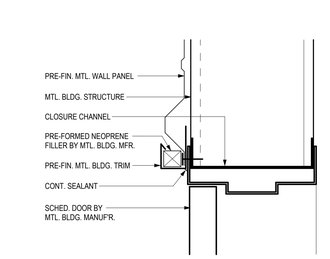

## 7 EXT OVRHD DOOR SILL @ FOUND
1 1/2" = 1'-0"

G1 - NOT USED
G2 - NOT USED
G3 - NOT USED
G4 - INSULATED GLASS
G5 - NOT USED
G6 - NOT USED
G7 - NOT USED
G8 - NOT USED

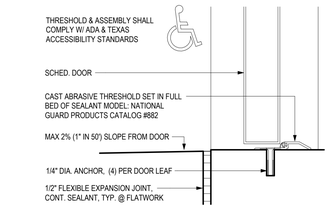
## LEGEND - GLAZING
1/4" = 1'-0"



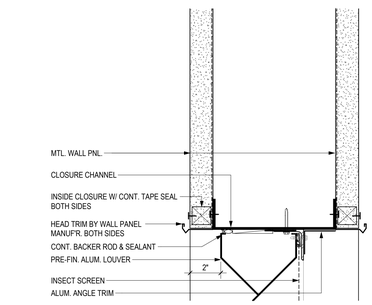

## 6 EXT HM DR HEAD @ MTL BLDG
3" = 1'-0"



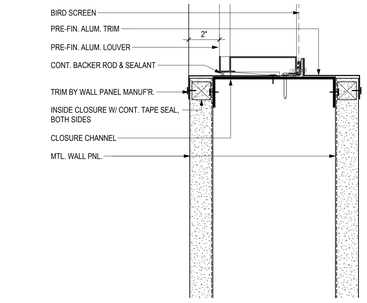

## 5 EXT HM DR JAMB @ MTL BLDG
3" = 1'-0"



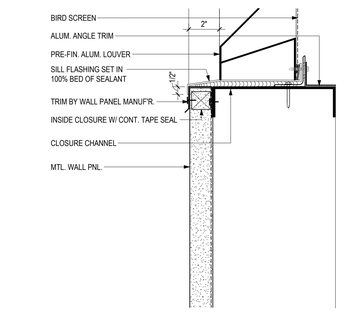

## 4 EXT DOOR THRSHLD @ FOUND
3" = 1'-0"



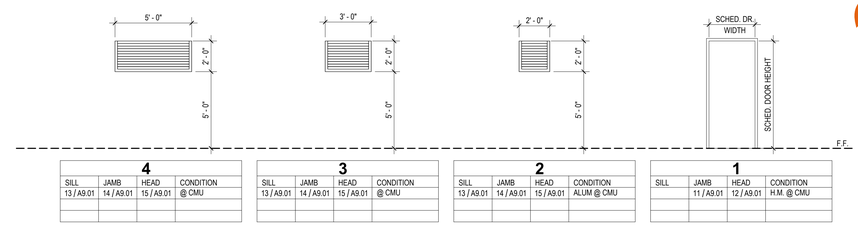

## 3 EXT ALUM LOUVER HEAD @ MTL B
3" = 1'-0"




## 2 EXT ALUM LOUVER JAMB @ MTL B
3" = 1'-0"




## 1 EXT ALUM LOUVER SILL @ MTL B
3" = 1'-0"




| 4 | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 13 / A9.01 | 14 / A9.01 | 15 / A9.01 | @ CMU |
| | | | |

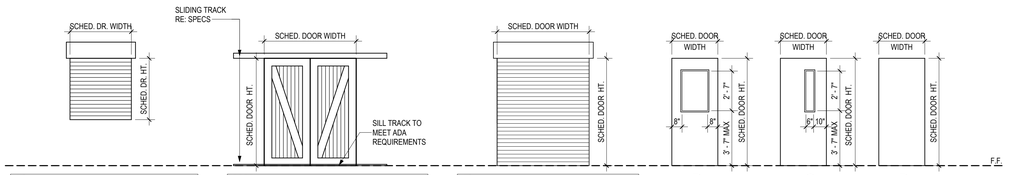
| 3 | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 13 / A9.01 | 14 / A9.01 | 15 / A9.01 | @ CMU |
| | | | |

| 2 | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 13 / A9.01 | 14 / A9.01 | 15 / A9.01 | ALUM @ CMU |
| | | | |

| 1 | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| | 11 / A9.01 | 12 / A9.01 | H.M. @ CMU |
| | | | |

GENERAL NOTES:
1. "00-E" DESIGNATES EXTERIOR FRAMES
2. RE: WINDOW ELEVATIONS FOR DOOR FRAMES WHICH ARE PART OF A WINDOW ASSEMBLY

## ELEVATIONS - INTERIOR FRAMES
1/4" = 1'-0"




| R COILING COUNTER DOOR SOLID W/ HOOD | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 19 / A9.01 | 19 / A9.01 | 19 / A9.01 | FIELDHOUSE @ CMU |
| | | | |

| XX BARN DOOR, EXTERIOR GRADE WOOD, PT-2 | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 16 / A9.01 | | 17 / A9.01 | BARN DOOR @ CMU |
| | 11 / A9.01 | 12 / A9.01 | H.M. OPENING @ CMU |

| P OVERHEAD COILING DOOR SOLID W/ HOOD | | | |
|---|---|---|---|
| SILL | JAMB | HEAD | CONDITION |
| 7 / A9.01 | 8 / A9.01 | 9 / A9.01 | @ MTL |
| | | | |

D FLUSH DOOR
C FLUSH DOOR
B FLUSH DOOR

## ELEVATIONS - DOORS
1/4" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
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Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433

ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620

REGISTERED ARCHITECT BRIAN NEIL 25340 STATE OF TEXAS

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | BN |
| CHECKED: | - |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# A9.01

FRAME ELEVATIONS AND OPENING DETAILS

1'-0" X 4'-0" LIGHT FIXTURE

2'-0" X 4'-0" LIGHT FIXTURE

RECESSED LIGHT

6" WIDE LIGHT FIXTURE

SUSPENDED GRID W/ ACOUSTICAL CEILING TILE, RE: SCHED. & SPECS.

BIRD WIRE CONT. ALONG UNDERSIDE OF METAL STRUCTURE AND PREVENT BIRDS FROM ENTERING, TYP.

BIRD WIRE CONT. ALONG TOP OF CMU TO COMPLETLY ENCLOSE AND PREVENT BORDS FROM ENTERING, TYP.

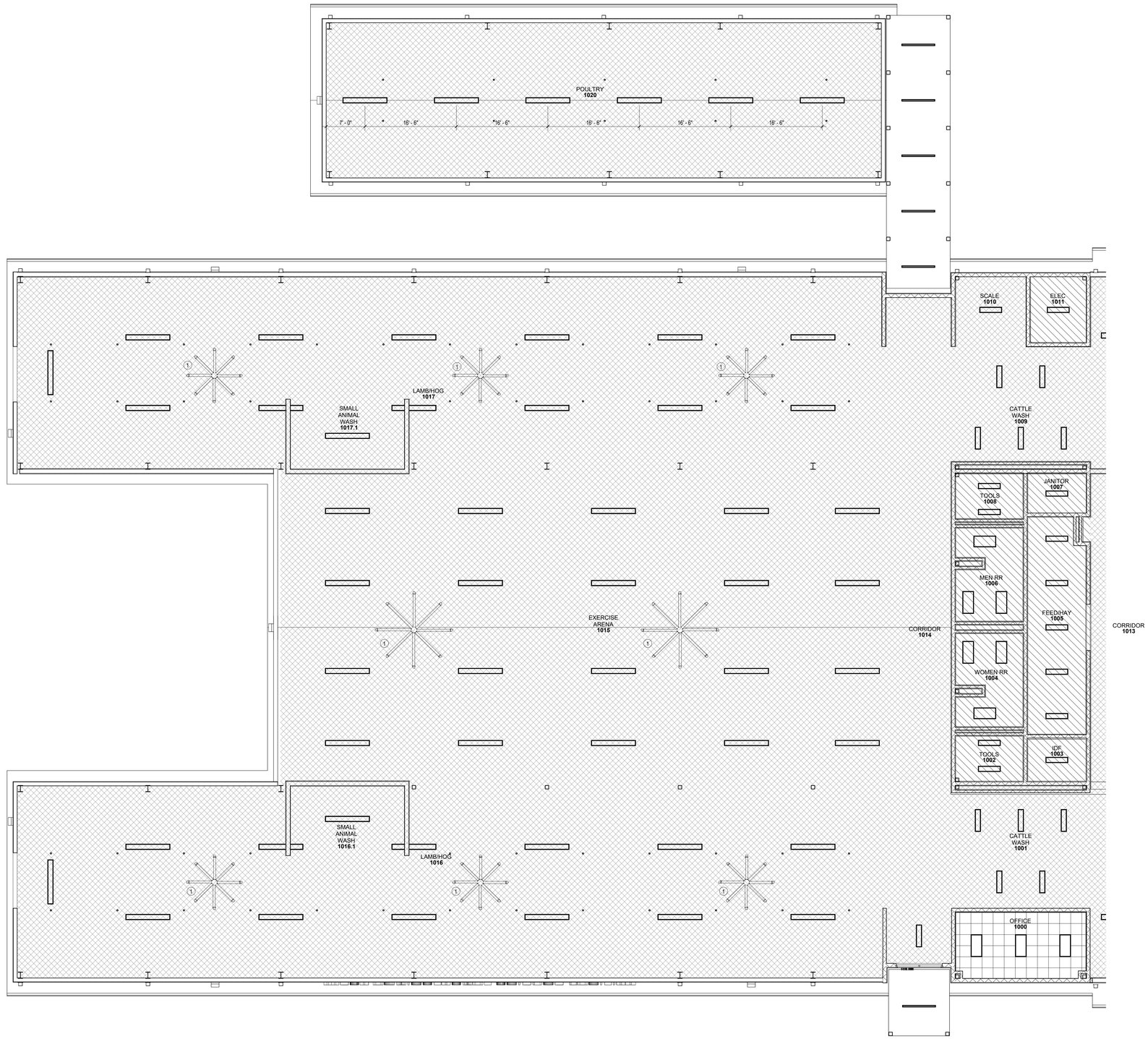
## LEGEND - RCP

1/4" = 1'-0"

(1) INDUSTRIAL FAN, RE: MEP

## KEYNOTES - RCP

1/4" = 1'-0"




1 AREA 'A1' - RCP

1/8" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
6051 North Course Dr., Suite 375
Houston, TX 77072
Tel: 713.780.3345

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888

A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
18530 CYPRESS HEIGHTS DR.
CYPRESS TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED ARCHITECT KATE WHITE 25345 STATE OF TEXAS

07/28/2025

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# A10.01

AREA 'A1' 1ST FLOOR RCP

1'-0" X 4'-0" LIGHT FIXTURE

2'-0" X 4'-0" LIGHT FIXTURE

RECESSED LIGHT

6" WIDE LIGHT FIXTURE

SUSPENDED GRID W/ ACOUSTICAL CEILING TILE, RE: SCHED. & SPECS.

BIRD WIRE CONT. ALONG UNDERSIDE OF METAL STRUCTURE AND PREVENT BIRDS FROM ENTERING, TYP.

BIRD WIRE CONT. ALONG TOP OF CMU TO COMPLIETLY ENCLOSE AND PREVENT BORDS FROM ENTERING, TYP.

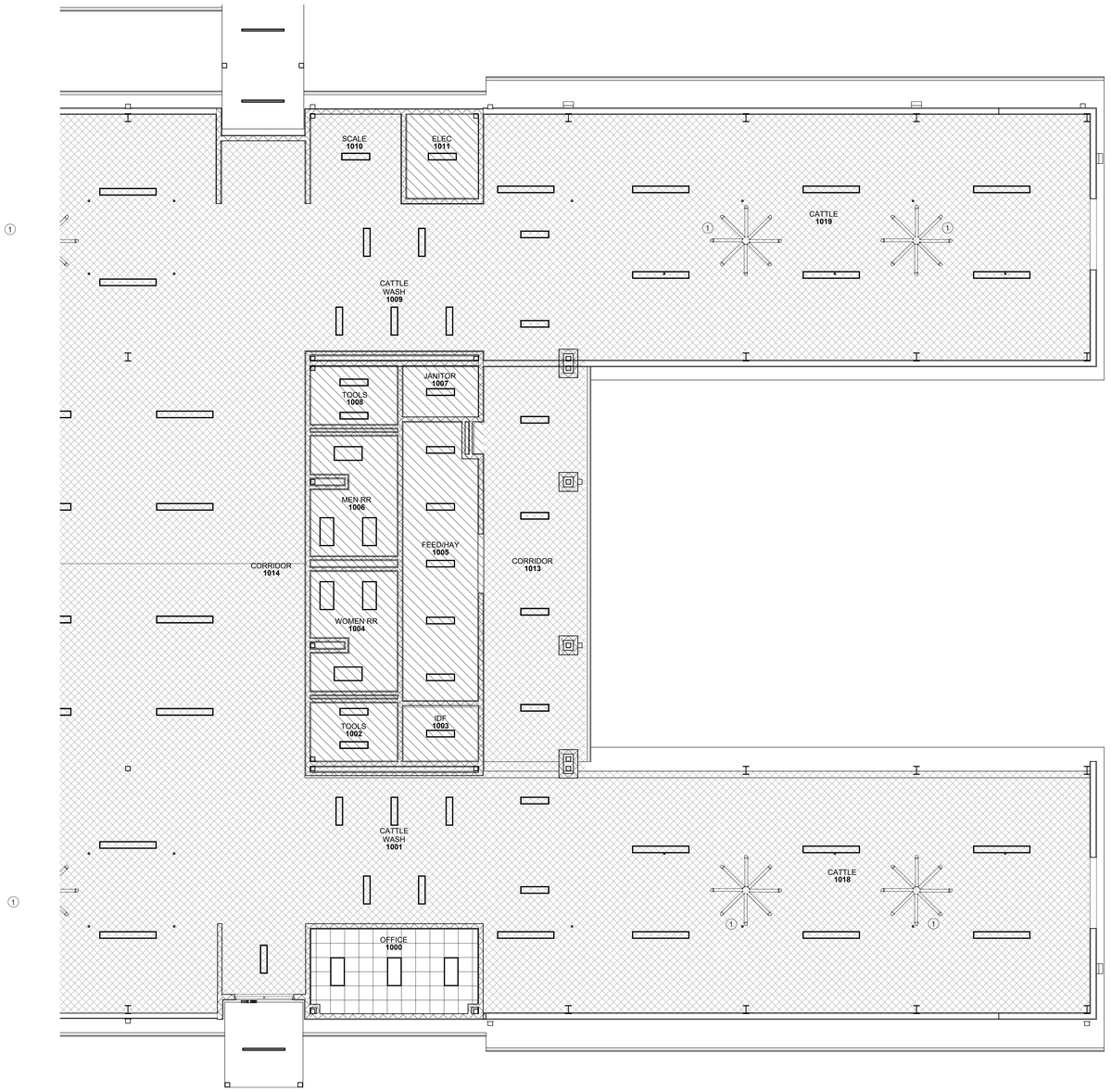
## LEGEND - RCP

1/4" = 1'-0"

(1) INDUSTRIAL FAN, RE: MEP

## KEYNOTES - RCP

1/4" = 1'-0"




1 AREA 'B1' - RCP

1/8" = 1'-0"

PLAN NORTH

CONSULTANTS

CIVIL
Talon Engineering, LLC
1118 Wolfs Knoll
Houston, Texas 77094
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STRUCTURAL
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A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
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CYPRESS TX, 77433


ARCADIS

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REGISTERED ARCHITECT
STATE OF TEXAS
25345

07/28/2025

| | |
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| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
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# A10.02

AREA 'B1' 1ST FLOOR RCP

| FLOORS | | WALLS | | CEILINGS | | MISC. | |
|---|---|---|---|---|---|---|---|
| **SC-1** | **SEALED CONCRETE (FIELD)**<br>FINISH: SMOOTH | **PT-1** | **PAINT (FIELD)**<br>MFR: SHERWIN WILLIAMS<br>COLOR: SAND BEACH 7529 | **ACT-1** | **ACOUSTICAL CEILING TILE (TYPE A)**<br>MFR: XX<br>SERIES: XX<br>COLOR: XX<br>SIZES: XX | **GRT-1** | **GROUT**<br>MFR: XX<br>SERIES: XX<br>COLOR: XX<br>SIZES: XX |
| **SC-2** | **SEALED CONCRETE (WASH ROOMS)**<br>FINISH: BRUSHED | **PT-2** | **PAINT (DOORS, FRAMES, ACCENT)**<br>MFR: SHERWIN WILLIAMS<br>COLOR: DOVETAIL 7018 | | | **RB-1** | **RUBBER BASE**<br>MFR: ROPPE<br>COLOR: DARK GREY<br>SIZES: 4" |
| **TF-1** | **TILE FLOORS**<br>MFR: DALTILE<br>SERIES: PORTFOLIO<br>COLOR: ASH GRAY PF05<br>SIZE: 12" X 24"<br>TYPE: PORCELAIN | **PT-3** | **PAINT (ACCENT)**<br>MFR: SHERWIN WILLIAMS<br>COLOR: GLITZY GOLD 6691 | | | | |
| | | **TB-1** | **TILE BASE**<br>MFR: DALTILE<br>SERIES: PORTFOLIO<br>COLOR: ASH GRAY PF05<br>SIZE: 6" X 24" COVE BASE P36C9<br>TYPE: PORCELAIN | | | | |

NOTE: ALL OPTIONS, SIZES, AND PATTERNS ARE SUBJECT TO CHANGE UPON OWNER APPROVAL

1 INTERIOR FINISH LEGEND
3/8" = 1'-0"

PLAN NORTH

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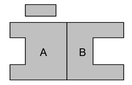


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REGISTERED ARCHITECT
JUSTIN T. WEST
25346
STATE OF TEXAS

07/28/2025

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A11.00

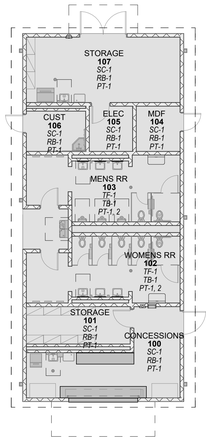
INTERIOR FINISH LEGEND

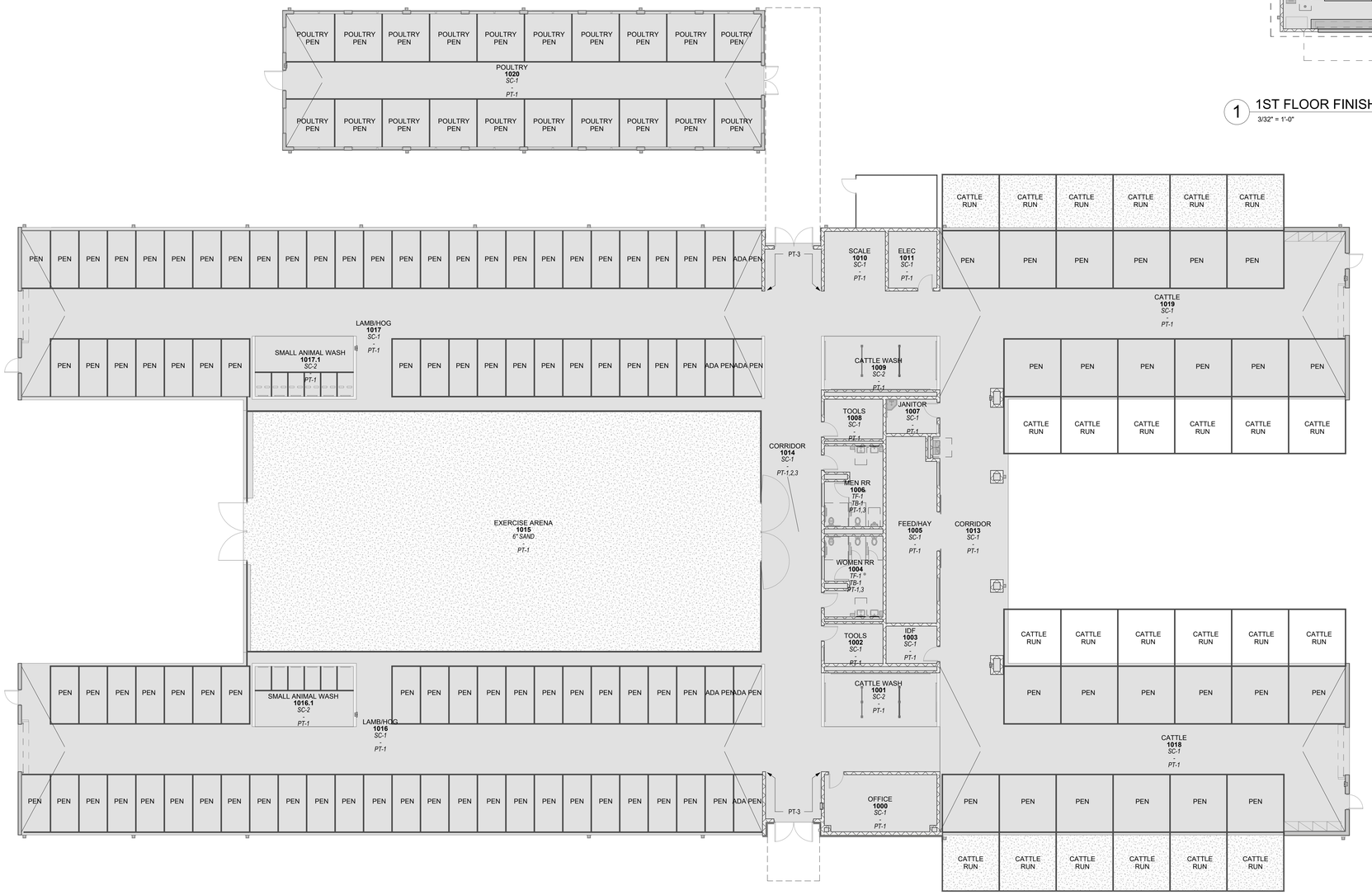
| ROOM NAME | ROOM NAME |
|---|---|
| **101** | ROOM NUMBER |
| *CPT-1* | FLOOR FINISH |
| *RB-1* | BASE FINISH |
| *PT-1* | WALL FINISH |

1. RE: ROOM FINISH SCHEDULES FOR MATERIAL LOCATIONS.
2. RE: A11 SERIES DWGS. FOR TILE PATTERN ORIGIN POINTS.
3. ALL CHANGES IN FLOOR MATERIAL BETWEEN ROOMS SHALL OCCUR @ CENTERLINE OF DOORWAY UNLESS OTHERWISE NOTED.
4. ANY FINISH CONFLICT BETWEEN FINISH SCHEDULES & FINISH FLOOR PLANS TO BE BROUGHT TO THE ARCH'S ATTENTION FOR RESOLUTION.

## NOTES - GENERAL FINISH PLAN

1/4" = 1'-0"




1 1ST FLOOR FINISH PLAN FIELDHOUSE

3/32" = 1'-0"

2 1ST FLOOR FINISH PLAN

3/32" = 1'-0"

PLAN NORTH

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A B

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REGISTERED ARCHITECT 25348 STATE OF TEXAS

07/28/2025

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# A11.01

AREA 'A1' 1ST FLOOR FINISH PLAN

**NOTE:**
1. SEE SIGN TYPE "A" FOR PLASTIC LAMINATE & LETTERING COLORS

8 SIGN - TYPE 'V'
6" = 1'-0"




**NOTE:**
1. SEE SIGN TYPE "A" FOR PLASTIC LAMINATE & LETTERING COLORS

7 SIGN - TYPE 'Q'
6" = 1'-0"



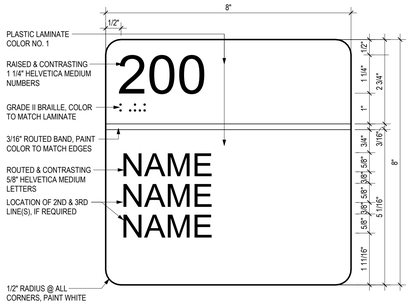

**NOTE:**
1. SEE SIGN TYPE "A" FOR PLASTIC LAMINATE & LETTERING COLORS

6 SIGN - TYPE 'M'
6" = 1'-0"



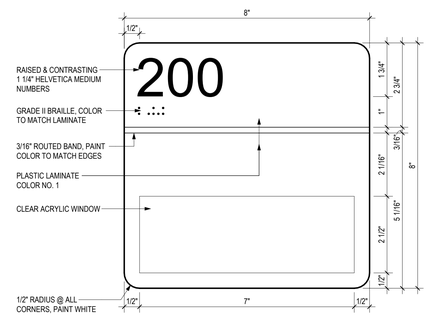

**NOTE:**
1. SEE SIGN TYPE "A" FOR PLASTIC LAMINATE & LETTERING COLORS

5 SIGN - TYPE 'D'
6" = 1'-0"



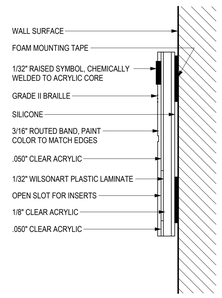

**NOTE:**
1. SEE SIGN TYPE "A" FOR PLASTIC LAMINATE & LETTERING COLORS

4 SIGN - TYPE 'B'
6" = 1'-0"

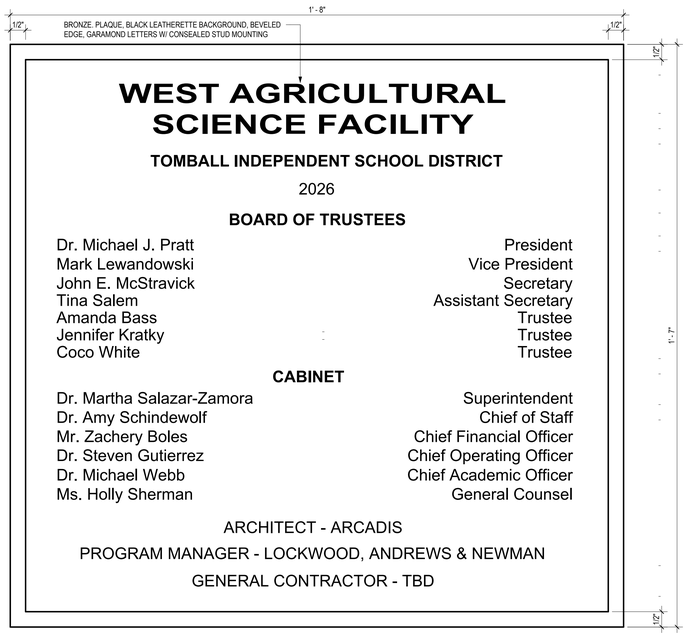



| PLASTIC LAMINATE | | RAISED LETTERING |
|---|---|---|
| # | WILSONART COLOR/ NUMBER | |
| 1 | PL-1, ARCHITECT TO SELECT | BLACK |

3 SIGN - TYPE 'A'
6" = 1'-0"




2 SIGN - TYPE 'A' SECTION
6" = 1'-0"




1 SIGN - BUILDING PLAQUE
6" = 1'-0"

PLAN NORTH

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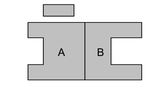


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REGISTERED ARCHITECT — JOSHUA WATTS — 25348 — STATE OF TEXAS

07/28/2025

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A12.00

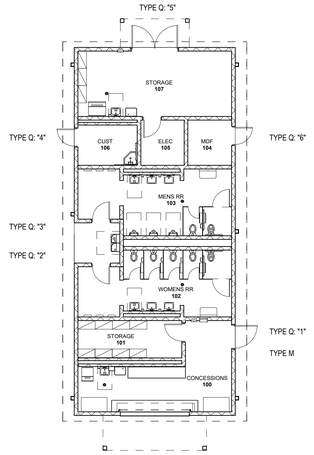
SIGNAGE DETAILS

## AG BARN - GRAPHIC SCHEDULE

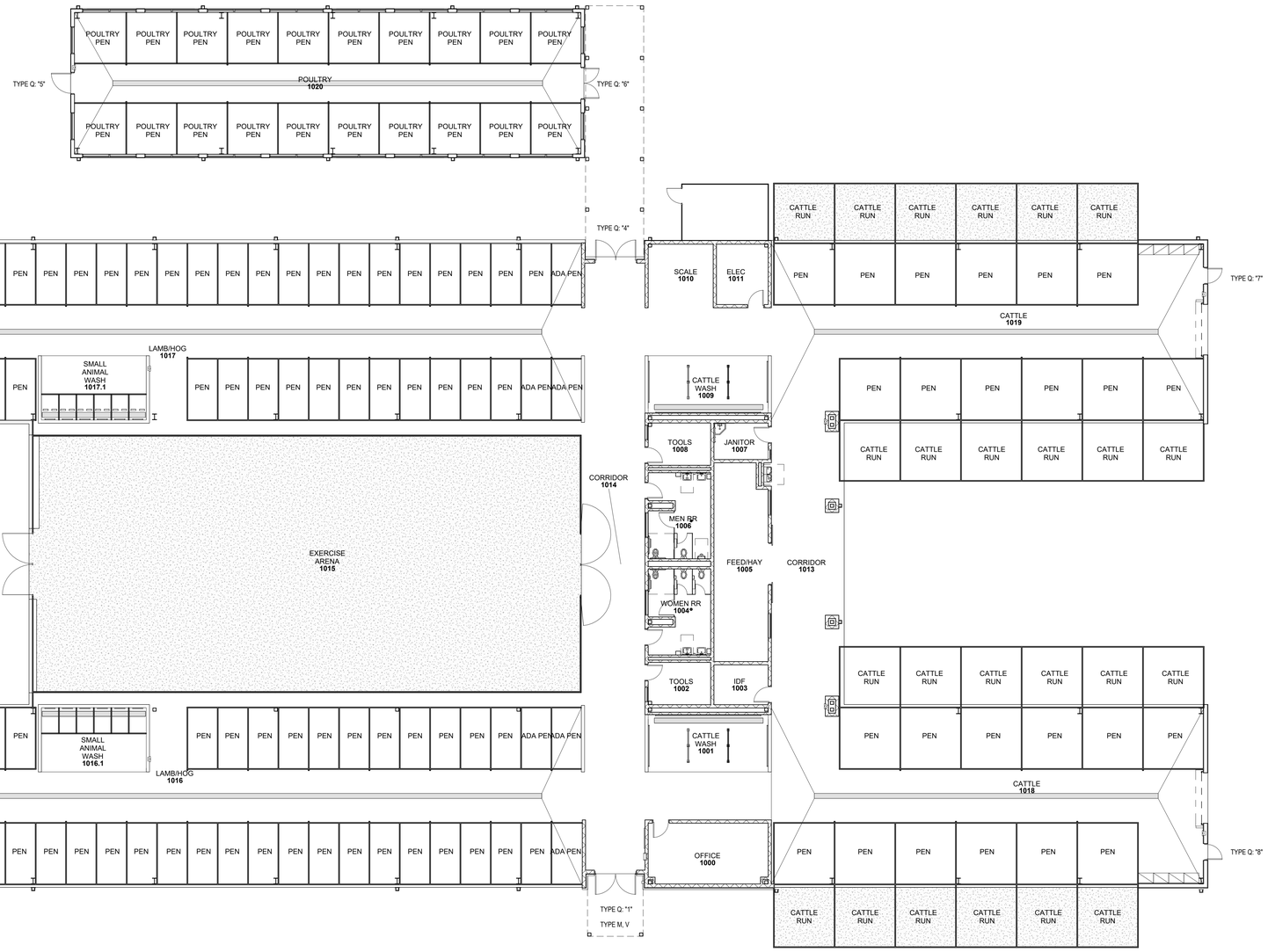
| ROOM # | ROOM NAME | GRAPHIC # | GRAPHIC NAME | PLAQUE TYPE | SEX ID | ADA SYMBOL | QTY | BCKR PLT(S) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| 1000 | OFFICE | 1000 | OFFICE | A | | | 1 | | |
| 1001 | CATTLE WASH | 1001 | WASH | B | | | 1 | | |
| 1002 | TOOLS | 1002 | TOOLS | B | | | 1 | | |
| 1003 | IDF | 1003 | IDF | B | | | 1 | | |
| 1004 | WOMEN RR | 1004 | WOMEN | D | | | 1 | | |
| 1005 | FEED/HAY | 1005 | FEED/HAY | B | | | 1 | | |
| 1006 | MEN RR | 1006 | MEN | D | | | 1 | | |
| 1007 | JANITOR | 1007 | CUSTODIAL | B | | | 1 | | |
| 1008 | TOOLS | 1008 | TOOLS | B | | | 1 | | |
| 1009 | CATTLE WASH | 1009 | WASH | B | | | 1 | | |
| 1010 | SCALE | 1010 | STORAGE | B | | | 1 | | |
| 1011 | ELEC | 1011 | MECHANICAL | B | | | 1 | | |
| 1013 | CORRIDOR | | | | | | | | |
| 1014 | CORRIDOR | | | Q (2) | | | 1 | | |
| 1015 | EXERCISE ARENA | | | | | | | | |
| 1016 | LAMB/HOG | | | Q | | | 1 | | |
| 1016.1 | SMALL ANIMAL WASH | | | | | | | | |
| 1017 | LAMB/HOG | | | Q | | | 1 | | |
| 1017.1 | SMALL ANIMAL WASH | | | | | | | | |
| 1018 | CATTLE | | | Q | | | 1 | | |
| 1019 | CATTLE | | | Q | | | 1 | | |
| 1020 | POULTRY | 1020 | POULTRY | B (2), Q (2) | | | 4 | | |

## FIELD HOUSE - GRAPHIC SCHEDULE

| ROOM # | ROOM NAME | GRAPHIC # | GRAPHIC NAME | PLAQUE TYPE | SEX ID | ADA SYMBOL | QTY | BCKR PLT(S) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| 100 | CONCESSIONS | 100 | CONCESSION | B, M, Q | | | 3 | | |
| 101 | STORAGE | 101 | STORAGE | B | | | 1 | | |
| 102 | WOMENS RR | 102 | WOMEN | D, Q | FEMALE | YES | 2 | | |
| 103 | MENS RR | 103 | MEN | D, Q | MALE | YES | 2 | | |
| 104 | MDF | 104 | MDF | B, Q | | | 2 | | |
| 105 | ELEC | 105 | ELECTRICAL | B | | | 1 | | |
| 106 | CUST | 106 | CUSTODIAL | B, Q | | | 2 | | |
| 107 | STORAGE | 107 | STORAGE | B, Q | | | 2 | | |




2 1ST FLOOR GRAPHICS PLAN - FIELD HOUSE
3/32" = 1'-0"




1 1ST FLOOR GRAPHICS PLAN
3/32" = 1'-0"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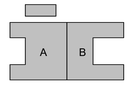


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# A12.01

SIGNAGE PLAN AND DETAILS

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AIR (COMPRESSED) |
| ABV | ABOVE |
| A/C | AIR CONDITIONING |
| AC | ALTERNATING CURRENT, AIR COMPRESSOR |
| ACCH | AIR COOLED CHILLER |
| ACCU | AIR COOLED CONDENSING UNIT |
| AD | ACCESS DOOR, AREA DRAIN |
| ADJ | ADJUSTABLE |
| AF | AIR FILTER |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AHRI | AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE |
| AHU | AIR HANDLING UNIT |
| AL | ALUMINUM |
| AMB | AMBIENT |
| AP | ACCESS PANEL |
| APD | AIR PRESSURE DROP |
| ARCH | ARCHITECT, ARCHITECTURAL |
| AS | AIR SEPARATOR |
| ASHP | AIR SOURCE HEAT PUMP |
| ASHRAE | AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY OF TESTING AND MATERIALS |
| AVG | AVERAGE |
| AWS | AMERICAN WELDING SOCIETY |
| AUX | AUXILIARY |

## B

| | |
|---|---|
| B | BOILER |
| BC | BELOW COUNTER |
| B/C | BACK OF CURB |
| BFF | BELOW FINISHED FLOOR |
| BFV | BUTTERFLY VALVE |
| BLDG | BUILDING |
| BM | BENCHMARK |
| BOF | BOTTOM OF FOOTING |
| BOS | BOTTOM OF STRUCTURE |
| BP | BACKFLOW PREVENTER |
| BTU | BRITISH THERMAL UNIT |
| BV | BALL VALVE |

## C

| | |
|---|---|
| C | CELSIUS |
| CAB | CABINET |
| CD | CONDENSATE DRAIN LINE |
| CFM | CUBIC FEET PER MINUTE |
| CFS | CUBIC FEET PER SECOND |
| CH | CHILLER |
| CHR | CHILLED WATER RETURN |
| CHS | CHILLED WATER SUPPLY |
| CHW | CHILLED WATER |
| CHWP | CHILLED WATER PUMP |
| CI | CAST IRON |
| CIRC | CIRCULATING |
| CL | CENTERLINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| COMB | COMBINATION |
| COMP | COMPRESSOR |
| CONC | CONCRETE, CONCENTRIC |
| COND | CONDENSER, CONDENSATE |
| CONN | CONNECTION |
| CONT | CONTINUOUS,CONTINUATION |
| CTR | CENTER |
| CU | COPPER |
| CV | CONSTANT VOLUME |

## D

| | |
|---|---|
| D | DEPTH, DRAIN, DRYER |
| DB | DRY BULB |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DDMB | DUAL DUCT MIXING BOX |
| DESIG | DESIGNATION |
| DTL | DETAIL |
| DIA | DIAMETER |
| DIFF | DIFFUSER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN |
| DPR | DAMPER |
| DW | DISHWASHER |
| DWG | DRAWING |
| DX | DIRECT EXPANSION |

## E

| | |
|---|---|
| EA | EACH |
| EAT | ENTERING AIR TEMPERATURE |
| EC | ELECTRICAL CONTRACTOR |
| ECC | ECCENTRIC |
| EDB | ENTERING DRY BULB |
| EDH | ELECTRIC DUCT HEATER |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRICAL |
| EMERG | EMERGENCY |
| ENCL | ENCLOSURE |
| ENGR | ENGINEER |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ESP | EXTERNAL STATIC PRESSURE |
| ET | EXPANSION TANK |
| ETD | EXISTING TO BE DEMOLISHED |
| ETR | EXISTING TO REMAIN |
| EUH | ELECTRIC UNIT HEATER |
| EVAP | EVAPORATOR |
| EWB | ENTERING WET BULB |
| EWT | ENTERING WATER TEMPERATURE |
| EX | EXPLOSION PROOF |
| EXT | EXTERNAL |
| EXTG | EXISTING |

## F

| | |
|---|---|
| F | FAHRENHEIT, FIRE |
| FBO | FURNISHED BY OTHERS |
| FCU | FAN COIL UNIT |
| FD | FLOOR DRAIN, FIRE DAMPER |
| FLA | FULL LOAD AMPS |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FPTU | FAN POWERED TERMINAL UNIT |
| FT | FOOT, FEET |
| FUT | FUTURE |

## G

| | |
|---|---|
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GLV | GLOBE VALVE |
| GND | GROUND |
| GPM | GALLONS PER MINUTE |
| GUH | GAS UNIT HEATER |
| GV | GATE VALVE |

## H

| | |
|---|---|
| HDT | HORIZONTAL DRAW THROUGH |
| HORIZ | HORIZONTAL |
| HP | HORSEPOWER, HEAT PUMP |
| HSTAT | HUMIDISTAT |
| HT | HEIGHT |
| HTG | HEATING |
| HTR | HEATER |
| HW | HOT WATER |
| HWP | HEATING WATER PUMP |
| HWR | HOT WATER RETURN |
| HWS | HOT WATER SUPPLY |
| HX | HEAT EXCHANGER |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IH | INFRARED HEATER |
| IN | INCH |
| INSUL | INSULATION |
| INT | INTERNAL, INTERIOR |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPMENT CONTRACTOR |
| KO | KNOCKOUT |
| KVA | KILOVOLT- AMPS |
| KW | KILOWATT |

## L

| | |
|---|---|
| L | LENGTH |
| LAT | LEAVING AIR TEMPERATURE |
| LF | LINEAR FEET |
| LP | LOW PRESSURE |
| LRA | LOCKED ROTOR AMPS |
| LVL | LEVEL |
| LWB | LEAVING WET BULB |
| LWCO | LOW WATER CUT OFF |
| LWT | LEAVING WATER TEMPERATURE |

## M

| | |
|---|---|
| MAT | MIXED AIR TEMPERATURE |
| MAX | MAXIMUM |
| MBTUH | THOUSAND OF BTU'S |
| MC | MECHANICAL CONTRACTOR |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MI | MALLEABLE IRON |
| MIN | MINIMUM |
| MP | MEDIUM PRESSURE |
| MTD | MOUNTED |
| MU | MAKE-UP |
| MVD | MANUAL VOLUME DAMPER |
| MSAH | MINI-SPLIT AIR HANDLER |
| MSCU | MINI-SPLIT CONDENSING UNIT |
| MZ | MULTI-ZONE |

## N

| | |
|---|---|
| N.C. | NORMALLY CLOSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NIC | NOT IN CONTRACT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| OA | OUTSIDE AIR |
| OAF | OUTSIDE AIR FAN |
| OAHU | OUTSIDE AIR HANDLING UNIT |
| OBD | OPPOSED BLADE DAMPER |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER, OVERFLOW DRAIN |
| OFCU | OUTSIDE AIR FAN COIL UNIT |
| OPG | OPENING |
| OS&Y | OUTSIDE SCREW AND YOKE |

## P

| | |
|---|---|
| PG | PRESSURE GAUGE |
| PP | POLYPROPYLENE |
| PPM | PART PER MILLION |
| PRI | PRIMARY |
| PRS | PRESSURE REDUCING STATION |
| PRV | PRESSURE REDUCING VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PV | PLUG VALVE |
| PVC | POLYVINYL CHLORIDE |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| RA | RETURN AIR |
| RAD | REFRIGERATED AIR DRYER |
| RAF | RETURN AIR FAN |
| RAG | RETURN AIR GRILLE |
| RAT | RETURN AIR TEMPERATURE |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| RE | REFERENCE, REFER |
| RED | REDUCER |
| REFR | REFRIGERATOR |
| REG | REGISTER |
| REINF | REINFORCING |
| REQD | REQUIRED |
| REV | REVISION, REVISE |
| RH | RELATIVE HUMIDITY |
| RHG | REFRIGERANT HOT GAS |
| RL | REFRIGERANT LIQUID |
| RLA | RUNNING LOAD AMPS |
| RM | ROOM |
| RPM | REVOLUTIONS PER MINUTE |
| RS | REFRIGERANT SUCTION |
| RTU | ROOFTOP UNIT |
| RV | RELIEF VALVE |

## S

| | |
|---|---|
| SA | SUPPLY AIR |
| SAF | SUPPLY AIR FAN |
| SAG | SUPPLY AIR GRILLE |
| SAR | SUPPLY AIR REGISTER |
| SC | STEAM CONDENSATE |
| SCHED | SCHEDULED |
| SEC | SECONDARY |
| SECT | SECTION |
| SENS | SENSIBLE |
| SF | SQUARE FEET |
| SFCS | SPRINKLER FLOOR CONTROL STATION |
| SH | SHOWER |
| SHT | SHEET |
| SIM | SIMILAR |
| SM | SHEETMETAL |
| SP | STATIC PRESSURE, SUMP PUMP |
| SPEC | SPECIFICATION |
| SPR | SPRINKLER |
| SQ | SQUARE |
| SS | STAINLESS STEEL |
| SSSC | SOLID STATE SPEED CONTROL |
| STD | STANDARD |
| STL | STEEL |
| STM | STEAM |
| STR | STRAINER |
| SURF | SURFACE |
| SUSP | SUSPEND |
| SV | SANITARY VENT |
| SW | SOFT WATER |
| SZ | SINGLE ZONE |

## T

| | |
|---|---|
| TC | TEMPERATURE CONTROL |
| TDH | TOTAL DYNAMIC HEAD |
| TF | TRANSFER FAN |
| TH BLK | THRUST BLOCK |
| THERM | THERMOMETER |
| TMV | THERMOSTATIC MIXING VALVE |
| TSP | TOTAL STATIC PRESSURE |
| TSTAT | THERMOSTAT |
| TW | TEMPERED HOT WATER |
| TYP | TYPICAL |

## U

| | |
|---|---|
| UCD | UNDER CUT DOOR |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC |
| UNO | UNLESS NOTED OTHERWISE |
| U/F | UNDERFLOOR |
| U/S | UNDERSLAB |

## V

| | |
|---|---|
| V | VOLT |
| VA | VOLT- AMPERE |
| VAC | VACUUM |
| VAV | VARIABLE AIR VOLUME |
| VB | VALVE BOX, VACUUM BREAKER |
| VD | VOLUME DAMPER |
| VDT | VERTICAL DRAW THROUGH |
| VEL | VELOCITY |
| VERT | VERTICAL |
| VFD | VARIABLE FREQUENCY DRIVE |
| VIB | VALVE IN BOX |
| VOV | VALVE ON VERTICAL |
| VP | VACUUM PUMP |
| VRF | VARIABLE REFRIGERANT FLOW |
| VVR | VARIABLE AIR VOLUME REHEAT |

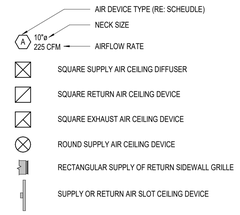
## W

| | |
|---|---|
| W | WATT, WIDTH |
| W/ | WITH |
| W/O | WITHOUT |
| WB | WET BULB |
| WM | WATER METER |
| WP | WEATHERPROOF |
| WPD | WATER PRESSURE DROP |
| WSHP | WATER SOURCE HEAT PUMP |
| WWF | WELDED WIRE FABRIC |

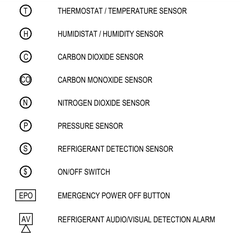
## Z

| | |
|---|---|
| Z | ZONE |

# AIR DEVICE TYPES




# WALL MOUNTED SENSOR AND DEVICE TYPES




# CONTROLS SCHEMATIC SYMBOLS LEGEND

| | | | |
|---|---|---|---|
| AI | ANALOG INPUT | FS | FLOW SWITCH |
| AO | ANALOG OUTPUT | DAT | DISCHARGE AIR TEMPERATURE SENSOR |
| DI/BI | DIGITAL/BINARY INPUT | S | WALL SENSOR |
| DO/BO | DIGITAL/BINARY OUTPUT | T | THERMOSTAT |
| MD | ON-OFF MOTORIZED DAMPER | CO2 | CARBON DIOXIDE SENSOR |
| MMD | MODULATING TYPE MOTORIZED DAMPER | SP | SET POINT |
| AFMS | AIR FLOW MEASURING STATION | S/A | SUPPLY AIR |
| MCV | CONTROL VALVE MODULATING TYPE | R/A | RETURN AIR |
| VFD | VARIABLE FREQUENCY DRIVE | O/A | OUTSIDE AIR |
| CSR | CURRENT SENSING RELAY | HC | HEATING COIL |
| FRZ | FREEZESTAT | CC | COOLING COIL |
| HSL | HIGH STATIC LIMIT | DX | DIRECT EXPANSION COOLING COIL |
| SPT | STATIC PRESSURE TRANSMITTER | PICCV | PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE |
| DPT | DIFFERENTIAL PRESSURE TRANSDUCER | AFC | AIRFLOW CROSS |
| FM | FLOW METER | DPS | DIFFERENTIAL PRESSURE SWITCH |

# PIPING TYPES

| | | | |
|---|---|---|---|
| CD | CONDENSATE DRAIN LINE | REF | REFRIGERANT PIPING SIZED BY MFR. |
| CHS | CHILLED WATER SUPPLY | HPS | HIGH PRESSURE STEAM SUPPLY |
| CHR | CHILLED WATER RETURN | HPR | HIGH PRESSURE CONDENSATE RETURN |
| HWS | HOT WATER SUPPLY | LPS | LOW PRESSURE STEAM SUPPLY |
| HWR | HOT WATER RETURN | LPR | LOW PRESSURE CONDENSATE RETURN |
| CWS | CONDENSER WATER SUPPLY | PCR | PUMPED CONDENSATE RETURN |
| CWR | CONDENSER WATER RETURN | | |

# DESIGN CRITERIA

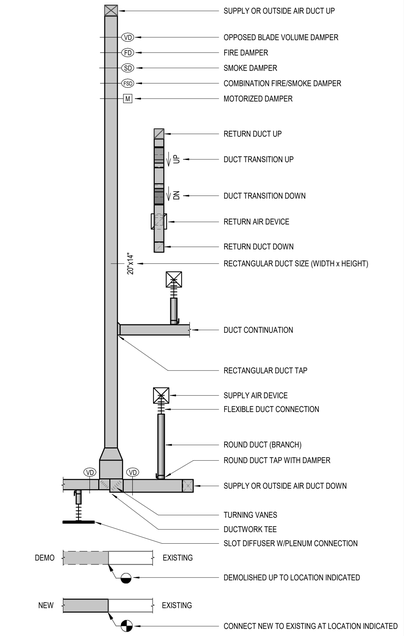
LOCATION:
BERRY POINT DR, CYPRESS TX, 77433

| | |
|---|---|
| ELEVATION: | 168 FEET |
| DESIGN CONDITIONS: | |
| HEATING DB: | 29.8 °F (ASHRAE 99.6%) |
| COOLING DB / WB: | 98.1 °F / 75.9 °F (ASHRAE 0.4%) |
| DEHUMIDIFICATION DP / DB: | 78.7 °F / 82.5 °F (ASHRAE 0.4%) |
| SPACE INDOOR DESIGN TEMPERATURE: | |
| HEATING DB: | 70 °F |
| COOLING DB: | 75 °F |
| RELATIVE HUMIDITY | 55% |

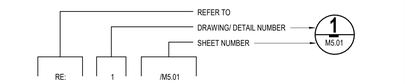
# BUILDING CODES & STANDARDS

APPLICABLE CODES:
2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL FIRE CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 INTERNATIONAL PLUMBING CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE
2021 INTERNATIONAL FUEL GAS CODE
2023 NATIONAL ELECTRICAL CODE

# DUCTWORK




# DRAWING/DETAIL REFERENCE KEY





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A B

**WEST AGRICULTURAL SCIENCE FACILITY**

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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER 7/28/25

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

**M0.01**

MECHANICAL SYMBOL LEGEND


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


SS | CC/TD/DT/DL | JD | RT

# MECHANICAL GENERAL NOTES

A. MECHANICAL DRAWINGS AND SPECIFICATIONS ARE DIAGRAMMATIC IN NATURE AND INTENDED TO DESCRIBE AND ILLUSTRATE SYSTEMS THAT WILL NOT INTERFERE WITH THE ARCHITECTURAL / STRUCTURAL CONDITIONS OF THE BUILDING AND WILL FIT INTO AVAILABLE SPACES. CONTRACTOR SHALL COORDINATE ALL WORK TO CONFORM TO THE ARCHITECTURAL, STRUCTURAL, FINISH CONDITIONS, EQUIPMENT MANUFACTURER / FIXTURE CUTSHEETS AND WITH OTHER TRADES, TO AVOID OBSTRUCTIONS, AND TO ALLOW THE PROPER INSTALLATION OF EACH ITEM. EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER'S DRAWINGS AND CUTSHEETS PRIOR TO FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS. CONTRACTOR SHALL OBTAIN ALL ARCHITECTURAL DRAWINGS AND STRUCTURAL DATA, LOCATIONS OF PIERS, BEAMS, COLUMNS, JOISTS, ETC., FROM STRUCTURAL DRAWINGS AND PROVIDE OFFSETS, RELOCATIONS, ETC., AS REQUIRED TO MEET THIS INTENT AT NO ADDITIONAL COST. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.

B. CONTRACTOR SHALL BE RESPONSIBLE TO EXAMINE ALL THE CONTRACT DOCUMENTS CAREFULLY BEFORE SUBMITTING THEIR BID, WITH PARTICULAR ATTENTION TO ERRORS, OMISSIONS, CONFLICTS WITH PROVISIONS OF LAWS AND CODES HAVING JURISDICTION, CONFLICTS BETWEEN DRAWINGS OR DRAWINGS AND SPECIFICATIONS, AND AMBIGUOUS DEFINITION OF THE EXTENT OF COVERAGE BETWEEN CONTRACTS. ANY SUCH DISCREPANCY SHALL BE BROUGHT IMMEDIATELY TO ATTENTION FOR CORRECTION. SHOULD ANY OF THESE ERRORS, OMISSIONS, CONFLICTS, OR AMBIGUITIES EXIST, THE CONTRACTOR SHALL HAVE THEM EXPLAINED AND AT THEIR EXPENSE, SUPPLY THE PROPER MATERIALS AND LABOR TO MAKE GOOD ANY DAMAGE OR DEFECTS IN THEIR WORK OR THE RESULTS OBTAINED THEREFORE, CAUSED BY SUCH DISCREPANCY. THE CONTRACTOR SHALL MAKE A CAREFUL EXAMINATION OF THE PREMISES AND THOROUGHLY FAMILIARIZE THEMSELF WITH THE REQUIREMENTS OF THE CONTRACT. UPON COMMENCEMENT OF THE CONSTRUCTION FOR THE WORK INCLUDED IN THIS CONTRACT, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY OR EXAMINATION AND ACCEPTS ALL CONDITIONS.

C. WHEREVER CONFLICTS OCCUR BETWEEN DIFFERENT PARTS OF THE CONTRACT DOCUMENTS (SUCH AS DRAWINGS AND SPECIFICATIONS), THE GREATER QUANTITY, THE BETTER QUALITY, THE LARGER SIZE, OR THE VALUE WITH THE GREATEST COST IMPACT SHALL PREVAIL UNLESS THE ARCHITECT INFORMS THE CONTRACTOR OTHERWISE IN WRITING. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING DATA: DIMENSIONS, GAUGE THICKNESS, TEMPERATURES, PRESSURE, BTUH, SCHEDULE / TIME DURATION, ELECTRICAL RATING, MATERIAL, SAFETY RATING, ENERGY EFFICIENCY, ETC.

D. CONTRACTOR SHALL PROVIDE A MECHANICAL INSTALLATION THAT IS COMPLETE AND ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLY INCIDENTAL, OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFICALLY CALLED OUT OR SHOWN. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS, LABOR, SUPERVISION AND SERVICE NECESSARY SO AS TO PROVIDE A COMPLETE, FUNCTIONING MECHANICAL SYSTEM.

E. ALL EQUIPMENT, PIPING, DUCTWORK, ETC. SHALL BE LOCATED APPROXIMATELY IN GENERAL LOCATIONS SHOWN AND SHALL CONFORM TO ALL ARCHITECTURAL AND STRUCTURAL CONDITIONS. PROVIDE ANY ADDITIONAL SUPPORTS, HANGERS, OPENINGS, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS ENSURING THAT ACCESS PANELS ARE NOT BLOCKED. EXPERIENCED CRAFTSMEN SHALL MAKE THE INSTALLATION OF ALL EQUIPMENT IN A NEAT WORKMANSHIP-LIKE MANNER. EQUIPMENT SHALL BE AS SCHEDULED OR APPROVED EQUAL. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH ALL APPLICABLE CODES HAVING JURISDICTION. COORDINATE BETWEEN ALL TRADES PRIOR TO STARTING ANY WORK. PROVIDE ADEQUATE CLEARANCE FOR PROPER OPERATION, SERVICE/ MAINTENANCE, AIR FLOW, ETC. PIPING AND DUCTWORK ARE NOT PERMITTED IN ELECTRICAL, ELEVATOR MACHINE, TELECOM, IT, AND COMMUNICATION ROOMS. ALL ELEVATIONS INDICATED IN THIS WAY ( 8' – 4" ) ARE THE ELEVATIONS FROM THE FINISHED FLOOR DIRECTLY BELOW TO THE BOTTOM OF THE BARE PIPE OR DUCT.

F. EXECUTE ALL WORK FOLLOWING LOCAL, STATE AND/OR NATIONAL CODES, ORDINANCES AND REGULATIONS GOVERNING THE PARTICULAR CLASS OF WORK INVOLVED. THE GOVERNING CODES ARE MINIMUM REQUIREMENTS. THE DRAWINGS AND/OR SPECIFICATIONS SHALL PREVAIL WHERE THE DRAWINGS ARE/OR ACCOMPANYING SPECIFICATIONS EXCEED THE CODE REQUIREMENTS.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING AND PAYING ALL FEES AND OBTAINING NECESSARY PERMITS AND CERTIFICATES OF INSPECTION. THE CONTRACTOR SHALL DELIVER ALL CERTIFICATES OF INSPECTION TO OWNER/CONSTRUCTION MANAGER INCLUDING COPIES WITH MAINTENANCE MANUALS.

H. CONTRACTOR SHALL PROVIDE DETAILED AND DIMENSIONED HVAC DUCTWORK AND PIPING FABRICATION SHOP DRAWINGS FOR APPROVAL BY THE ARCHITECT / ENGINEER, DURING THE INSTALLATIONS OF THE WORK, THE CONTRACTOR SHALL KEEP DETAILED RECORDS OF ANY AND ALL CHANGES MADE FROM THE WORK AS ACTUALLY INSTALLED. THESE RECORD DRAWINGS SHALL BE NOTED "AS-BUILT", AND SUBMITTED TO THE ARCHITECT / ENGINEER FOR REVIEW WITH ALL O&M MANUALS.

I. PROPERLY SUPPORT ALL EQUIPMENT, DUCTWORK AND PIPING WITHIN THE BUILDING AND PROVIDE ADEQUATE PROVISIONS FOR SLOPE AND ANCHORAGE. CONTRACTOR SHALL USE HANGERS, RODS AND INSERTS LISTED BY UNDERWRITERS' LABORATORIES FOR THE SERVICE INTENDED, SECURELY SUPPORTED BY STRUCTURAL MEMBERS WHICH IN TURN ARE SUPPORTED DIRECTLY FROM THE BUILDING STRUCTURE.

J. CLEARANCE REQUIREMENTS BETWEEN MECHANICAL COMPONENTS AND SWITCHBOARDS, PANELBOARDS, POWER PANELS, MOTOR CONTROL CENTERS AND TRANSFORMERS SHALL CONFORM TO THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE.

K. DUCTWORK AND PIPING SHALL BE INSTALLED CONCEALED ABOVE CEILINGS, INSIDES CHASES / WALLS, ETC. IN GENERAL LOCATIONS SHOWN, UNLESS NOTED OTHERWISE. CONFORM TO ALL ARCHITECTURAL, STRUCTURAL, AND FINISH CONDITIONS OF THE BUILDING. WHEREVER CONDITIONS ARISE WHICH WILL CAUSE NORMALLY CONCEALED MATERIALS TO BE EXPOSED, IMMEDIATELY CALL THE SITUATION TO THE ATTENTION OF THE ARCHITECT AND STOP WORK IN THOSE AREAS UNTIL THE ARCHITECT DIRECTS THE RESUMPTION OF THE WORK AND THE PROCEDURES TO BE FOLLOWED. ALL DUCTWORK, PIPING AND ASSOCIATED ACCESSORIES IN OCCUPIED AREAS THAT ARE EXPOSED TO VIEW SHALL BE PAINTED. REFER TO ARCHITECT FOR COLOR. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS. IN ANY CASE WHERE A PIPE OR DUCT SHOWN ON THE PLAN SHEET DIFFERS FROM THAT SHOWN IN A SCHEMATIC OR DETAIL, PROVIDE THE LARGER OF THE TWO SIZES SHOWN.

L. SLOPE AND ARRANGE HVAC PIPING TO ESTABLISH HIGH POINTS FOR AIR ELIMINATION AND LOW POINTS TO PERMIT PROPER DRAINAGE. PROVIDE AIR VENTS AT HIGH POINTS AND DRAIN VALVES AT LOW POINTS. ALL PIPING SHOWN ON FLOOR PLANS SHALL BE ROUTED ABOVE THE CEILING ON THE FLOOR WHERE IT IS SHOWN, UNLESS OTHERWISE NOTED. ARRANGE PIPING CONNECTIONS TO ALL EQUIPMENT TO ALLOW EASY REMOVAL OF EQUIPMENT, COILS, FANS, MOTORS, FILTERS, ACCESS PANELS, ETC. PROVIDE UNIONS, FLANGES, AND VALVES AT CONNECTIONS. ALL EXTERIOR PIPING SHALL BE INSULATED AND JACKETED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. PIPING RUN-OUTS TO TERMINAL UNITS SHALL BE 3/4" UNLESS OTHERWISE NOTED. MINIMUM PIPE SIZE FOR THE PROJECT SHALL BE 3/4".

M. WALL MOUNTED THERMOSTATS / HUMIDISTATS / SENSORS SHALL BE MOUNTED AT 42" A.F.F. APPROX. WHERE INDICATED ON PLANS, UNLESS OTHERWISE NOTED. SENSOR LOCATION SHALL BE MAX 12" FROM END OF WALL AND/OR DOOR JAMB. COORDINATE EXACT LOCATIONS WITH ARCHITECT, ELECTRICAL CONTRACTOR, AND BETWEEN OTHER TRADES PRIOR TO MOUNTING. DO NOT MOUNT ABOVE DIMMERS. THERMOSTATS ON EXTERIOR WALLS OR WALLS SEPARATING CONDITIONED SPACE FROM UNCONDITIONED SPACE SHALL BE INSULATED. THERMOSTATS / HUMIDISTATS / SENSORS SHALL NOT BE INSTALLED ON DECORATIVE WALLS.

N. FIRE, SMOKE, AND FIRE/SMOKE DAMPERS SHALL BE INSTALLED AS INDICATED AND WHERE OTHERWISE REQUIRED BY LOCAL CODES AND ORDINANCES. REFER TO ARCHITECTURAL DRAWINGS / BUILDING CODE SUMMARY / LIFE SAFETY PLANS FOR LOCATIONS OF ALL FIRE RESISTANT / RATED WALLS, CEILINGS, CHASES, SHAFTS, SMOKE COMPARTMENTS, AND LOCATIONS OF EGRESS CORRIDORS. DAMPER SIZES INDICATED ARE CLEAR INSIDE AIRSTREAM DIMENSIONS. PROVIDE MEANS TO ADEQUATELY SERVICE THE DAMPER'S FUSIBLE LINKS. PROVIDE 12" X 12" MINIMUM METAL ACCESS DOORS IN ALL GYPBOARD AND PLASTER CEILINGS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND UL LISTING FOR SERVICE INTENDED. PROVIDE METAL SLEEVES AS REQUIRED. PROVIDE ACCESS DOORS IN DUCTWORK AT ALL FIRE, SMOKE, AND FIRE/SMOKE DAMPERS. ALL SMOKE AND FIRE/SMOKE DAMPERS REQUIRE INTEGRAL SMOKE DETECTORS AND SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. IDENTIFY ACCESS DOORS IN ACCORDANCE WITH SPECIFICATIONS AND CODE.

O. ALL DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR HVAC DUCT CONSTRUCTION. IN NO CASE SHALL THE DUCTWORK BE LESS THAN 26 GAUGE FOR LOW PRESSURE DUCTWORK AND 24 GAUGE FOR MEDIUM PRESSURE DUCTWORK. ALL DUCTWORK SHALL BE CONSTRUCTED TO SEAL CLASS 'A' AS REFERENCED IN SMACNA STANDARDS. ALL NON-WELDED JOINTS AND SEAMS SHALL BE SEALED. THIS INCLUDES BUT IS NOT LIMITED TO TRANSVERSE JOINTS, LONGITUDINAL SEAMS, DUCT WALL PENETRATIONS, SPIN-INS, TAPS, AND OTHER BRANCH CONNECTIONS, ACCESS DOORS, ACCESS PANELS, AND DUCT CONNECTIONS TO EQUIPMENT. OPENINGS FOR ROTATING SHAFTS SHALL ALSO BE SEALED WITH BUSHINGS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

P. ALL OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR DUCTWORK AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHERE LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED WITH A MINIMUM OF R-8 INSULATION WHERE LOCATED OUTSIDE THE BUILDING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

Q. CEILING-MOUNTED AIR DEVICES SHALL BE LOCATED APPROXIMATELY AS SHOWN. COORDINATE FRAME MOUNTING TYPES FOR AIR DEVICES WITH CEILING TYPES INDICATED ON ARCHITECTURAL REFLECTED CEILING PLAN. ALL CEILING DIFFUSERS TO BE 4-WAY TYPE, UNLESS NOTED OTHERWISE BY AIRFLOW ARROWS ON FLOOR PLAN. INSULATE THE BACKSIDE OF ALL CEILING AIR DEVICES. REFER TO PLANS AND AIR DEVICE SCHEDULE FOR SIZE OF DUCT RUNOUT AND AIR DEVICE CONNECTION SIZE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR LOCATIONS, OF ALL CEILING FEATURES, LIGHTS, AIR DEVICES, FINISHES, CEILING HEIGHTS AND ELECTRICAL DRAWINGS FOR SPEAKERS, DETECTORS, POWER OUTLETS, ETC. AND FIRE PROTECTION SHOP DRAWINGS FOR FIRE SPRINKLER HEADS. COORDINATE FINAL LOCATIONS WITH ARCHITECT AND BETWEEN TRADES PRIOR TO MOUNTING. ALL CEILING MOUNTED AND WALL MOUNTED AIR DEVICE FINISHES SHALL MATCH ADJACENT ARCHITECTURAL SURFACE UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.

R. BRANCH DUCT RUN-OUTS TO AIR DEVICES SHALL BE SAME SIZE AS NECK, UNLESS NOTED OTHERWISE. PROVIDE A SPIN-IN TAP WITH MANUAL VOLUME DAMPER AT MAIN DUCT TAP AND EXTEND AS SHOWN. EXTEND FLEX DUCTWORK A MAXIMUM OF 5'-0" FROM AIR DEVICES. INSTALL AS STRAIGHT AS POSSIBLE WITH LONG RADIUS BENDS WITH CLAMPS TO BE USED AT BOTH ENDS. ALL DAMPERS LOCATED ABOVE INACCESSIBLE CEILINGS SHALL BE PROVIDED WITH REMOTE DAMPER OPERATORS.

S. TURNING VANES SHALL BE INSTALLED IN ALL MITERED ELBOWS AND AIR EXTRACTORS. PROVIDE ADEQUATE ACCESS AND MEANS TO ADJUST / BALANCE ALL AIR EXTRACTORS. TURNING VANES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR HVAC DUCT CONSTRUCTION.

T. MEDIUM PRESSURE BRANCH DUCT RUN-OUTS TO AIR TERMINAL UNITS SHALL BE SAME SIZE AS AIR TERMINAL UNIT INLET, UNLESS NOTED OTHERWISE. INCREASE DUCT SIZE BY 2" IF THE DISTANCE BETWEEN THE MAIN DUCT AND THE TERMINAL UNIT INLET IS GREATER THAN 6'-0" AND / OR UTILIZES MORE THAN 2-90 DEGREE ELBOWS. PROVIDE A SPIN-IN FLARED CONICAL TAP AT MEDIUM PRESSURE DUCT MAIN AND EXTEND AS SHOWN. FLEXIBLE DUCTWORK SHALL NOT BE USED TO MAKE CHANGES IN DIRECTION IN MEDIUM PRESSURE DUCT.

U. ACCESS PANELS SHALL BE PROVIDED FOR EACH LOCATION WHERE EQUIPMENT, MANUAL VALVES, AUTOMATIC CONTROL VALVES, AUTOMATIC DAMPER MECHANISMS, FIRE/SMOKE DAMPERS, ETC., ARE INSTALLED BEHIND FURRINGS, CHASES, OR ABOVE INACCESSIBLE CEILINGS. SIZE AND POSITION EACH ACCESS PANEL SO THAT THE CONCEALED EQUIPMENT CAN BE PROPERLY SERVICED, MINIMUM SIZE SHALL BE 18" X 18" UNLESS FIELD CONDITIONS DICTATE OTHERWISE. REFER TO ARCHITECTURAL DRAWINGS / SPECIFICATIONS AND COORDINATE WITH GENERAL CONTRACTOR FOR EXACT LOCATION, CONDITIONS, SIZES, FINISHES, ETC.

V. PROVIDE REMOTE DAMPER OPERATORS FOR EACH LOCATION WHERE VOLUME DAMPERS ARE INSTALLED BEHIND FURRINGS, CHASES, OR ABOVE INACCESSIBLE CEILINGS. SIZE AND POSITION REMOTE DAMPER OPERATOR SO THAT THE CONCEALED VOLUME DAMPERS CAN BE ADJUSTED. REMOTE OPERATOR SHALL BE A STRAIGHT SOLID SHAFT EXTENSION IN-LINE FOR DIRECT CONNECTION TO VOLUME DAMPER SHAFT WITHOUT GEAR MECHANISM, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. COORDINATE WITH ARCHITECT AND GENERAL CONTRACTOR FOR APPROVAL, EXACT LOCATION, CONDITIONS, SIZES, FINISHES, ETC.

W. HVAC SYSTEMS SHALL BE INSTALLED COMPLETE WITH ALL BALANCING AND REGULATING DEVICES NECESSARY FOR THE TAB CONTRACTOR TO PERFORM THEIR WORK. COORDINATE WITH THE TAB CONTRACTOR TO DETERMINE THEIR EXACT REQUIREMENTS. ALL HVAC SYSTEMS SHALL BE STARTED PER MANUFACTURER'S START-UP INSTRUCTIONS. REPLACE FILTERS, BELTS, SHEAVES, DAMPERS, VALVES, STARTERS AND HEATERS AS NECESSARY PRIOR TO TAB.

X. CONTRACTOR SHALL PROVIDE ALL TESTING, ADJUSTING, AND BALANCING WORK TO INCLUDE, BUT NOT LIMITED TO, ADJUSTMENT OF DAMPERS, BALANCE AIR DEVICES, VERIFY CORRECT SETPOINT AND CALIBRATION OF THERMOSTATS, VERIFY ALL SEQUENCE OF OPERATION, STAGING OF COOLING/ HEATING AS APPLICABLE, BALANCE OF CONDENSER AND HEATING WATER SYSTEMS, PUMPS, BOILERS, COOLING TOWERS, NOTE DEFICIENCIES IN MECHANICAL SYSTEM, ETC. FOR A CORRECTLY OPERATING MECHANICAL SYSTEM. CONTRACTOR SHALL REPLACE ALL FILTERS AND CLEAN ALL STRAINERS. TESTING AND BALANCING SUBCONTRACTOR MUST BE A MEMBER IN GOOD STANDING OF AABC AND SUBMIT REPORT ON AABC OR SMACNA FORMS FOR APPROVAL BY THE ENGINEER. PROVIDE A TEST AND BALANCE REPORT TO THE MECHANICAL INSPECTOR AT TIME OF HEATING FINAL INSPECTION. TAB CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR TO LOCATE DP SENSORS IN PIPING FOR PUMPING SYSTEMS AND STATIC PRESSURE SENSORS IN DUCTWORK FOR FAN SYSTEMS.

Y. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS. CONTRACTOR SHALL ENSURE THE FURNISHING AND INSTALLATION OF ALL BRANCH ELECTRICAL CIRCUIT WIRING, CONDUITS, PROTECTIVE DEVICES, DISCONNECTS, AND ACCESSORIES FOR ALL ELECTRICAL CONTROL POWER WIRING TO INCLUDE, BUT NOT LIMITED TO, CONTROL PANELS, ACTUATORS, SMOKE DETECTORS, CONTROL / MOTORIZED DAMPER, PRESSURE MONITORS, FIRE/SMOKE DAMPERS, VARIABLE FREQUENCY DRIVES, VAV TERMINALS (24V TRANSFORMER) AND ALL OTHER 120V CONTROLS AS REQUIRED FOR A COMPLETE CONTROL SYSTEM WHETHER SHOWN TO BE PERFORMED BY OTHER OR NOT. ALL ELECTRICAL WORK SHALL BE INSTALLED IN FULL ACCORDANCE WITH REQUIREMENTS OF ELECTRICAL SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE.

Z. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND SIZE OF LOUVERS. BLANK OFF AREA OF LOUVER NOT USED FOR INTAKE OR EXHAUST. LOUVERS SHALL BE DRAINABALE STATIONARY TYPE AND SHALL BE AMCA 500-L CERTIFIED. LOUVERS LOCATED IN HURRICANE-PRONE REGIONS SHALL BE AMCA 550 CERTIFIED. LOUVERS LOCATED IN WIND-BOURNE DEBRIS REGIONS WITHIN 30 FEET OF GRADE SHALL BE AMCA 540 CERTIFIED.

AA. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING FINISHES AND FURNISHINGS FROM DAMAGE DURING WORK.

BB. CONTRACTOR TO PROVIDE TEMPORARY SPACE CONDITIONING DURING ALL HVAC EQUIPMENT OUTAGES AND PRIOR TO HVAC EQUIPMENT START-UP.

CC. COMMISSIONING OF THE MECHANICAL SYSTEMS ON THIS PROJECT IS PART OF THE SCOPE OF WORK. DOCUMENTATION AND TESTING OF THESE SYSTEMS, AS WELL AS TRAINING OF THE OWNER'S OPERATION / MAINTENANCE PERSONNEL, IS REQUIRED IN COOPERATION WITH THE OWNER'S REPRESENTATIVE AND THE COMMISSIONING AGENT. PROJECT CLOSEOUT IS DEPENDENT ON SUCCESSFUL COMPLETION OF ALL COMMISSIONING PROCEDURES, DOCUMENTATION, AND ISSUE CLOSURE.

DD. ALL PIPES, DUCTS, AND OTHER EQUIPMENT SHALL BE PROPERLY SUPPORTED BY GALVANIZED OR CADMIUM PLATED ANCHOR BOLTS, ALL THREAD RODS AND WASHERS, LOCK WASHERS OR DOUBLE NUTS, AND BOLTS.

EE. INSTALLING CONTRACTOR SHALL STRICTLY ADHERE TO ANCHOR BOLT MANUFACTURER'S INSTALLATION RECOMMENDATIONS REGARDING PULL-OUT LOADS, ANCHOR DIAMETER AND DEPTH OF ANCHOR INSERTION FOR DRILLING THE ANCHOR POINT IN CONCRETE.

FF. SUBMIT SUPPORT LOCATIONS AND LOADS OF PIPES GREATER THAN 6" DIAMETER TO STRUCTURAL ENGINEER FOR REVIEW.

GG. POST-INSTALLED ANCHOR BOLTS ARE NOT PERMITTED TO BE INSTALLED IN THE SOFFIT OF BEAMS OR JOISTS.

HH. POST-INSTALLED ANCHOR BOLTS INSTALLED ON THE SIDE OF BEAMS OR JOISTS SHALL BE LOCATED A MINIMUM OF 5" FROM BOTTOM OF THE BEAM OR JOIST.

II. NO PIPE HANGERS SHALL BE SPACED MORE THAN 10'-0" O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.

JJ. ALL PIPING LOCATED INSIDE BUILDING SHALL BE SUPPORTED FROM THE STRUCTURE WITH SADDLE OR TRAPEZE HANGERS WITH ADJUSTABLE CLEVIS OR THREADED RODS.

KK. COORDINATE LOCATIONS OF FLOOR AND WALL OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.

LL. PROVIDE INSULATED DUCT ACCESS DOORS FOR DUCTWORK DOWNSTREAM OF AIR HANDLING UNITS AT EVERY 20'-0" TO FACILITATE DUCT CLEANING. PROVIDE DUCT ACCESS DOORS WITHIN 5'-0" OF EACH ELBOW.

MM. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 15 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS.

NN. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR FOR ALL CONDENSATE DRAIN PIPES CONNECTING TO A LAVATORY / SINK DRAIN TAIL PIECE.

OO. ALL KITCHEN GREASE EXHAUST DUCTWORK SHALL BE CONTINUOUSLY WELDED 16 GA. CARBON STEEL. ALL GREASE EXHAUST DUCTS SHALL BE WRAPPED WITH 3M 2 HR. FIRE RATED WRAP OR INSTALLED WITHIN A FIRE RATED ENCLOSURE.

## ROOF MOUNTED EQUIPMENT ANCHORAGE REQUIREMENTS

ALL ROOF MOUNTED EQUIPMENT CURBS, ROOF MOUNTED EQUIPMENT, EQUIPMENT TIE DOWNS, AND CONNECTIONS OF ALL EQUIPMENT TO BUILDING STRUCTURE FOR WIND LOADING ARE TO BE DESIGNED AND ENGINEERED BY A REGISTERED SPECIALTY ENGINEER RETAINED BY THE CONTRACTOR. DESIGN CRITERIA FOR WIND LOADING SHALL BE AS INDICATED IN THE CONSTRUCTION DOCUMENTS AND PER LOCAL CODES FOR THE PROJECT LOCATION AND BUILDING CATEGORY. SIGNED AND SEALED DRAWINGS AND CALCULATIONS ARE TO BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL. THE SUBMITTAL SHALL INCLUDE ATTACHMENT DETAILS OF THE EQUIPMENT TO THE STRUCTURE WITH DESIGN LOADS, LOCATIONS, AND METHODS OF ATTACHMENT. THE CONTRACTOR SHALL ALSO SUBMIT THE INFORMATION TO THE STRUCTURAL ENGINEER TO COORDINATE THE DESIGN OF THE PRIMARY STRUCTURAL FRAME WITH THE FINAL LOADS AND ATTACHMENTS SUBMITTED.


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ADAM C. JONES 90008 LICENSED PROFESSIONAL ENGINEER 7/28/25

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| DRAWN: | Author |
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**M0.11**

MECHANICAL GENERAL NOTES


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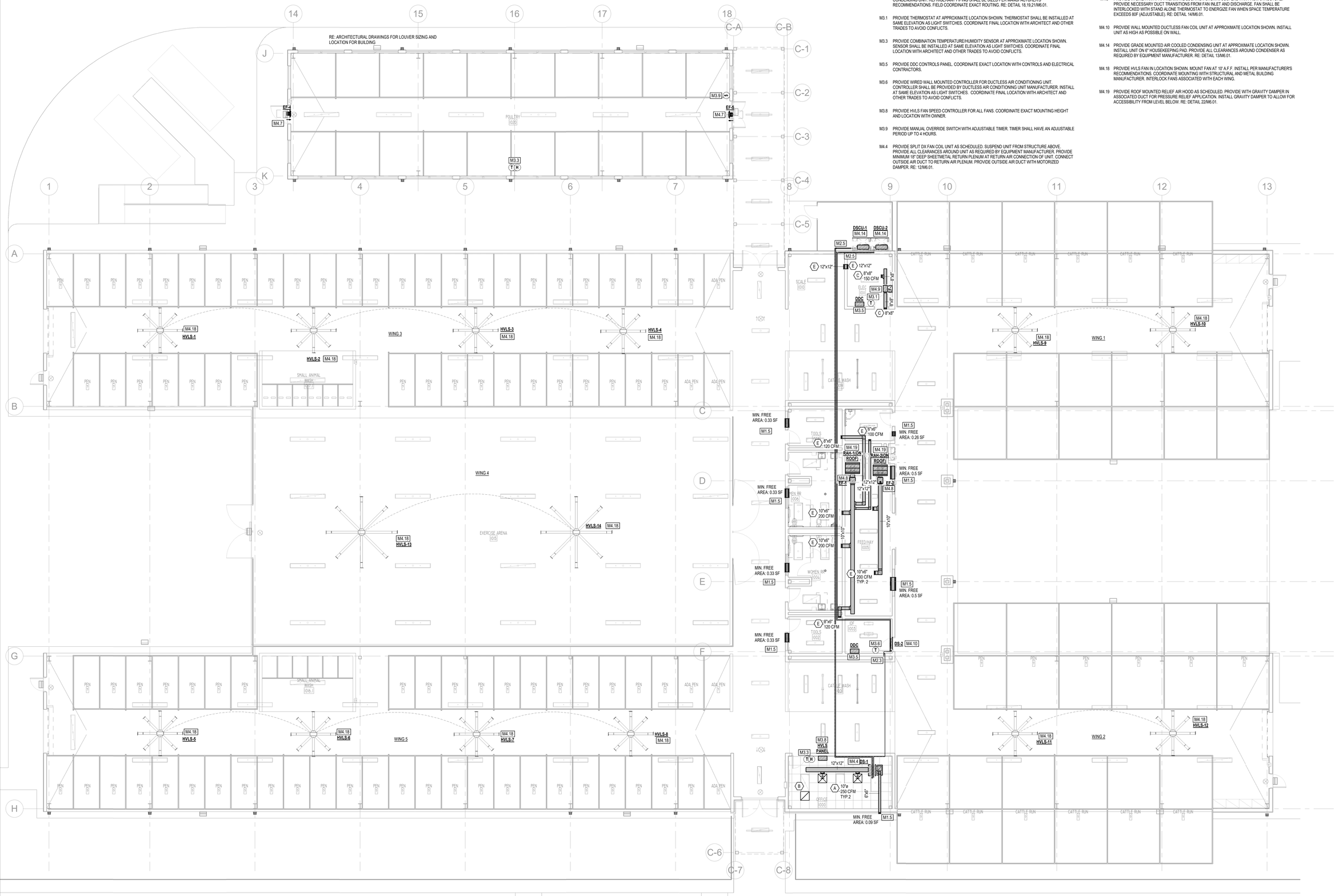


## MECHANICAL KEYED NOTES

M1.5 PROVIDE LOUVER AS SPECIFIED BY ARCHITECTURAL AND WITH MINIMUM FREE AREA AS INDICATED. COORDINATE MOUNTING HEIGHT, DIMENSIONS, AND FINISH WITH ARCHITECTURAL. RE: 10,11/M6.01.

M2.3 ROUTE COOLING COIL CONDENSATE DRAIN LINE TO BASKET DRAIN AS INDICATED. SIZE AS INDICATED ON DRAWING. COORDINATE WITH PLUMBING FOR EXACT LOCATION OF BASKET DRAIN. RE: DETAIL 16,17/M6.01.

M2.5 ROUTE REFRIGERANT PIPING FROM INDOOR FAN COIL UNIT TO ASSOCIATED AIR COOLED CONDENSING UNIT. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. FIELD COORDINATE EXACT ROUTING. RE: DETAIL 18,19,21/M6.01.

M3.1 PROVIDE THERMOSTAT AT APPROXIMATE LOCATION SHOWN. THERMOSTAT SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.3 PROVIDE COMBINATION TEMPERATURE/HUMIDITY SENSOR AT APPROXIMATE LOCATION SHOWN. SENSOR SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.5 PROVIDE DDC CONTROLS PANEL. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS.

M3.6 PROVIDE WIRED WALL MOUNTED CONTROLLER FOR DUCTLESS AIR CONDITIONING UNIT. CONTROLLER SHALL BE PROVIDED BY DUCTLESS AIR CONDITIONING UNIT MANUFACTURER. INSTALL AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.8 PROVIDE HVLS FAN SPEED CONTROLLER FOR ALL FANS. COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH OWNER.

M3.9 PROVIDE MANUAL OVERRIDE SWITCH WITH ADJUSTABLE TIMER. TIMER SHALL HAVE AN ADJUSTABLE PERIOD UP TO 4 HOURS.

M4.4 PROVIDE SPLIT DX FAN COIL UNIT AS SCHEDULED. SUSPEND UNIT FROM STRUCTURE ABOVE. PROVIDE ALL CLEARANCES AROUND UNIT AS REQUIRED BY EQUIPMENT MANUFACTURER. PROVIDE MINIMUM 18" DEEP SHEETMETAL RETURN PLENUM AT RETURN AIR CONNECTION OF UNIT. CONNECT OUTSIDE AIR DUCT TO RETURN AIR PLENUM. PROVIDE OUTSIDE AIR DUCT WITH MOTORIZED DAMPER. RE: 12/M6.01.

## MECHANICAL KEYED NOTES

M4.7 PROVIDE WALL MOUNTED EXHAUST FAN AT APPROXIMATE LOCATION SHOWN. FAN SHALL BE INTERLOCKED WITH STAND ALONE THERMOSTAT TO ENERGIZE FAN WHEN SPACE TEMPERATURE EXCEEDS 80 DEGREES F (ADJ). COORDINATE MOUNTING HEIGHT WITH ARCHITECT. RE: 15/M6.01.

M4.8 PROVIDE IN-LINE FAN AT APPROXIMATE LOCATION SHOWN. SUSPEND FAN FROM STRUCTURE. PROVIDE NECESSARY DUCT TRANSITIONS FROM FAN INLET AND DISCHARGE. RE: DETAIL 14/M6.01.

M4.9 PROVIDE IN-LINE FAN AT APPROXIMATE LOCATION SHOWN. SUSPEND FAN FROM STRUCTURE. PROVIDE NECESSARY DUCT TRANSITIONS FROM FAN INLET AND DISCHARGE. FAN SHALL BE INTERLOCKED WITH STAND ALONE THERMOSTAT TO ENERGIZE FAN WHEN SPACE TEMPERATURE EXCEEDS 80F (ADJUSTABLE). RE: DETAIL 14/M6.01.

M4.10 PROVIDE WALL MOUNTED DUCTLESS FAN COIL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT AS HIGH AS POSSIBLE ON WALL.

M4.14 PROVIDE GRADE MOUNTED AIR COOLED CONDENSING UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT ON 6" HOUSEKEEPING PAD. PROVIDE ALL CLEARANCES AROUND CONDENSER AS REQUIRED BY EQUIPMENT MANUFACTURER. RE: DETAIL 13/M6.01.

M4.18 PROVIDE HVLS FAN IN LOCATION SHOWN. MOUNT FAN AT 10' A.F.F. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE MOUNTING WITH STRUCTURAL AND METAL BUILDING MANUFACTURER. INTERLOCK FANS ASSOCIATED WITH EACH WING.

M4.19 PROVIDE ROOF MOUNTED RELIEF AIR HOOD AS SCHEDULED. PROVIDE WITH GRAVITY DAMPER IN ASSOCIATED DUCT FOR PRESSURE RELIEF APPLICATION. INSTALL GRAVITY DAMPER TO ALLOW FOR ACCESSIBILITY FROM LEVEL BELOW. RE: DETAIL 22/M6.01.

1 M2.11 **MECHANICAL PLAN LEVEL 1**
1/8" = 1'-0"

PLAN NORTH


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ADAM C. JONES 110069 LICENSED PROFESSIONAL ENGINEER

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# M2.11

MECHANICAL PLAN LEVEL 1

## ☐ MECHANICAL KEYED NOTES

M2.1 ROUTE 3/4" CONDENSATE DRAIN LINE FROM FAN COIL UNIT TO FUNNEL DRAIN LOCATED BELOW SINK. COORDINATE EXACT DRAIN LOCATION WITH PLUMBING.

M2.2 ROUTE 3/4" CONDENSATE DRAIN LINE FROM FAN COIL UNIT TO PLUMBING TAILPIECE LOCATED BELOW LAVATORY. COORDINATE EXACT CONNECTION LOCATION WITH PLUMBING.

M2.5 ROUTE REFRIGERANT PIPING FROM INDOOR FAN COIL UNIT TO ASSOCIATED AIR COOLED CONDENSING UNIT. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. FIELD COORDINATE EXACT ROUTING. RE: DETAIL 18,19,21/M6.01.

M3.3 PROVIDE COMBINATION TEMPERATURE/HUMIDITY SENSOR AT APPROXIMATE LOCATION SHOWN. SENSOR SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.5 PROVIDE DDC CONTROLS PANEL. COORDINATE EXACT LOCATION WITH CONTROLS AND ELECTRICAL CONTRACTORS.

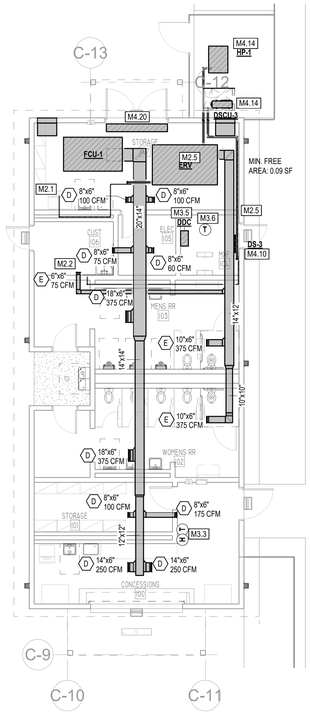
M3.6 PROVIDE WIRED WALL MOUNTED CONTROLLER FOR DUCTLESS AIR CONDITIONING UNIT. CONTROLLER SHALL BE PROVIDED BY DUCTLESS AIR CONDITIONING UNIT MANUFACTURER. INSTALL AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M4.10 PROVIDE WALL MOUNTED DUCTLESS FAN COIL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT AS HIGH AS POSSIBLE ON WALL.

M4.14 PROVIDE GRADE MOUNTED AIR COOLED CONDENSING UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT ON 6" HOUSEKEEPING PAD. PROVIDE ALL CLEARANCES AROUND CONDENSER AS REQUIRED BY EQUIPMENT MANUFACTURER. RE: DETAIL 13/M6.01.

## ☐ MECHANICAL KEYED NOTES

M4.20 PROVIDE AIR CURTAIN AT APPROXIMATE LOCATION SHOWN. PROVIDE MARS LPV296 OR APPROVED EQUAL. INSTALL AIR CURTAIN AND ALL REQUIRED DOOR SENSORS AND ACCESSORIES PER MANUFACTURER'S RECOMMENDATIONS.




1 M3.01 **MECHANICAL ENLARGED PLAN - FIELD HOUSE/RESTROOM**
1/8" = 1'-0"

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# M3.01

MECHANICAL ENLARGED PLAN

PLAN NORTH


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## AIR DEVICE SCHEDULE

| MARK | MFR. & MODEL | TYPE | REMARKS |
|---|---|---|---|
| A | TITUS - TMS-AA | LOUVERED FACE SUPPLY AIR DIFFUSER | 24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR SURFACE MOUNT. REFER TO PLANS FOR CEILING TYPE. |
| B | TITUS - PAR AA | 24"x24" PERFORATED FACE RETURN / EXHAUST AIR GRILLE | ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN CEILING OR HARD CEILING, DEPENDING ON CEILING TYPE. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPE. PROVIDE 22"x22" NECK OPEN TO PLENUM UNLESS OTHERWISE NOTED ON DRAWINGS. |
| C | TITUS TMS-AA | LOUVERED FACE SUPPLY AIR GRILLE | 12"X12" FACE, ALUMINUM CONSTRUCTION WITH FRAME FOR LAY-IN OR GYP-BOARD CEILING. REFER TO PLANS FOR CEILING TYPE. PROVIDE O.B.D. FOR DUCTED EXHAUST. |
| D | TITUS - 300FL | SIDEWALL SUPPLY AIR GRILLE | ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, DOUBLE DEFLECTION WITH FRONT BLADES PARALLEL TO LONG DIMENSION. PROVIDE O.B.D. |
| E | TITUS - 350 FL | SIDEWALL RETURN / EXHAUST AIR GRILLE | ALUMINUM CONSTRUCTION WITH FRAME FOR SURFACE MOUNT. 3/4" BLADE SPACING, 35° DEFLECTION WITH BLADES PARALLEL TO LONG DIMENSION. |

NOTES:
1. STANDARD WHITE FINISH UNLESS OTHERWISE NOTED. REFER TO ARCHITECTURAL DRAWINGS FOR SPECIFICATIONS.
2. PROVIDE FRAME TO MATCH CEILING TYPE INDICATED ON ARCHITECTS REFLECTED CEILING PLAN.
3. PAINT INTERIOR SURFACES OF DUCTWORK VISIBLE FROM FACE OF RETURN AIR GRILLES FLAT BLACK.

## MINISPLIT SYSTEM SCHEDULE

| | MARK | DS-1 | DS-2 | DS-3 |
|---|---|---|---|---|
| INDOOR UNIT | SERVES | OFFICE | IDF | MDF |
| | TYPE | HORIZONTAL DUCTED | HIGH WALL | HIGH WALL |
| | AIRFLOW (CFM) | 512-565-636-742 | 215-255-320-375 | 320-370-425 |
| | OUTSIDE AIR (CFM) | 35 | 0 | 0 |
| | TOTAL COOLING (MBH) | 24 | 12 | 18 |
| | HEATING (MBH) | 31.4 | N/A | N/A |
| | VOLTS/PHASE/HERTZ | 208 / 1 / 60 | 208 / 1 / 60 | 208 / 1 / 60 |
| | MCA | NOTE 6 | NOTE 6 | NOTE 6 |
| | MOCP | NOTE 6 | NOTE 6 | NOTE 6 |
| | MANUFACTURER | MITSUBISHI | MITSUBISHI | MITSUBISHI |
| | MODEL NUMBER | PEAD-AA24NL | PKA-AL12NL | PKA-AL18NL |
| OUTDOOR UNIT | MARK | DSCU-1 | DSCU-2 | DSCU-3 |
| | VOLTS/PHASE/HERTZ | 208 / 1 / 60 | 208 / 1 / 60 | 208 / 1 / 60 |
| | MCA | 22.0 | 16.0 | 11.0 |
| | MOCP | 37.0 | 27.0 | 28.0 |
| | SEER | 19.6 | 21.1 | 18.5 |
| | MANUFACTURER | MITSUBISHI | MITSUBISHI | MITSUBISHI |
| | MODEL NUMBER | PUZ-AH24NL | PUY-AK12NL | PUY-AK18NL |
| NOTES: | | 1, 2, 3, 4, 5, 7 | 1, 2, 3, 5, 7 | 1, 2, 3, 5, 7 |

NOTES:

1. PROVIDE REFRIGERANT PIPING IN ACCORDANCE WITH MFR'S RECOMMENDATIONS.
2. PROVIDE FULL SIZE CONDENSATE DRAIN TO NEAREST RECEPTACLE.
3. PROVIDE WALL MOUNTED THERMOSTAT.
4. PROVIDE FILTER BOX WITH MERV 8 FILTER
5. PROVIDE CONDENSER HAIL GUARDS
6. INDOOR UNIT POWERED THROUGH OUTDOOR UNIT.

7. PROVIDE WITH LITTLE GIANT CONDENSATE PUMP MODEL #554405 VCMA-15ULS. INSTALL ADJACENT TO EVAPORATOR UNIT.

## HVLS FAN SCHEDULE

| MARK | HVLS-1 | HVLS-2 | HVLS-3 | HVLS-4 | HVLS-5 | HVLS-6 | HVLS-7 | HVLS-8 | HVLS-9 | HVLS-10 | HVLS-11 | HVLS-12 | HVLS-13 | HVLS-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SERVES | LAMB/HOG | LAMB/HOG | LAMB/HOG | LAMB/HOG | LAMB/HOG | LAMB/HOG | LAMB/HOG | LAMB/HOG | CATTLE | CATTLE | CATTLE | CATTLE | EXERCISE BARN | EXERCISE BARN |
| TYPE/DRIVE | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT | CEILING/DIRECT |
| SIZE (FT. Ø) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 16 | 16 |
| RPM (MAX.) | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 98 | 98 |
| SOUND (dBA) | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 | < 55 |
| WEIGHT (LBS.) | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 224 | 224 |
| MOTOR HORSEPOWER | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 2.0 |
| VOLTS/PHASE/HERTZ | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 | 480/3/60 |
| MOCP | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| MANUFACTURER | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS | BIG ASS FANS |
| MODEL NUMBER | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 | POWERFOIL 8 |
| NOTES | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 | 1, 2, 3, 4, 5, 6 |

NOTES:
1. PROVIDE FAN WITH NECESSARY MOUNTING HARDWARE. PROVIDE EXTENSION TUBES AS REQUIRED. MOUNT FAN ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ENSURE CLEARANCES ARE MAINTAINED.
2. PROVIDE SINGLE WALL MOUNTED KEYPAD SPEED CONTROLLER FOR EACH FAN. EACH FAN SHALL BE INTERLOCKED TO OTHER FANS IN ASSOCIATED WING. REFER TO PLANS FOR CONTROLLER LOCATIONS.
3. FAN MOTOR SHALL BE GEARLESS DIRECT DRIVE.
4. COLOR / FINISH SHALL BE SELECTED BY ARCHITECT.
5. FIELD COORDINATE MOUNTING HEIGHT SUCH THAT THEY ARE FREE FROM ANY OBSTRUCTIONS.
6. PROVIDE HUB COVER AS REQUIRED SO THAT FAN LOGO IS NOT VISIBLE.

## FAN SCHEDULE

| MARK | EF-1 | EF-2 | EF-3 | EF-4 | EF-5 | EF-6 |
|---|---|---|---|---|---|---|
| SERVES | BARN RESTROOMS | FEED / HAY STORAGE | ELECTRICAL ROOM | POULTRY | POULTRY | FIELDHOUSE RR |
| CFM | 740 | 500 | 150 | 1,500 | 1,500 | 825 |
| EXT. S.P. (IN. W.G.) | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.5 |
| TYPE | INLINE | INLINE | INLINE | WALL MOUNTED | WALL MOUNTED | INLINE |
| HORSEPOWER | 1/6 | 1/10 | 1/10 | 1/4 | 1/4 | 1 |
| RPM (MAX.) | 1725 | 1725 | 1,725 | 1459 | 1459 | 2200 |
| SONES (MAX.) | 9.4 | 7.1 | 4.4 | 8.3 | 8.3 | 14.7 |
| VOLTS/PHASE/HERTZ | 120 / 1 / 60 | 120 / 1 / 60 | 120 / 1 / 60 | 120 / 1 / 60 | 120 / 1 / 60 | 120 / 1 / 60 |
| MANUFACTURER | GREENHECK | GREENHECK | GREENHECK | GREENHECK | GREENHECK | GREENHECK |
| MODEL NUMBER | SQ-95-VG | SQ-90-VG | SQ-70-VG | SE1-14-432-VG | SE1-14-432-VG | SQ-99-VG |
| NOTES | 1, 2, 3, 6 | 1, 2, 3, 6 | 1, 2, 4, 6 | 1, 3, 5, 6 | 1, 3, 5, 6 | 1,2,3,6 |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO FILTERS, HOUSING, NOR ACCESSORIES
2. FAN SHALL INCLUDE THE FOLLOWING: HANGING KIT, SPEED CONTROLLER, AND BACKDRAFT DAMPER.
3. FAN SHALL BE ACTIVATED BY 7-DAY PROGRAMMABLE TIME CLOCK
4. FAN SHALL BE THERMOSTATICALLY CONTROLLED TO TURN ON WHEN SPACE TEMPERATURE GETS ABOVE 85°F (ADJ.)
5. PROVIDE WITH WEATHERHOOD KIT, BACKDRAFT DAMPER, AND BIRDSCREEN.
6. PROVIDE WITH FAN MOUNTED MOTOR RATED TOGGLE SWITCH.
7. INTERLOCK FAN WITH ASSOCIATED FCU.

## AIR COOLED HEAT PUMP UNIT SCHEDULE

| MARK | HP-1 |
|---|---|
| SERVES | FCU-1 |
| UNIT SIZE | 8 TONS |
| NET TOTAL COOLING CAPACITY (MBH) | 84.9 |
| AMBIENT TEMP. (°F) | 105 |
| REFRIGERANT TYPE | R-454B |
| NUMBER STAGES OF COOLING | DIGITAL |
| SEER (AT ARI) | |
| EER (AT ARI) | - |
| MCA (MINIMUM CIRCUIT AMPACITY) - AMPS | 16.4 |
| MOCP (MAXIMUM OVER-CURRENT PROTECTION) - AMPS | 20 |
| VOLTS/PHASE/HERTZ | 480/3/60 |
| MANUFACTURER | DAIKIN |
| MODEL NUMBER | TXYQ96AAYDB |
| NOTES | 1,2,3 |

NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. MOUNT ON 6" HOUSEKEEPING PAD.
3. PROVIDE ALL CLEARANCES AS REQUIRED BY EQUIPMENT MANUFACTURER.

## RELIEF AIR HOOD SCHEDULE

| MARK | RAH-1 | RAH-2 | RAH-3 |
|---|---|---|---|
| CFM | 740 | 500 | 825 |
| MAX. P.D. (IN. W.G.) | 0.05 | 0.05 | 0.05 |
| TYPE | RELIEF | RELIEF | RELIEF |
| THROAT SIZE (SQFT) | 1.78 | 1.36 | 1.94 |
| THROAT SIZE (W" X L") | 16X16 | 14X14 | 14X20 |
| MODEL | FGR | FGR | FGR |
| WEIGHT (LBS) | 71 | 61 | 73 |
| MANUFACTURER | GREENHECK | GREENHECK | GREENHECK |
| NOTES | 1 | 1 | 1 |

NOTES:
1. PROVIDE WITH PREFABRICATED ROOF CURB AND 3/16" BIRD SCREEN.

## DX FAN COIL UNIT SCHEDULE

| | MARK | FCU-1 |
|---|---|---|
| FAN | SERVES | CONCESSIONS/RR |
| | TYPE | HORIZONTAL |
| | SUPPLY AIR (CFM) | 1,675 |
| | OUTDOOR AIR (CFM) | 1,675 |
| | EXHAUST AIR (CFM) | 1,400 |
| | FAN TYPE | DIRECT DRIVE PLENUM |
| | EXT. S.P. (IN. W.G.) | 0.50 |
| | VOLTS/PHASE/HERTZ | 208/1/60 |
| | FAN MOTOR HORSEPOWER | 1.00 |
| DX COOLING COIL | MAX. COIL FACE VELOCITY (FPM) | 500 |
| | MIN. ROWS/MAX. FINS PER INCH | 4/12 |
| | COIL CFM | 1,675 |
| | EAT DB/WB (°F) | 82.1 / 68.3 |
| | LAT DB/WB (°F) | 54.0 / 53.0 |
| | TOTAL COOLING CAPACITY (MBH) | 84.9 |
| | SENSIBLE COOLING CAPACITY (MBH) | 51.1 |
| DX HEATING COIL | MAX. COIL FACE VELOCITY (FPM) | 500 |
| | MIN. ROWS/MAX. FINS PER INCH | 4/12 |
| | COIL CFM | 1,675 |
| | EAT DB (°F) | 57.6 |
| | LAT DB (°F) | 80 |
| | TOTAL HEATING CAPACITY (MBH) | 40.7 |
| AUX ELECTRIC RE-HEAT | MAX. COIL FACE VELOCITY (FPM) | 700 |
| | ELEMENT TYPE | OPEN |
| | EAT (°F) | 57.6 |
| | LAT (°F) | 80.0 |
| | KW | 11.9 |
| | STEPS CONTROL | 2 |
| | VOLTS/PHASE/HERTZ | 480/3/60 |
| MCA | | 42.85 |
| MOCP | | 45 |
| WEIGHT (LBS) | | |
| MANUFACTURER | | OXYGEN 8 |
| MODEL NUMBER | | H25IN-ERV |
| NOTES | | |

NOTES:
1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR LOSSES DUE TO COIL(S), FILTERS, HOUSING, NOR ACCESSORIES.
2. PROVIDE FILTERS WITH MINIMUM EFFICIENCY OF MERV 8.
3. PROVIDE UNIT WITH SINGLE POINT ELECTRICAL CONNECTION.
4. PROVIDE UNIT WITH HORIZONTAL DISCHARGE.
5. PROVIDE SEPARATE 208/1/60 CIRCUIT TO UNIT CONTROLLER.


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| SS | CC/TD | DT/DL | JD | RT |
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# WEST AGRICULTURAL SCIENCE FACILITY

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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER 7/30/25

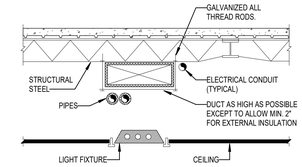
| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

M5.01

MECHANICAL SCHEDULES

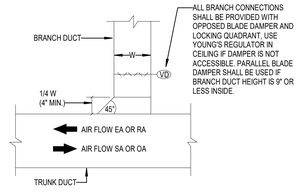
## 1 TYPICAL MEP INSTALLATION




NOTES:
1. PIPES (INCLUDING SPRINKLER PIPING) AND ELECTRICAL CONDUIT CAN BE ROUTED BETWEEN JOISTS OR THROUGH JOIST WEB SPACE AS REQUIRED. DUCT SHALL BE LOCATED AS HIGH AS POSSIBLE.
2. U.L. DESIGN ASSEMBLY NUMBERS ARE SHOWN ON ARCHITECTURAL PLANS WHEN REQUIRED.
3. INSTALLATION OF ALL SERVICES MUST BE COORDINATED BY THE CONTRACTOR.

"NOT TO SCALE"

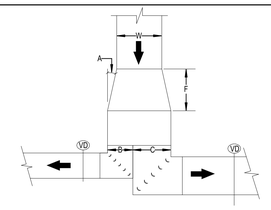
## 2 RECTANGULAR BRANCH DUCT TAP




NOTES:
THIS CONNECTION SHALL BE TYPICAL FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO RECTANGULAR TRUNK DUCTS, INCLUDING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTS.

"NOT TO SCALE"

## 3 DUCTWORK TEE

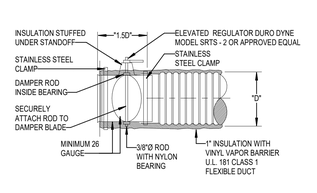



DIMENSIONAL RELATIONSHIPS
1. ANGLE 'A' TO BE 15° OR LESS (BOTH SIDES)
2. SEE FLOOR PLANS FOR B, C, & W.
3. VERTICAL DIMENSION TO BE MAINTAINED THRU F.
4. CHANGE IN VERTICAL DIMENSION TO OCCUR AFTER TURNS.

NOTES:
VOLUME DAMPERS REQUIRED FOR LOW PRESSURE DUCT SYSTEMS ONLY.

"NOT TO SCALE"

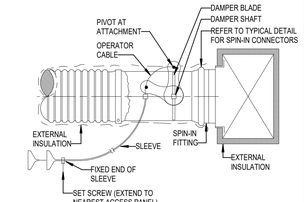
## 4 SPIN-IN




NOTES:
1. ALL FLEXIBLE DUCT OFFSETS AND BENDS SHALL MAINTAIN A RADIUS OF 1.5 X ("D") MINIMUM 3"-0" AND MAXIMUM 5'-0"
2.TYPICAL OF ROUND DUCT CONNECTIONS TO RECTANGULAR DUCTS
3.ALL JOINTS SHALL BE SEALED WITH MASTIC AND FIBER CLOTH PER SPECIFICATIONS.

"NOT TO SCALE"

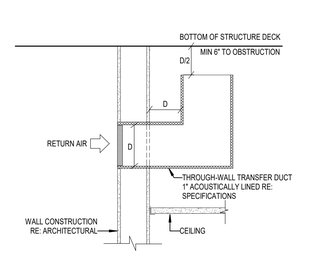
## 5 REMOTE SPIN-IN DAMPER OPERATOR




NOTES:
1. MOUNT OPERATOR CRANK AND CABLE PLATFORM ON TOP OF EXTERNAL INSULATION AT DAMPER.

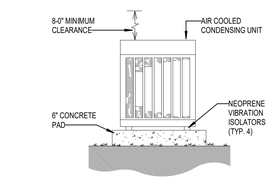
"NOT TO SCALE"

## 6 SIDEWALL REGISTER RETURN AIR BOOT




"NOT TO SCALE"

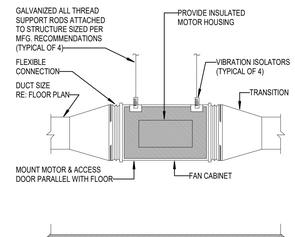
## 7 RETURN AIR BOOT THROUGH WALL




NOTE:
WHERE FIRE, SMOKE, OR FIRE/SMOKE DAMPERS ARE INSTALLED, PROVIDE ACCESS DOOR.

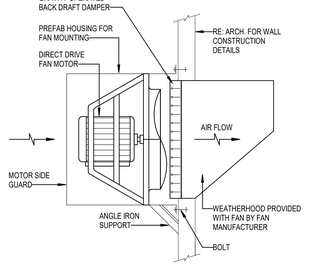
"NOT TO SCALE"

## 8 EXHAUST AIR HOOD



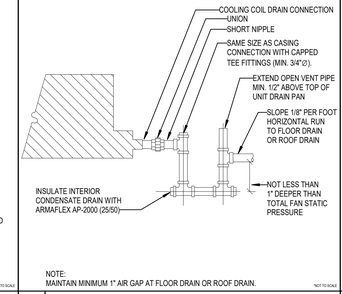

"NOT TO SCALE"

## 9 OUTSIDE AIR INTAKE HOOD




"NOT TO SCALE"

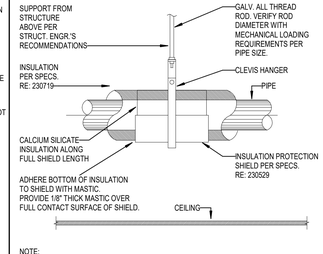
## 10 INTAKE LOUVER MOUNTING




NOTE:
MAINTAIN MINIMUM 1" AIR GAP AT FLOOR DRAIN OR ROOF DRAIN.

"NOT TO SCALE"

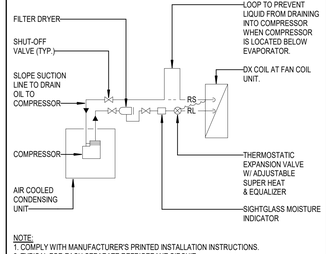
## 11 EXHAUST LOUVER MOUNTING




NOTE:
CONTRACTOR SHALL SECURE STRUCT. ENGR. APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS TO CONCRETE OR STEEL STRUCTURE. CONTRACTOR SHALL CONFORM TO ALL MAXIMUM SPAN DISTANCES PER SPECIFICATIONS FOR HANGER SPACING. RE: 230529

"NOT TO SCALE"

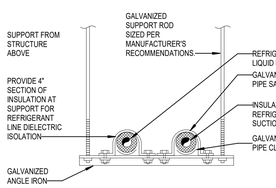
## 12 FAN COIL UNIT MOUNTING




NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

"NOT TO SCALE"

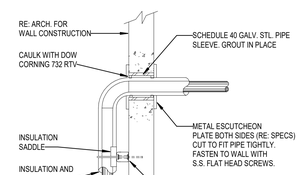
## 13 CONDENSING UNIT MOUNTING ON GRADE




NOTE:
PROVIDE CLEARANCE AROUND UNIT FOR AIR FLOW AND SERVICE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

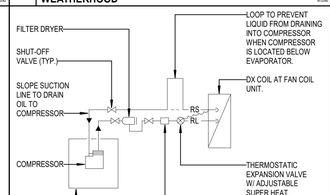
"NOT TO SCALE"

## 14 IN-LINE EXHAUST FAN




"NOT TO SCALE"

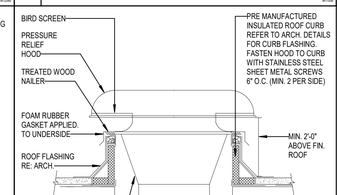
## 15 PROPELLER EXHAUST FAN DIRECT DRIVE WITH WEATHERHOOD




NOTE:
1. COMPLY WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
2. TYPICAL FOR EACH SEPARATE REFRIGERANT CIRCUIT.
3. PROVIDE FILTER DRYER ON ALL SYSTEMS.
4. USE "ACR" HARD DRAWN COPPER REFRIGERANT PIPE.

"NOT TO SCALE"

## 16 COOLING COIL CONDENSATE DRAIN




NOTE:
PROVIDE GRAVITY DAMPER
FOR PRESSURE RELIEF APPLICATION.
BALANCE DAMPER TO 0.1 IN.W.G. MAXIMUM.

"NOT TO SCALE"

## 17 PIPE HANGER (1-PIPE)




NOTE: PROVIDE SUPPORTS AT 3'-0" ON CENTER MAX. AND WITHIN 1'-0" OF ALL CHANGES IN PIPE DIRECTION.

"NOT TO SCALE"

## 18 REFRIGERANT PIPING SCHEMATIC




"NOT TO SCALE"

## 19 REFRIGERANT PIPE HANGER

## 20 PIPE ENTRY THRU EXTERIOR WALL

## 21 REFRIGERANT PIPING SCHEMATIC

## 22 BAROMETRIC RELIEF AIR HOOD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|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

MECHANICAL SCHEDULES

M6.01

MECHANICAL DETAILS


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TBPE Firm Registration No. 2234
DBR Project # 250070


| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|

**Outdoor Air Conditions**
The sensors shall be mounted in an area on the north side of the building where the representative temperature and humidity can be monitored, both shall have sun shields. Based on the outdoor air temperature and humidity the EMCS shall calculate the outdoor air enthalpy, wet bulb and dew point temperatures. These outdoor air conditions shall be broadcast as global data points for use by other control programs. These shall be displayed on all major air and water systems graphics.

**Electrical Power Meter Monitoring**
The EMCS shall provide BACnet/IP communication to each power meter provided by Division 26. Coordinate with Division 26 for all power meter locations. The EMCS shall monitor and record kW, kWH, kVAR, Power Factor, 3-Phase Amps and Volts.

The kW and kWH data acquired from each meter shall be categorized within the EMCS by the following end-uses:
- Total HVAC system loads
- Interior lighting loads
- Exterior lighting loads
- Plug loads
- Process loads
- Building operations and other miscellaneous loads

For each end-use category indicated above, the EMCS shall provide a graphic representation to show instantaneous real-time consumption data and shall provide hourly, daily, monthly, and yearly consumption data. Where multiple meters are used to measure an end-use category, the graphic representation for that end-use category shall include data from the individual meters as well as a total for the associated category. The graphic representation shall also include time and date of the highest peak demand for the current month and year as well as prior months and years for stored data. Demand thresholds may be set to adjust and shed loads in order to reduce peak consumption.

All meter data collected shall be stored for a minimum of 36 months and shall have the ability to be trended by building operation and management personnel on a hourly, daily, monthly, and yearly basis using the previous 36 months of stored data.

**Lighting Controls Integration for Networked Lighting Controls System**
The EMCS shall provide BACnet/IP communications to the Lighting Control System interface module to monitor and control the building and site lighting. The interface shall be provided by the manufacturer per Division 26. The EMCS shall monitor and control the lighting circuits as indicated on the Electrical Drawings.

**Lighting Controls Integration via Contactors**
The EMCS shall monitor and control lighting contactors (by Division 26) via digital relays. The EMCS Contractor shall provide a dedicated control point for each contactor as indicated on the Electrical Drawings.

**IDF and MDF Room Monitoring**
The EMCS shall monitor the space temperature and humidity in the IDF and MDF rooms. The primary cooling for IDF and MDF rooms will be supplied by the packaged computer room units. The EMCS shall report high/low temperature/humidity alarms to the computers, pagers, and/or text message compatible devices designated by the Owner. Alarms shall be sent if the space conditions deviate from the following, temperature between 60 °F and 80 °F (adj), humidity between 40% RH and 70% RH (adj), for more than 10 minutes.

**HVAC Ventilation Emergency Shutdown Switch**
A mushroom button type, local override switch shall be installed to deactivate the building's ventilation and exhaust systems in case of emergency. All 100% outside air conditioning units or outside air supply fans shall be deactivated and all outside air dampers shall be closed. All exhaust and relief fans shall be deactivated and their associated isolation dampers shall be closed. Once depressed, the switch must be manually reset to allow the ventilation and exhaust systems to resume normal operation. The final location of the switch shall be determined by the Owner.

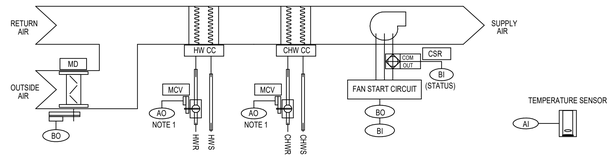
**HVLS Fans**
The EMCS shall manage the HVLS fans via the central HVLS controller. Coordinate with HVLS manufacturer for integration of controls.

**1 MISCELLANEOUS SYSTEMS**
NOT TO SCALE

| | |
|---|---|
| AI | ANALOG INPUT |
| AO | ANALOG OUTPUT |
| DI/BI | DIGITAL/BINARY INPUT |
| DO/BO | DIGITAL/BINARY OUTPUT |
| MD | ON-OFF MOTORIZED DAMPER |
| MMD | MODULATING TYPE MOTORIZED DAMPER |
| AFMS | AIR FLOW MEASURING STATION |
| MCV | CONTROL VALVE MODULATING TYPE |
| VFD | VARIABLE FREQUENCY DRIVE |
| CSR | CURRENT SENSING RELAY |
| FRZ | FREEZESTAT |
| HSL | HIGH STATIC LIMIT |
| SPT | STATIC PRESSURE TRANSMITTER |
| DPT | DIFFERENTIAL PRESSURE TRANSDUCER |
| FM | FLOW METER |
| FS | FLOW SWITCH |
| DAT | DISCHARGE AIR TEMPERATURE SENSOR |
| S | WALL SENSOR |
| T | THERMOSTAT |
| CO2 | CARBON DIOXIDE SENSOR |
| SP | SET POINT |
| S/A | SUPPLY AIR |
| R/A | RETURN AIR |
| O/A | OUTSIDE AIR |
| HC | HEATING COIL |
| CC | COOLING COIL |
| DX | DIRECT EXPANSION COOLING COIL |
| PICCV | PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE |
| AFC | AIRFLOW CROSS |
| DPS | DIFFERENTIAL PRESSURE SWITCH |

**2 CONTROL SCHEMATIC LEGEND**
NOT TO SCALE

NOTES:
1. Provide 2-way automatic control valve unless otherwise indicated in mechanical schedules or control specifications.




**System Off - When the system is off:**
The supply air fan shall be off.
The outside air damper shall be closed.
The chilled water coil valve shall be closed.
The hot water coil valve(s) shall be closed.
The control loops shall be disabled.

**System Start-up - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Time of Day Schedule.

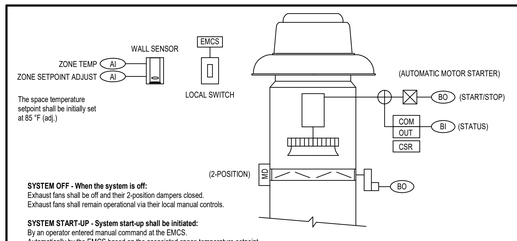
**System Operation - When system start-up has been initiated, the following sequences shall be implemented:**
The fan coil unit shall be integrated with the EMCS to monitor fan status, schedule run times, and to adjust space temperature setpoints. The outside air motorized isolation damper shall open.

COOLING MODE: When the space temperature is above the Cooling Setpoint, the chilled water coil control valve shall be modulated between 0-100%, to maintain the space temperature within +/- 0.5 °F of the Cooling Setpoint. The chilled water coil discharge temperature shall not be allowed to go below the chilled water coil low-limit setpoint.
HEATING MODE: When the space temperature is below the Heating Setpoint, the hot water coil control valve shall be modulated between 0-100%, to maintain the space temperature within +/- 0.5 °F of the Heating Setpoint.
FREEZE PROTECTION: When the outdoor air temperature drops below the freeze protection setpoint, the EMCS shall open the chilled water control valve(s) to 50% open (adj.) for water circulation through the coil. The control valve shall return to normal operating conditions when the ambient temperature is above the freeze protection setpoint for 10 minutes (adj.). Refer to the Chilled Water System Control Diagram for further information.

**System Setpoints - The setpoints for the system shall be set as follows:**
The Cooling Setpoint shall be set initially at 75 °F (adjustable).
The Heating Setpoint shall be set initially at 70 °F (adjustable).
The design airflow rates shall be set at the values given in the Mechanical Drawings.
The outdoor air temperature freeze protection setpoint shall be 37°F (adj).

**System Alarms - The EMCS shall generate an alarm as follows:**
If the space temperature is 5 °F (adj.) above the cooling setpoint.
If the space temperature is 5 °F (adj.) below the heating setpoint.
All alarms shall be inhibited when the supply fan is not operating except the space temperature alarms. The alarms, except the fan failure and the space temperature alarms, shall remain inhibited following startup of the unit for 2 minutes.

**3 Fan Coil Unit - Control Schematic and Sequence of Operations**
NOT TO SCALE




**SYSTEM OFF - When the system is off:**
Exhaust fans shall be off and their 2-position dampers closed.
Exhaust fans shall remain operational via their local manual controls.

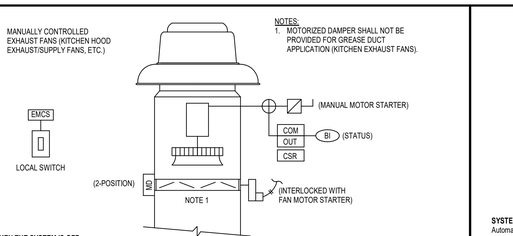
**SYSTEM START-UP - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on the associated space temperature setpoint.
By an operator command at local manual control.

AUTOMATICALLY CONTROLLED (TEMP. BASED) EXHAUST FANS: Upon activation of building occupied mode and start-up of the air handling system, the EMCS shall allow exhaust fans to be energized based on the associated space temperature setpoint, and their respective two-position motorized dampers shall open. The EMCS shall monitor the status of each exhaust fan and shall assign the scheduled exhaust numerical CFM value to each fan as indicated on the mechanical equipment schedules. Upon activation of the building unoccupied mode, the automatically controlled building exhaust fans shall be de-energized and shall only become energized via the local override switch.

**Fan Status:**
The controller shall monitor the fan status.

**Alarms shall be provided as follows:**
Fan Failure: Commanded on, but the status is off.
Fan in Hand: Commanded off, but the status is on.

**4 Automatically Controlled Temperature Based Exhaust Fans with Local Override Switch - Control Schematic and Sequence of Operations**
NOT TO SCALE




**SYSTEM OFF - WHEN THE SYSTEM IS OFF:**
Manually controlled exhaust fans shall remain operational via their local manual controls.

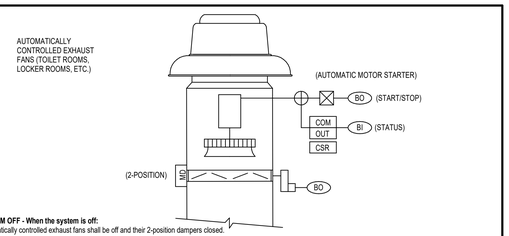
**SYSTEM START-UP - SYSTEM START-UP SHALL BE INITIATED:**
By an operator command at local manual control.

MANUALLY CONTROLLED EXHAUST FANS: Manually controlled exhaust fans shall utilize two-position motorized damper interlocked with their manual motor starter. The EMCS shall monitor the status of each manually controlled exhaust fan and shall assign the scheduled exhaust numerical CFM value to each fan as indicated on the mechanical equipment schedules.

**Fan Status:**
The controller shall monitor the fan status.

**Alarms shall be provided as follows:**
Fan Failure: Commanded on, but the status is off.
Fan in Hand: Commanded off, but the status is on.
Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

**5 Manually Controlled Exhaust/Supply Fans - Control Schematic and Sequence of Operations**
NOT TO SCALE




**SYSTEM OFF - When the system is off:**
Automatically controlled exhaust fans shall be off and their 2-position dampers closed.

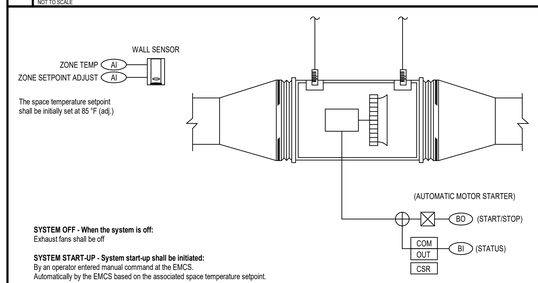
**SYSTEM START-UP - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on Night-Setback or Time of Day schedule.

AUTOMATICALLY CONTROLLED EXHAUST FANS: Upon activation of building occupied mode and start-up of the air handling system, the EMCS shall energize all automatically controlled exhaust fans and open their respective two-position motorized dampers. The EMCS shall monitor the status of each automatically controlled exhaust fan and shall assign the scheduled exhaust numerical CFM value to each fan as indicated on the mechanical equipment schedules. Upon activation of the building unoccupied mode, the automatically controlled building exhaust fans shall be de-energized.

**Fan Status:**
The controller shall monitor the fan status.

**Alarms shall be provided as follows:**
Fan Failure: Commanded on, but the status is off.
Fan in Hand: Commanded off, but the status is on.
Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

**6 Automatically Controlled Exhaust/Supply Fans - Control Schematic and Sequence of Operations**
NOT TO SCALE




**SYSTEM OFF - When the system is off:**
Exhaust fans shall be off

**SYSTEM START-UP - System start-up shall be initiated:**
By an operator entered manual command at the EMCS.
Automatically by the EMCS based on the associated space temperature setpoint.

AUTOMATICALLY CONTROLLED (TEMP. BASED) EXHAUST FANS: Upon activation of building occupied mode and start-up of the air handling system, the EMCS shall allow exhaust fans to be energized based on the associated space temperature setpoint, and their respective two-position motorized dampers shall open. The EMCS shall monitor the status of each exhaust fan and shall assign the scheduled exhaust numerical CFM value to each fan as indicated on the mechanical equipment schedules. Upon activation of the building unoccupied mode, the automatically controlled building exhaust fans shall be de-energized.

**Fan Status:**
The controller shall monitor the fan status.

**Alarms shall be provided as follows:**
Fan Failure: Commanded on, but the status is off.
Fan in Hand: Commanded off, but the status is on.

**7 Automatically Controlled Temperature Based Exhaust Fans - Control Schematic and Sequence of Operations**
NOT TO SCALE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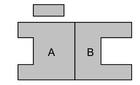


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|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

M7.01

MECHANICAL CONTROL DIAGRAMS


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|

# ABBREVIATIONS

| | |
|---|---|
| AC | ALTERNATING CURRENT |
| AF | AMPERE FUSE, AMPERE FRAME |
| AFC | ABOVE FINISHED CEILING |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AIC | AMPERE INTERRUPT CAPACITY |
| AL | ALUMINUM |
| AM | AMMETER |
| AMP | AMPLIFIER |
| ANN | ANNUNCIATOR |
| ASC | AMPERES SHORT CIRCUIT |
| AT | AMPERE TRIP RATING |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUX | AUXILIARY |
| BKR | BREAKER |
| BLDG. | BUILDING |
| C | CONDUIT, CELSIUS |
| CKT | CIRCUIT |
| CLG. | CEILING |
| CONT. | CONTINUOUS,CONTINUATION |
| CONTR | CONTROLLER, CONTRACTOR |
| CT | CURRENT TRANSFORMER/COOLING TOWER |
| CU | COPPER |
| DAS | DISTRIBUTED ANTENNA SYSTEM |
| DC | DIRECT CURRENT |
| DISC | DISCONNECT |
| DP | DISTRIBUTION PANEL |
| DPDT | DOUBLE-POLE, DOUBLE-THROW |
| DPST | DOUBLE-POLE, SINGLE-THROW |
| DWG | DRAWING |
| ELEV. | ELEVATOR |
| EPO | EMERGENCY POWER OFF |
| ERRC | EMERGENCY RESPONDER RADIO COVERAGE SYSTEM |
| FA | FIRE ALARM |
| FF | FURNITURE FEED |
| FLA | FULL LOAD AMPS |
| FTL | FEED-THRU LUGS |
| GA | GAUGE |
| GEN | GENERATOR |
| GND | GROUND |
| GTD | GENERATOR TRANSFER DEVICE |
| IG | ISOLATED GROUND |
| LF | LINEAR FEET |
| LTG | LIGHTING |
| LV | LOW VOLTAGE |
| LVL | LEVEL |
| MAX. | MAXIMUM |
| MC | METAL CLAD CABLE |
| MCA | MINIMUM CIRCUIT AMPS |
| MCB | MAIN CIRCUIT BREAKER |
| MCCB | MOLDED CASE CIRCUIT BREAKER |
| MD | MOTORIZED DAMPER |
| MDP | MAIN DISTRIBUTION PANEL |
| MFR | MANUFACTURER |
| MIC | MICROPHONE |
| MIN. | MINIMUM |
| MLO | MAIN LUGS ONLY |
| MOCP | MAXIMUM OVER-CURRENT PROTECTION |
| MSB | MAIN SWITCHBOARD |
| N3R | NEMA 3R |
| N4X | NEMA 4X |
| N.C. | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NF | NON-FUSED |
| NFS | NON-FUSED SWITCH |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| N.O. | NORMALLY OPEN |
| NO. | NUMBER |
| NTS | NOT TO SCALE |
| PH | PHASE |
| POS | POINT OF SALE |
| QTY | QUANTITY |
| RCP | REFLECTED CEILING PLAN |
| RCPT | RECEPTACLE |
| RE | REFERENCE, REFER |
| SF | SQUARE FOOT |
| SIM | SIMILAR |
| SKVA | STARTING KILOVOLT-AMPS |
| SPD | SURGE PROTECTION DEVICE |
| SPDT | SINGLE-POLE, DOUBLE-THROW |
| SPST | SINGLE-POLE, SINGLE-THROW |
| SPEC | SPECIFICATION |
| SQFT | SQUARE FOOT |
| ST | SHUNT TRIP |
| SWB | SWITCHBOARD |
| TL | TWIST-LOCK |
| TOC | TOP OF CURB |
| TOS | TOP OF STEEL |
| TR | TAMPER RESISTANT RECEPTACLE |
| TV | TELEVISION |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| UNO | UNLESS NOTED OTHERWISE |
| UPS | UNINTERRUPTIBLE POWER SYSTEM |
| VFD | VARIABLE FREQUENCY DRIVE |
| WP | WEATHERPROOF |
| WT | WATERTIGHT, WEIGHT |
| WSF | WATTS PER SQUARE FOOT |
| XFMR | TRANSFORMER |

MANY ABBREVIATIONS NOT LISTED MAY BE FOUND IN THE NATIONAL ELECTRIC CODE, OR IN THE INTERNATIONAL AND UNIFORM CODES

## PHASING

| | |
|---|---|
| (E) | EXISTING (TO REMAIN) |
| (D) | SHALL BE DEMOLISHED |
| (N) | PROVIDE NEW |
| (R) | RELOCATED ELEMENT |

# ELECTRICAL SYMBOLS

## MOTORS AND CONTROLS

- MOTOR RATED SWITCH WITH THERMAL OVERLOADS
- SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER
- ELECTRIC DUCT HEATER
- DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE, "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R
- ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP.
- MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER. "3CS/15/90" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE. "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.
- EPO — EMERGENCY POWER OFF BUTTON.

## RECEPTACLES AND OUTLETS

ALL RECEPTACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE. REFER TO SPECIFICATIONS AND DRAWINGS FOR ADDITIONAL REQUIREMENTS.

ABBREVIATIONS APPLICABLE TO RECEPTACLES:

"GFCI" GROUND FAULT INTERRUPTER
"WP" WEATHERPROOF
"IG" ISOLATED GROUND
"TR" TAMPER RESISTANT
"USB" RECEPTACLE WITH USB CHARGING PORTS
"AC" ABOVE COUNTER MOUNTING
"UC" UNDER COUNTER MOUNTING
"H" HORIZONTALLY ORIENTED RECEPTACLE

- SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.
- DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. SHADED INDICATES SPLIT-WIRED
- FOURPLEX (QUADRUPLEX) RECEPTACLE
- DUPLEX RECEPTACLE (PEDESTAL MOUNTED)
- CONTROLLED WALL RECEPTACLE. DUPLEX SPLIT-WIRED QUAD: SEPARATELY WIRED UNDER A COMMON COVERPLATE.
- POWER DEVICE RED IN COLOR, ON EMERGENCY POWER CIRCUIT
- CEILING RECEPTACLE/QUAD, EMERGENCY POWER SYMBOL MAY APPLY
- SPECIAL RECEPTACLE, NEMA CONFIGURATION PER PLAN OR EQUIPMENT
- TV — TV ROUGH-IN: 3-GANG RECESSED TV BOX, CONTAINING 1 DUPLEX RECEPTACLE, 1 GANG FOR AV, 1 GANG FOR DATA
- FLOOR BOX OR POKE THRU. POKE-THRU'S WHERE IN SUSPENDED SLABS, RECESSED IN FOUNDATION WHERE SLAB ON GRADE
- FLUSH ELECTRICAL FLOOR OUTLET. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.
- DROP CORD WITH SIMPLEX RECEPTACLE UNLESS OTHERWISE NOTED
- CORD REEL WITH DUPLEX RECEPTACLE UNLESS OTHERWISE NOTED
- JUNCTION BOX
  "MD" INDICATES POWER CONNECTION TO SERVE MOTOR DAMPER
  "HD" INDICATES POWER CONNECTION TO SERVE HAND DRYER
  "FV" INDICATES POWER CONNECTION TO SERVE FLUSH VALVES
- P — PULL BOX (OVER 4" SQUARE)
- BELL/BUZZER/CHIME
- PUSH BUTTON/DOOR BELL/START-STOP
- PP — POWER POLE
- POINT OF DIRECT CONNECTION TO EQUIPMENT
- C (2) — CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.

## LIGHTING

LETTER(S) DENOTE TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.

2'X4' 2'X2' 1'X4' 1'X2' 1'X1'

- STRIP LIGHTING FIXTURES.
- ROUND DOWNLIGHT FIXTURE.
- SQUARE DOWNLIGHT FIXTURE.
- WALL MOUNTED LIGHTING FIXTURE.
- TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.
- CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.
- EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.
- SITE LIGHTING FIXTURE.

HATCHING PATTERNS BELOW SHALL APPLY TO ALL LIGHTING FIXTURE SYMBOLS.

- NL — EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT AS NORMAL POWER LIGHTING). FIXTURES SHALL BE WIRED IN A MANNER AS TO ALLOW SWITCHING OF FIXTURES WITHOUT DISCHARGING THE EMERGENCY BATTERY. BATTERY PACK IS TO ONLY OPERATE IN THE EVENT OF A POWER OUTAGE.
  "NL" NIGHT LIGHT ON UNSWITCHED 24HR OPERATION
- EM CIRCUIT — LIGHT FIXTURE ON LIFE SAFETY BRANCH CIRCUIT, GENERATOR TRANSFER DEVICES REQUIRED (UL1008 OR UL924) PROVIDE UNSWITCHED HOT, NEUTRAL AND GROUND FOR ALL LIFE SAFETY LIGHTING ORIGINATING FROM THE LIFE SAFETY CIRCUIT SHOWN.
- CRITICAL OPERATIONS LIGHTING ORIGINATING FROM THE CRITICAL CIRCUIT INDICATED. HATCHED AS INDICATED. HATCHING TYPICAL FOR ALL CRITICAL BRANCH LIGHT FIXTURES

## RACEWAYS AND WIRING

- CAP AND STAKE
- CONDUIT CONCEALED IN WALL OR CEILING
- UNDERGROUND, UNDERSLAB, CONCEALED ROUTING
- OHE — OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE
- CONDUIT UP/DOWN
- HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT: PHASE/NEUTRAL/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES EMPTY CONDUIT, 1" MINIMUM, UNLESS NOTED OTHERWISE.
- 1LA-2,4,6 — HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.
- (ON)1LA-6 — PARTIAL/SHARED CIRCUIT HOMERUN TO PANEL.
- TELECOMMUNICATIONS CABLE TRAY SHALL BE CONCEALED ABOVE ACCESSIBLE CEILING UNLESS OTHERWISE NOTED.

## ELECTRICAL EQUIPMENT

- DISTRIBUTION PANEL
- MSB — SWITCHBOARD, MAIN DISTRIBUTION PANEL OR MOTOR CONTROL CENTER
- PANELBOARD (FLUSH/SURFACE MOUNT)
- FLOOR MOUNTED DRY-TYPE TRANSFORMER
- SUSPENDED OR WALL MOUNTED TRANSFORMER
- ATS — AUTOMATIC TRANSFER SWITCH
- FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE

## COMMUNICATIONS

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 18" ABOVE FINISHED FLOOR (AFF)

- DATA/COMM/AV ROUGH-IN. CONDUIT TO PLENUM AND BOX ONLY
- HS DS — SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 42" AFF

- VC — VOLUME CONTROL - WALL MOUNTED
- CB — INTERCOM/PA SYSTEM CALL-IN OR CALL-BACK DEVICE

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 120" AFF OR 12" BELOW CEILING, WHICHEVER IS LOWER

- S L — INTERCOM/PA SPEAKER "L" LOCAL SOUND REINFORCEMENT

CEILING MOUNTED DEVICES:

- S VC — INTERCOM/PA SPEAKER "VC" INDICATES VOLUME CONTROL ON SPEAKER.

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## ONE-LINE DIAGRAM

- TRANSFORMER, TYPE AND RATINGS AS NOTED
- 800A/3P — SWITCH, RATING AS SHOWN
- 400A — FUSE, RATING AS SHOWN
- ST — SHUNT TRIP
- GFP — GROUND FAULT PROTECTION
- K — KIRK-KEY INTERLOCK
- M — DIGITAL METER OR SUB-METER INTEGRATED INTO EQUIPMENT
- 1200/5 — CURRENT TRANSFORMER, RATED AS SHOWN
- GROUND CONNECTION
- AUTOMATIC TRANSFER SWITCH
- BUS DUCT PLUG
- M — ELECTRICAL UTILITY REVENUE METER
- SPD — SURGE PROTECTION DEVICE
- GANN — GENERATOR ANNUNCIATOR PANEL
- CIRCUIT BREAKER
- DRAW-OUT CIRCUIT BREAKER
- NEW EQUIPMENT/WIRING
- DEMOLITION EQUIPMENT/WIRING
- EXISTING EQUIPMENT/WIRING
- UNDERGROUND WIRING

## DAYLIGHT ZONES

DAYLIGHT ZONE/PRIMARY — SECONDARY DAYLIGHT ZONE

DAYLIGHT ZONES SHALL BE INCLUSIVE OF THE FIXTURES WITHIN THE SHADED REGION, AND SHALL BE DIMMED USING ON-BOARD OR EXTERNAL CONTROL IN ACCORDANCE WITH IECC 2021. IECC 2018 OR 2015 MAY BE REFERENCED ONLY WHERE ADOPTED BY LOCAL AHJ.

# GENERAL NOTES:

A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THE CONTRACT DOCUMENTS.

## MISCELLANEOUS

- F — SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
- INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL
- 1 — DRAWING NOTE REFERENCE
- SOS — AREA OF RESCUE ASSISTANCE

## FIRE ALARM

- W — WATER FLOW SWITCH
- SP — SUPERVISORY SWITCH
- S — SMOKE DETECTOR - MULTI CRITERIA DETECTOR
- S # — SMOKE DETECTOR - "SB" INDICATES IN INTEGRAL SOUNDER BASE "D" INDICATES DUCT TYPE "R" INDICATES 120 VOLT RESIDENTIAL TYPE
- H — HEAT DETECTOR
- S BT — BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S BR — BEAM DETECTOR RECEIVER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
- S — FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
- S — FIRE ALARM SPEAKER / CEILING MOUNT.
- DH — MAGNETIC DOOR HOLDER
- R — AUXILIARY CONTROL RELAY
- FH — FIRE FIGHTER HANDSET
- F — FIRE ALARM PULL STATION +42" AFF
- F — FIREMAN'S TELEPHONE JACK +42" AFF
- AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
- VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
- AUDIO FIRE ALARM HORN +80" AFF
- FACP — FIRE ALARM CONTROL PANEL
- ANN — REMOTE FIRE ALARM ANNUNCIATOR PANEL
- RPS — REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
- FSD — FIRE SMOKE DAMPER
- REMOTE LED INDICATOR LIGHT

## SECURITY

- PB — ADA AUTO DOOR OPEN BUTTON
- DR — DOOR RELEASE BUTTON
- CR — WALL MOUNTED CARD READER

REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.

## SWITCHES AND LIGHTING CONTROL DEVICES

ALL SWITCH TYPES AND SENSORS TYPES FOUND ON 'LIGHTING CONTROL DEVICE SCHEDULE' LOCATED ON ELECTRICAL SCHEDULE SHEETS

SWITCH ANNOTATION AS FOLLOWS:

- $ x,a,b,c — TYPE, PER SCHEDULE; NO TYPE INDICATES SINGLE POLE TOGGLE SWITCH; SWITCH LEGS, PER PLAN, SHOWN HERE AS 3 (a,b,c)

OCCUPANCY SENSOR ANNOTATION, AS FOLLOWS:

- OCx — OCCUPANCY / VACANCE SENSOR 'x' INDICATES TYPE, PER SCHEDULE; CEILING SENSOR; WITH BRACKET INDICATES WALL / CORNER MOUNT

LIGHT SENSOR ANNOTATION, AS FOLLOWS:

- PC — DIGITAL PHOTOCELL
- DS — DAYLIGHT HARVESTING SENSOR

RELAY PANELS, CONTACTORS, TIME SWITCHES:

- XX — RELAYS/CONTACTORS/TIMERS/DEVICES WHERE 'XX' INDICATES: "LC" LIGHTING CONTRACTOR; "LCP" LIGHTING CONTROL PANEL; "TS" TIME SWITCH; "TC" TIME CLOCK

## DRAWING/DETAIL REFERENCE KEY

RE: 1 /E3-2 — REFER TO DRAWING/DETAIL NUMBER; SHEET NUMBER (1 / E3-2)

## PANELBOARD NOMENCLATURE

5 DP C H A 1

- 5 — SUB PANEL
- DP — AREA
- C — VOLTAGE: H: 480Y/277V; L: 208Y/120V
- H — BRANCH: NONE: NORMAL; E: LIFE SAFETY; Q: EQUIPMENT; C: CRITICAL; R: LEGALLY REQUIRED; X: OPTIONAL STAND-BY
- A — DISTRIBUTION PANEL (IF APPLICABLE)
- 1 — LEVEL

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A B

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E0.01

ELECTRICAL SYMBOL LEGEND


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## GENERAL ELECTRICAL NOTES:

A. ELECTRICAL DEVICE LOCATIONS SHOWN ARE NOT EXACT. ALL DEVICE LOCATIONS SHALL BE VERIFIED WITH ARCHITECTURAL MILLWORK, CASEWORK, AND GENERAL ELEVATION VIEWS.

B. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TECHNOLOGY, LOW VOLTAGE, ACCESS CONTROL SECURITY, SURVEILLANCE, AND OTHER DIVISION 27/28 SCOPE. REFER TO DIVISION 27/28 DRAWINGS AND SPECIFICATIONS FOR ALL WORK REQUIRED. OMISSION OF THIS SCOPE FROM DIV 26 SCOPE OF WORK IS PROHIBITED.

C. HVAC AND PLUMBING EQUIPMENT LOCATIONS ARE NOT EXACT, AND THE EXACT POINT OF CONNECTION TO EQUIPMENT MAY VARY. COORDINATE EXACT ROUGH-IN REQUIREMENTS IN FIELD AND WITH FINAL SUBMITTALS.

D. PROVIDE LABELING OF ALL DEVICES, CONDUIT, PANELS, AND JUNCTION BOXES WITH TYPE-WRITTEN LABEL IDENTIFYING CIRCUIT ON THE BACK OF DEVICE COVER PLATES AND ON COVER OF JUNCTION BOXES IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

E. ROOF PENETRATIONS SHALL BE MINIMIZED. WHERE ABLE, ROUTE ALL CONDUIT FOR ROOF MOUNTED EQUIPMENT THROUGH ROOF CURB. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING NECESSARY WATER PROOFING AROUND ROOF PENETRATIONS WITH ROOFING INSTALLER.

F. ALL RECEPTACLES LOCATED IN RESTROOMS, JANITOR CLOSETS, MECHANICAL ROOMS, ELEVATOR PITS OR SHAFTS, ELEVATOR EQUIPMENT ROOMS, SERVING ELECTRIC DRINKING FOUNTAINS OR VENDING MACHINES, LOCATED WITHIN 6' OF A SINK, LOCATED ABOVE A WET COUNTERTOP OR IN A KITCHEN OR COFFEE BAR SHALL BE GFCI. FEED-THRU GFCI/GFI IS PROHIBITED, ALL GFCI/GFI DEVICES SHALL BE PROVIDED WITH INDIVIDUAL TEST/RESET FEATURES. ALL GFCI RECEPTACLES SHALL BE ACCESSIBLE. PROVIDE SEPARATE RECEPTACLE PROTECTED BY "FACELESS GFCI " REQUIRED TO COMPLY WITH CURRENTLY ADOPTED NEC.

G. WHERE MULTI-WIRE HOMERUNS ARE INSTALLED, GROUP HOMERUNS WITH THREE HOTS (A,B, AND C PHASE), AND #10 NEUTRAL TO PROVIDE MULTI-WIRE BRANCH CIRCUITS. NO MORE THAN 2 MULTI-WIRE HOMERUNS PER CONDUIT. CONTRACTOR IS REQUIRED TO FURNISH CALCULATIONS PROVING CONDUCTOR DE-RATING HAS BEEN INCORPORATED, INCLUDING CONDUIT FILL PERCENTAGE AND MULTI-CONDUCTOR DE-RATING FOR MULTI-WIRE CIRCUITS. THE NEUTRAL IS CONSIDERED A CURRENT CARRYING CONDUCTOR FOR ALL PHASE CONFIGURATIONS. MULTI-WIRE BRANCH CIRCUITS SHARING A COMMON NEUTRAL SHALL BE PROVIDED WITH GROUPED BREAKER HANDLE TIES PER NEC ARTICLE 210.4 & 240.15(B).

H. CONTRACTOR SHALL PROVIDE PLENUM RATED MATERIAL FOR ALL INFRASTRUCTURE LOCATED IN PLENUMS NOT PROTECTED BY CONDUIT OR ANOTHER APPROVED/LISTED FIRE ENCLOSURE.

I. NEW ELECTRICAL EQUIPMENT LOCATED IN ELECTRICAL ROOMS SHALL BE ARRANGED TO COMPLY WITH LATEST NEC ARTICLE 110.

J. ELECTRICAL AND TECHNOLOGY OUTLETS SHOWN IN SOUND RATED PARTITIONS SHALL NOT BE PLACED BACK-TO-BACK. OFFSET AT LEAST ONE STUD AND SEAL FOR SOUND AS REQUIRED.

K. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE. CONTRACTOR MAY PROVIDE NON-TAMPER RESISTANT RECEPTACLES WHERE NOT REQUIRED PER CURRENT NEC ARTICLE 406.

## LIGHTING GENERAL NOTES:

A. ALL LIGHTING CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH PERFORMANCE DESCRIPTION INDICATED IN THE LIGHTING CONTROL DEVICE SCHEDULE FOUND ON SCHEDULE SHEETS.

B. MULTIPLE SWITCHES SHOWN TOGETHER SHALL BE GANGED UNDER A COMMON COVER PLATE.

C. PROVIDE LABELING OF ALL CONTROL DEVICES, SWITCH PACKS, LIGHT FIXTURES, JUNCTION BOXES, ETC IN ACCORDANCE WITH SPECIFICATIONS.

D. LIGHTING FIXTURE LOCATIONS SHOWN TAKE PRECEDENCE IN CEILING LOCATION TO ALL OTHER TRADES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING OTHER TRADES DO NOT IMPACT SPACING AND/OR OVERLAYMENT OF OTHER DEVICES WHERE LIGHT FIXTURES ARE INSTALLED.

E. REFERENCE SYMBOLS LEGEND FOR LIGHT SWITCH AND LIGHTING CONTROL DEVICE NOMENCLATURE AND SWITCH-LEG ANNOTATION OR LABELING.

F. ALL 2X2, 2X4 FIXTURES INSTALLED IN SUSPENDED GRID CEILING SHALL BE PROVIDED WITH (4) SECONDARY SUPPORT WIRES ANCHORED DIRECTLY TO STRUCTURE.

## EMER. LIGHTING GENERAL NOTES:

A. PROVIDE ALL EMERGENCY LIGHT FIXTURES WITH UNSWITCHED HOT LEG AS INDICATED IN NEC 700.12 AND PROVIDE LOCK-ON DEVICE AS REQUIRED BY NEC 700.

B. ROUTE AN UNSWITCHED HOT LEG TO ALL LIGHT FIXTURES DESIGNATED AS EMERGENCY FIXTURES. HOT LEG SHALL ORIGINATE FROM CIRCUIT SERVING NORMAL LIGHTING FIXTURES IN THAT SPACE. UNSWITCHED HOT LEG SHALL CONNECT TO THE NORMAL POWER SENSING LUG ON THE EMERGENCY BATTERY PACK.

C. PROVIDE UN-SWITCHED CIRCUIT TO ALL EXIT SIGNS. CONNECT TO DEDICATED CIRCUIT INDICATED AND PROVIDE LOCK-ON DEVICE AS REQUIRED BY NEC 700.

## GENERAL SITE PLAN NOTES:

A. CONTRACTOR SHALL INSTALL ALL RACEWAYS, DUCTBANKS, CONCRETE PADS ETC. REQUIRED BY THE UTILITY COMPANY. OBTAIN WRITTEN INSTRUCTIONS FROM THE UTILITY COMPANY BEFORE ROUGH IN.

B. CONTRACTOR SHALL BORE UNDERNEATH EXISTING PAVEMENT WHERE CONDUITS ARE ROUTED UNDER EXISTING PAVING. SAW CUTTING IS NOT PERMITTED WITHOUT OWNER PERMISSION PRIOR TO BEGINNING WORK.

C. CONDUIT SHALL BE PERMITTED TO BE ROUTED EXPOSED/SURFACE MOUNTED IN MECHANICAL YARDS. EXPOSED CONDUITS SHALL RUN PERPENDICULAR OR PARALLEL TO THE WALLS, BEAMS, ETC. ROUTING SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGH-IN.

D. CONTRACTOR SHALL SAW CUT EXISTING CONCRETE SLABS WHEN REQUIRED TO INSTALL NEW RACEWAYS. COORDINATE PROPOSED ROUTING WITH ARCHITECT PRIOR TO SAW CUTTING. CONTRACTOR SHALL PATCH TO MATCH EXISTING CONDITIONS. PERFORM X-RAY SCAN ON ANY POST TENSION SLAB PRIOR TO COMMENCING CUTTING.

E. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS WHEN EXCAVATING TO AVOID DAMAGE TO EXISTING POWER, COMMUNICATIONS, WATER, SANITARY/SEWER, AND/OR GAS LINES THAT MAY BE BURIED IN AREAS OF NEW CONSTRUCTION OR WHEN TRENCHING FOR NEW FEEDERS AND BRANCHES IS REQUIRED. COORDINATE WITH CIVIL PLANS FOR ADDITIONAL INFORMATION.

F. COORDINATE EQUIPMENT LOCATIONS WITH ARCHITECTURAL AND CIVIL PLANS FOR EXACT EQUIPMENT LOCATION BEFORE INSTALLATION. EQUIPMENT LOCATIONS SHOWN ARE APPROXIMATE.

G. THE CONTRACTOR SHALL PROVIDE AND INSTALL PULL STRINGS TO ALL SPARE OR UNUSED UNDERGROUND CONDUITS.

H. CONTRACTOR SHALL PROVIDE CONDUIT AS REQUIRED BY DIVISION 27/28. COORDINATE WITH DIVISION 27/28 SYSTEM PROVIDER FOR EXACT SIZE AND QUANTITY OF CONDUITS REQUIRED.

I. PROVIDE FLUSH WITH GRADE TRAFFIC-RATED CONCRETE PULL-BOXES AS REQUIRED EVERY 250' MAXIMUM FOR ALL BELOW GRADE CONDUIT RUNS SHOWN. LOW VOLTAGE AND LINE VOLTAGE CABLING SHALL NOT BE RUN THROUGH THE SAME PULL BOX.

J. ELECTRICAL SERVICE PULL-BOXES/MANHOLES SHALL BE COORDINATED WITH THE POWER COMPANY. REFER TO POWER COMPANY STANDARDS FOR EXACT REQUIREMENTS.

K. UNDER GROUND BRANCH CIRCUITS CONDUITS SHALL BE A MINIMUM SIZE OF 1 INCH USING #10 AWG CONDUCTORS UNLESS OTHERWISE NOTED.

L. ALL UNDERGROUND FEEDERS AND BRANCH CIRCUIT SHALL BE PROVIDED WITH PULLBOXES AS REQUIRED BY NEC.

M. ALL PULL BOXES SHALL BE INSTALLED FLUSH WITH FINISHED GRADE. REFER TO CIVIL PLANS FOR FINAL GRADE ELEVATION.

## FIRE ALARM GENERAL NOTES:

A. CONTRACTOR SHALL SUBMIT LICENSED SEALED FIRE ALARM DRAWINGS TO THE AHJ/PERMIT OFFICE FOR PLAN REVIEW BY MEANS OF DEFERRED SUBMITTAL.

B. ALL CEILING MOUNTED DEVICES SHALL BE CENTERED IN THE CEILING TILE.

C. ALL FIRE ALARM VISUAL AND AUDIO/VISUAL DEVICES SHALL BE CONFIGURED TO PROVIDE CANDELA RATINGS IN ACCORDANCE WITH ADA & NFPA COVERAGES.

D. CONTRACTOR SHALL PROVIDE 120V DEDICATED 20A BRANCH CIRCUIT WITH LOCK-ON BREAKER PROVISIONS TO EACH SPEAKER AMPLIFIER AND VISUAL DEVICE POWER SUPPLIES AS REQUIRED BY FIRE ALARM SHOP DRAWINGS. CONNECT TO EMERGENCY POWER WHEN AVAILABLE.

E. ALL WIRING FOR DEVICES IN EXPOSED STRUCTURE AREAS SHALL BE ROUTED WITHIN CONDUIT. EXPOSED ROUTING SHALL BE AVOIDED. EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH ARCHITECT AND ENGINEER PRIOR TO INSTALLATION.

F. CONTRACTOR SHALL PROVIDE CONDUIT PATHWAYS FOR FIRE ALARM PLENUM CONDUCTORS WHERE ROUTED ABOVE HARD CEILING AREAS. CONDUIT RACEWAYS SHALL ALLOW ACCESS TO CONDUIT AT EACH END IN ACCESSIBLE LOCATIONS ABOVE CEILINGS.

G. LOCATE NEW SMOKE DETECTORS IN THE PATH OF EGRESS , ELECTRICAL, MECHANICAL, IDF ROOMS, STORAGE ROOMS AND OTHER LOCATIONS IN CHILDREN AREAS.

H. DUCT MOUNTED SMOKE DETECTORS SERVING HVAC UNITS WITH 2000 CFM OR GREATER SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION IN RETURN AIR DUCT INSIDE THE BUILDING THE UNIT SERVES. IT IS NOT ACCEPTABLE TO INSTALL DUCT MOUNTED SMOKE DETECTORS AT THE HVAC UNIT ON THE ROOF OR EXTERIOR OF THE BUILDING.

I. LOCATE HEAT DETECTORS IN BREAKROOM AREAS.

J. PROVIDE NEW AUDIO & VISUAL DEVICES PER APPLICABLE CODE.

## NOTE TO THE CONTRACTORS:

CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE LIGHTNING PROTECTION SYSTEM FOR EACH ENTIRE BUILDING (EXISTING AND NEW ADDITIONS) COMPLYING WITH NFPA 780 PER THE PERFORMANCE BASED DIVISION 26 SPECIFICATION. BOND ALL ROOF-MOUNTED EQUIPMENT AND FURNISH A SYSTEM MASTER LABEL OR LPI CERTIFICATION. GROUND LOOP SHALL BE PROVIDED AROUND EACH ENTIRE BUILDING.

CONTRACTOR SHALL PROVIDE A COMPLETE ANALOG, MICROPROCESSOR CONTROLLED FIRE ALARM SYSTEM AS SPECIFIED PER THE PERFORMACE BASED DIVISION 28 SPECIFICATIONS. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL CONTROL EQUIPMENT, POWER SUPPLIES, SIGNAL INITIATING AND SIGNALING DEVICES, CONDUIT, WIRE, FITTINGS, AND ALL OTHER ACCESSORIES REQUIRED TO PROVIDE A COMPLETE AND OPERABLE SYSTEM. THE NEW BUILDING FIRE ALARM SYSTEM SHALL COMPLY WITH NFPA 72 (MOST RECENT) AND ALL ASSOCIATED CODES.

CONTRACTOR SHALL COMPLY WITH INTERNATIONAL FIRE CODE (IFC) SECTION 510, "EMERGENCY RESPONDER RADIO COVERAGE". THIS CODE REQUIREMENT APPLIES TO THE ENTIRE BUILDING. A REPORT OF RADIO COMMUNICATION COVERAGE SHALL BE TURNED TO THE COUNTY FIRE MARSHAL'S OFFICE. BASED ON THE RESULTS OF THE REPORT, IF IT IS DETERMINED THERE IS INSUFFICIENT RADIO COVERAGE AND IF THE RADIO COVERAGE DOES NOT COMPLY IN ACCORDANCE WITH THE IFC AN E.R.R.C. SYSTEM SHALL BE PROVIDED.


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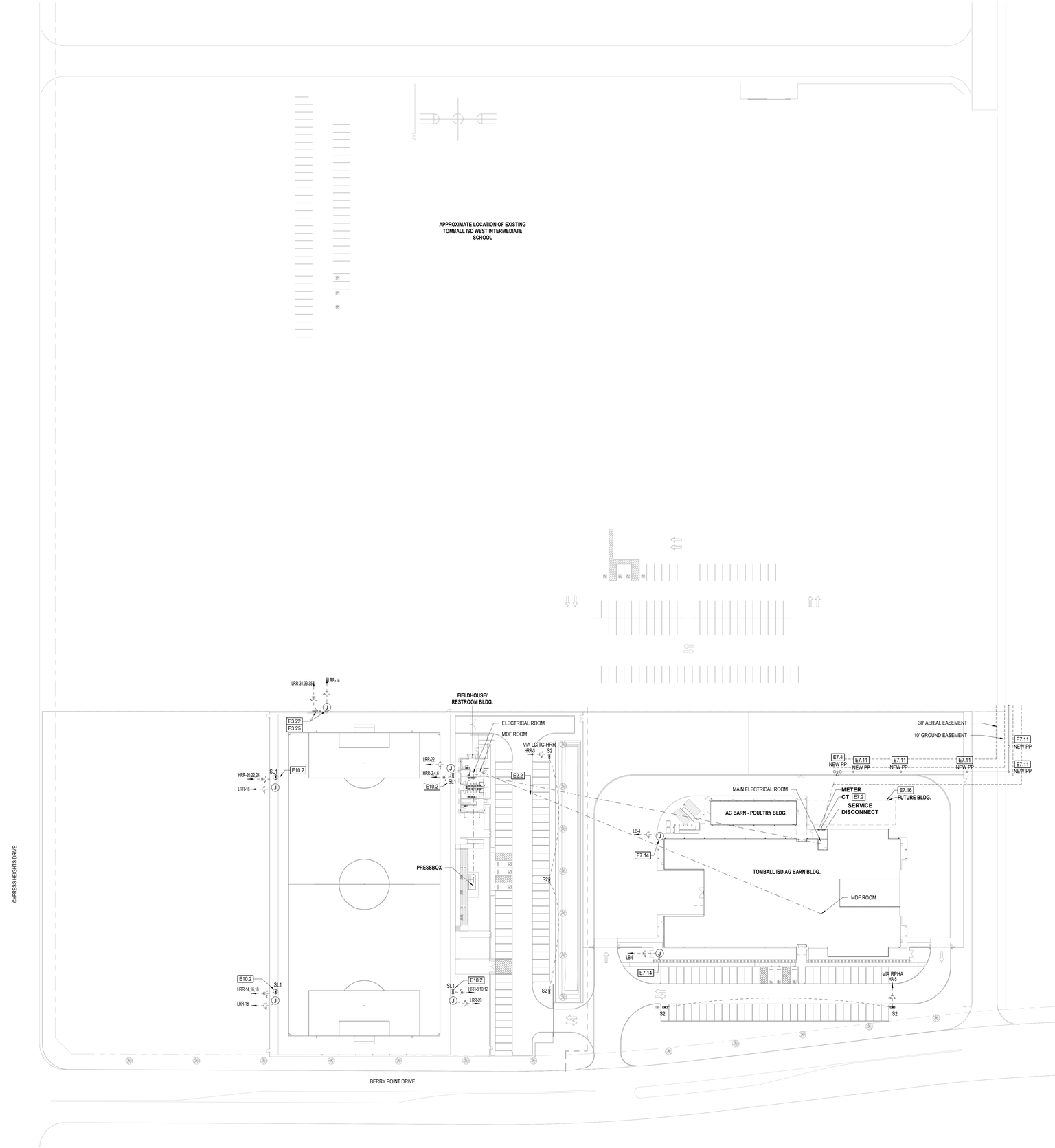
E0.11

ELECTRICAL GENERAL NOTES




1 E1.01 **ELECTRICAL SITE PLAN**
1" = 50'-0"

## GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

## ELECTRICAL KEYED NOTES

E2.2 PROVIDE TWO (2) 2-1/2" CONDUITS FROM AG BARN DDC/BAS PANEL TO FIELD HOUSE/RESTROOM BUILDING'S DDC/BAS PANEL TO INTEGRATE DDC/BAS SYSTEMS. COORDINATE EXACT LOCATIONS AND REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.

E3.22 PROVIDE POWER SCOREBOARD AND SCOREBOARD CONTROLS AS REQUIRED. PROVIDE 60A/3P/150AF/NE3R DISCONNECT SWITCH FOR SCOREBOARD POWER. PROVIDE (1)1" CONDUIT FOR DATA BACK TO RESTROOM BUILDING IDF ROOM. COORDINATE EXACT REQUIREMENTS WITH ARCHITECT AND TECHNOLOGY CONTRACTOR.

E3.25 FOR SCOREBOARD POWER, PROVIDE 3-PHASE BUCK AND BOOST TRANSFORMER TO STEP UP FROM 208V/3PH TO 240V/3PH. MOUNT TRANSFORMER IN LOCK-ABLE NEMA 3R ELECTRICAL ENCLOSURE. FIELD COORDINATE LOCATION AND COORDINATE ELECTRICAL REQUIREMENTS WITH FINAL SCOREBOARD SELECTED.

E7.2 PROPOSED LOCATION FOR CT CABINET, METER CAN, AND SERVICE ENTRANCE DISCONNECT. REFERENCE ELECTRICAL ONE-LINE DIAGRAM SHEET FOR FURTHER DETAILS. COORDINATE WITH UTILITY COMPANY, ARCHITECT, OWNER, CIVIL AND ALL SITE UTILITIES PRIOR TO STARTING ANY WORK.

E7.4 PROPOSED LOCATION OF NEW POWER COMPANY TERMINAL POLE. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH POWER COMPANY.

E7.11 PROPOSED LOCATION OF NEW POWER POLE AND EXTENSION OF 3-PHASE OVERHEAD LINES. EXACT POLE LOCATIONS AND ROUTING SHALL BE DETERMINED BY POWER COMPANY AND CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH POWER CO. INCLUDING THE NEW EASEMENT AND EXISTING/NEW UTILITIES AND SITE CONDITIONS. FIELD VERIFY LOCATION OF EXISTING UPSTREAM POWER POLES AND 3-PHASE LINES THAT SERVE THE EXISTING TOMBALL ISD WEST INTERMEDIATE SCHOOL AND EXTEND NEW 3-PHASE LINES AND POWER POLES FROM THAT LOCATION.

E7.14 PROVIDE (1)1"C. UNDERGROUND TO SAMPLE WELL/SAND MUD SEPARATOR FOR ALARM AND ROUTE BACK TO ALARM CONTROL PANEL INSIDE BUILDING. PROVIDE POWER FOR ALARM CONTROL PANEL. COORDINATE WITH PLUMBING CONTRACTOR FOR EXACT LOCATIONS OF ALARM AND ALARM CONTROL PANEL AND EXACT ELECTRICAL REQUIREMENTS FOR WIRING FROM ALARM TO ALARM CONTROL PANEL. FIELD VERIFY CONDUIT ROUTING.

E7.16 APPROXIMATE EXTEND OF PROPOSED FUTURE BUILDING. REFER TO ARCHITECTURAL SITE PLAN FOR ACTUAL EXTENT. CONDUITS SHALL NOT BE ROUTED UNDER THE PROPOSED FUTURE BUILDING. TYPICAL

E10.2 PROVIDE POWER AND CONTROLS FOR SPORTS LIGHTING POLE WITH CONTACTOR/CONTROLLER MOUNTED ON POLE. IN ADDITION TO CONTROLS ON POLE, PROVIDE REMOTELY LOCATED MANUAL ON/OFF OVERRIDE CONTROL OF SPORTS POLE LIGHTS IN FIELD-HOUSE BUILDING, REFER TO POWER PLANS FOR PROPOSED LOCATION. PROVIDE CONDUITS AND WIRE FROM THIS LOCATION TO EACH POLE LIGHT: (1)1" CONDUIT FOR CONTACTOR CONTROL WIRING AND (1)1" CONDUIT FOR DIMMING WIRES. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER. PROVIDE (1)1" CONDUIT FROM POLE TO FIELD-HOUSE BUILDING MDF ROOM FOR DATA. COORDINATE WITH TECHNOLOGY INSTALLER.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ELECTRICAL SITE PLAN


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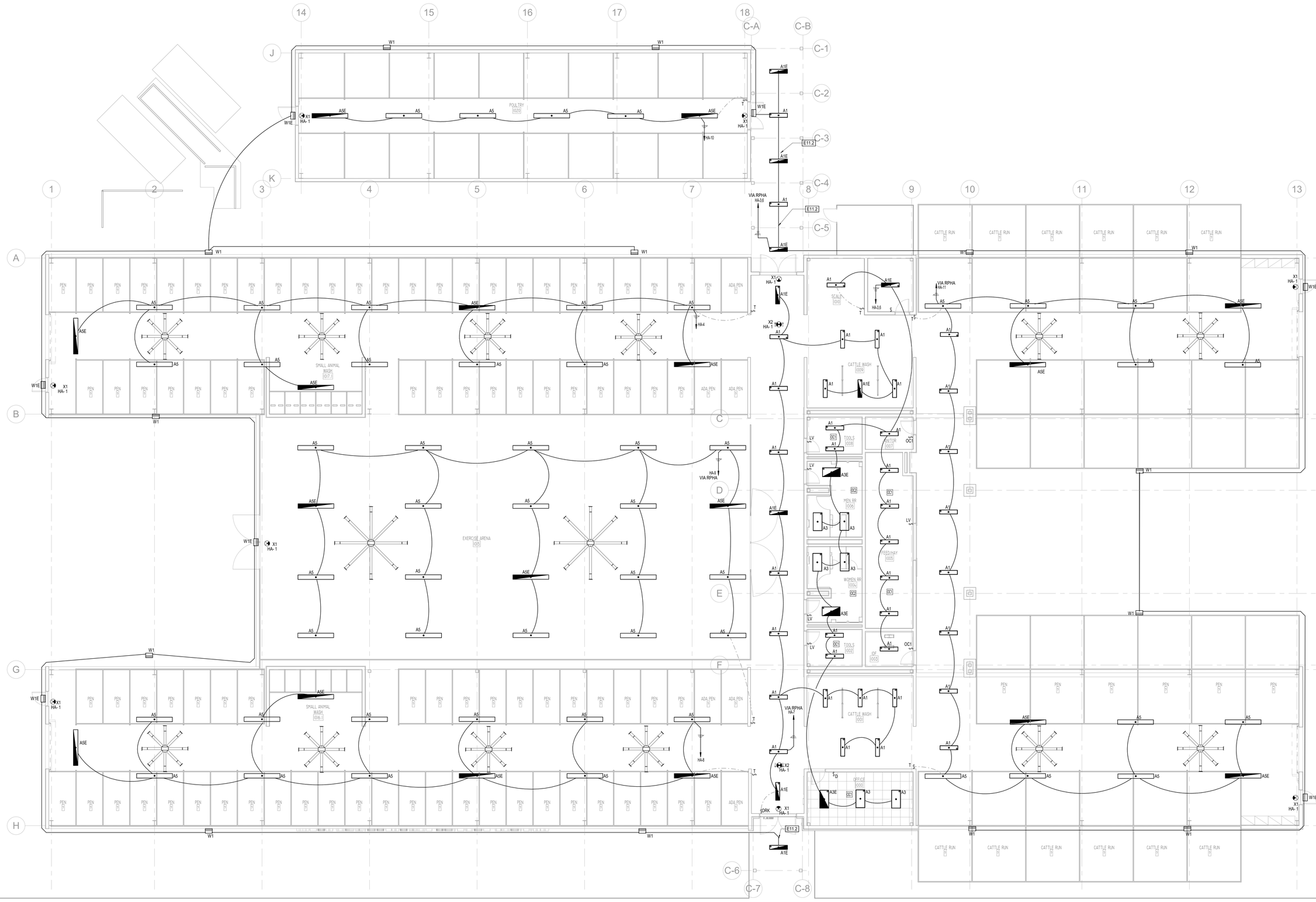
## GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

## ☐ ELECTRICAL KEYED NOTES

E11.2 CONDUIT SHALL BE ROUTED SURFACE-MOUNTED TO THE UNDERSIDE OF THE CANOPY AND PAINTED TO MATCH CANOPY.




## 1 E2.01 ELECTRICAL LIGHTING PLAN LEVEL 1

1/8" = 1'-0"

PLAN NORTH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ELECTRICAL LIGHTING PLAN


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## GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

## ELECTRICAL KEYED NOTES

E4.2 PROVIDE RECEPTACLE FOR DRINKING FOUNTAIN AT THIS LOCATION. PROVIDE REMOTE GFCI TEST BUTTON ADJACENT TO DRINKING FOUNTAIN AT NORMAL RECEPTACLE HEIGHT IN AN ACCESSIBLE LOCATION.

E4.10 GFCI QUADRUPLEX RECEPTACLES MOUNTED IN WEATHERPROOF ENCLOSURE SHALL BE ON DEDICATED CIRCUITS. MOUNT TO POST AT 42"A.F.F. FIELD COORDINATE EXACT LOCATION WITH OWNER AND ARCHITECT. TYPICAL

E4.11 GFCI DUPLEX RECEPTACLES MOUNTED IN WEATHERPROOF ENCLOSURE SHALL BE ON DEDICATED CIRCUITS. MOUNT TO POST AT 42"A.F.F. FIELD COORDINATE EXACT LOCATION WITH OWNER AND ARCHITECT. TYPICAL

E4.13 PROVIDE RECEPTACLE MOUNTED 6" TO TOP BELOW CEILING TILE. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH OWNER/ARCHITECT PRIOR TO ROUGH-IN.

E4.14 PROVIDE POWER FOR ANIMAL TREADMILL. COORDINATE FINAL LOCATIONS WITH OWNER/ARCHITECT PRIOR TO ROUGH-IN.

E4.15 PROVIDE CONTROLLED DUPLEX RECEPTACLE. TOP HALF SHALL BE SWITCH VIA PLUG LOAD CONTROLLER AND BOTTOM HALF SHALL BE UNSWITCHED. REFER TO SWITCHED RECEPTACLE DETAIL. TYPICAL FOR ALL CONTROLLED DUPLEX RECEPTACLES.

E4.20 PROVIDE REMOTE GFCI TEST/RESET BUTTON IN ACCESSIBLE LOCATION ADJACENT TO EQUIPMENT.

E5.13 PROVIDE POWER FOR DDC/BAS PANEL. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION PRIOR TO ROUGH-IN.

E7.15 PROVIDE POWER FOR IRRIGATION CONTROLLER. COORDINATE WITH OWNER OR IRRIGATION SYSTEM INSTALLER FOR ACTUAL LOCATION PRIOR TO ROUGH-IN.

## ELECTRICAL KEYED NOTES

E3.14 PROVIDE POWER FOR ALL HARDWIRED PLUMBING FIXTURE SENSORS. JUNCTION BOX MOUNTED BEHIND WALL ADJACENT TO EACH PLUMBING FIXTURE FOR CONNECTION TO HARDWIRED PLUMBING FIXTURE. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT QUANTITIES AND LOCATIONS WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.

E3.15 PROVIDE 208Y/30A SPECIAL NEMA RECEPTACLE FOR SERVER RACK UPS. EXTEND RIGID CONDUIT FROM CEILING TO RECEPTACLE LOCATION AND PROVIDE CONDUIT SUPPORTS AS REQUIRED. COORDINATE EXACT RECEPTACLE NEMA CONFIGURATION AND LOCATIONS WITH DIVISION 27 PRIOR TO ROUGH-IN.

E3.16 CONTRACTOR SHALL COORDINATE WITH OWNER AND DIVISION 27/28 INSTALLERS FOR EXACT RECEPTACLE NEMA CONFIGURATIONS, LOCATIONS, RECEPTACLE MOUNTING HEIGHTS, AND QUANTITIES FOR ALL EQUIPMENT IN THIS ROOM PRIOR TO ROUGH-IN.

E3.17 PROVIDE POWER FOR ACCESS CONTROLS (ACP). COORDINATE EXACT LOCATIONS AND REQUIREMENTS WITH DIVISIONS 27/28 PRIOR TO ROUGH-IN.

E3.18 PROVIDE POWER FOR ALL MOTORIZED DAMPERS IN ENTIRE BUILDING. COORDINATE ALL LOCATIONS AND QUANTITIES WITH MECHANICAL CONTRACTOR.

E3.19 PROVIDE POWER FOR CIRCULATION PUMP AND TIME SWITCH. COORDINATE WITH PLUMBING CONTRACTOR.

E3.20 PROVIDE POWER FOR WATER HEATER. PROVIDE 60A/3P/NF/NE1 DISCONNECT SWITCH. COORDINATE WITH PLUMBING CONTRACTOR.

E3.26 PROVIDE POWER FOR INTRUSION DETECTION PANEL (IDP). COORDINATE EXACT LOCATIONS AND REQUIREMENTS WITH DIVISIONS 27/28 PRIOR TO ROUGH-IN.

## ELECTRICAL KEYED NOTES

E3.8 INDOOR UNIT SHALL RECEIVE POWER FROM ASSOCIATE OUTDOOR UNIT. PROVIDE DISCONNECTING MEANS AT INDOOR UNIT AS REQUIRED BY MANUFACTURER AND ALL APPLICABLE CODES. REFER TO DUCTLESS SPLIT ELECTRICAL CONNECTION DETAIL ON ELECTRICAL DETAILS SHEET.

E3.9 PROVIDE POWER FOR HVLS FAN. INTEGRATE WITH FIRE ALARM SUCH THAT FAN IS DE-ENERGIZED UPON ACTIVATION OF THE FIRE ALARM SYSTEM. PROVIDE 1" CONDUIT TO FAN CONTROLS AND TO FIRE ALARM CONTROL PANEL. REFER TO MECHANICAL DRAWINGS FOR PROPOSED CONTROLS/WITCH LOCATIONS. COORDINATE WITH MECHANICAL AND FIRE ALARM CONTRACTOR PRIOR TO ROUGH-IN. TYPICAL

E3.10 PROPOSED LOCATION FOR NEW FIRE ALARM CONTROL PANEL (FACP). PROVIDE POWER FOR FACP. COORDINATE FINAL LOCATION AND EXACT REQUIREMENTS WITH FIRE ALARM CONTRACTOR AND FIRE ALARM SHOP DRAWINGS PRIOR TO ROUGH-IN.

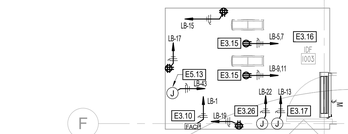
E3.11 PROPOSED LOCATION FOR NEW FIRE ALARM REMOTE POWER SUPPLY (RPS). PROVIDE POWER FOR RPS. MOUNT IN NEMA 3R WEATHERPROOF ENCLOSURE. PROVIDE (2)1" CONDUITS WITH PULL STRINGS BACK TO FACP. COORDINATE FINAL LOCATION AND EXACT REQUIREMENTS WITH FIRE ALARM CONTRACTOR AND FIRE ALARM SHOP DRAWINGS PRIOR TO ROUGH-IN.

E3.12 PROPOSED LOCATION FOR NEW FIRE ALARM ANNUNCIATOR PANEL (ANN). MOUNT IN NEMA 3R WEATHERPROOF ENCLOSURE. ENCLOSURE MUST BE RECESSED. PROVIDE (2)1" CONDUITS WITH PULL STRINGS BACK TO FACP. COORDINATE FINAL LOCATION AND EXACT REQUIREMENTS WITH FIRE ALARM CONTRACTOR AND FIRE ALARM SHOP DRAWINGS PRIOR TO ROUGH-IN.

E3.13 PROVIDE POWER FOR ALL ELECTRIC TRAP PRIMERS IN ENTIRE BUILDING. COORDINATE ALL LOCATIONS WITH PLUMBING CONTRACTOR.

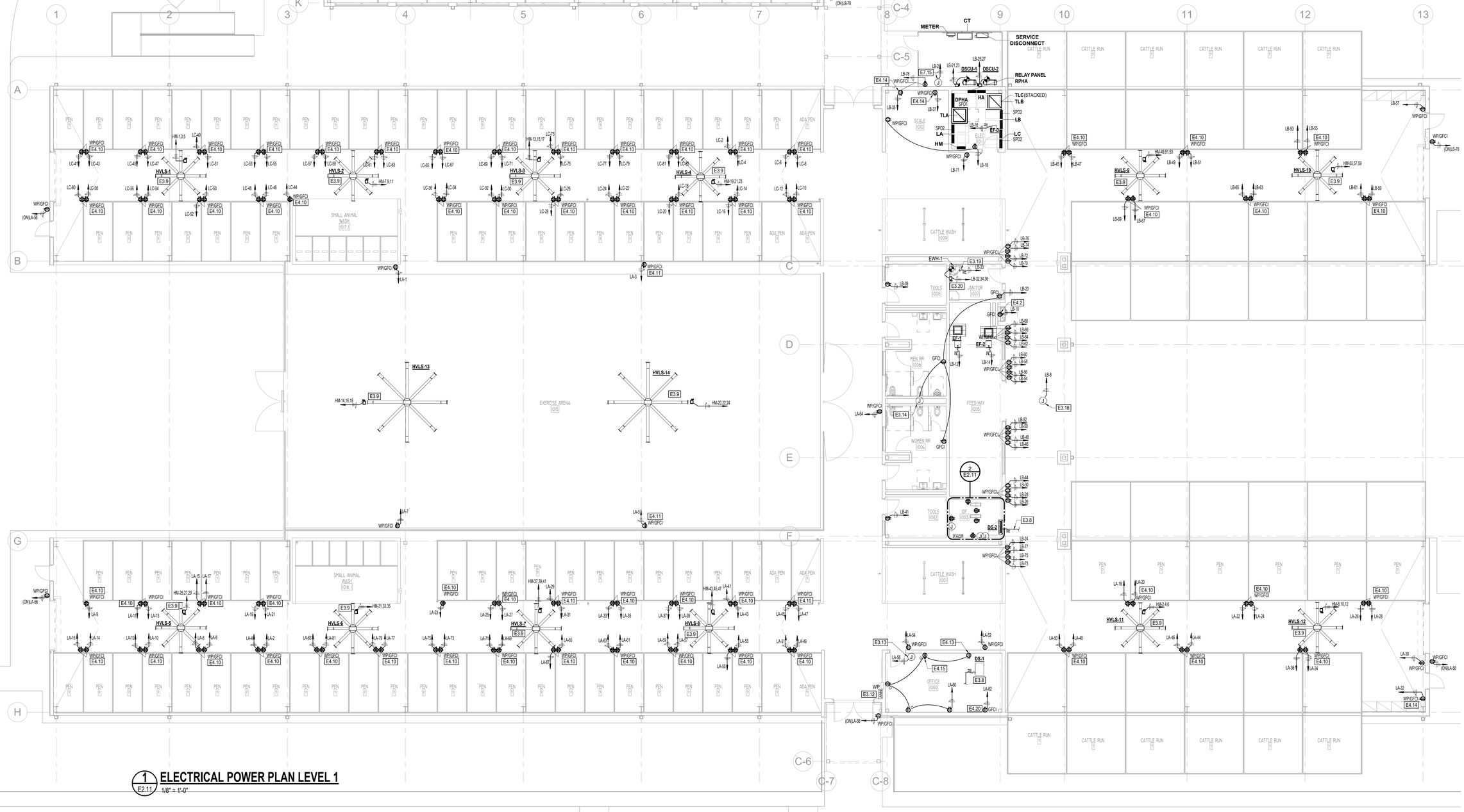
## 2 ENLARGED ELECTRICAL POWER PLAN - IDF ROOM

E2.11 1/4" = 1'-0"



## 1 ELECTRICAL POWER PLAN LEVEL 1

E2.11 1/8" = 1'-0"




PLAN NORTH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Tel: 832.287.9874

STRUCTURAL
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MEP
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9990 Richmond Avenue, Suite 300
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Tel: 713.914.0888


A B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
---- BERRY POINT DR, CYPRESS TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# E2.11

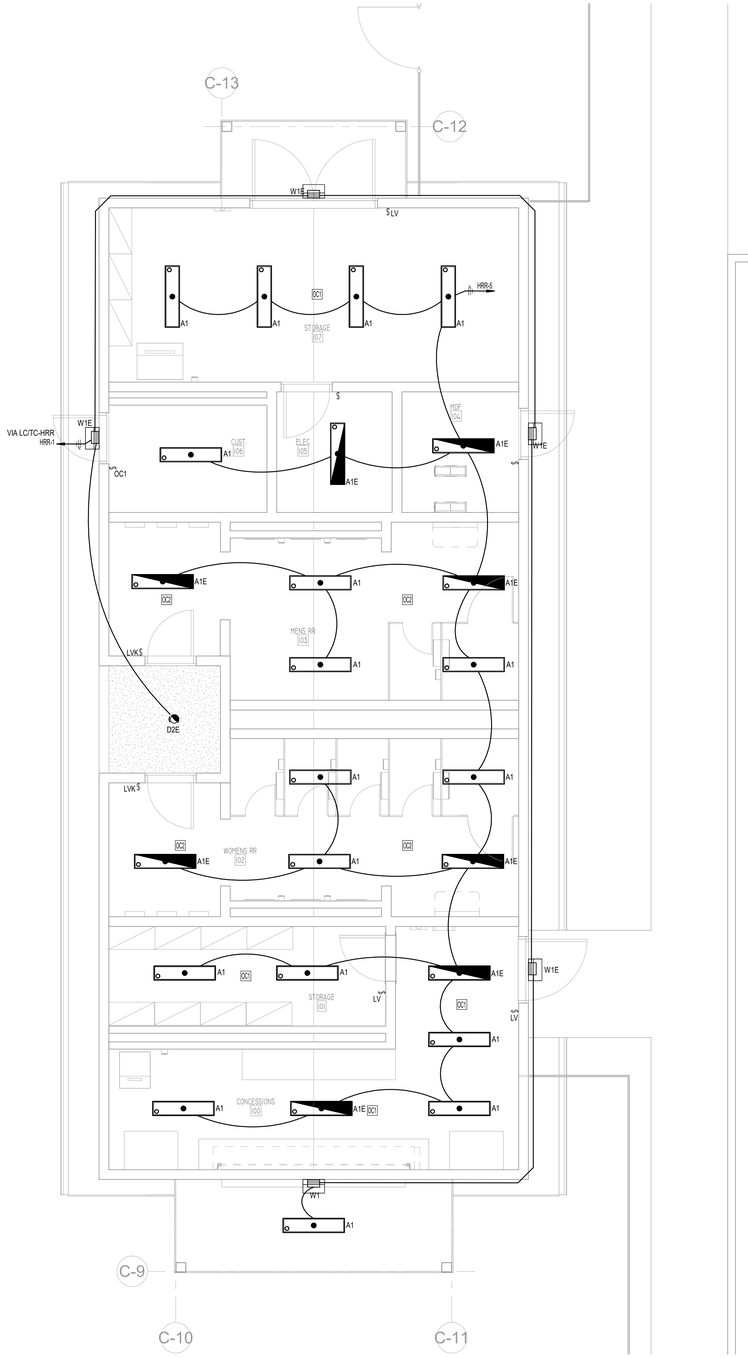
ELECTRICAL POWER PLAN LEVEL 1


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|

## GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.




1 E3.01 **ELECTRICAL LIGHTING ENLARGED PLAN - FIELD HOUSE/RESTROOM**

1/4" = 1'-0"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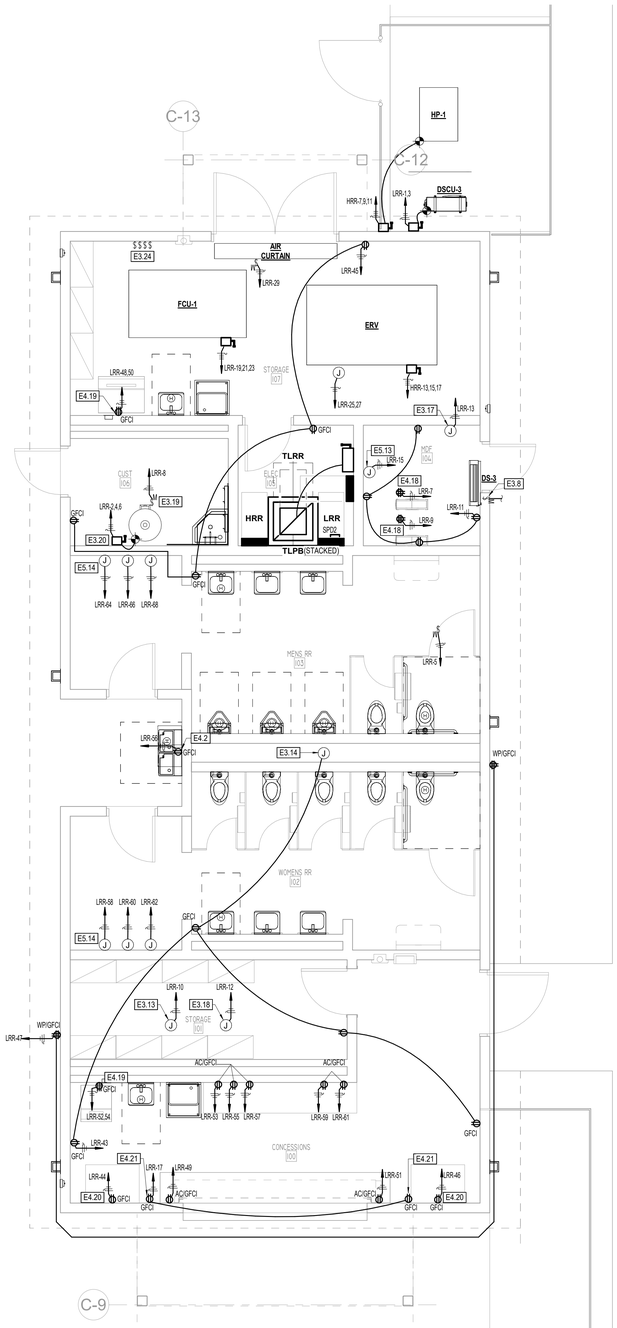
# E3.01

ELECTRICAL LIGHTING ENLARGED PLAN

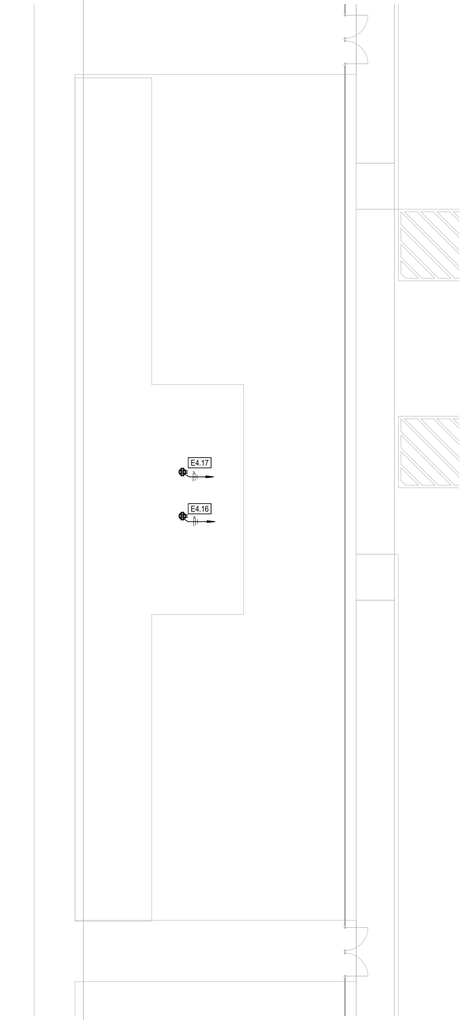
PLAN NORTH


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


SS | CC/TD|DT/DL | JD | RT




## 1 ELECTRICAL POWER ENLARGED PLAN - FIELD HOUSE/RESTROOM
E3.02 — 1/4" = 1'-0"




## 2 ELECTRICAL POWER ENLARGED PLAN - PRESS BOX
E3.02 — 1/8" = 1'-0"

## GENERAL ELECTRICAL NOTE:

A. REFER TO SHEET E0.11 FOR ALL GENERAL ELECTRICAL NOTES.

## ELECTRICAL KEYED NOTES

E3.8 INDOOR UNIT SHALL RECEIVE POWER FROM ASSOCIATE OUTDOOR UNIT. PROVIDE DISCONNECTING MEANS AT INDOOR UNIT AS REQUIRED BY MANUFACTURER AND ALL APPLICABLE CODES. REFER TO DUCTLESS SPLIT ELECTRICAL CONNECTION DETAIL ON ELECTRICAL DETAILS SHEET.

E3.13 PROVIDE POWER FOR ALL ELECTRIC TRAP PRIMERS IN ENTIRE BUILDING. COORDINATE ALL LOCATIONS WITH PLUMBING CONTRACTOR.

E3.14 PROVIDE POWER FOR ALL HARDWIRED PLUMBING FIXTURE SENSORS. JUNCTION BOX MOUNTED BEHIND WALL ADJACENT TO EACH PLUMBING FIXTURE FOR CONNECTION TO HARDWIRED PLUMBING FIXTURE. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT QUANTITIES AND LOCATIONS WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.

E3.17 PROVIDE POWER FOR ACCESS CONTROLS (ACP). COORDINATE EXACT LOCATIONS AND REQUIREMENTS WITH DIVISIONS 27/28 PRIOR TO ROUGH-IN.

E3.18 PROVIDE POWER FOR ALL MOTORIZED DAMPERS IN ENTIRE BUILDING. COORDINATE ALL LOCATIONS AND QUANTITIES WITH MECHANICAL CONTRACTOR.

E3.19 PROVIDE POWER FOR CIRCULATION PUMP AND TIME SWITCH. COORDINATE WITH PLUMBING CONTRACTOR.

E3.20 PROVIDE POWER FOR WATER HEATER. PROVIDE 60A/3P/NF/NE1 DISCONNECT SWITCH. COORDINATE WITH PLUMBING CONTRACTOR.

E3.24 PROPOSED LOCATION FOR SPORTS LIGHT POLES MANUAL OVERRIDE CONTROLS. FIELD COORDINATE EXACT LOCATION. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER.

E4.2 PROVIDE RECEPTACLE FOR DRINKING FOUNTAIN AT THIS LOCATION. PROVIDE REMOTE GFCI TEST BUTTON ADJACENT TO DRINKING FOUNTAIN AT NORMAL RECEPTACLE HEIGHT IN AN ACCESSIBLE LOCATION.

E4.16 PROVIDE POWER FOR PRESS BOX SPEAKER RACK. PROVIDE 20A/1P BREAKER IN AVAILABLE SPACE IN PRESS BOX PANEL. COORDINATE WITH PRESS BOX PROVIDER AND TECHNOLOGY CONTRACTOR.

E4.17 PROVIDE POWER FOR PRESS BOX NETWORK RACK. PROVIDE 20A/1P BREAKER IN AVAILABLE SPACE IN PRESS BOX PANEL. COORDINATE WITH PRESS BOX PROVIDER AND TECHNOLOGY CONTRACTOR.

E4.18 PROVIDE POWER FOR SERVER RACK. PROVIDE RECEPTACLE ABOVE RACK. COORDINATE EXACT NEMA CONFIGURATION, LOCATION, AND MOUNTING HEIGHT WITH OWNER/TECHNOLOGY CONTRACTOR PRIOR TO ROUGH-IN.

E4.19 PROVIDE POWER FOR ICE MACHINE AND PROVIDE SPECIAL NEMA RECEPTACLE. COORDINATE RECEPTACLE NEMA CONFIGURATION AND ELECTRICAL REQUIREMENTS WITH FINAL EQUIPMENT SELECTED. FIELD COORDINATE LOCATION AND MOUNTING HEIGHT.

E4.20 PROVIDE REMOTE GFCI TEST/RESET BUTTON IN ACCESSIBLE LOCATION ADJACENT TO EQUIPMENT.

E4.21 PROVIDE POWER FOR WALL MOUNTED FANS. COORDINATE LOCATION AND MOUNTING HEIGHT WITH OWNER/ARCHITECT PRIOR TO ROUGH-IN.

E5.13 PROVIDE POWER FOR DDC/BAS PANEL. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION PRIOR TO ROUGH-IN.

E5.14 PROVIDE POWER FOR HAND DRYERS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS. (TYPICAL)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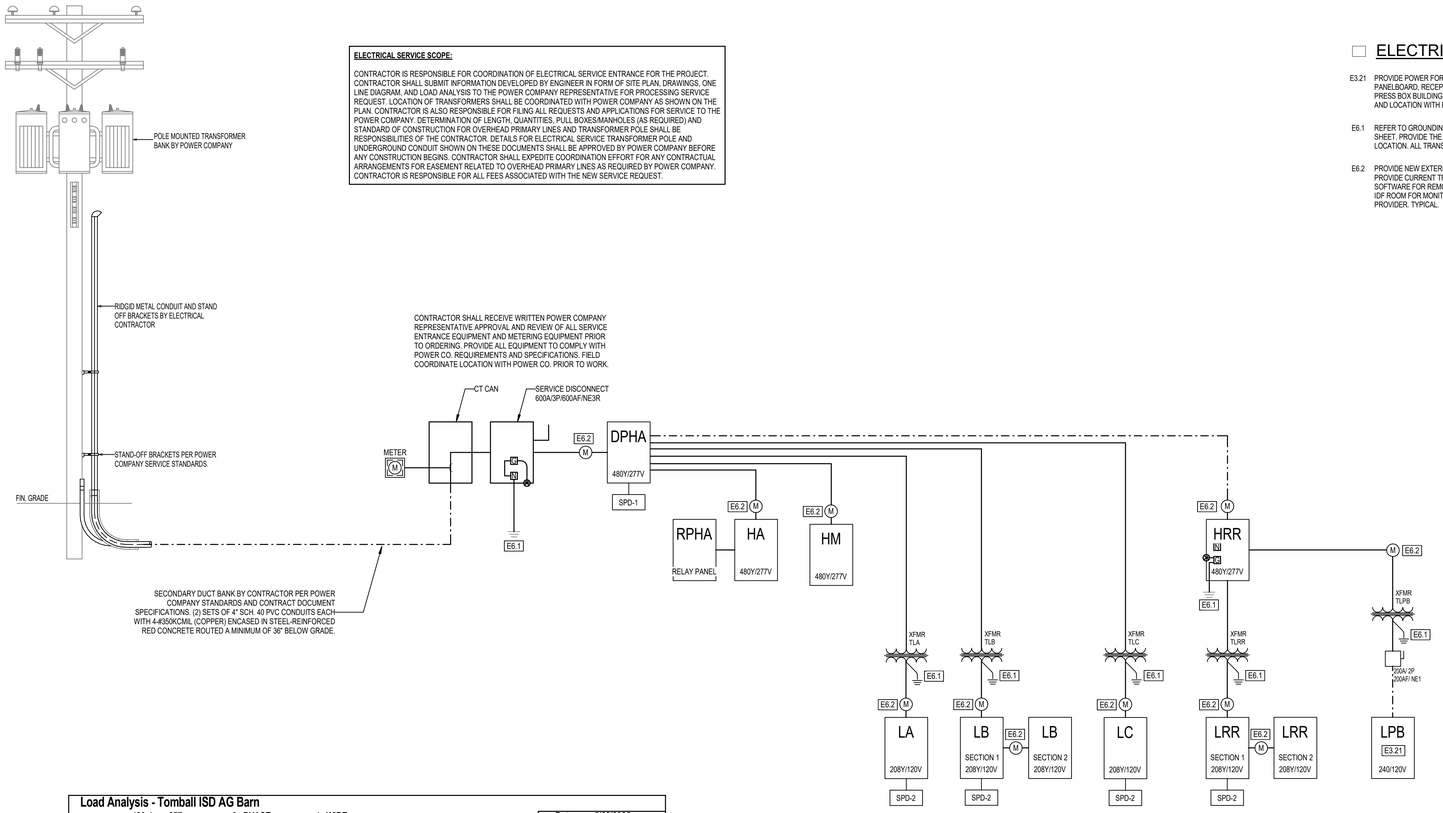
# E3.02

ELECTRICAL POWER ENLARGED PLAN

PLAN NORTH


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


| SS | CC/TD/DT/DL | JD | RT |
|---|---|---|---|




**ELECTRICAL SERVICE SCOPE:**

CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ELECTRICAL SERVICE ENTRANCE FOR THE PROJECT. CONTRACTOR SHALL SUBMIT INFORMATION DEVELOPED BY ENGINEER IN FORM OF SITE PLAN, DRAWINGS, ONE LINE DIAGRAM, AND LOAD ANALYSIS TO THE POWER COMPANY REPRESENTATIVE FOR PROCESSING SERVICE REQUEST. LOCATION OF TRANSFORMERS SHALL BE COORDINATED WITH POWER COMPANY AS SHOWN ON THE PLAN. CONTRACTOR IS ALSO RESPONSIBLE FOR FILING ALL REQUESTS AND APPLICATIONS FOR SERVICE TO THE POWER COMPANY. DETERMINATION OF LENGTH, QUANTITIES, PULL BOXES/MANHOLES (AS REQUIRED) AND STANDARD OF CONSTRUCTION FOR OVERHEAD PRIMARY LINES AND TRANSFORMER POLE SHALL BE RESPONSIBILITIES OF THE CONTRACTOR. DETAILS FOR ELECTRICAL SERVICE TRANSFORMER POLE AND UNDERGROUND CONDUIT SHOWN ON THESE DOCUMENTS SHALL BE APPROVED BY POWER COMPANY BEFORE ANY CONSTRUCTION BEGINS. CONTRACTOR SHALL EXPEDITE COORDINATION EFFORT FOR ANY CONTRACTUAL ARRANGEMENTS FOR EASEMENT RELATED TO OVERHEAD PRIMARY LINES AS REQUIRED BY POWER COMPANY. CONTRACTOR IS RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THE NEW SERVICE REQUEST.

## ELECTRICAL KEYED NOTES

E3.21 PROVIDE POWER FOR PRE-MANUFACTURED AND PRE-WIRED PRESS BOX BUILDING WITH PANELBOARD, RECEPTACLES, LIGHTING FIXTURES, AND LIGHTING CONTROLS PROVIDED WITH PRESS BOX BUILDING. COORDINATE EXACT ELECTRICAL REQUIREMENTS (VOLTAGE/PHASE) AND LOCATION WITH PRESS BOX BUILDING SUBMITTAL/SHOP DRAWINGS.

E6.1 REFER TO GROUNDING ELECTRODE SYSTEM AND BONDING DETAIL ON ELECTRICAL DETAILS SHEET. PROVIDE THE MAIN GROUND BAR IN THE MAIN ELECTRICAL ROOM, FIELD COORDINATE LOCATION. ALL TRANSFORMERS SHALL BE GROUNDED PER DETAILS.

E6.2 PROVIDE NEW EXTERNALLY MOUNTED METER TO MONITOR THE ENTIRE ELECTRICAL GEAR. PROVIDE CURRENT TRANSFORMERS, POTENTIAL TRANSFORMERS, POWER SUPPLY, AND SOFTWARE FOR REMOTE MONITORING VIA COMPUTER SOFTWARE. PROVIDE (1)1" CONDUIT TO IDF ROOM FOR MONITORING. COORDINATE EXACT REQUIREMENTS WITH METERING SYSTEM PROVIDER. TYPICAL.

## ONE-LINE DIAGRAM GENERAL NOTES:

A. CONTRACTOR SHALL UTILIZE THE MANUFACTURER OF ELECTRICAL EQUIPMENT TO PROVIDE A SHORT CIRCUIT AND ARC FLASH STUDY OF THE ENTIRE ELECTRICAL SYSTEM.

1. CONTRACTOR SHALL SUBMIT FULL STUDY PRIOR TO RELEASE OF ELECTRICAL EQUIPMENT FOR MANUFACTURER TO ENSURE EQUIPMENT COMPLIES WITH ALL STUDIES. STUDIES SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER.
2. PROVIDE DATA TO ENSURE SHORT CIRCUIT INTERRUPTING RATINGS OF EQUIPMENT IS GREATER THAN FAULT CURRENT AVAILABLE AT EQUIPMENT. SERIES RATINGS MAY BE USED EXCEPT FOR SWITCHBOARDS AND DISTRIBUTION PANELS. SWITCHBOARDS AND DISTRIBUTION PANELS SHALL BE FULLY RATED. WHERE SERIES RATINGS ARE UTILIZED, EQUIPMENT SHALL BEAR BLUE LABELS INDICATING SERIES RATED EQUIPMENT ON THE EXTERIOR OF EACH ENCLOSURE.
3. ARC FLASH STUDY SHALL PROVIDE ARC INCIDENT ENERGY LEVELS, ARC FLASH BOUNDARY, AND PPE INFORMATION TO BE PRINTED AND APPLIED TO EACH EQUIPMENT IN THE SYSTEM. PROVIDE EQUIPMENT INTERRUPTING DATA AS PART OF STUDY.
4. REFER TO SPECIFICATIONS SECTION 26.05.73.

B. METERING EQUIPMENT ENCLOSURE PROVIDED BY POWER CO., INSTALLED BY ELECTRICAL CONTRACTOR PER POWER COMPANY SPECIFICATIONS. METERS INSTALLED BY POWER COMPANY.

C. CONTRACTOR SHALL INSTALL FEEDERS BASED ON THE OVERCURRENT DEVICE RATING UNLESS OTHERWISE NOTED. CONTRACTOR SHALL REFER TO THE FEEDER SCHEDULE TO OBTAIN AND INSTALL THE FEEDERS REQUIRED.

D. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT AT THE TIME OF INSTALLATION AND CALCULATION. THE LABEL SHALL BE 2" X 3" IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. THIS LABEL SHALL ALSO INCLUDE THE DATE OF THE CALCULATION.

E. PRIOR TO INSTALLATION OF UNDERGROUND FEEDERS, THE ELECTRICAL CONTRACTOR SHALL SUBMIT AN UNDERGROUND ROUTING PLAN TO THE ENGINEER OF RECORD., INDICATING THE EXACT ROUTING PATH FOR ALL UNDERGROUND CONDUIT. INDICATE STUB-UP LOCATIONS, SIZE AND QUANTITY OF CONDUIT. ALL ELECTRICAL PANELS AND EQUIPMENT SHALL BE SHOWN ON THIS PLAN FOR REFERENCE OF CONDUIT TERMINATION.

F. CONTRACTOR SHALL COORDINATE NEW ELECTRICAL SERVICE WITH UTILITY COMPANY. PROVIDE CONDUIT, TRANSFORMER PAD, AND TAP BOX, WHERE REQUIRED. ALL NEW UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY STANDARDS.

**Load Analysis - Tomball ISD AG Barn**

480 / 277 , 3 -PHASE, 4 -WIRE — Date: 5/28/2025

| DESCRIPTION | | | | | NEC | KVA |
|---|---|---|---|---|---|---|
| LIGHTING: | | | | | | |
| INTERIOR LIGHTING = | 11,324 | VA X | | X1.25% | | 14.2 |
| EXTERIOR LIGHTING = | 5,000 | VA X | | X1.25% | | 6.3 |
| POWER: | | | | | | |
| RECEPTACLES = | 309,170 | VA | | | 220.44 | |
| First 10,000: | | | 10,000 | X 100% | | 10.0 |
| Remainder: | | | 299,170 | X 50% | | 149.6 |
| MISCELLANEOUS | 11,500 | VA | | | | 11.5 |
| TECHNOLOGY | 20,976 | VA | | | | 21.0 |
| RESTROOM BUILDING | 27,000 | VA | | | | 27.0 |
| HVAC: | | | | | | |
| COOLING = | 17,462 | VA | | | 620.14 | 17.5 |
| HEATING (COINCIDENTAL) = | 0 | VA | | | | 0.0 |
| HEATING (NON-COINCIDENTAL) = | 27,825 | VA | | | | 27.8 |
| FANS= | 34,811 | VA | | | | 34.8 |
| PLUMBING: | | | | | | |
| WATER HEATER = | 10,000 | VA | | | | 10.0 |
| DRINKING FOUNTAIN = | 750 | VA X | 2 | | | 1.5 |
| | | | | | 20% SPARE: | 66.2 |
| | | | | | SUB TOTAL: | 331.1 |
| | | | | | TOTAL = | 397.3 |
| | | | | | TOTAL AMPS: | 477.8 |
| SQUARE FOOTAGE = 45,338 | | | | | SERVICE SIZE: | 600.0 |
| | | | | | SPARE AMPACITY: | 122.2 |

**TRANSFORMER FEEDER SCHEDULE - GENERAL PURPOSE - 3 PHASE**

| PRIMARY VOLTAGE | | | | SECONDARY VOLTAGE | | | |
|---|---|---|---|---|---|---|---|
| 480V, THREE PHASE | | | | 120/208V, THREE PHASE, FOUR WIRE | | | |
| KVA | FEEDER | CONDUIT | BREAKER | FEEDER | CONDUIT | BREAKER | GND. ELEC. SIZE |
| 3 | 3 #12, 1 #12G. | 3/4" | 15A/3P | 4 #12, 1 #8G. | 3/4" | 15A/3P | #8 |
| 6 | 3 #12, 1 #12G. | 3/4" | 15A/3P | 4 #10, 1 #8G. | 3/4" | 25A/3P | #8 |
| 9 | 3 #12, 1 #12G. | 3/4" | 15A/3P | 4 #10, 1 #8G. | 3/4" | 30A/3P | #8 |
| 15 | 3 #10, 1 #10G. | 3/4" | 25A/3 | 4 #6, 1 #8G. | 1" | 60A/3P | #8 |
| 30 | 3 #8, 1 #10G. | 1" | 45A/3P | 4 #3, 1 #8G. | 1 1/4" | 100A/3P | #8 |
| 45 | 3 #4, 1 #8G. | 1" | 70A/3P | 4 #1/0, 1 #6G. | 1 1/2" | 150A/3P | #6 |
| 75 | 3 #1, 1 #6G. | 1 1/4" | 125A/3P | 4 #250, 1 #2G. | 2 1/2" | 250A/3P | #2 |
| 75 | 3 #3, 1 #8G. | 1" | 100A/3P | 4 #4/0, 1#2G. | 2 1/2" | 225A/3P | #2 |
| 112.5 | 3 #2/0, 1 #6G. | 1 1/2" | 175A/3P | 4 #600, 1 #1/0G. | 4" | 400A/3P | #1/0 |
| 150 | 3 #4/0, 1 #4G. | 2" | 225A/3P | (2) SETS OF 4 #250, 1 #1/0G. | 2 1/2" | 500A/3P | #1/0 |
| 225 | 3 #500, 1 #3G. | 3" | 350A/3P | (2) SETS OF 4 #600, 1 #3/0G. | 4" | 800A/3P | #3/0 |
| 300 | (2) SETS OF 3 #4/0, 1 #2G. | 2 1/2" | 450A/3P | (3) SETS OF 4 #500, 1 #3/0G. | 3 1/2" | 1000A/3P | #3/0 |
| 400 | (2) SETS OF 3 #350, 1 #1G. | 2 1/2" | 600A/3P | (4) SETS OF 4 #500, 1 #250G. | 4" | 1600AF/1400AT/3P | #3/0 |
| 500 | (2) SETS OF 3 #500, 1 #1/0G. | 3" | 800A/3P | (5) SETS OF 4 #500, 1 #350G. | 4" | 2000AF/1800AT/3P | #3/0 |

NOTE:
-ALL CONDUCTORS SHALL BE COPPER

**3-PHASE, 4-WIRE FEEDER SCHEDULE**

| COPPER | | | | ALUMINUM | | | |
|---|---|---|---|---|---|---|---|
| RATING | SETS | CONDUCTOR SIZE | CONDUIT | RATING | SETS | CONDUCTOR SIZE | CONDUIT |
| 30A | 1 | 4#10, 1#10 G. | 3/4" | 30A | N/A | N/A | N/A |
| 40A | 1 | 4#8, 1#10 G. | 1" | 40A | N/A | N/A | N/A |
| 50A | 1 | 4#8, 1#10 G. | 1" | 50A | N/A | N/A | N/A |
| 60A | 1 | 4#6, 1#10 G. | 1" | 60A | N/A | N/A | N/A |
| 70A | 1 | 4#4, 1#8 G. | 1 1/4" | 70A | N/A | N/A | N/A |
| 80A | 1 | 4#4, 1#8 G. | 1 1/4" | 80A | N/A | N/A | N/A |
| 90A | 1 | 4#3, 1#8 G. | 1 1/4" | 90A | N/A | N/A | N/A |
| 100A | 1 | 4#3, 1#8 G. | 1 1/4" | 100A | N/A | N/A | N/A |
| 125A | 1 | 4#1, 1#6 G. | 1 1/2" | 125A | N/A | N/A | N/A |
| 150A | 1 | 4#1/0, 1#6 G. | 1 1/2" | 150A | N/A | N/A | N/A |
| 175A | 1 | 4#2/0, 1#6 G. | 2" | 175A | N/A | N/A | N/A |
| 200A | 1 | 4#3/0, 1#6 G. | 2" | 200A | 1 | 4#250, 1#4 G. | 2 1/2" |
| 225A | 1 | 4#4/0, 1#4 G. | 2 1/2" | 225A | 1 | 4#300, 1#2 G. | 3" |
| 250A | 1 | 4#250, 1#4 G. | 2 1/2" | 250A | 1 | 4#350, 1#2 G. | 3" |
| 300A | 1 | 4#350, 1#4 G. | 3" | 300A | 1 | 4#500, 1#2 G. | 4" |
| 350A | 1 | 4#500, 1#3 G. | 3 1/2" | 350A | 2 | 4#4/0, 1#1 G. | 2 1/2" |
| 400A | 1 | 4#600, 1#3 G. | 4" | 400A | 2 | 4#250, 1#1 G. | 2 1/2" |
| 450A | 2 | 4#4/0, 1#2 G. | 2 1/2" | 450A | 2 | 4#300, 1#1/0 G. | 3" |
| 500A | 2 | 4#250, 1#2G. | 2 1/2" | 500A | 2 | 4#350, 1#1/0 G. | 3" |
| 600A | 2 | 4#350, 1#1G. | 3" | 600A | 2 | 4#500, 1#2/0 G. | 3" |
| 700A | 2 | 4#500, 1#1/0G. | 4" | 700A | 3 | 4#350, 1#3/0 G. | 3" |
| 800A | 2 | 4#600, 1#1/0G. | 4" | 800A | 3 | 4#400, 1#3/0 G. | 3" |
| 1000A | 3 | 4#500, 1#2/0G. | 4" | 1000A | 4 | 4#350, 1#4/0 G. | 4" |
| 1200A | 4 | 4#350, 1#3/0G. | 3" | 1200A | 4 | 4#500, 1#250 G. | 4" |
| 1600A | 4 | 4#600, 1#4/0G. | 4" | 1600A | 5 | 4#750, 1#350 G. | 4" |
| | 5 | 4#500, 1#4/0G. | 4" | | | | |
| 2000A | 5 | 4#600, 1#250G. | 4" | 2000A | 6 | 4#750, 1#400 G. | 4" |
| | 6 | 4#500, 1#250G. | 4" | | | | |
| 2500A | 6 | 4#600, 1#350G. | 4" | 2500A | 7 | 4#750, 1#600 G. | 4" |
| | 7 | 4#500, 1#350G. | 4" | | | | |
| 3000A | 8 | 4#500, 1#400G. | 4" | 3000A | 8 | 4#750, 1#600 G. | 4" |
| 3500A | 9 | 4#600, 1#500G. | 4" | 3500A | 10 | 4#750, 1#750 G. | 4" |
| | 10 | 4#500, 1#500G. | 4" | | | | |
| 4000A | 10 | 4#600, 1#500G. | 4" | 4000A | 11 | 4#750, 1#750 G. | 4" |
| | 11 | 4#500, 1#500G. | 4" | | | | |
| 5000A | 12 | 4#600, 1#750G. | 4" | 5000A | 13 | 4#750, 2#600 G. | 5" |
| | 14 | 4#500, 1#750G. | 4" | | | | |

1. ALUMINUM CONDUCTORS SHALL BE COMPRESSION TYPE CONDUCTORS AND SHALL USE PENETROX WITH COMPRESSION TERMINATION FITTINGS.
2. ALUMINUM FEEDERS ARE NOT APPROVED FOR USE ON THE FOLLOWING:

- ALL HVAC EQUIPMENT
- TRANSFORMER SECONDARY
- ELEVATORS
- VARIABLE FREQUENCY DRIVE

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.

**1-PHASE, 3-WIRE FEEDER SCHEDULE**

| COPPER | | | | ALUMINUM | | | |
|---|---|---|---|---|---|---|---|
| RATING | SETS | CONDUCTOR SIZE | CONDUIT | RATING | SETS | CONDUCTOR SIZE | CONDUIT |
| 30A | 1 | 3#10, 1#10 G. | 3/4" | 30A | N/A | N/A | N/A |
| 40A | 1 | 3#8, 1#10 G. | 3/4" | 40A | N/A | N/A | N/A |
| 50A | 1 | 3#8, 1#10 G. | 3/4" | 50A | N/A | N/A | N/A |
| 60A | 1 | 3#6, 1#10 G. | 1" | 60A | N/A | N/A | N/A |
| 70A | 1 | 3#4, 1#8 G. | 1" | 70A | N/A | N/A | N/A |
| 80A | 1 | 3#4, 1#8 G. | 1" | 80A | N/A | N/A | N/A |
| 90A | 1 | 3#3, 1#8 G. | 1 1/4" | 90A | N/A | N/A | N/A |
| 100A | 1 | 3#3, 1#8 G. | 1 1/4" | 100A | N/A | N/A | N/A |
| 125A | 1 | 3#1, 1#6 G. | 1 1/4" | 125A | N/A | N/A | N/A |
| 150A | 1 | 3#1/0, 1#6 G. | 1 1/2" | 150A | N/A | N/A | N/A |
| 175A | 1 | 3#2/0, 1#6 G. | 1 1/2" | 175A | N/A | N/A | N/A |
| 200A | 1 | 3#3/0, 1#6 G. | 2" | 200A | 1 | 3#250, 1#4 G. | 2" |
| 225A | 1 | 3#4/0, 1#4 G. | 2" | 225A | 1 | 3#300, 1#2 G. | 2-1/2" |
| 250A | 1 | 3#250, 1#4 G. | 2 1/2" | 250A | 1 | 3#350, 1#2 G. | 2 1/2" |
| 300A | 1 | 3#350, 1#4 G. | 2 1/2" | 300A | 1 | 3#500, 1#2 G. | 3" |
| 350A | 1 | 3#500, 1#3 G. | 3" | 350A | 2 | 3#4/0, 1#1 G. | 2" |
| 400A | 1 | 3#600, 1#3 G. | 3 1/2" | 400A | 2 | 3#250, 1#1 G. | 2 1/2" |
| 450A | 2 | 3#4/0, 1#2 G. | 2" | 450A | 2 | 3#300, 1#1/0 G. | 2 1/2" |
| 500A | 2 | 3#250, 1#2G. | 2 1/2" | 500A | 2 | 3#350, 1#1/0 G. | 2 1/2" |
| 600A | 2 | 3#350, 1#1G. | 3" | 600A | 2 | 3#500, 1#2/0 G. | 3" |
| 700A | 2 | 3#500, 1#1/0G. | 3 1/2" | 700A | 3 | 3#350, 1#3/0 G. | 2 1/2" |
| 800A | 2 | 3#600, 1#1/0G. | 3 1/2" | 800A | 3 | 3#400, 1#3/0 G. | 3" |
| 1000A | 3 | 3#500, 1#2/0G. | 3" | 1000A | 4 | 3#350, 1#4/0 G. | 3" |
| 1200A | 4 | 3#350, 1#3/0G. | 3" | 1200A | 4 | 3#500, 1#250 G. | 3" |
| 1600A | 4 | 3#600, 1#4/0G. | 3 1/2" | 1600A | 5 | 3#750, 1#350 G. | 3 1/2" |
| | 5 | 3#500, 1#4/0G. | 3" | | | | |
| 2000A | 5 | 3#600, 1#250G. | 3 1/2" | 2000A | 6 | 3#750, 1#400 G. | 3 1/2" |
| | 6 | 3#500, 1#250G. | 3" | | | | |
| 2500A | 6 | 3#600, 1#350G. | 3 1/2" | 2500A | 7 | 3#750, 1#600 G. | 4" |
| | 7 | 3#500, 1#350G. | 3 1/2" | | | | |
| 3000A | 8 | 3#500, 1#400G. | 3 1/2" | 3000A | 8 | 3#750, 1#600 G. | 4" |
| 3500A | 9 | 3#600, 1#500G. | 3 1/2" | 3500A | 10 | 3#750, 1#750 G. | 4" |
| | 10 | 3#500, 1#500G. | 3 1/2" | | | | |
| 4000A | 10 | 3#600, 1#500G. | 3 1/2" | 4000A | 11 | 3#750, 1#750 G. | 4" |
| | 11 | 3#500, 1#500G. | 3 1/2" | | | | |

1. ALUMINUM CONDUCTORS SHALL BE COMPRESSION TYPE CONDUCTORS AND SHALL USE PENETROX WITH COMPRESSION TERMINATION FITTINGS
2. ALUMINUM FEEDERS ARE NOT APPROVED FOR USE ON THE FOLLOWING:

- ALL HVAC EQUIPMENT
- TRANSFORMER SECONDARY
- ELEVATORS
- VARIABLE FREQUENCY DRIVE

1. ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
2. GROUND NOT REQUIRED AT SERVICE LATERAL.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# WEST AGRICULTURAL SCIENCE FACILITY

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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER

| PROJECT #: | 202414 |
|---|---|
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
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| 2025-07-28 | PERMIT AND PROPOSAL |

# E4.01

ELECTRICAL ONE-LINE DIAGRAM


DBR
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TBPE Firm Registration No. 2234
DBR Project # 250070


| SS | CC/TD/DT/DL | JD | RT |
|---|---|---|---|

# LIGHTING FIXTURE SCHEDULE

| TYPE | MANUFACTURER | MODEL | MOUNTING | LAMPS | VOLTAGE | WATTAGE | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| A1 | DAYBRITE | DWAE51L-840-4'-UNV | SURFACE | LED | 277 V | 46 VA | 4' WET-LOCATION LISTED. 5,100 LUMENS. |
| A1E | DAYBRITE | DWAE51L-840-4'-UNV-EMLED | SURFACE | LED | 277 V | 46 VA | SAME AS TYPE 'A1' EXCEPT PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. |
| A3 | DAYBRITE | 2FGX-G-48L-840-4'-RS-UNV-DIM | RECESSED | LED | 277 V | 36 VA | 2'X4' WITH 0-10V DIMMING. |
| A3E | DAYBRITE | 2FGX-G-48L-840-4'-RS-UNV-DIM-BSL10LST | RECESSED | LED | 277 V | 36 VA | SAME AS TYPE 'A3' EXCEPT PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. |
| A5 | DAYBRITE | DWAE51L-840-8'-UNV | SURFACE | LED | 277 V | 89 VA | 8' WET-LOCATION LISTED. 10,200 LUMENS. |
| A5E | DAYBRITE | DWAE51L-840-8'-UNV-EMLED | SURFACE | LED | 277 V | 89 VA | SAME AS TYPE 'A5' EXCEPT PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. |
| D2E | EMERGI-LITE | MODEL | RECESSED | CF26DT/E/IN/835/ECO | 277 V | 26 VA | |
| S2 | GARDCO | OPF-M-A13-740-T4M-AR1-UNV-WAP/HB-BZ | POLE | LED | 277 V | 352 VA | DOUBLE HEAD POLE LIGHT FIXTURE WITH INTEGRAL OCCUPANCY AND DAYLIGHT SENSOR, 30,000 LUMENS. PROVIDE 30' POLE DRILLED FOR TWO LIGHT FIXTURES AT 180 DEGREES APART KW INDUSTRIES #RTSP30-7.5-11-KZ13-DM2180-BC. PROVIDE BRONZE FINISHES TO MATCH EXISTING WEST INTERMEDIATE SCHOOL POLE LIGHTS. |
| SL1 | MUSCO | (8)TLC-LED-1500 AT 80' | POLE | LED | 480 V | 12000 VA | 480V/3-PHASE, SPORTS LIGHT FIXTURE ARRAY WITH 8 LIGHT FIXTURES MOUNTED AT 80' ON 80' POLE. PROVIDE WITH CONTACTOR/CONTRILLER MOUNTED TO POLE AND PROVIDE REMOLTELY LOCATED MANUAL ON/OFF OVERRIDE CONTROL IN FIELD-HOUSE BUILDING. PROVIDE WITH INTEGRAL STEP-DOWN TRANSFORMER FOR 120V CONTROLS. PROVIDE POLE WITH PRE-CAST CONCRETE BASE. INSTALL PER MANUFACTURER WRITTEN INSTRUCTIONS AND REQUIREMENTS. |
| W1 | GARDCO | 101L-16L-1000-NW-G2-2-UNV-FINISH | SURFACE | LED | 277 V | 55 VA | EXTERIOR FULL-CUTOFF WALL PACK. |
| W1E | GARDCO | 101L-16L-700-NW-G2-2-EBPC-277-FINISH | SURFACE | LED | 277 V | 38 VA | EXTERIOR FULL-CUTOFF WALL PACK. PROVIDE WITH INTEGRAL COLD-WEATHER EMERGENCY BATTERY PACK. |
| X1 | EMERGI-LITE | BB-SVXN-1-R-4X-CW | SURFACE | LED | 277 V | 4 VA | EXIT SIGN, NEMA 4X WET-LOCATION LISTED. SINGLE FACE, RED. PROVIDE DIRECTIONAL ARROWS PER PLANS. PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. |
| X2 | EMERGI-LITE | BB-SVXN-2-R-4X-CW | SURFACE | LED | 277 V | 4 VA | EXIT SIGN, NEMA 4X WET-LOCATION LISTED. DOUBLE FACE, RED. PROVIDE DIRECTIONAL ARROWS PER PLANS. PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. |

NOTES:
1. LIGHTING FIXTURE CATALOG NUMBERS AND DESCRIPTIONS ARE SCHEDULED FOR ESTABLISHING QUALITY, APPEARANCE AND PERFORMANCE OF THE FIXTURES AS REQUIRED BY THE DESIGN. EXACT CATALOG NUMBERS DESCRIBING MOUNTING CONDITIONS, FINISHES AND REQUIREMENTS RELATED TO TRIMS AND LENS FOR ALL FIXTURES SHALL BE CONFIRMED (BY THE CONTRACTOR) WITH THE ROOM FINISH SCHEDULE AND REFLECTED CEILING PLANS, INCLUDING GRID TYPES, ON THE ARCHITECTURAL DRAWINGS PRIOR TO BIDDING. FIXTURES SHALL BE SUBMITTED ACCORDING TO THE CONDITIONS INDICATED ON THE ARCHITECTURAL PLANS. REFER TO THE WRITTEN SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. THE NEW LIGHT FIXTURES SCHEDULED ARE THE BASIS OF DESIGN. IT IS NOT INTENDED TO LIMIT COMPETITION FROM EQUAL MANUFACTURERS. ALL BIDDERS SHALL SUBMIT THEIR PROPOSED LIGHT FIXTURES IN SUBMITTAL FORM A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID DATE FOR REVIEW. APPROVED LIGHT FIXTURES WILL BE ISSUED IN AN ADDENDUM.

# LIGHTING CONTROLS DEVICE SCHEDULE

| TYPE | DESCRIPTION | COMMENTS |
|---|---|---|
| $S$ $S^{3}$ $S^{4}$ $S^{K}$ | LINE VOLTAGE SWITCH. | '3' INDICATES THREE WAY SWITCHING. '4' INDICATES FOUR WAY SWITCHING. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH. |
| $S^{MC}$ | LINE VOLTAGE MOMENTARY CONTACT SWITCH. | |
| $S^{DR}$ | LINE VOLTAGE DIMMER SWITCH | DIMMER FOR USE IN DWELLING UNIT. COORDINATE DIMMING TYPE WITH FINAL FIXTURE AND LAMP SELECTION TO ENSURE COMPATIBILITY. |
| $S^{3,D}$ | LINE VOLTAGE DIMMER WITH 3-WAY SWITCH. | 3-WAY DIMMER FOR USE IN DWELLING UNIT. COORDINATE DIMMING TYPE WITH FINAL FIXTURE AND LAMP SELECTION TO ENSURE COMPATIBILITY. |
| $S^{F}$ | MULTI-SPEED FAN CONTROLLER WITH LINE VOLTAGE SWITCH. | |
| $S^{T}$ | LINE VOLTAGE TIMER SWITCH WITH DIGITAL TIMER. | RATED FOR 120/277VAC. PROVIDE WITH AUDIBLE & VISUAL ALERTS. USER PROGRAMMABLE FOR 5MIN-12HR TIME-OUT SETTINGS. |
| $S^{OC1}$ | LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR | SENSOR SHALL BE SET TO VACANCY MODE |
| $S^{OC2}$ | LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR WITH DUAL RELAYS. | SENSOR SHALL BE SET TO VACANCY MODE. ONE RELAY SHALL SERVE 120 VOLT LIGHTING IN AREA INDICATED, AND ONE RELAY SHALL SERVE 277 VOLT LIGHTING. |
| $S^{OCD}$ | LOW VOLTAGE OC SENSOR SWITCH WITH 0-10V DIMMER | SENSOR SHALL BE SET TO VACANCY MODE |
| $S^{LV}$ $S^{LVK}$ | LOW VOLTAGE MANUAL CONTROL. | CONNECT TO POWER PACK OR ROOM CONTROLLER IF OCCUPANCY SENSORS ARE INDICATED ON PLAN. PROVIDE MULTI-BUTTON SWITCH AS REQUIRED PER SWITCH LEGS SHOWN ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH. |
| $S^{OR}$ $S^{ORK}$ | LOW VOLTAGE MANUAL CONTROL. | CONNECT TO RELAY PANEL OR TIME CLOCK FOR TIME OF DAY OVERRIDE AS NOTED ON PLANS. PROVIDE MULTI-BUTTON SWITCH AS NOTED ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH. |
| $S^{D}$ | LOW VOLTAGE SWITCH WITH 0-10V DIMMER | PROVIDE MULTI-BUTTON SWITCH AS REQUIRED PER SWITCH LEGS SHOWN ON PLANS. PROVIDE POWER PACKS OR ROOM CONTROLLERS AS REQUIRED. |
| OC1 | CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR. | SET TO VACANCY MODE. PROVIDE POWER PACKS AS NEEDED. |
| OC2 | CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR. | SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED. |
| OC3 | CEILING MOUNTED ULTRASONIC OR MICROPHONIC OCCUPANCY SENSOR. | SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED. |
| OC4 | CORNER MOUNTED DUAL TECH OCCUPANCY SENSOR. | SET TO VACANCY MODE. PROVIDE POWER PACKS AS REQUIRED. |
| OC5 | WET LOCATION PIR OCCUPANCY SENSOR. | CONNECT GARAGE OCCUPANCY SENSORS TO RELAY PANEL SERVING AREA. PROVIDE POWER PACKS FOR CONTROL WHERE NOT LOCATED IN THE GARAGE. |
| OC6 | CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR FOR HIGH BAY APPLICATION. | SET TO VACANCY MODE. PROVIDE POWER PACKS AS REQUIRED. |
| PC | DIGITAL PHOTOSENSOR | CONNECT TO ROOM CONTROLLER OR RELAY PANEL AS NOTED ON PLANS. |
| DS | DAYLIGHT HARVESTING SENSOR | CONNECT TO ROOM CONTROLLER OR INDIVIDUAL LIGHT FIXTURE FOR DAYLIGHT HARVESTING DIMMING CONTROL. |

NOTES:
1. WATTSTOPPER IS THE BASIS OF DESIGN.
2. THE LIGHTING CONTROLS SCHEDULED ARE THE BASIS OF DESIGN. IT IS NOT INTENDED TO LIMIT COMPETITION FROM EQUAL MANUFACTURERS. ALL BIDDERS SHALL SUBMIT THEIR PROPOSED LIGHTING CONTROLS IN SUBMITTAL FORM A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID DATE FOR REVIEW. APPROVED LIGHTING CONTROL SYSTEMS WILL BE ISSUED IN AN ADDENDUM.
3. BASIS OF DESIGN SHALL BE A HARD-WIRED TYPE SYSTEM, UNLESS NOTED OTHERWISE.

## 2021 STANDARD SEQUENCE OF OPERATIONS

v1 - 85192022

| ROOM TYPE | AUTO ON1 | MANUAL ON (VACANCY) | AUTO OFF (20MIN MAX) | PARTIAL OFF AT NORMAL HOURS2 | AUTO OFF AFTER-HOURS (30MIN MAX) | TIME ON | TIME OFF | ASTRONOMIC or PHOTOCELL ON/OFF | AUTO STEP CONTROL WITH OFF4 | AUTO CONTINUOUS DIM WITH OFF4, 5 | MANUAL BI-LEVEL REDUCTION CONTROL6 | MANUAL CONTINUOUS DIM CONTROL | MANUAL ON/OFF SWITCH | MANUAL DIMMER SWITCH | DISPLAY, ACCENT, TASK CONTROL7 | AUTOMATIC RECEPTACLE CONTROL | SEQUENCE OF OPERATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OCCUPANCY SENSOR | | | | | TIME SWITCH | | | DAYLIGHT CTL | | LT REDUCT | | MANUAL CONTROL | | | | |
| Enclosed Offices | | ● | 20 min | | | | | | | D | ● | D | ● | D | | ● | Manual control and ≥50% light reduction with two on/off controls Where >150W in daylight area, use continuous dimming daylighting control and dimmer switch. 50% of receptacles turn on when occupied, off within 20 minutes of occupants leaving the space. |
| Electrical/Mech/Equip Room | | ● | | | | | | | | | | | ● | | | | Manual On/Off. Manual control device. |
| Janitor Closet | | ● | 20 min | | | | | | | | | | ● | | | | Manual On; Occupancy sensor Auto Off. Manual control device. |
| Restroom | 100% | | 20 min | | | | | | | | | | ● | | | | Auto On 100%. Occupancy sensor Auto Off. Manual control. |
| Corridor | 100% | | | | | | | | | | | | ● | | ● | | Time On/Off. Local control device. |
| Storage Room | 50% | | 20 min | | | | | | | D | ● | D | ● | | | | Auto On 50%. Occupancy sensor Auto Off. Manual control and ≥50% light reduction with two on/off controls. |
| Building Façade / Landscape (Decorative) | | | | | | open | close | ● | | | | | | | | | Dusk Auto On with astro time switch or photocell; Evening Time Auto Off no later than one hour after business close. Morning Time Auto On no earlier than one hour before business open; Dawn Auto Off. |
| Parking Lot Lighting Height ≤ 24Ft & >78W | 100% | | | 50% 15min | | | | ● | | | | | | | | | Dusk Auto On with astronomical time switch or photocell. Occupancy sensor Partial Auto Off ≥50%. Scheduled Shut Off no later than midnight or business close. Morning Auto On no earlier than 6AM or business open. Dawn Auto Off. |
| Exterior / Parking Lots Lighting >24Ft or <78W Site Lighting (Setback) | | | | | | 6AM3 | 12AM3 | ● | | | | | | | | | Dusk Auto On with astro time switch or photocell; Reduce at least 50% from midnight or up to one hour after business close. Auto On to full at 6:00AM or up to one hour before business open. Dawn Auto Off. |

●= Designation for code compliant default control design for spaces without daylighting control
D = Where daylighting control is required, "D" designation indicates controls required in the space for code compliance design
CK = Captive Key Switch system for use in Hotel/Motel and Guest Suites

**NOTES:** 1 May be Manual On or Auto On to ≤50%. Full Auto On only permitted in Corridors, Interior Parking, Stairways, Lobbies, Restrooms, Open Office, Library Stacks, Locker Rooms.

2 Partial Auto Off must reduce lighting by ≥50% during normal operating hours in corridors, warehouse aisles and open areas. Each aisle must be independently controlled. Full Auto Off complies with Partial Auto Off.

3 Exterior / Parking / Site lighting must Auto Off during daylight hours, reduce by at least 50% between midnight and 6AM or from one hour after business closing until 6AM before business opening.

4Automatic daylight control required where >150W lighting power in toplight or sidelight daylight area. Continuous dimming with Off. Assumes 0-10V dimmable fixtures in daylight and non-daylight area unless otherwise specified.

5Code requires automatic continuous dimming with full Off capability in daylighting areas of all space types.

6Manual bilevel lighting reduction control must allow ≥50% of the general lighting to be manually turned off by a control device located in the space.

7Display, Accent and Task lighting must have manual control independent from general lighting. Auto Off with occupancy sensors or time switch control required. Exempt from automatic daylighting control.

8Where Parking Garage eye adaptation transition zones are provided, lighting power must reduce ≥50% between sunset and sunrise.

# TRANSFORMER SCHEDULE

| MARK | KVA | PRI. VOLTAGE | SECONDARY VOLTAGE | MOUNTING | ENCLOSURE | REMARKS |
|---|---|---|---|---|---|---|
| TLA | 75.0 | 480V, 3PH. | 208Y/120V, 3PH., 4W | PAD | Type 1 | GENERAL PURPOSE TRANSFORMER. |
| TLB | 75.0 | 480V, 3PH. | 208Y/120V, 3PH., 4W | PAD | Type 1 | GENERAL PURPOSE TRANSFORMER. |
| TLC | 75.0 | 480V, 3PH. | 208Y/120V, 3PH., 4W | SUSPENDED | Type 1 | GENERAL PURPOSE TRANSFORMER. |
| TLPB | 45.0 | 480V, 1PH. | 240/120V, 1PH., 3W | SUSPENDED | Type 1 | GENERAL PURPOSE TRANSFORMER. |
| TLRR | 75.0 | 480V, 3PH. | 208Y/120V, 3PH., 4W | PAD | Type 1 | GENERAL PURPOSE TRANSFORMER. |

* PROVIDE ALL TRANSFORMERS WITH ALUMINUM WINDING, UNLESS NOTED OTHERWISE.

# SURGE PROTECTION DEVICE (SPD) SCHEDULE

| MARK | MANUFACTURER | MODEL | VOLTAGE | PHASE | SURGE RATING PER MODE | BREAKER SIZE | TIERGUIDE CABLE SIZE |
|---|---|---|---|---|---|---|---|
| SPD1 | SOUTHERN TIER TECHNOLOGIES | T4S277Y125ALAM1C | 480/277V | 3 | 125/250kA | 60A/3P | 5 #6,1 1/2" C. |
| SPD2 | SOUTHERN TIER TECHNOLOGIES | T4S120Y100AWA/ZS | 208/120V | 3 | 100/200kA | 30A/3P | INCLUDED |

*ALL T45 SERIES SPD ENCLOSURES INSTALLED IN FOOD SERVICE AREAS (IE. KITCHENS, SNACK BARS, FOOD LABS, CULINARY ARTS ROOMS AND LIFE SKILLS ROOMS) SHALL BE RECESSED IN THE WALL. PROVIDE RECESSED WALL KIT #RKSS.

# RELAY PANEL SCHEDULE RPHA

| MARK | ROOM / AREA DESCRIPTION | CIRCUIT # | NOTES |
|---|---|---|---|
| RPHA -1 | SPARE | | |
| RPHA -2 | EXTERIOR LIGHTING | HA-3 | 1 |
| RPHA -3 | SITE LIGHTING | HA-5 | 1 |
| RPHA -4 | CORRIDOR LIGHTING | HA-7 | 2 |
| RPHA -5 | EXERCISE ARENA LTG. | HA-9 | |
| RPHA -6 | EAST WING LIGHTING | HA-11 | |
| RPHA -7 | SPARE | | |
| RPHA -8 | SPARE | | |

**RELAY PANEL GENERAL NOTES:**

A. RELAY PANEL SHALL BE LOCATED ADJACENT TO THE POWER PANEL THE LIGHTING RELAY PANEL IS SERVING. REFER TO POWER PLANS FOR PROPOSED LOCATION.

B. ALL LIGHTING ON/OFF TIME SCHEDULES SHALL BE COORDINATED WITH OWNER.

C. PROVIDE LIGHTING RELAY PANEL WITH OUTDOOR PHOTO CELL FOR EXTERIOR LIGHTING CIRCUITS.

D. PROVIDE 120V POWER FOR RELAY PANEL CONTROL FROM NEAREST 120V CONVENIENCE RECEPTACLE CIRCUIT OR CONNECT TO NEAREST 208/120V PANELBOARD 20A/1P SPARE BREAKER.

**RELAY PANEL KEYED NOTES:**

1. EXTERIOR LIGHTING SHALL BE PHOTOCELL CONTROLLED WITH ON/OFF SCHEDULING PER IECC REQUIREMENTS.

2. PROVIDE KEYED OVERRIDE SWITCH TO OVERRIDE THE RELAY PANEL FOR MANUAL ON/OFF CONTROL. REFER TO LIGHTING PLAN FOR PROPOSED SWITCH LOCATION(S).

# CONTACTOR SCHEDULE

| NAME | AMPS PER POLE | POLES | COIL VOLTAGE | CONTROL | CIRCUIT # | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|
| LC-LRR | 30A | 4 | 120V | BAS/HOA | HRR-1 | EXTERIOR LIGHTING | MECHANICALLY HELD COIL. NEMA 1, HOA SELECTOR SWITCH, 2-WIRE CONTROL MODULE |
| - | - | - | - | - | HRR- 3 | SITE LIGHTING | - |

NOTES:
1. CIRCUIT CONTROL COIL POWER TO NEAREST CONVENIENCE RECEPTACLE CIRCUIT OR PROVIDE NEAREST 120V PANELBOARD CIRCUIT AND CONNECT TO NEXT AVAILABLE SPARE 20A/1P BREAKER.
2. LOCATE ALL CONTACTORS ADJACNET TO PANEL IT'S SERVING OR IN NEARBY MECHANICAL/ELECTRICAL ROOM. FIELD COORDINATE EXACT LOCATION. FIELD MARK ON EACH CONTACTOR THE PANEL, CIRCUIT NUMBERS, AND LOAD DESCTRIPTION IT IS SERVING.
3. PROVIDE CONDUIT(S) TO EACH CONTACTOR FROM THE NEAREST NEW BAS PANEL FOR SCHEDULING CONTROLS AS REQUIRED. COORDINATE TIME SCHEDULE WITH OWNER.
4. PROVIDE CONTACTOR WITH OUTDOOR PHOTOCELL TO CONTROL EXTERIOR LIGHTS AND INTEGRATE CONTACTOR WITH BAS PANEL FOR ON/OFF CONTROLS.

# TIME CLOCK SCHEDULE

| NAME | POLES/ CIRCUITS | AMPS PER POLE | VOLTAGE | NOTES | REMARKS |
|---|---|---|---|---|---|
| TC-HRR | 4 | 20 | 120/277 | 1,2 | NEMA 3R. PROGRAM AS DIRECTED BY OWNER |

NOTES:
1. TIME CLOCK SHALL BE INTERMATIC 90000 SERIES RATED 20 AMP WITH BATTERY BACKUP.
2. PROVIDE TIME CLOCK WITH OUTDOOR PHOTOCELL TO CONTROLL EXTERIOR LIGHTS.
3. CONTRACTOR SHALL PROVIDE 120V POWER FOR CONTROLS FROM NEAREST 120V CIRCUIT SERVING CONVENIENCE RECEPTACLES.


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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER

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ELECTRICAL SCHEDULES


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DBR Project # 250070


SS | CC/TD|DT/DL | JD | RT

## Panelboard HRR

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating
Mains Type: MCB — 225 A MCB -- ; 225 A BUS (Copper); --
LUGS: -- ; --
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 279 VA | L; EL | EXTERIOR LIGHTING | 12 | 20 A | 1 | 2 | | | | | | |
| | 1056 VA | L | SITE LIGHTING | 12 | 20 A | 3 | 4 | 30 A | 8 | SPORTS LIGHTING | EL | 12000 VA | |
| | 1104 VA | L | RR/FIELD HOUSE LIGHTING | 12 | 20 A | 5 | 6 | | | | | | |
| | | | | | | 7 | 8 | | | | | | |
| | 10975 VA | C | HP-1 | 10 | 30 A | 9 | 10 | 30 A | 8 | SPORTS LIGHTING | EL | 12000 VA | |
| | | | | | | 11 | 12 | | | | | | |
| | | | | | | 13 | 14 | | | | | | |
| | 28600 VA | C | ERV | 4 | 70 A | 15 | 16 | 30 A | 8 | SPORTS LIGHTING | EL | 12000 VA | |
| | | | | | | 17 | 18 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 19 | 20 | | | | | | |
| | 0 VA | -- | Spare | 12 | 20 A | 21 | 22 | 30 A | 8 | SPORTS LIGHTING | EL | 12000 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 23 | 24 | | | | | | |
| | 0 VA | -- | Space | 12 | -- | 25 | 26 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 27 | 28 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 29 | 30 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 31 | 32 | -- | 12 | Space | -- | 0 VA | |
| | 22000 VA | -- | TLPB | 1 | 125 A | 33 | 34 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 35 | 36 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 49465 VA | Spare; R; WH;... | TLRR | 1 | 125 A | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 11220 VA | 94.56% | 10610 VA | 210.20A | (L)Lighting | 2261 VA | 125.00% | 2826 VA |
| 220.56 | (K)Kitchen | 2400 VA | 100.00% | 2400 VA | | (EL)Ext. Ltg. | 48178 VA | 125.00% | 60223 VA |
| 220.60 | (C)Cooling | 42270 VA | 100.00% | 42270 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | 10000 VA | 100.00% | 10000 VA |
| 220.60 | (F)Fans | 6150 VA | 100.00% | 6150 VA | 220.50 | (MT)Lrg. Motor | 650 VA | 125.00% | 813 VA |
| | (M)Misc. | 16350 VA | 100.00% | 16350 VA | | (SP)Sub Pnl. | | | |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 161479 VA VA = 194 A
Total Load (Diversified): 173641 VA VA = 209 A
Location of Panel: ELEC 105

## Panelboard LRR

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating
Mains Type: MCB — 225 A MCB -- ; 225 A BUS (Copper); --
LUGS: -- ; FEED THRU
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1831 VA | C | DSCU-3/DS-3 (11.0 MCA) | 12 | 20 A | 1 | 2 | | | | | | |
| | | | | | | 3 | 4 | 40 A | 8 | ELECTRIC WATER HEATER | WH | 10000 VA | |
| | 1920 VA | F | EF-6 | 8 | 40 A | 5 | 6 | | | | | | |
| | 360 VA | R | IDF - SERVER RACK UPS | 12 | 20 A | 7 | 8 | 20 A | 12 | CIRC. PUMP & TIMER SWITCH | MT | 650 VA | |
| | 360 VA | R | IDF - SERVER RACK UPS | 12 | 20 A | 9 | 10 | 20 A | 12 | TRAP PRIMERS | M | 50 VA | |
| | 720 VA | R | IDF RECEPTACLES | 12 | 20 A | 11 | 12 | 20 A | 12 | MOTORIZED DAMPERS | M | 50 VA | |
| | 500 VA | M | IDF - ACP | 12 | 20 A | 13 | 14 | 20 A | 10 | SCOREBOARD DATA | M | 250 VA | |
| | 500 VA | M | DDC/BAS | 12 | 20 A | 15 | 16 | 20 A | 8 | SPORTS LIGHTING DATA | M | 100 VA | |
| | 360 VA | R | RC - CONCESSSIONS | 12 | 20 A | 17 | 18 | 20 A | 6 | SPORTS LIGHTING DATA | M | 100 VA | |
| | | | | | | 19 | 20 | 20 A | 8 | SPORTS LIGHTING DATA | M | 100 VA | |
| | 4230 VA | F | FCU-1 | 10 | 30 A | 21 | 22 | 20 A | 12 | SPORTS LIGHTING DATA | M | 100 VA | |
| | | | | | | 23 | 24 | -- | 12 | Space | -- | 0 VA | |
| | 50 VA | M | ERV Controller | 12 | 15 A | 25 | 26 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 27 | 28 | -- | 12 | Space | -- | 0 VA | |
| | 864 VA | C | AIR CURTAIN | 12 | 20 A | 29 | 30 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 31 | 32 | -- | 12 | Space | -- | 0 VA | |
| | 9000 VA | M | SCOREBOARD | 3 | 50 A | 33 | 34 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 35 | 36 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | | | | | | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | 30 A | 10 | SPD2 | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | | | | | | |
| | 770 VA | R; M | RC - RM102, RM. 101, RM.100 | 12 | 20 A | 43 | 44 | 20 A | 12 | REFRIGERATOR | K | 1200 VA | |
| | 720 VA | R | RC - RM.107, RM.106, RM.105 | 12 | 20 A | 45 | 46 | 20 A | 12 | REFRIGERATOR | K | 1200 VA | |
| | 720 VA | R | WP/GFCI | 12 | 20 A | 47 | 48 | 30 A | 10 | ICE MACHINE | M | 2500 VA | GFI |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 49 | 50 | | | | | | |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 51 | 52 | 30 A | 10 | ICE MACHINE | M | 2500 VA | GFI |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 53 | 54 | | | | | | |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 55 | 56 | 20 A | 12 | EDF | M | 500 VA | |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 57 | 58 | 20 A | 12 | HAND DRYER WOMENS RR | R | 1000 VA | |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 59 | 60 | 20 A | 12 | HAND DRYER WOMENS RR | R | 1000 VA | |
| | 180 VA | R | RC - CONCESSSIONS | 12 | 20 A | 61 | 62 | 20 A | 12 | HAND DRYER WOMENS RR | R | 1000 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 63 | 64 | 20 A | 12 | HAND DRYER MENS RR | R | 1000 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 65 | 66 | 20 A | 12 | HAND DRYER MENS RR | R | 1000 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 67 | 68 | 20 A | 12 | HAND DRYER MENS RR | R | 1000 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 69 | 70 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 71 | 72 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Spare | 12 | 20 A | 73 | 74 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 75 | 76 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 77 | 78 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 79 | 80 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 81 | 82 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 83 | 84 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 11220 VA | 94.56% | 10610 VA | 210.20A | (L)Lighting | | | |
| 220.56 | (K)Kitchen | 2400 VA | 100.00% | 2400 VA | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | 2695 VA | 100.00% | 2695 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | 10000 VA | 100.00% | 10000 VA |
| 220.60 | (F)Fans | 6150 VA | 100.00% | 6150 VA | 220.50 | (MT)Lrg. Motor | 650 VA | 125.00% | 813 VA |
| | (M)Misc. | 16350 VA | 100.00% | 16350 VA | | (SP)Sub Pnl. | | | |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 49465 VA VA = 137 A
Total Load (Diversified): 49018 VA VA = 136 A
Location of Panel: ELEC 105

## Panelboard LC

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating
Mains Type: MCB — 250 A MCB -- ; 400 A BUS (Copper); --
LUGS: -- ; FEED THRU
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 1 | 2 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 3 | 4 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 5 | 6 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 7 | 8 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 9 | 10 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 11 | 12 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 13 | 14 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 15 | 16 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 17 | 18 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 19 | 20 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 21 | 22 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 23 | 24 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 25 | 26 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 27 | 28 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 29 | 30 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 12 | 20 A | 31 | 32 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 33 | 34 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 35 | 36 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 37 | 38 | | | | | | |
| | 1500 VA | R | RECPT - POULTRY 1020 | 10 | 20 A | 39 | 40 | 30 A | 10 | SPD2 | SP | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 41 | 42 | | | | | | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 43 | 44 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 360 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 45 | 46 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 47 | 48 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 49 | 50 | 20 A | 12 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 51 | 52 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 53 | 54 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 55 | 56 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 57 | 58 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 59 | 60 | 20 A | 10 | RECPT - LAMB/HOG PEN | R | 1500 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 61 | 62 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 63 | 64 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 65 | 66 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 10 | 20 A | 67 | 68 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 69 | 70 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 71 | 72 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 73 | 74 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 75 | 76 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 77 | 78 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 79 | 80 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 81 | 82 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECPT - LAMB/HOG PEN | 12 | 20 A | 83 | 84 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 102360 VA | 54.88% | 56180 VA | 210.20A | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.50 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 102360 VA VA = 284 A
Total Load (Diversified): 56180 VA VA = 156 A
Location of Panel: ELEC 1011

## Panelboard LA

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating
Mains Type: MCB — 250 A MCB -- ; 400 A BUS (Copper); --
LUGS: -- ; FEED THRU
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 180 VA | R | RECEPT - LAMB/HOG 1015 | 12 | 20 A | 1 | 2 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 180 VA | R | RECEPT - LAMB/HOG 1015 | 12 | 20 A | 3 | 4 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 180 VA | R | RECEPT - LAMB/HOG 1015 | 12 | 20 A | 5 | 6 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 180 VA | R | RECEPT - LAMB/HOG 1015 | 10 | 20 A | 7 | 8 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 9 | 10 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 11 | 12 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 13 | 14 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 15 | 16 | 20 A | 10 | RECEPT - LAMB/HOG | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 17 | 18 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 19 | 20 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 21 | 22 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 23 | 24 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 25 | 26 | 20 A | 10 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 27 | 28 | 20 A | 28 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 29 | 30 | 20 A | 10 | RECPT - CORRIDOR | R | 180 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 31 | 32 | 20 A | 10 | RECPT - ANIMAL TREADMIL | R | 1000 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 33 | 34 | 20 A | 10 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 35 | 36 | 20 A | 10 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 37 | 38 | | | | | | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 39 | 40 | 30 A | 10 | SPD2 | SP | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 41 | 42 | | | | | | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 43 | 44 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 45 | 46 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 47 | 48 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 49 | 50 | 20 A | 12 | RECEPT - CATTLE PEN | R | 1500 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 51 | 52 | 20 A | 12 | RECEPT - CATTLE WASH 1001 | R | 180 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 53 | 54 | 20 A | 12 | RECEPT - CATTLE WASH 1001 | R | 180 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 12 | 20 A | 55 | 56 | 20 A | 12 | EXTERIOR RECEPTACLES | R | 720 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 57 | 58 | 20 A | 12 | TRAP PRIMERS | M | 200 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 59 | 60 | 20 A | 10 | RECEPTACLES - OFFICE | R | 900 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 61 | 62 | 20 A | 10 | REFRIGERATOR | K | 1200 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 63 | 64 | 20 A | 12 | RECPT - CORRIDOR | R | 180 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 65 | 66 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 67 | 68 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 69 | 70 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 71 | 72 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 73 | 74 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 75 | 76 | 20 A | 12 | Spare | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 77 | 78 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 79 | 80 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 81 | 82 | -- | 12 | Space | -- | 0 VA | |
| | 1500 VA | R | RECEPT - LAMB/HOG | 10 | 20 A | 83 | 84 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 91060 VA | 55.49% | 50530 VA | 210.20A | (L)Lighting | | | |
| 220.56 | (K)Kitchen | 1200 VA | 100.00% | 1200 VA | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.50 | (MT)Lrg. Motor | | | |
| | (M)Misc. | 200 VA | 100.00% | 200 VA | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 92460 VA VA = 257 A
Total Load (Diversified): 51930 VA VA = 144 A
Location of Panel: ELEC 1011

## Panelboard LB

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating
Mains Type: MCB — 250 A MCB -- ; 400 A BUS (Copper); --
LUGS: -- ; FEED THRU
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 500 VA | M | FIRE ALARM - FACP | 10 | 20 A | 1 | 2 | 20 A | 8 | IRRIGATION CONTROLLER | M | 500 VA | |
| | 500 VA | M | FIRE ALARM - RPS | 10 | 20 A | 3 | 4 | 20 A | 8 | SAND SEPARATOR ALARM | M | 500 VA | |
| | 3800 VA | M | IDF - SERVER RACK UPS | 10 | 30 A | 5 | 6 | 20 A | 8 | SAND SEPARATOR ALARM | M | 500 VA | |
| | | | | | | 7 | 8 | 20 A | 12 | MOTORIZED DAMPERS | M | 200 VA | |
| | 3800 VA | M | IDF - SERVER RACK UPS | 10 | 30 A | 9 | 10 | 20 A | 12 | EDF | M | 500 VA | |
| | | | | | | 11 | 12 | 20 A | 12 | EF-1 | F | 528 VA | |
| | 500 VA | M | IDF - SECURITY (ACP) | 10 | 20 A | 13 | 14 | 20 A | 12 | EF-2 | F | 500 VA | |
| | 360 VA | R | IDF - QUAD RECEPTACLE | 12 | 20 A | 15 | 16 | 20 A | 12 | EF-3 | F | 700 VA | |
| | 360 VA | R | IDF - QUAD RECEPTACLE | 12 | 20 A | 17 | 18 | 20 A | 12 | RECEPT - RM.1010, RM.1011 | R | 360 VA | |
| | 360 VA | R | IDF - QUAD RECEPTACLE | 12 | 20 A | 19 | 20 | 20 A | 12 | RECEPTACLES | R | 540 VA | |
| | 3661 VA | C | DSCU-1/DS-1 (22.0 MCA) | 10 | 40 A | 21 | 22 | 20 A | 10 | IDF - SECURITY INTRUSION | M | 500 VA | |
| | | | | | | 23 | 24 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 2663 VA | C | DSCU-2/DS-2 (16.0 MCA) | 10 | 30 A | 25 | 26 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | | | | | | 27 | 28 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 696 VA | F | EF-4 | 10 | 20 A | 29 | 30 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 696 VA | F | EF-5 | 10 | 20 A | 31 | 32 | | | | | | |
| | 650 VA | MT | CIRC. PUMP & TIMER SWITCH | 12 | 20 A | 33 | 34 | 40 A | 8 | ELECTRIC WATER HEATER | WH | 10000 VA | |
| | 1000 VA | R | RECEPT - ANIMAL TREADMIL | 12 | 20 A | 35 | 36 | | | | | | |
| | 1000 VA | R | RECEPT - ANIMAL TREADMIL | 12 | 20 A | 37 | 38 | | | | | | |
| | 1500 VA | R | RECEPT - TOOLS ROOM | 12 | 20 A | 39 | 40 | 30 A | 10 | SPD2 | SP | 0 VA | |
| | 1500 VA | R | RECEPT - TOOLS ROOM | 12 | 20 A | 41 | 42 | | | | | | |
| | 500 VA | M | DDC/BAS | 12 | 20 A | 43 | 44 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 45 | 46 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 47 | 48 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 49 | 50 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 51 | 52 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 53 | 54 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 55 | 56 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 180 VA | R | CATTLE PEN | 12 | 20 A | 57 | 58 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 59 | 60 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 61 | 62 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 63 | 64 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 65 | 66 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 67 | 68 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | CATTLE PEN | 12 | 20 A | 69 | 70 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 180 VA | R | CATTLE WASH | 12 | 20 A | 71 | 72 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | R GROOMING STATIONS | 12 | 20 A | 73 | 74 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | R GROOMING STATIONS | 12 | 20 A | 75 | 76 | 20 A | 12 | R GROOMING STATIONS | R | 1500 VA | |
| | 1500 VA | R | R GROOMING STATIONS | 12 | 20 A | 77 | 78 | 20 A | 12 | EXTERIOR RECEPTACLES | R | 720 VA | |
| | 0 VA | -- | Space | 12 | -- | 79 | 80 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 81 | 82 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 83 | 84 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 62060 VA | 58.06% | 36030 VA | 210.20A | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | 6324 VA | 100.00% | 6324 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | 10000 VA | 100.00% | 10000 VA |
| 220.60 | (F)Fans | 3120 VA | 100.00% | 3120 VA | 220.50 | (MT)Lrg. Motor | 650 VA | 125.00% | 813 VA |
| | (M)Misc. | 12300 VA | 100.00% | 12300 VA | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 94454 VA VA = 262 A
Total Load (Diversified): 68587 VA VA = 190 A
Location of Panel: ELEC 1011

## Distribution Panelboard DPHA

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating
Mains Type: MCB — 600 A MCB -- ; 600 A BUS (Copper); --
LUGS: -- ; --
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 VA | -- | Space | 12 | -- | 1 | 2 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 3 | 4 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 5 | 6 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 7 | 8 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 9 | 10 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 11 | 12 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 13 | 14 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 15 | 16 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 17 | 18 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 19 | 20 | -- | 12 | Space | -- | 0 VA | |
| | 10360 VA | L; EL | HA | 3 | 100 A | 21 | 22 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 23 | 24 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 25 | 26 | | | | | | |
| | 27353 VA | F; C | HM | 3 | 100 A | 27 | 28 | 125 A | 1 | TLB | R; WH; SP; ... | 94454 VA | |
| | | | | | | 29 | 30 | | | | | | |
| | | | | | | 31 | 32 | | | | | | |
| | 92460 VA | Spare; R; SP; K; M | TLA | 1 | 125 A | 33 | 34 | 125 A | 1 | TLC | Spare; R; SP | 102360 VA | |
| | | | | | | 35 | 36 | | | | | | |
| | | | | | | 37 | 38 | | | | | | |
| | 161479 VA | Spare; L; R; WH;... | HRR | 4/0 | 225 A | 39 | 40 | 60 A | 6 | SPD1 | SP | 0 VA | |
| | | | | | | 41 | 42 | | | | | | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | 266700 VA | 51.87% | 138350 VA | 210.20A | (L)Lighting | 12317 VA | 125.00% | 15396 VA |
| 220.56 | (K)Kitchen | 3600 VA | 90.00% | 3240 VA | | (EL)Ext. Ltg. | 48482 VA | 125.00% | 60603 VA |
| 220.60 | (C)Cooling | 51087 VA | 100.00% | 51087 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | 20000 VA | 100.00% | 20000 VA |
| 220.60 | (F)Fans | 34130 VA | 100.00% | 34130 VA | 220.50 | (MT)Lrg. Motor | 1300 VA | 112.50% | 1463 VA |
| | (M)Misc. | 28850 VA | 100.00% | 28850 VA | | (SP)Sub Pnl. | 0 VA | Not Computed | 0 VA |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 488466 VA VA = 588 A
Total Load (Diversified): 375118 VA VA = 451 A
Location of Panel: ELEC 1011

## Panelboard HA

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating
Mains Type: MLO — 0 A -- -- ; 100 A BUS (Copper); --
LUGS: SINGLE ; --
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 44 VA | L | EXIT SIGNS | 12 | 20 A | 1 | 2 | -- | 12 | Space | -- | 0 VA | |
| | 1350 VA | L; EL | EXTERIOR LIGHTING | 10 | 20 A | 3 | 4 | 20 A | 12 | LIGHTING | L | 1246 VA | |
| | 704 VA | L | SITE LIGHTING | 10 | 20 A | 5 | 6 | 20 A | 12 | LIGHTING | L | 922 VA | |
| | 920 VA | L | CORRIDOR LIGHTING | 12 | 20 A | 7 | 8 | 20 A | 12 | LIGHTING | L | 1246 VA | |
| | 1780 VA | L | EXCERCISE ARENA LIGHTING | 12 | 20 A | 9 | 10 | 20 A | 12 | LIGHTING | L | 534 VA | |
| | 1614 VA | L | EAST WING LIGHTING | 12 | 20 A | 11 | 12 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 13 | 14 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 15 | 16 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 17 | 18 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 19 | 20 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 21 | 22 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 23 | 24 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 25 | 26 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 27 | 28 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 29 | 30 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 31 | 32 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 33 | 34 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 35 | 36 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | 0 VA | -- | Space | 12 | -- | 41 | 42 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | | | | 210.20A | (L)Lighting | 10056 VA | 125.00% | 12570 VA |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | 304 VA | 125.00% | 380 VA |
| 220.60 | (C)Cooling | | | 0 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | | | | 220.50 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | | | |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 10360 VA VA = 12 A
Total Load (Diversified): 12950 VA VA = 16 A
Location of Panel: ELEC 1011

## Panelboard HM

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating
Mains Type: MLO — 0 A -- -- ; 100 A BUS (Copper); --
LUGS: SINGLE ; --
Mounting Stye: SURFACE

| NOTE | LOAD (VA) | TYPE | DESCRIPTION | WIRE | CB | CKT | CKT | CB | WIRE | DESCRIPTION | TYPE | LOAD (VA) | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 2 | | | | | | |
| | 1746 VA | F | HVLS-1 | 12 | 15 A | 3 | 4 | 15 A | 12 | HVLS-11 | F | 1746 VA | |
| | | | | | | 5 | 6 | | | | | | |
| | | | | | | 7 | 8 | | | | | | |
| | 1746 VA | F | HVLS-2 | 12 | 15 A | 9 | 10 | 15 A | 12 | HVLS-12 | F | 1746 VA | |
| | | | | | | 11 | 12 | | | | | | |
| | | | | | | 13 | 14 | | | | | | |
| | 1746 VA | F | HVLS-3 | 12 | 15 A | 15 | 16 | 15 A | 12 | HVLS-13 | F | 2827 VA | |
| | | | | | | 17 | 18 | | | | | | |
| | | | | | | 19 | 20 | | | | | | |
| | 1746 VA | F | HVLS-4 | 12 | 15 A | 21 | 22 | 15 A | 12 | HVLS-14 | F | 2827 VA | |
| | | | | | | 23 | 24 | | | | | | |
| | | | | | | 25 | 26 | -- | 12 | Space | -- | 0 VA | |
| | 1746 VA | F | HVLS-5 | 12 | 15 A | 27 | 28 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 29 | 30 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 31 | 32 | -- | 12 | Space | -- | 0 VA | |
| | 1746 VA | F | HVLS-6 | 12 | 15 A | 33 | 34 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 35 | 36 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 37 | 38 | -- | 12 | Space | -- | 0 VA | |
| | 2493 VA | C | HVLS-7 | 12 | 15 A | 39 | 40 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 41 | 42 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 43 | 44 | -- | 12 | Space | -- | 0 VA | |
| | 1746 VA | F | HVLS-8 | 12 | 15 A | 45 | 46 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 47 | 48 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 49 | 50 | -- | 12 | Space | -- | 0 VA | |
| | 1746 VA | F | HVLS-9 | 12 | 15 A | 51 | 52 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 53 | 54 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 55 | 56 | -- | 12 | Space | -- | 0 VA | |
| | 1746 VA | F | HVLS-10 | 12 | 15 A | 57 | 58 | -- | 12 | Space | -- | 0 VA | |
| | | | | | | 59 | 60 | -- | 12 | Space | -- | 0 VA | |

| NEC REF: | Load Type | Conn. | Fct. | Diversity | NEC REF: | Load Type | Conn. | Fct. | Diversity |
|---|---|---|---|---|---|---|---|---|---|
| 220.47 | (R)Receptacle | | | | 210.20A | (L)Lighting | | | |
| 220.56 | (K)Kitchen | | | | | (EL)Ext. Ltg. | | | |
| 220.60 | (C)Cooling | 2493 VA | 100.00% | 2493 VA | 620.14 | (E)Elevators | | | |
| 220.60 | (H)Heating | | | 0 VA | | (WH)Wat. Htr. | | | |
| 220.60 | (F)Fans | 24860 VA | 100.00% | 24860 VA | 220.50 | (MT)Lrg. Motor | | | |
| | (M)Misc. | | | | | (SP)Sub Pnl. | | | |
| | | | | | 630.11B | (W) Welders | | | |

Total Connected Load: 27353 VA VA = 33 A
Total Load (Diversified): 27353 VA VA = 33 A
Location of Panel: ELEC 1011


CONSULTANTS

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Talon Engineering, LLC
16225 Park Ten Place, Suite 500
Houston, Texas 77084
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
3200 Wilcrest Drive, Suite 305
Houston, TX 77042
Tel: 713.780.3345
Fax: 713.780.3712

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888


A B

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tel 281.286.6605, fax 713.977.4620


STATE OF TEXAS
ADAM C. JONES
110008
LICENSED
PROFESSIONAL ENGINEER
7/28/25

PROJECT #: 202414
DATE: 2025-07-28
DRAWN: Author
CHECKED: Checker

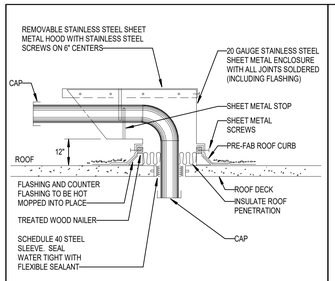
| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

E5.02

ELECTRICAL PANEL SCHEDULES


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070

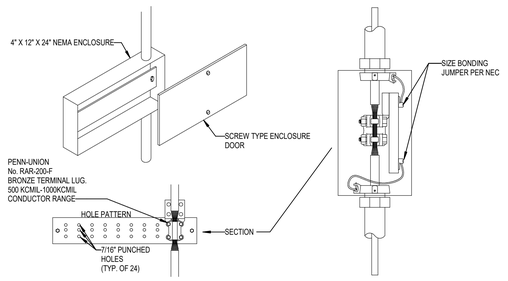

| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|




NOTE: REFER TO ARCHITECTURAL DRAWINGS FOR ROOF DETAILS.

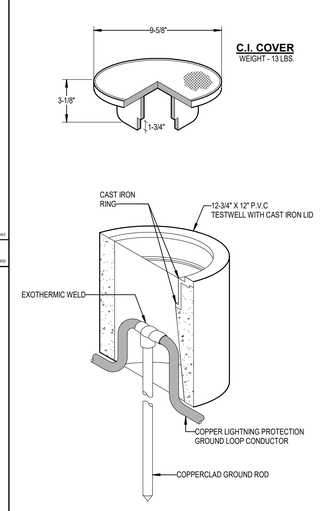
"NOT TO SCALE"

**5 ROOF CONDUIT PENETRATION** E1603



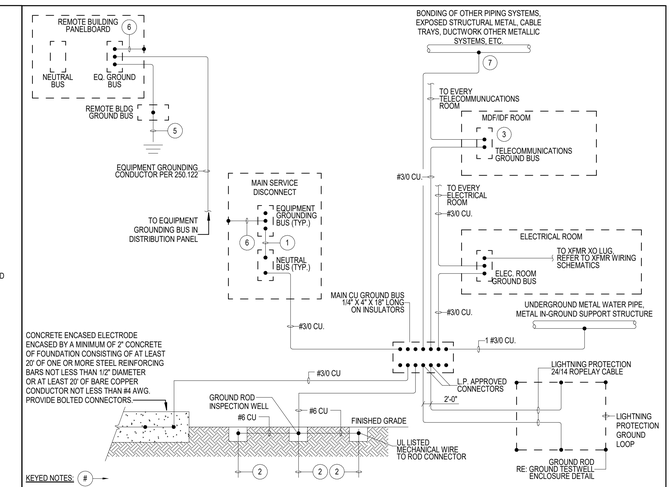

"NOT TO SCALE"

**3 TYPICAL GROUNDING BUS** E1603




"NOT TO SCALE"

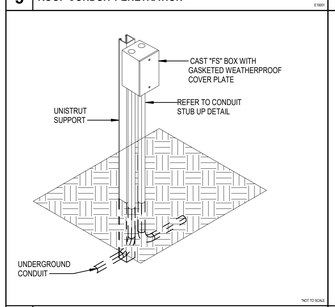
**2 GROUND TESTWELL ENCLOSURE** E1603




1. MAIN BONDING JUMPER SIZED BY MANUFACTURER OR TABLE 250.102(C)(1).
2. COPPER BONDED STEEL ELECTRODE 5/8" IN DIAMETER 10'-0" LONG WITH A MINIMUM OF 8'-0" IN DIRECT CONTACT WITH THE EARTH PER N.E.C. 250.52(A)(5) AND 250.53(A)(4). PROVIDE TRIAD GROUNDING SYSTEM CONSISTING OF THREE GROUND RODS SPACED NO LESS THAN 10'-0" APART.
3. REFER TO TECHNOLOGY DRAWINGS FOR ADDITIONAL REQUIREMENTS.
4. COPPER BONDED STEEL ELECTRODE 5/8" IN DIAMETER 10'-0" LONG WITH A MINIMUM OF 8'-0" IN DIRECT CONTACT WITH THE EARTH PER N.E.C. 250.52(A)(5) AND 250.53(A)(4).
5. GROUNDING ELECTRODE SYSTEM AS REQUIRED BY ARTICLE 250 OF THE CURRENT VERSION OF THE N.E.C. PROVIDE TRIAD GROUNDING SYSTEM AS INDICATED IN KEYED NOTE #2.
6. BOND TO ENCLOSURE WITH U.L. LISTED GREEN SCREW AND BOND TERMINAL. JUMPER CABLE SHALL BE SIZED BY MANUFACTURER OR TABLE 250.102(C)(1).
7. OTHER PIPING SYSTEMS INCLUDING GAS PIPING AND STRUCTURAL METAL THAT IS LIKELY TO BE ENERGIZED SHALL BE BONDED PER NEC 250.104

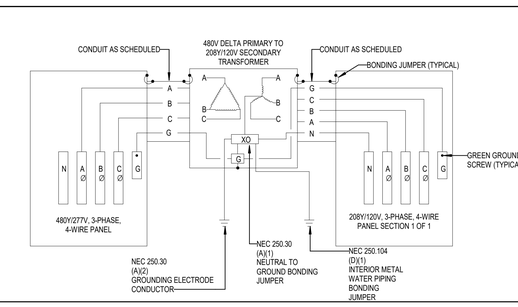
"NOT TO SCALE"

**1 GROUNDING ELECTRODE SYSTEM AND BONDING - SINGLE SERVICE** E1701



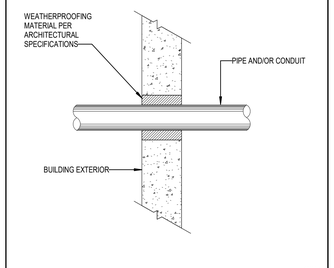

"NOT TO SCALE"

**6 JUNCTION BOX MOUNTING** E1603



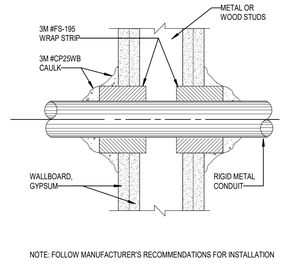

"NOT TO SCALE"

**4 3-PHASE TRANSFORMER WIRING SCHEMATIC** E1603




"NOT TO SCALE"

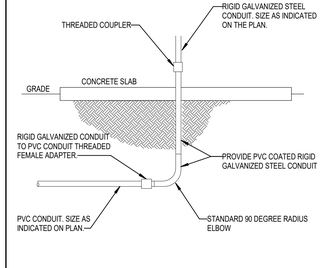
**12 PIPE AND/OR CONDUIT PENETRATION** E1615




NOTE: FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION

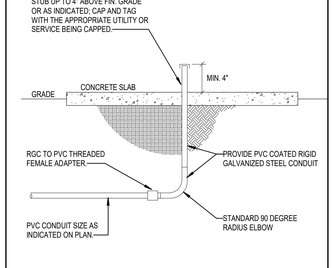
"NOT TO SCALE"

**11 2 HR. GYPSUM WALLBOARD PIPE PENETRATION** E1611



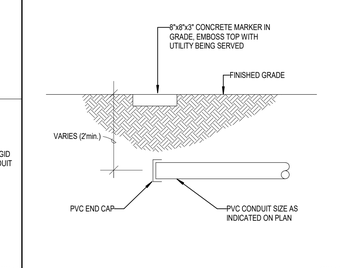

"NOT TO SCALE"

**10 CONDUIT STUB-UP** E1611



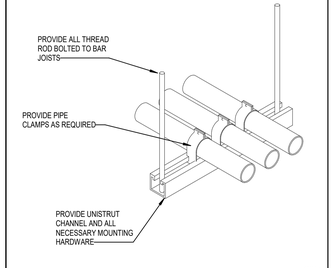

"NOT TO SCALE"

**9 CONDUIT STUB-UP** E1611



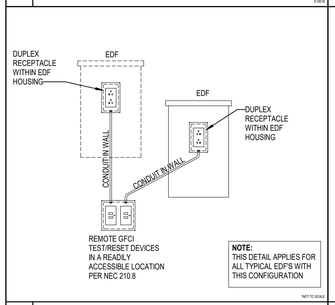

"NOT TO SCALE"

**8 CAP AND STAKE** E1609



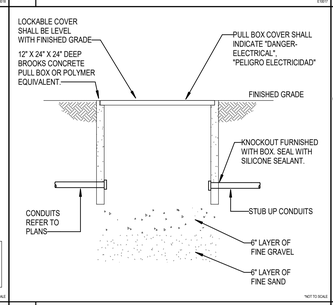

"NOT TO SCALE"

**7 UNISTRUT CONDUIT** E1603



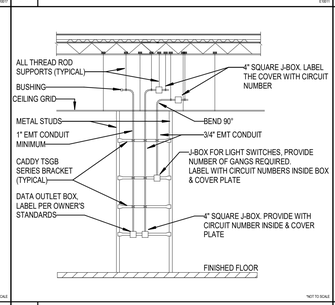

"NOT TO SCALE"

**18 ELEC. DRINKING FOUNTAIN** E1609



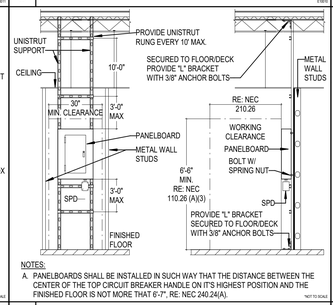

"NOT TO SCALE"

**17 PULL BOX** E2403




"NOT TO SCALE"

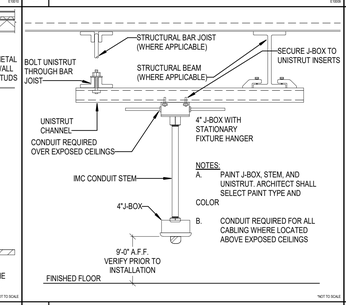
**16 CONDUIT ROUGH-IN 1** E2403




NOTES:
A. PANELBOARDS SHALL BE INSTALLED IN SUCH WAY THAT THE DISTANCE BETWEEN THE CENTER OF THE TOP CIRCUIT BREAKER HANDLE ON IT'S HIGHEST POSITION AND THE FINISHED FLOOR IS NOT MORE THAT 6'-7", RE: NEC 240.24(A).

"NOT TO SCALE"

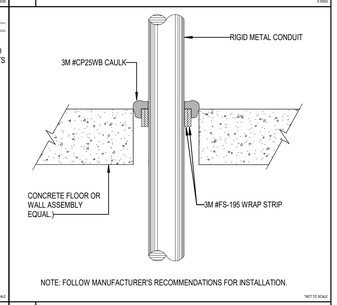
**15 PANELBOARD MOUNTING** E2003




NOTES:
A. PAINT J-BOX, STEM, AND UNISTRUT. ARCHITECT SHALL SELECT PAINT TYPE AND COLOR
B. CONDUIT REQUIRED FOR ALL CABLING WHERE LOCATED ABOVE EXPOSED CEILINGS

"NOT TO SCALE"

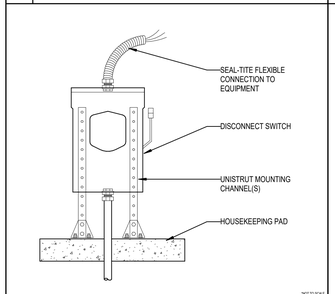
**14 PENDANT MOUNTED FIRE ALARM DEVICE** E1601




NOTE: FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.

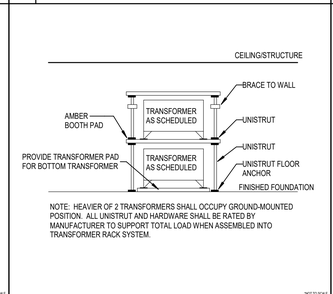
"NOT TO SCALE"

**13 2, 3 AND 4 HR. PENETRATIONS FOR CONCRETE** E1615




"NOT TO SCALE"

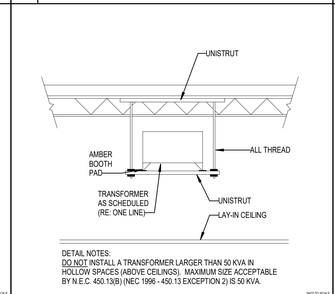
**23 DISCONNECT SWITCH MOUNTING AT CONCRETE PAD** E1615




NOTE: HEAVIER OF 2 TRANSFORMERS SHALL OCCUPY GROUND-MOUNTED POSITION. ALL UNISTRUT AND HARDWARE SHALL BE RATED BY MANUFACTURER TO SUPPORT TOTAL LOAD WHEN ASSEMBLED INTO TRANSFORMER RACK SYSTEM.

"NOT TO SCALE"

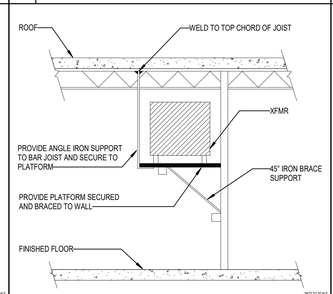
**22 STACKED TRANSFORMER** E2603




DETAIL NOTES:
DO NOT INSTALL A TRANSFORMER LARGER THAN 50 KVA IN HOLLOW SPACES (ABOVE CEILINGS). MAXIMUM SIZE ACCEPTABLE BY N.E.C. 450.13(B) (NEC 1996 - 450.13 EXCEPTION 2) IS 50 KVA.

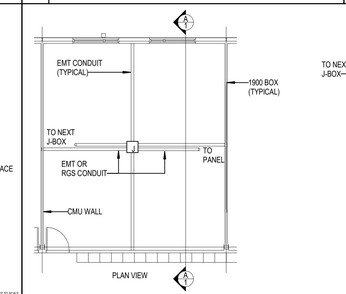
"NOT TO SCALE"

**21 SUSPENDED TRANSFORMER** E1609



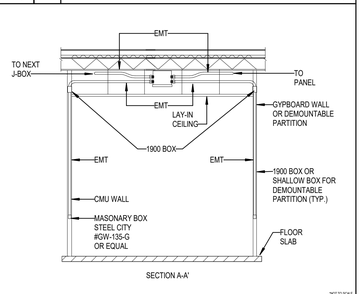

"NOT TO SCALE"

**20 WALL MOUNTED TRANSFORMER** E1609




"NOT TO SCALE"

**19 TYPICAL RACEWAY CONFIGURATION** E1601




"NOT TO SCALE"

**19 TYPICAL RACEWAY CONFIGURATION** E1601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A | B

# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

E6.01

ELECTRICAL DETAILS


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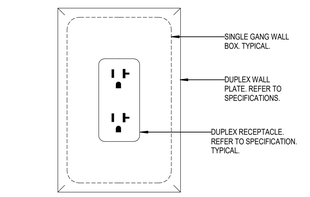
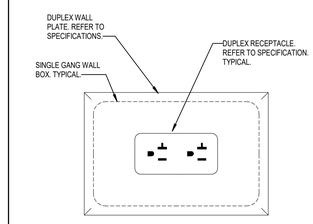
TBPE Firm Registration No. 2234
DBR Project # 250070

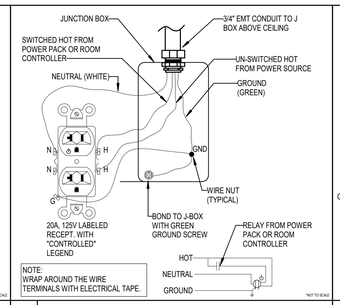

| SS | JC/TD/DT/DL | JD | RT |
|---|---|---|---|



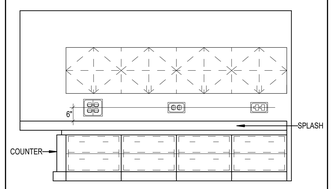

**5** TYPICAL RECEPTACLE MOUNTING E1604



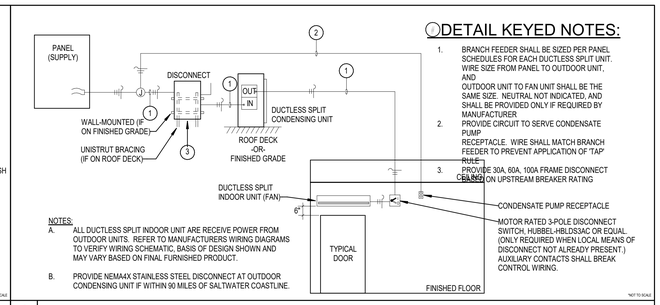

**4** HORIZONTAL RECEPTACLE MOUNTING E1604



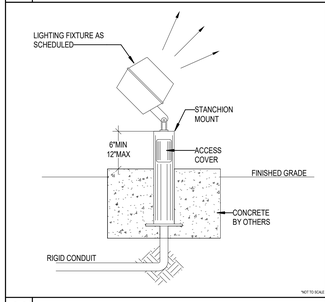

**3** SWITCHED RECEPTACLE E1604



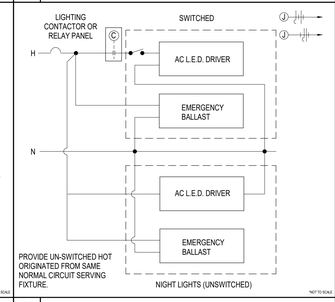

**2** TYPICAL COUNTERTOP DEVICE ELEVATION E1604



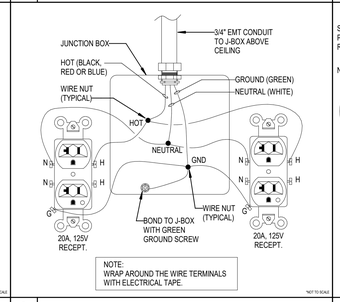

**1** DUCTLESS SPLIT ELECTRICAL CONNECTION E1604



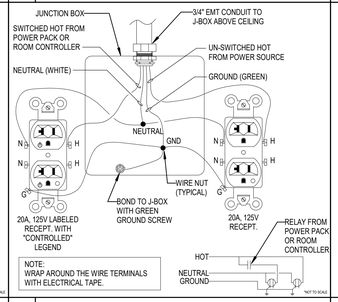

**11** GROUND MOUNTED FLOODLIGHT E1403



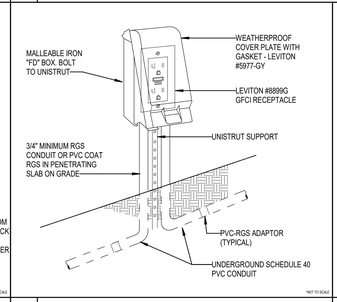

**10** EMERGENCY BATTERY WIRING E1404



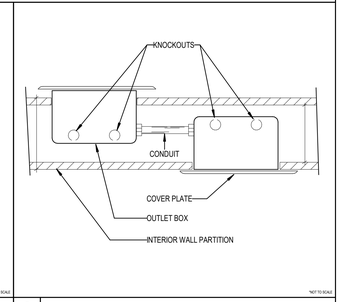

**9** 20A, 125V RECEPTACLE WIRING E1604




**8** CONTROLLED QUAD E1604



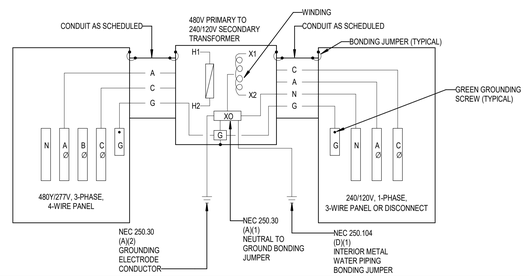

**7** RECEPTACLE MOUNTING E1604



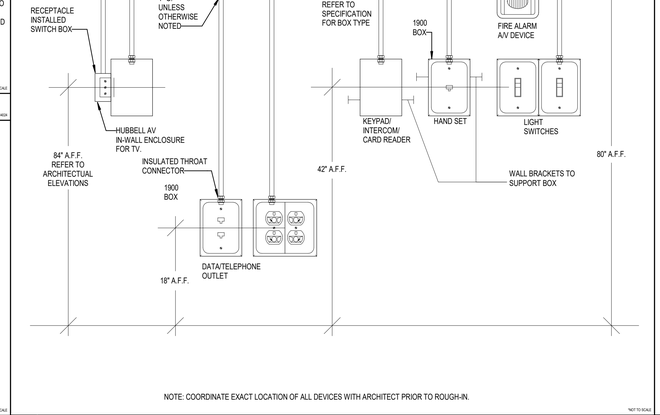

**6** BACK - TO - BACK OUTLETS E1604

**15** FACADE LIGHTING MOUNTING E1403

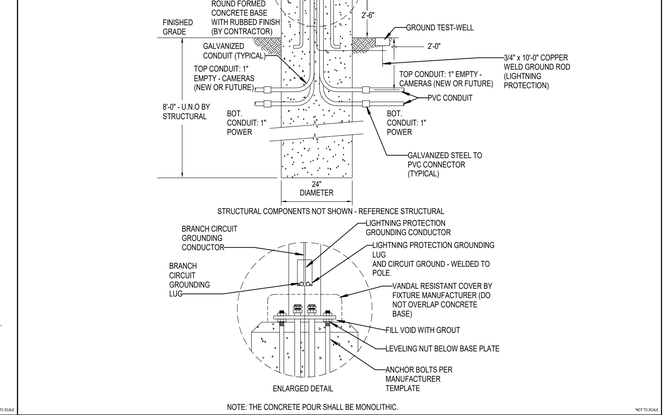
**14** LIGHTING FIXTURE SUPPORT E1404




**16** 1-PHASE TRANSFORMER WIRING SCHEMATIC E3607




**13** TYPICAL DEVICE ELEVATIONS E1604




**12** CONCRETE POLE BASE 1 E1604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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | Author |
| CHECKED: | Checker |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

E6.02

ELECTRICAL DETAILS


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DBR Project # 250070


| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|

(NOT ALL ITEMS INDICATED APPLY TO THIS PROJECT)

# ABBREVIATIONS

## A

| | |
|---|---|
| A | AIR (COMPRESSED) |
| AC | AIR COMPRESSOR |
| AD | AIR DRYER |
| ADA | AMERICANS WITH DISABILITIES ACT |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AP | ACCESS PANEL |
| ARCH | ARCHITECT, ARCHITECTURAL |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| ASTM | AMERICAN SOCIETY OF TESTING AND MATERIALS |
| AUX | AUXILIARY |
| AV | ACID VENT |
| AVV | AIR ADMITTANCE VALVE |
| AW | ACID WASTE |

## B

| | |
|---|---|
| B | BOILER |
| BF | BOTTLE FILLER |
| BFF | BELOW FINISH FLOOR |
| BFP | BACKFLOW PREVENTER |
| BFV | BUTTERFLY VALVE |
| BOF | BOTTOM OF FOOTING |
| BOS | BOTTOM OF STRUCTURE |
| BT | BATH TUB |
| BTU | BRITISH THERMAL UNIT |
| BV | BALL VALVE |
| BWV | BACK WATER VALVE |

## C

| | |
|---|---|
| C | CELSIUS |
| CAB | CABINET |
| CB | CATCH BASIN |
| CD | CONDENSATE DRAIN LINE |
| CI | CAST IRON |
| CIRC | CIRCULATING |
| CPM | CUBIC FEET PER MINUTE |
| CFS | CUBIC FEET PER SECOND |
| CMU | CONCRETE MASONRY UNIT |
| CL | CENTERLINE |
| CO | CLEAN OUT |
| COL | COLUMN |
| CONC | CONCRETE, CONCENTRIC |
| CONN | CONNECTION |
| CP | CIRCULATING PUMP, CHROME PLATE |
| CPI | CAST IRON PIPE INSTITUTE |
| CPVC | CHLORINATED POLYVINYL CHLORIDE |
| CTE | CONNECT TO EXISTING |
| CW | COLD WATER |

## D

| | |
|---|---|
| DBP | DOMESTIC BOOSTER PUMP |
| DC | DOWNSPOUT COVER |
| DCVA | DOUBLE CHECK VALVE ASSEMBLY |
| DF | DRINKING FOUNTAIN |
| DFU | DRAINAGE FIXTURE UNITS |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DISC | DISCONNECT |
| DN | DOWN, DOWNSPOUT NOZZLE |
| DS | DOWNSPOUT |
| DW | DISHWASHER |
| DWG | DRAWING |

## E

| | |
|---|---|
| ECC | ECCENTRIC |
| EDF | ELECTRIC DRINKING FOUNTAIN |
| EL OR ELVA | ELEVATION |
| ES | EMERGENCY SHOWER |
| ESP | ELEVATOR SUMP PUMP |
| ET | EXPANSION TANK |
| ETR | EXISTING TO REMAIN |
| EW | EYE WASH |
| EWH | ELECTRIC WATER HEATER |

## F

| | |
|---|---|
| F | FARENHEIT, FIRE |
| FBO | FURNISHED BY OTHERS |
| FCO | FLOOR CLEAN OUT |
| FCV | FLOOR CONTROL VALVE |
| FD | FLOOR DRAIN |
| FDC | FIRE DEPARTMENT CONNECTION |
| FEC | FIRE EXSTINGUISHER CABINET |
| FH | FIRE HYDRANT |
| FHC | FIRE HOSE CABINET |
| FHR | FIRE HOSE RACK |
| FHV | FIRE HOSE VALVE |
| FIXT | FIXTURE |
| FL | FLOW LINES |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FP | FIRE PUMP |
| FS | FLOW SWITCH, FIRE SPRINKLER FLOOR SINK |
| FT | FOOT, FEET |
| FW | FORCE WASTE, FILTER WATER |

## G

| | |
|---|---|
| G | GAS |
| GA | GAUGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GCO | GRADE CLEANOUT |
| GD | GARBAGE DISPOSAL |
| GI | GREASE INTERCEPTOR |
| GL | GLOBE VALVE |
| GPD | GALLONS PER DAY |
| GPF | GALLONS PER FLUSH |
| GPH | GALLONS PER HOUR |
| GPM | GALLONS PER MINUTE |
| GT | GREASE TRAP |
| GV | GATE VALVE, GREASE VENT |
| GW | GREASE WASTE |
| GWH | GAS WATER HEATER |

## H

| | |
|---|---|
| HB | HOSE BIBB |
| HC | HANDICAPPED |
| HD | HEAD, HUB DRAIN |
| HKP | HOUSEKEEPING PAD |
| HP | HORSEPOWER |
| HR | HOSE REEL |
| HSC | HORIZONTAL SPLIT CASE |
| HT | HEIGHT |
| HTR | HEATER |
| HW | HOT WATER |
| HWR | HOT WATER RETURN |
| HZ | HERTZ |

## I

| | |
|---|---|
| ID | INSIDE DIAMETER |
| IE | INVERT ELEVATION |
| IN | INCH |
| INSUL | INSULATION |
| IW | INDIRECT WASTE |
| IWH | INSTANTANEUOS WATER HEATER |

## J

| | |
|---|---|
| JP | JOCKEY PUMP |

## K

| | |
|---|---|
| KEC | KITCHEN EQUIPTMENT CONTRACTOR |
| KVA | KILOVOLT- AMPS |
| KW | KILOWATT |

## L

| | |
|---|---|
| L | LENGTH, LAVATORY |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LP | LOW PRESSURE |
| LPG | LIQUEFIED PETROLEUM GAS |
| LT | LINT, LINT TRAP |
| LVL | LEVEL |

## M

| | |
|---|---|
| MAX | MAXIMUM |
| MBTUH | THOUSAND OF BTU'S |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MS | MOP SINK |
| MSB | MOP SERVICE BASIN |
| MTD | MOUNTED |
| MUW | MAKE-UP WATER |

## N

| | |
|---|---|
| N.C. | NORMALLY CLOSED |
| NFPA | NATIONAL FIRE PROTECTION ASSOCIATION |
| NIC | NOT IN CONTRACT |
| N.O. | NORMALLY OPEN |
| NTS | NOT TO SCALE |

## O

| | |
|---|---|
| O | MEDICAL OXYGEN |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER, OVERFLOW DRAIN |
| OS&Y | OPEN STEM AND YOLK |

## P

| | |
|---|---|
| PC | PLUMBING CONTRACTOR |
| PH | PHASE |
| PIV | POST INDICATOR VALVE |
| PLBG | PLUMBING |
| PNL | PANEL |
| POU | POINT-OF-USE |
| PP | POLYPROPYLENE |
| PPM | PART PER MILLION |
| PRS | PRESSURE REDUCING STATION |
| PRV | PRESSURE REDUCING VALVE |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PVC | POLYVINYL CHLORIDE |
| PVDF | POLYVINYL IDENE FLUORIDE |

## Q

| | |
|---|---|
| QTY | QUANTITY |

## R

| | |
|---|---|
| RCP | REFLECTED CEILING PLAN, REINFORCED CONCRETE PIPE |
| RD | ROOF DRAIN |
| RE | REFERENCE,REFER |
| RECIRC | RECIRCULATE |
| REFR | REFRIGERATOR |
| RH | ROOF HYDRANT |
| RM | ROOM |
| RO | REVERSE OSMOSIS |
| RPBF | REDUCED PRESSURE BACKFLOW PREVENTER |
| RPM | REVOLUTIONS PER MINUTE |
| RTU | ROOFTOP UNIT |
| RV | RELIEF VALVE |

## S

| | |
|---|---|
| SA | SHOCK ABSORBER |
| SC | SCHEDULE |
| SD | STORM DRAIN, SANITARY DRAIN |
| SEC | SECONDARY |
| SECT | SECTION |
| SF | SQUARE FEET |
| SH | SHOWER |
| SHI | SOLID HAIR INTERCEPTOR |
| SI | SOLIDS INTERCEPTOR |
| SIM | SIMILAR |
| SK | SINK |
| SOS | SAND OIL SEPERATOR |
| SOV | SHUT-OFF VALVE |
| SP | SUMP PUMP, STATIC PRESSURE |
| SPEC | SPECIFICATION |
| SPR | SPRINKLER |
| SQ | SQUARE |
| SS | SERVICE SINK, SOIL STACK, STAINLESS STEEL |
| SSD | SUBSURFACE DRAIN |
| STD | STANDARD |
| STL | STEEL |
| STR | STRAINER |
| SV | SANITARY VENT |
| SW | SOFT WATER |

## T

| | |
|---|---|
| TCO | TRAFFIC CLEANOUT |
| TD | TRENCH DRAIN |
| TDH | TOTAL DYNAMIC HEAD |
| TDL | TOTAL DEVELOPED LENGTH |
| TLT | TOILET |
| TMV | THERMOSTATIC MIXING VALVE |
| TOB | TOP OF BEAM |
| TOF | TOP OF FOOTER |
| TP | TRAP PRIMER |
| TPD | TRAP PRIMER DEVICE |
| TS | TAMPER SWITCH |
| TYP | TYPICAL |

## U

| | |
|---|---|
| U | URINAL |
| UF | UNDERFLOOR |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| UL | UNDERWRITERS LABORATORIES, INC. |
| UNO | UNLESS NOTED OTHERWISE |
| US | UNDERSLAB |

## V

| | |
|---|---|
| V | VOLT, VENT |
| VAC | VACUUM(MEDICAL) |
| VB | VALVE BOX, VACUUM BREAKER |
| VFD | VARIABLE FREQUENCY DRIVE |
| VP | VACUUM PUMP |
| VS | VENT STACK |
| VTR | VENT THRU ROOF |

## W

| | |
|---|---|
| W | WATT, WASTE, WIDTH, WASHER |
| W/ | WITH |
| W/O | WITHOUT |
| WADG | WASTE ANESTHETIC GAS DISPOSAL |
| WB | WALL BOX |
| WC | WATER CLOSET |
| WCO | WALL CLEANOUT |
| WH | WALL HYDRANT |
| WM | WATER METER |
| WMB | WASHER MACHINE BOX |
| WP | WEATHERPROOF |
| WPD | WATER PRESSURE DROP |
| WS | WATER SOFTENER, WASTE STACK |
| WSFU | WATER SUPPLY FIXTURE UNIT |
| WT | WATERTIGHT, WEIGHT |

## Y

| | |
|---|---|
| YCO | YARD CLEANOUT |
| YH | YARD HYDRANT |

## Z

| | |
|---|---|
| Z | ZONE |

# SYMBOLS

## PLUMBING SYSTEMS

- SANITARY DRAIN BELOW FLOOR
- S(E) — EXISTING SOIL OR WASTE PIPING B.G. - S(E)
- SANITARY DRAIN ABOVE FLOOR
- S(E) — EXISTING SOIL OR WASTE PIPING A.G. - S(E)
- PIPE DEMO
- SANITARY VENT
- EXISTING VENT PIPING
- GW — GREASE WASTE(ABOVE CEILING)
- GW — GREASE WASTE(BELOW FLOOR)
- SD — STORM DRAIN(ABOVE CEILING)
- SD — STORM DRAIN(BELOW FLOOR)
- OD — OVERFLOW DRAIN(ABOVE CEILING)
- OD — OVERFLOW DRAIN(BELOW FLOOR)
- AW — ACID WASTE(ABOVE CEILING)
- AW(E) — EXISTING ACID WASTE PIPING A.G. - AW(E)
- AW — ACID WASTE(BELOW FLOOR)
- AW(E) — EXISTING ACID WASTE PIPING B.G. - AW(E)
- AV — ACID VENT(ABOVE CEILING OR BELOW FLOOR)
- AV(E) — EXISTING ACID VENT PIPING - AV(E)
- NP-CW — NON-POTABLE - COLD WATER
- COLD WATER - CW
- CW(E) — EXISTING DOMESTIC COLD WATER - CW(E)
- HOT WATER - HW
- HW(E) — EXISTING DOMESTIC HOT WATER - HW(E)
- HOT WATER RECIRCULATION
- HWR(E) — EXISTING DOMESTIC HOT WATER RETURN - HWR(E)
- G (4oz) — NATURAL GAS (LOW PRESSURE)
- G (2 PSI) — NATURAL GAS (MEDIUM PRESSURE)
- G (5 PSI) — NATURAL GAS (HIGH PRESSURE)
- T — TEMPERED WATER
- A — COMPRESSED AIR
- MA — MEDICAL AIR
- O — MEDICAL OXYGEN
- MV — MEDICAL VACUUM
- F — FIRE STANDPIPE, FIRE LINE
- FS — WET AUTOMATIC FIRE SPRINKLER
- FW — FORCE WASTE
- TP — TRAP PRIMER
- D — DRAIN LINE
- SW — SOFT WATER
- LT — LINT WASTE
- LP — LIQUIFIED PETROLEUM GAS
- N — NITROGEN
- N2O — NITROUS OXIDE
- IA — INSTRUMENT AIR
- WAGD — WASTE ANESTHETIC GAS DISPOSAL

## PIPING FITTINGS

- CAP ON END OF PIPE
- ELBOW UP
- ELBOW DOWN
- VALVE IN DROP
- VALVE IN RISE
- DIRECTION OF FLOW
- DIRECTION OF SLOPE DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- TEE OUTLET UP
- TEE OUTLET DOWN
- UNION
- FLANGE
- STRAINER WITH BLOWDOWN VALVE
- GATE VALVE, HVAC BALANCING/STOP VALVE
- GLOBE VALVE
- BALL VALVE
- BALANCING VALVE WITH DIFFERENTIAL PRESSURE TAPS
- OS&Y VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- TWO-WAY MODULATING CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS REGULATOR
- GAS COCK
- SPRINKLER FLOOR CONTROL STATION
- MANUAL AIR VENT
- AUTOMATIC AIR VENT
- T&P RELIEF VALVE
- LINE CLEANOUT/ WALL CLEANOUT
- FLOOR CLEANOUT
- GRADE CLEANOUT
- PRESSURE GAUGE WITH GAUGE COCK
- THERMOMETER
- FLOW VENTURI
- VACUUM BREAKER
- VACUUM RELIEF VALVE
- BACKFLOW PREVENTOR
- CIRCULATING PUMP
- WATER SUB-METER
- LOCAL ALARM
- MASTER ALARM
- AREA ALARM

## MISCELLANEOUS

- DRAIN(TYPE AND SIZE AS NOTED ON PLANS)
- ROOF DRAIN OR OVERFLOW DRAIN
- ROOF DRAIN OR OVERFLOW DRAIN(FROM ABOVE)
- HOSE BIBB
- WALL HYDRANT
- PLUMBING FIXTURES
- EXISTING PLUMBING FIXTURES
- POINT OF NEW CONNECTION TO EXISTING PIPING
- P.X.X — PLUMBING DRAWING NOTE REFERENCE
- 2 / P2.1 — DETAIL NUMBER OR PLAN / SHEET WHERE DETAIL OR PLAN IS SHOWN
- FS — FLOW SWITCH
- TS — TAMPER SWITCH
- ACCESS PANEL (AP)
- FIRE DEPARTMENT SIAMESE CONNECTION(WALL MOUNTED)
- FIRE DEPARTMENT SIAMESE CONNECTION(FREE STANDING)
- 2 / P7.1 — PLUMBING RISER DIAGRAM NUMBER / SHEET WHERE PLUMBING RISER DIAGRAM IS SHOWN


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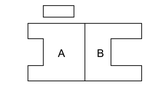


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PLUMBING SYMBOL LEGEND


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## SITE UTILITY NOTES

1. REFER TO CIVIL DRAWINGS FOR CONTINUATION OF DOMESTIC WATER, FIRE PROTECTION WATER, STORM, AND SANITARY WASTE UTILITIES.
2. REFER TO CIVIL DRAWINGS FOR LOCATION(S) OF WATER METER(S).
3. REFER TO CIVIL DRAWINGS FOR BUILDING FINISHED FLOOR ELEVATION(S).
4. ALL INVERT ELEVATIONS INDICATED ARE RELATIVE TO THE FINISHED FLOOR ELEVATION OF THE BUILDING SLAB AT THEIR RESPECTIVE LOCATIONS, UNLESS SPECIFICALLY NOTED OTHERWISE.
5. INVERT ELEVATIONS LISTED ARE APPROXIMATE. PRIOR TO CONSTRUCTION, COORDINATE FINAL INVERT ELEVATIONS OF GRAVITY OUTFALLS WITH SITE UTILITY CONTRACTOR. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER CONNECTIONS TO AVAILABLE SITE UTILITIES.
6. ROLL-DOWN AS NECESSARY AND PROVIDE PIPE, FITTINGS, AND ADAPTERS AS REQUIRED TO MAKE PROPER CONNECTIONS TO SITE UTILITY LINES.

## FIXTURES NOTES

1. DO NOT ROUGH-IN UNDERGROUND PIPING OR ANY OTHER CONNECTIONS FOR FIXTURES FROM THE PLUMBING DRAWINGS. REFER TO LATEST ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DIMENSIONED LOCATIONS. COORDINATE ALL FIXTURE AND EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS WITH THE LATEST ARCHITECTURAL DRAWINGS, SPECIFICATIONS, AND MANUFACTURER RECOMMENDATIONS PRIOR TO ANY ROUGH-INS.
2. CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS AND DIMENSIONS OF FINISHED FLOORS AND WALLS. TRUE ALL DRAINS, ROUGH-INS AND CARRIERS IN ACCORDANCE WITH THE PROPOSED ELEVATIONS AND FINISHED SURFACES.
3. THE MOUNTING HEIGHT ELEVATION OF ALL WALL HUNG AND COUNTER MOUNTED FIXTURES SHALL BE COORDINATED WITH THE LATEST ARCHITECTURAL DRAWINGS PRIOR TO ANY ROUGH-IN WORK.
4. PROVIDE LABOR AND MATERIALS AS REQUIRED TO MAKE FINAL CONNECTIONS TO ALL PLUMBING FIXTURES, EQUIPMENT, AND RELATED ITEMS FURNISHED UNDER SEPARATE DIVISIONS. INSTALL ASSOCIATED TRIM AND COMPONENT ACCESSORIES FURNISHED UNDER SEPARATE DIVISIONS.
5. CONTRACTOR SHALL REFER TO SHOP DRAWINGS OF ACTUAL EQUIPMENT TO BE SUPPLIED FOR THE FINAL COORDINATION OF ALL ROUGH-INS BEFORE BEGINNING WORK.
6. ALL FIXTURE AND EQUIPMENT STUB-OUTS SHALL BE PROVIDED WITH A STOP VALVE. UNLESS SPECIFIED OTHERWISE, ALL FIXTURE STOPS SHALL BE SOLID BRASS, LOOSE KEY OPERATED, CHROME PLATED, AND FITTED TIGHT TO CHROME PLATED BRASS WALL ESCUTCHEON PLATES COMPLETE WITH SUPPLY RISERS OF TYPE 'L' TUBING, CHROME PLATED. MCGUIRE MANUFACTURING OR PRE-APPROVED EQUAL.
7. ALL EXPOSED FIXTURE P-TRAPS WITHIN THE BUILDING AND ABOVE FLOOR SHALL BE CHROME PLATED ADJUSTABLE, HEAVY CAST BRASS WITH CLEANOUT PLUG, SLIP NUTS, AND 17 GAUGE SEAMLESS TUBULAR BRASS DRAIN TO WALL WITH WALL FLANGE. MCGUIRE MANUFACTURING OR PRE-APPROVED EQUAL.
8. EACH FIXTURE TRAP SHALL HAVE A LIQUID SEAL OF NOT LESS THAN 2 INCHES AND NOT MORE THAN 4 INCHES, EXCEPT WHERE A DEEPER SEAL IS FOUND NECESSARY BY THE AUTHORITY HAVING JURISDICTION.
9. ALL ROUGH IN OPENINGS SHALL BE FITTED WITH CHROME PLATED SOLID RING TYPE ESCUTCHEON PLATES FITTED TIGHT TO THE PIPE AND FLUSH TO THE WALL.
10. ALL EXPOSED TAILPIECES, P-TRAPS, TRAP ARMS, ASSOCIATED HARDWARE AND ESCUTCHEONS SHALL BE CHROME PLATED.
11. ALL FIXTURES INDICATED AS OR REQUIRED TO BE HANDICAPPED ACCESSIBLE ("ADA" OR "TAS") SHALL BE PROVIDED IN APPROVED TYPES, WITH REQUIRED CONTROLS AND PROVIDED WITH THE REQUIRED HEIGHTS AND CLEARANCES. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONED MOUNTING HEIGHTS AND SPECIFIED CLEARANCE REQUIREMENTS.
12. ALL EXPOSED LAVATORY AND SINK PIPING FOR ACCESSIBLE FIXTURES SHALL BE INSULATED WITH APPROVED, MANUFACTURED MOLDED VINYL COVERS BY TRUEBRO OR APPROVED EQUAL. PROVIDE OFFSET DRAIN FITTINGS WHERE REQUIRED TO ENSURE REQUIRED MINIMUM CLEARANCES.
13. ALL ACCESSIBLE SINKS SHALL BE PROVIDED WITH DRAIN OUTLETS LOCATED ACCORDINGLY TOWARD THE REAR OF BASIN.
14. ENSURE TO ORIENT ALL ACCESSIBLE WATER CLOSET FLUSH OPERATORS ON THE "WIDE" SIDE OF THE FIXTURE ENCLOSURE.
15. SEAL ALL SPACES BETWEEN PLUMBING FIXTURES AND MOUNTING SURFACES WITH WHITE SILICONE CAULK WIPED SMOOTH AND FLUSH WITH FIXTURE.
16. FLOOR DRAINS SHALL BE INSTALLED AT LOW POINTS OF SLOPED FLOORS. CONTRACTOR SHALL FIELD COORDINATE WITH STRUCTURAL TO WITH INTENDED ARCHITECTURAL FLOOR FINISHES TO ENSURE THAT DRAINS ARE LOCATED ACCORDINGLY.
17. ALL SINKS AND URINALS SHALL BE PROVIDED WITH WALL CLEANOUTS.
18. SHOCK ARRESTORS SHALL CONFORM WITH THE REQUIREMENTS OF ASSE 1010 AND SHALL BE SIZED AND LOCATED PER THE PLUMBING AND DRAINAGE INSTITUTE STANDARD WH-201. PROVIDE ACCESS PANELS SIZED ACCORDINGLY TO ENSURE MAINTENANCE AND REPLACEMENT ACCESS TO ALL SHOCK ARRESTORS. FINAL LOCATIONS AND SIZES OF REQUIRED ACCESS PANELS SHALL BE REVIEWED FOR APPROVAL BY THE ARCHITECT PRIOR TO INSTALLATION.

## GENERAL WORK NOTES

1. ALL WORK, METHODS, AND INSTALLATIONS INVOLVED IN THE PLUMBING DESIGN SHALL BE IN ACCORDANCE WITH THE PREVAILING CODE AND INSPECTION REGULATIONS AND ALL OTHER OFFICIALS HAVING JURISDICTION.
2. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS, ELEVATIONS, DIRECTION OF FLOW, PIPE SIZES & CAPACITIES, AND PIPE MATERIAL & CONDITION AT PROPOSED POINTS OF CONNECTION WITH EXISTING BUILDING PLUMBING LINES AND SITE CIVIL LINES PRIOR TO INSTALLATION OF ANY NEW WORK. MODIFY/REPLACE EXISTING PIPING IF AND AS REQUIRED TO ENSURE PROPER CONNECTIONS. ONLY CONNECT NEW LINES TO SUITABLE EXISTING LINES OF EQUAL OR GREATER SIZE.
3. COORDINATE ROUTING OF BURIED PIPING WITH COLUMN FOOTINGS, GRADE BEAMS, UNDERGROUND UTILITIES, AND ALL OTHER SUB-SURFACE BUILDING ELEMENTS. MAKE ADJUSTMENTS AS REQUIRED AND ADVISE ARCHITECT/ENGINEER OF ANY GRADING CONFLICTS PRIOR TO COMMENCING INSTALLATION.
4. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL CONDITIONS AND PROVIDE PROPER PIPING INSTALLATIONS AS REQUIRED WITHOUT DAMAGE TO STRUCTURE. WHERE STRUCTURAL MODIFICATIONS WILL BE REQUIRED, THE CONTRACTOR SHALL FIRST RECEIVE WRITTEN APPROVAL OF THE ARCHITECT AND STRUCTURAL ENGINEER AND PROVIDE ALL SUCH WORK ACCORDINGLY.
5. COORDINATE IN FIELD TO ENSURE NO LESS THAN 6 INCHES OF EARTHEN COVER FROM TOPS OF DRAINAGE PIPES TO BOTTOMS OF GRADE BEAMS, FOUNDATION WALLS, OR SIMILAR ELEMENTS. WHERE SUCH COVER CANNOT BE PROVIDED DUE TO INVERT ELEVATIONS, PROVIDE SCHEDULE 40 GALVANIZED STEEL PIPE SLEEVES THROUGH THE FOUNDATION ELEMENTS. SLEEVES SHALL BE NO SMALLER THAN TWO PIPE SIZES LARGER THAN THE PIPE SERVED. SEAL WATERTIGHT. COORDINATE WITH AND ADHERE TO ALL RELATED REQUIREMENTS PER THE STRUCTURAL ENGINEER.
6. CONTRACTOR SHALL FIELD COORDINATE LOCATIONS AND ELEVATIONS OF ALL PLUMBING PIPING WITH OTHER TRADES PRIOR TO INSTALLATION. WHERE RELOCATIONS OF NEW WORK ARE REQUIRED TO CORRECT CONFLICTS WITH OTHER TRADES IT SHALL BE DONE AT NO ADDITIONAL COST TO OWNER.
7. ALL PIPE PASSING THROUGH FIRE RATED WALLS AND FLOORS SHALL BE SUPPORTED AT THE PENETRATION AND SHALL BE SEALED WITH APPROVED FIRE STOP MATERIALS AS SPECIFIED AND AS REQUIRED BY CODE AND THE AUTHORITIES HAVING JURISDICTION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD COORDINATING ALL PLUMBING PIPING SLEEVE LOCATIONS WITH ALL OTHER TRADES PRIOR TO INSTALLATION OF ANY PIPING OR SUPPORTS.
9. HORIZONTAL GRAVITY DRAINAGE PIPING SHALL BE PROVIDED AT NO LESS THAN THE MINIMUM SLOPE AS REQUIRED BY THE PREVAILING PLUMBING CODE.
   A. IN ACCORDANCE WITH THE UPC: GRAVITY DRAINAGE PIPING 3" AND SMALLER SHALL BE PROVIDED AT NO LESS THAN 1/4 INCH PER FOOT UNIFORM SLOPE AND GRAVITY DRAINAGE PIPING 4" AND LARGER SHALL BE PROVIDED AT NO LESS THAN 1/8 INCH PER FOOT UNIFORM SLOPE.
   B. IN ACCORDANCE WITH THE IPC: GRAVITY DRAINAGE PIPING 2-1/2" AND SMALLER SHALL BE PROVIDED AT NO LESS THAN 1/4 INCH PER FOOT UNIFORM SLOPE AND GRAVITY DRAINAGE PIPING 3" AND LARGER SHALL BE PROVIDED AT NO LESS THAN 1/8 INCH PER FOOT UNIFORM SLOPE.
   C. WHERE THE PREVAILING CODE REQUIRES A STEEPER SLOPE THAN INDICATED ABOVE (SUCH AS FOR GREASE WASTE PIPING) THEN SUCH REQUIREMENT SHALL CONTROL.
10. SLOPE ALL VENT PIPE BACK FROM THE VENT TERMINAL AT A MINIMUM 6" PER 100 FEET OF RUN.
11. THE DISCHARGE LINE FROM ANY EJECTOR OR PUMP WHICH CONNECTS TO A HORIZONTAL GRAVITY DRAINAGE LINE SHALL BE FROM THE TOP, THROUGH A WYE BRANCH FITTING.
12. PROVIDE FITTINGS FOR DRAINAGE WASTE AND VENT (DWV) AND STORM PIPING SYSTEMS OF APPROVED DRAINAGE PATTERN AND LONG OR SHORT RADIUS TYPES AS REQUIRED AND APPROVED FOR USE IN COMPLIANCE WITH PLUMBING CODE REQUIREMENTS.
13. PROVIDE CLEANOUTS AT EACH CHANGE OF DRAINLINE DIRECTION GREATER THAN 45° AND IN COMPLIANCE WITH PLUMBING CODE REQUIREMENTS.
14. PROVIDE BRACING TO PREVENT AXIAL MOVEMENT FOR ALL DRAINAGE PIPING. PROVIDE RESTRAINTS AT ALL CHANGES IN DIRECTION AND AT ALL DIAMETER CHANGES GREATER THAN TWO PIPE SIZES. SPECIFICALLY ENGINEERED BRACES, STRAPS, AND CLAMPS CONSISTENT WITH THE PIPE AND COUPLING MANUFACTURER RECOMMENDATIONS, THE APPLICABLE INSTALLATION STANDARDS, AND LOCAL CODE REQUIREMENTS SHALL BE ACCEPTABLE. HOLDRITE OR PRE-APPROVED EQUIVALENT PRODUCTS.
15. PROVIDE ISOLATING BALL VALVES FOR ALL BRANCHES OFF DOMESTIC WATER MAINS. ALL PLUMBING SYSTEM VALVES SHALL BE INSTALLED IN ACCESSIBLE CEILING SPACES. WHERE CEILING IS NOT ACCESSIBLE, OR SPACE IS CONFLICTING, VALVES SHALL BE INSTALLED IN PARTITIONS OR PIPE CHASES. PROVIDE MILCOR STYLE 'K' PAINTED STEEL HINGED ACCESS PANELS IN LOCATIONS PRE-APPROVED BY THE ARCHITECT.
16. ALL HOT WATER AND HOT WATER CIRCULATING PIPING SHALL BE PROVIDED WITH FIBERGLASS INSULATION WITH ALL SERVICE JACKET AND SELF SEALING LAP JOINT AS FOLLOWS:
   A. 1" THICK INSULATION FOR PIPE SIZES 1-1/4" AND SMALLER.
   B. 1-1/2" THICK INSULATION FOR PIPE SIZES 1-1/2" AND LARGER.
17. INSTALL EACH WATER HEATER AND ALL OTHER PLUMBING EQUIPMENT WITH ADEQUATE CLEARANCES FOR ACCESS BY SERVICE PERSONNEL AND WITH PROPER ORIENTATION FOR ELEMENT REMOVAL/REPLACEMENT.
18. CONTRACTOR SHALL STERILIZE ALL DOMESTIC WATER PIPING ACCORDING TO AMERICAN WATER WORKS ASSOCIATION (AWWA) SPECIFICATIONS.
19. ALL CAST IRON PIPE, FITTINGS AND INSTALLATION SHALL COMPLY WITH THE CAST IRON SOIL PIPE INSTITUTE (CISPI) STANDARDS.
20. FLASH FLOOR DRAINS IN FLOORS WITH TOPPING OVER FINISHED AREAS WITH 40 MIL PVC MEMBRANE, 10 INCHES CLEAR ON SIDES WITH MINIMUM 36 X 36 INCH SHEET SIZE. FASTEN WATERPROOFING MEMBRANE FLASHING TO DRAIN CLAMPING DEVICE.
21. NO PLUMBING PIPING SHALL BE ROUTED OVER MAJOR MECHANICAL EQUIPMENT, MDF/IDF/DATA CLOSETS, ELECTRICAL ROOMS, OR ANY SUCH EQUIPMENT.
22. COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES TO AVOID CONFLICTS AND ALSO TO MINIMIZE INTERRUPTION OF SERVICES FOR RENOVATIONS.
23. THE PROPER INSTALLATION OF NEW FIXTURES AND THE PROPER CONTINUED OPERATION OF EXISTING BUILDING FIXTURES TO REMAIN (FOR RENOVATIONS) SHALL GOVERN THE EXTENT AND NATURE OF WORK.


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| DRAWN: | Author |
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PLUMBING GENERAL NOTES


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## PLUMBING KEYED NOTES:

1. 1-1/2" COLD WATER LINE DOWN IN WALL/CHASE TO PLUMBING FIXTURES. CONTRACTOR TO ROUTE FULL SIZE LINE IN WALL/CHASE TO PLUMBING FIXTURES. CONTRACTOR TO TAP COLD WATER LINE TO EACH PLUMBING FIXTURE FROM 1-1/2" COLD WATER LINE ROUTED IN THE WALL/CHASE. CONTRACTOR TO REFER TO PLUMBING FIXTURE SCHEDULE FOR ROUGH-IN SIZE FOR EACH PLUMBING FIXTURE.
2. 3" SANITARY VENT LINE UP FROM BELOW GRADE AND UP TO CEILING SPACE. PROVIDE CLEANOUT AT THE BASE.
3. 3/4" COLD AND HOT WATER LINES DOWN IN WALL TO PLUMBING FIXTURE.
4. 1" COLD AND HOT WATER LINES DOWN TO HB-2 AND HB-3. CONTRACTOR TO ROUTE 1" COLD AND HOT WATER LINES IN FURR OUT PROVIDED BY THE ARCHITECT TO HB-2 AND HB-3.
5. 3/4" COLD WATER LINE DOWN TO PLUMBING FIXTURE.
6. 1" COLD WATER LINE DOWN TO BELOW GRADE.
7. 1" COLD WATER LINE UP FROM BELOW GRADE.
8. 6" STORM LINE DOWN TO BELOW GRADE FROM ROOF DOWNSPOUT BOOT. SEE DETAIL 11/P6.01.
9. 1/2" COLD WATER LINE DOWN TO WATERING NOZZLE ASSEMBLY. WATERING NOZZLE ASSEMBLY (TO BE FURNISHED/INSTALLED BY THE CONTRACTOR).
10. PROVIDE CB-1 AT TRENCH DRAIN OUTLET.
11. PROVIDE SHUT-OFF VALVE IN AN ACCESSIBLE LOCATION/HEIGHT. COORDINATE WITH ARCHITECT/OWNER.
12. 3/4" COLD WATER LINE DOWN TO HB-1. CONTRACTOR TO TAP 1/2" COLD WATER LINE FROM 3/4" COLD WATER LINE TO HB-1 AND ROUTE TO WATERING NOZZLE ASSEMBLY (TO BE FURNISHED/INSTALLED BY THE CONTRACTOR).
13. CIRCUIT SETTER TO BE SET AT 1.3 GPM.
14. CIRCUIT SETTER TO BE SET AT 0.9 GPM.
15. 6" STORM BUILDING DRAIN LINE. I.E. = -4.00' B.F.F. @ 1/8"/FT. SLOPE. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
16. 1/2" COLD WATER LINE DOWN IN WALL/CHASE TO TP-2.

6" SANITARY BUILDING DRAIN LINE. I.E. = -5.00' B.F.F. @ 1/8"/FT. SLOPE. REFER TO CIVIL DRAWINGS FOR CONTINUATION.

SAMPLE WELL

SAND/MUD INTERCEPTOR (MST -1) (750 GALLONS)

3" DOMESTIC WATER LINE ENTRY REFER TO CIVIL DRAWINGS FOR CONTINUATION.

4" SANITARY BUILDING DRAIN LINE. I.E. = -4.50' B.F.F. @ 1/8"/FT. SLOPE. REFER TO CIVIL DRAWINGS FOR CONTINUATION.

SAND/MUD INTERCEPTOR (MST -1) (750 GALLONS)

SAMPLE WELL

6" SANITARY BUILDING DRAIN LINE. I.E. = -5.00' B.F.F. @ 1/8"/FT. SLOPE. REFER TO CIVIL DRAWINGS FOR CONTINUATION.

**1 PLUMBING PLAN LEVEL 1**
P2.11
1/8" = 1'-0"

PLAN NORTH


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A B

# WEST AGRICULTURAL SCIENCE FACILITY

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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER 7/28/25

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|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
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# P2.11

PLUMBING PLAN LEVEL 1


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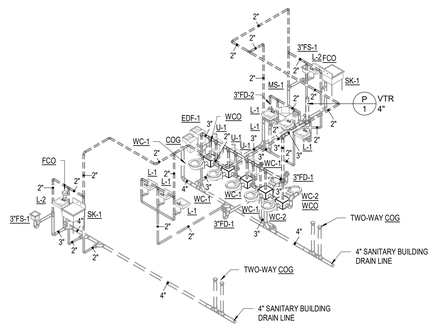
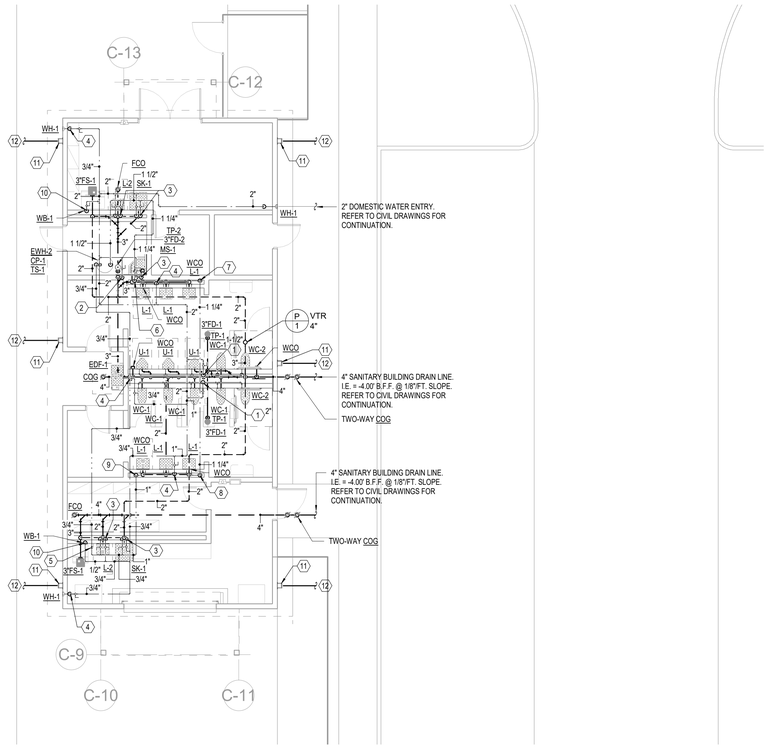
## PLUMBING KEYED NOTES:

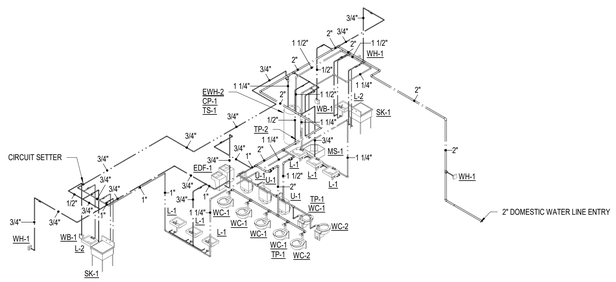
1. COLD WATER LINE DOWN IN WALL/CHASE TO PLUMBING FIXTURES. SIZE AS NOTED ON THE PLAN. CONTRACTOR TO ROUTE FULL SIZE LINE IN WALL/CHASE TO PLUMBING FIXTURES. CONTRACTOR TO TAP COLD WATER LINE TO EACH PLUMBING FIXTURE FROM COLD WATER LINE ROUTED IN THE WALL/CHASE. CONTRACTOR TO REFER TO PLUMBING FIXTURE SCHEDULE FOR ROUGH-IN SIZE FOR EACH PLUMBING FIXTURE.
2. 1/2" COLD WATER LINE DOWN IN WALL TO TP-2.
3. 3/4" COLD AND HOT WATER LINES DOWN IN WALL TO PLUMBING FIXTURE.
4. 3/4" COLD WATER LINE DOWN TO PLUMBING FIXTURE/FIXTURES.
5. CIRCUIT SETTER TO BE SET AT 1.1 GPM.
6. 1-1/2" HOT WATER LINE DOWN IN CHASE TO PLUMBING FIXTURES. ROUTE FULL SIZE LINE IN CHASE TO PLUMBING FIXTURES.
7. 1-1/2" HOT WATER LINE UP FROM CHASE TO CEILING SPACE.
8. 1-1/4" HOT WATER LINE DOWN IN CHASE TO PLUMBING FIXTURES. ROUTE FULL SIZE LINE IN CHASE TO PLUMBING FIXTURES.
9. 1" HOT WATER LINE UP FROM CHASE TO CEILING SPACE.
10. 1/2" COLD WATER LINE DOWN TO PLUMBING FIXTURE.
11. 6" STORM LINE DOWN TO BELOW GRADE FROM ROOF DOWNSPOUT BOOT. SEE DETAIL 11/P6.01.
12. 6" STORM BUILDING DRAIN LINE. I.E. = -4.00' B.F.F. @ 1/8"/FT. SLOPE. REFER TO CIVIL DRAWINGS FOR CONTINUATION.




2 P2.12 **RISER - SANITARY & VENT - CONCESSION**




1 P2.12 **PLUMBING ENLARGED PLAN**
1/8" = 1'-0"




3 P2.12 **RISER - WATER - CONCESSION**

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ADAM C. JONES 110005 LICENSED PROFESSIONAL ENGINEER 7/28/25

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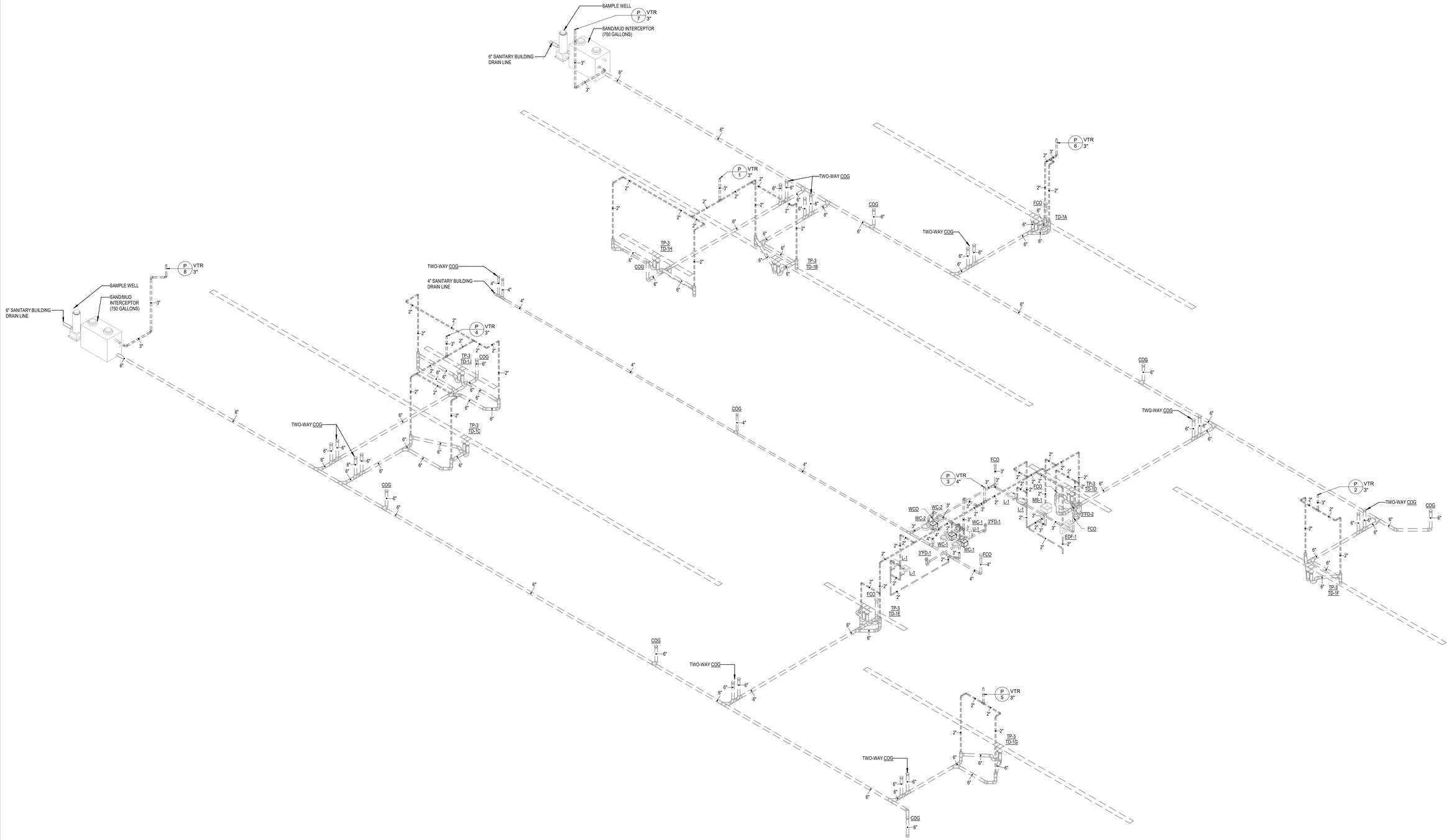
P2.12

PLUMBING ENLARGED PLAN




1 P4.01 **RISER - SANITARY & VENT - AG BARN**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ADAM C. JONES 119008 LICENSED PROFESSIONAL ENGINEER 7/28/25

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PLUMBING
RISER DIAGRAM


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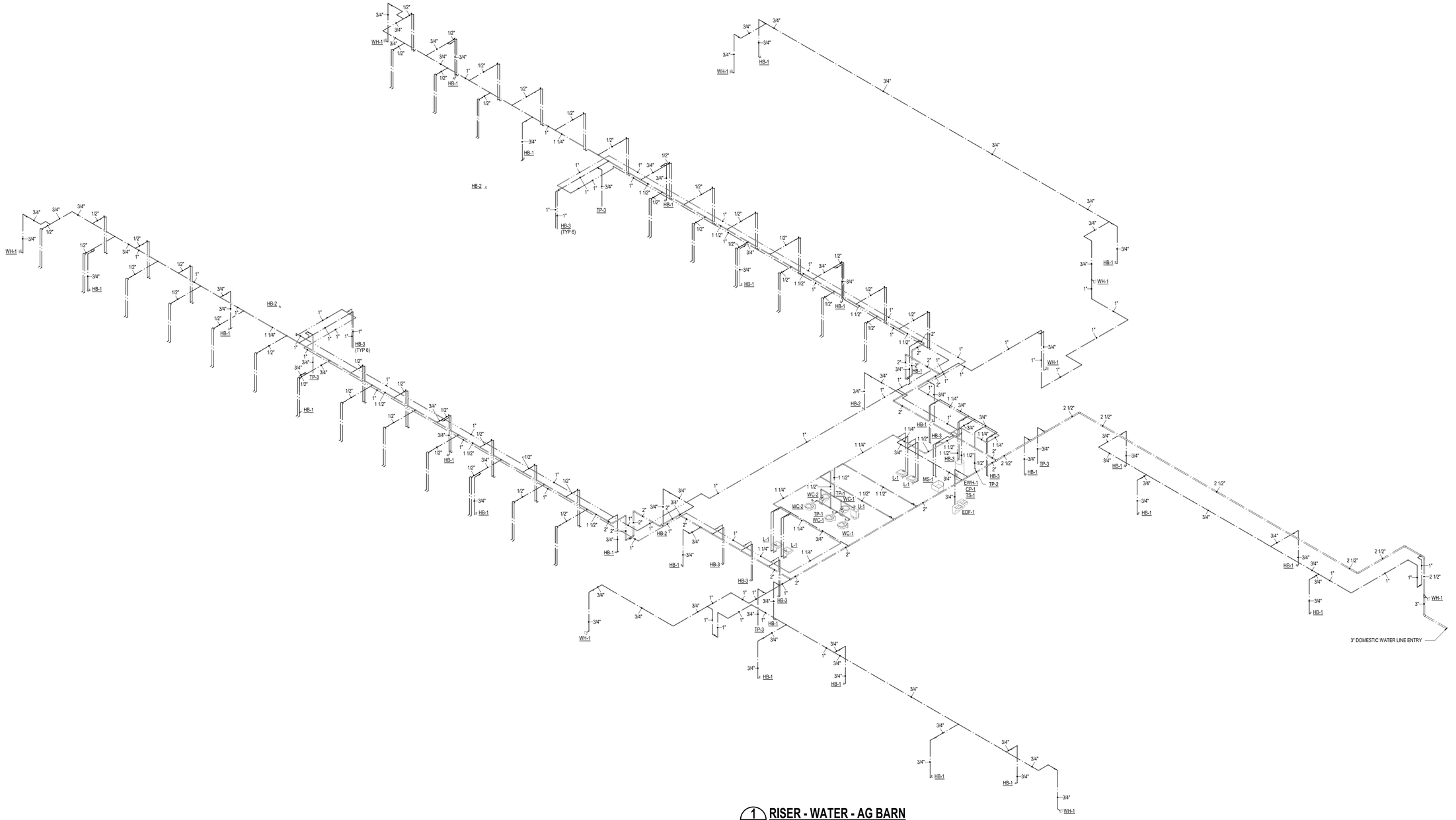


1 P4.02 **RISER - WATER - AG BARN**


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RISER DIAGRAM


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## PLUMBING PIPE MATERIALS SCHEDULE

| PIPING SYSTEM | PIPING MATERIAL |
|---|---|
| SANITARY DRAIN AND VENTS INSIDE BUILDING BELOW GRADE | SCHEDULE 40 PVC |
| SANITARY DRAIN AND VENTS INSIDE BUILDING ABOVE GRADE | CAST IRON NO-HUB |
| DOMESTIC HOT & COLD WATER | COPPER, TYPE "L" HARD DRAWN |
| DOMESTIC WATER BELOW FLOOR | COPPER, TYPE "K" SOFT ANNEALED |
| DOMESTIC WATER BELOW GROUND OUTSIDE BUILDING<br>PIPING 2" SIZE AND SMALLER<br>PIPING OVER 2" SIZE | COPPER, TYPE "K" SOFT ANNEALED |
| STORM DRAIN INSIDE BUILDING BELOW GRADE | SCHEDULE 40 PVC |

## SAND-MUD INTERCEPTOR SCHEDULE

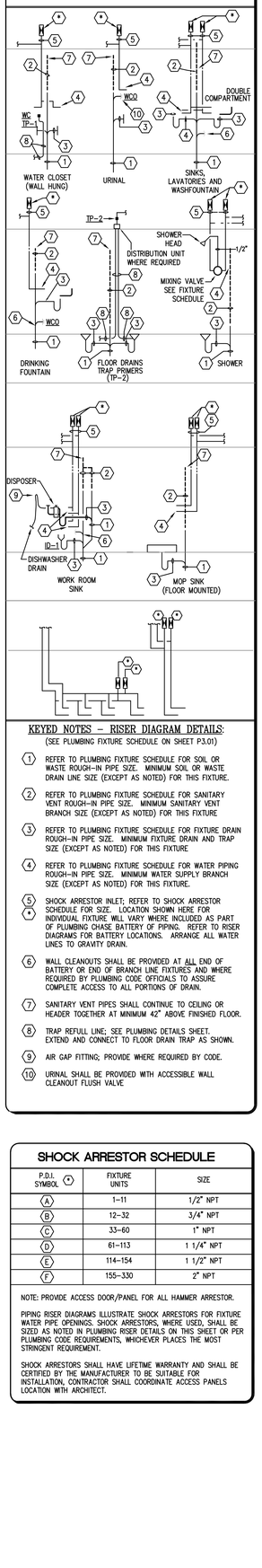
CALCULATIONS

18 TRENCH DRAINS x 6 DFU x 0.25 USAGE FACTOR x GPM/2 DFU = 13.5 GPM

TOTAL FLOWRATE = 13.5 GPM

| PLAN MARK | MAKE & MODEL NO. | DESCRIPTION |
|---|---|---|
| MST-1<br>MUD/SAND INTERCEPTOR | PARK EQUIPMENT COMPANY SM-750 WITH NOMINAL 24" DIAMETER COVERS | 750 US GAL LIQUID CAPACITY; 9,900 LBS EMPTY WEIGHT; 7'-10" LONG x 4'-4" WIDE x 6'-0" DEEP; INLET FL!= 4'-5", OUTLET FL2= 4'-2"; 59.25 GPM FLOW RATE |

## PLUMBING RISER DETAILS




### KEYED NOTES - RISER DIAGRAM DETAILS:

(SEE PLUMBING FIXTURE SCHEDULE ON SHEET P3.01)

1. REFER TO PLUMBING FIXTURE SCHEDULE FOR SOIL OR WASTE ROUGH-IN PIPE SIZE. MINIMUM SOIL OR WASTE DRAIN LINE SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE.
2. REFER TO PLUMBING FIXTURE SCHEDULE FOR SANITARY VENT ROUGH-IN PIPE SIZE. MINIMUM SANITARY VENT BRANCH SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE
3. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE DRAIN ROUGH-IN PIPE SIZE. MINIMUM FIXTURE DRAIN AND TRAP SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE
4. REFER TO PLUMBING FIXTURE SCHEDULE FOR WATER PIPING ROUGH-IN PIPE SIZE. MINIMUM WATER SUPPLY BRANCH SIZE (EXCEPT AS NOTED) FOR THIS FIXTURE.
5. SHOCK ARRESTOR INLET; REFER TO SHOCK ARRESTOR SCHEDULE FOR SIZE. LOCATION SHOWN HERE FOR INDIVIDUAL FIXTURE WILL VARY WHERE INCLUDED AS PART OF PLUMBING CHASE BATTERY OF PIPING. REFER TO RISER DIAGRAMS FOR BATTERY LOCATIONS. ARRANGE ALL WATER LINES TO GRAVITY DRAIN.
6. WALL CLEANOUTS SHALL BE PROVIDED AT ALL END OF BATTERY OR END OF BRANCH LINE FIXTURES AND WHERE REQUIRED BY PLUMBING CODE OFFICIALS TO ASSURE COMPLETE ACCESS TO ALL PORTIONS OF DRAIN.
7. SANITARY VENT PIPES SHALL CONTINUE TO CEILING OR HEADER TOGETHER AT MINIMUM 42" ABOVE FINISHED FLOOR.
8. TRAP REFULL LINE; SEE PLUMBING DETAILS SHEET, EXTEND AND CONNECT TO FLOOR DRAIN TRAP AS SHOWN.
9. AIR GAP FITTING; PROVIDE WHERE REQUIRED BY CODE.
10. URINAL SHALL BE PROVIDED WITH ACCESSIBLE WALL CLEANOUT FLUSH VALVE

## SHOCK ARRESTOR SCHEDULE

| P.D.I. SYMBOL (*) | FIXTURE UNITS | SIZE |
|---|---|---|
| A | 1-11 | 1/2" NPT |
| B | 12-32 | 3/4" NPT |
| C | 33-60 | 1" NPT |
| D | 61-113 | 1 1/4" NPT |
| E | 114-154 | 1 1/2" NPT |
| F | 155-330 | 2" NPT |

NOTE: PROVIDE ACCESS DOOR/PANEL FOR ALL HAMMER ARRESTOR.

PIPING RISER DIAGRAMS ILLUSTRATE SHOCK ARRESTORS FOR FIXTURE WATER PIPE OPENINGS. SHOCK ARRESTORS, WHERE USED, SHALL BE SIZED AS NOTED IN PLUMBING RISER DETAILS ON THIS SHEET OR PER PLUMBING CODE REQUIREMENTS, WHICHEVER PLACES THE MOST STRINGENT REQUIREMENT.

SHOCK ARRESTORS SHALL HAVE LIFETIME WARRANTY AND SHALL BE CERTIFIED BY THE MANUFACTURER TO BE SUITABLE FOR INSTALLATION. CONTRACTOR SHALL COORDINATE ACCESS PANELS LOCATION WITH ARCHITECT.

## PLUMBING FIXTURE SCHEDULE

| PLAN MARK | MINIMUM ROUGH-IN SIZES WST & VENT | DRAIN | CW | HW | DESCRIPTION |
|---|---|---|---|---|---|
| WATER CLOSET WATER SAVER WC-1 | 4" | 4" | 1" | ---- | AMERICAN STANDARD No. 2257.101 "AFWALL MILLENIUM FLOWISE" WHITE V.C. ELONGATED SIPHON JET WALL HUNG (1.28 GPF) BOWL WITH TOP SPUD, BEMIS No. 1655SSCT WHITE OPEN FRONT SEAT LESS COVER AND SLOAN ROYAL No. 111-1.28 FLUSH VALVE AND ZURN OR EQUAL FLOOR MOUNTED CARRIER. |
| WATER CLOSET WATER SAVER WC-2 ♿ | 4" | 4" | 1" | ---- | AMERICAN STANDARD No. 2257.101 "AFWALL MILLENIUM FLOWISE" SAME AS WC-1 ABOVE EXCEPT WITH MOUNTING HEIGHT REQUIRED FOR ADA REQUIREMENTS. |
| URINAL U-1 ♿ | 2" | 2" | 3/4" | ---- | AMERICAN STANDARD No. 6590.001 "WASHBROOK" WHITE V.C. SIPHON JET FIXTURE WITH 3/4" TOP SPUD AND WALL HANGERS. PROVIDE SLOAN ROYAL No. 186-0.5 (0.5 GPF) FLUSH VALVE, No. 47068-07 STAINLESS STEEL STRAINER AND ZURN OR EQUAL FLOOR MOUNTED CARRIER WITH HEIGHT AS REQUIRED FOR HANDICAP USE. |
| LAVATORY L-1 ♿ | 2" | 1-1/2" | 1-1/4" | 1/2" | 1/2" | AMERICAN STANDARD No. 0355.012 "LUCERNE" WHITE V.C. LAVATORY WITH FRONT OVERFLOW AND FAUCET HOLES DRILLED ON 4" CENTERS FOR CHICAGO No. 857-E2805-665PSHCP (0.50 GPM) METERING FAUCET, PROVIDE FIXED GRID DRAIN STRAINER, TAILPIECE, CAST BRASS P-TRAP WITH CO, STOPS, SUPPLIES AND THERMOSTATIC MIXING VALVE TMV-1. PROVIDE INSULATION KIT FOR ADA REQUIREMENTS. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CONCEALED ARM CARRIER WITH MOUNTING HEIGHT AS REQUIRED FOR STUDENT. REFER TO ARCHITECT PLANS FOR MOUNTING HEIGHTS. |
| LAVATORY L-2 ♿ | 2" | 1-1/2" | 1-1/4" | 1/2" | 1/2" | AMERICAN STANDARD No. 0355.012 "LUCERNE" WHITE VC LAVATORY WITH FRONT OVERFLOW, DRILLED FOR CONCEALED ARM AND WITH 4" CENTER HOLES FOR CHICAGO FAUCETS 895-317E2805-5ABCP (0.5 GPM) GOOSENECK FAUCET WITH VANDAL PROOF WRISTBLADE HANDLES, FIXED GRID DRAIN STRAINER, OFFSET TAILPIECE, CAST BRASS P-TRAP WITH CO, STOPS, SUPPLIES AND TMV-1. PROVIDE ZURN OR EQUAL FLOOR MOUNTED CONCEALED ARM CARRIER AND TRIM AS REQUIRED FOR HANDICAP USE. REFER TO ARCHITECT PLANS FOR MOUNTING HEIGHT. |
| SINK SK-1 | 2" | 2" | 1-1/2" | 1/2" | 1/2" | ELKAY No. SS-8124 "STURDIBILT" 14 GAUGE TYPE 304 STAINLESS STEEL SINK WITH WALL HANGER ANCHORED IN WALL AND FOUR LK-251 16 GAUGE TUBULAR STEEL LEGS. PROVIDE CHICAGO No. 445-LSCP BACK MOUNT FAUCET WITH POLISHED CHROME PLATED FINISH AND SWING SPOUT, ELKAY No. LK-18 GRID DRAIN, CAST BRASS P-TRAP, STOPS, SUPPLIES & TMV-1. |
| THERMOSTATIC MIXING VALVE TMV-1 | ---- | ---- | ---- | 1/2" | 1/2" | PROVIDE POWERS LFe-480-00 POINT-OF-USE MIXING VALVE WITH NPT INLET CHECKS INSTALLED IN CONCEALED AREA BELOW FIXTURE TO LIMIT HOT WATER TO MAXIMUM 105° F. AT FAUCET OUTLET. SUPPLY CW TO MIXING VALVE FROM CW RISER TO FAUCET. INSTALL ALL AS HIGH AS POSSIBLE TO PROVIDE NEAT AND CLEAN APPEARANCE. |
| MOP SINK MS-1 | 3" | 2" | 3" | 1/2" | 1/2" | FIAT No. TSBC1611 32x32x12 SERVICE SINK WITH STAINLESS STEEL CAP, HOSE AND HOSE BRACKET. PROVIDE CHICAGO No. 897-RCF SERVICE SINK FAUCET WITH VACUUM BREAKER HOSE END SPOUT, PAIL HOOK AND TOP REINFORCING BRACKET. |
| ELECTRIC WATER HEATER EWH-1 & EWH-2 | ---- | ---- | ---- | SEE PLANS | | A.O. SMITH No. DEL-50, 50 GALLON STORAGE WITH 10.0 KW INPUT WIRED FOR 208V/3Ø POWER AND SIMULTANEOUS OPERATION. UNIT CAPABLE OF 51 GPH RECOVERY AT 80° F. TEMPERATURE RISE, PROVIDE ASME TEMPERATURE AND PRESSURE RELIEF VALVE, AND DIAL THERMOMETER IN HW OUTLET PIPING. CONTRACTOR TO PROVIDE ET-1. |
| THERMAL EXPANSION TANK ET-1 | ---- | ---- | ---- | 3/4" | ---- | AMTROL THERM-X-TROL MODEL ST-5-C, ASME THERMAL EXPANSION ABSORBERS, MAXIMUM WORKING PRESSURE 150 PSIG, TOTAL VOLUME 2.1 GALLONS. |
| CIRCULATING PUMP CP-1 | ---- | ---- | ---- | ---- | SEE PLANS | GRUNDFOS MAGNA3 MODEL No. 32-120, ALL STAINLESS STEEL PUMP. 1/25 HP WIRED FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS AND FITTED WITH REMOTE HEAT SENSING AQUASTAT CONTROLLER HONEYWELL No. L4006 CONTROLLED BY ELECTRICAL CONTACTOR. RE: ELECTRICAL PLANS. |
| TIME SWITCH TS-1 | ---- | ---- | ---- | ---- | ---- | TORK ELECTROMECHANICAL 24 HOUR TIME SWITCH POWERED BY A SELF STARTING SYNCHRONOUS MOTOR. INSTALL ON WALL ADJACENT TO/FOR CIRCULATING PUMP. COORDINATE WITH ELECTRICAL AND PROVIDE FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS. |
| HOSE BIBB HB-1 | ---- | ---- | ---- | 3/4" | ---- | ZURN No. Z1341XL-P34-RC WITH No. Z1399-VB EXTERNAL VACUUM BREAKER WITH 3/4" MALE HOSE CONNECTION, VANDAL RESISTANT OPERATING STEM AND ROUGH CHROME FINISH. |
| HOSE BIBB HB-2 | ---- | ---- | ---- | 3/4" | ---- | PRIER No. C-633NSV HEAVY DUTY WALL HYDRANT, WITH 360° SWIVEL INLET, KEY OPERATED, INTEGRAL VACUUM BREAKER/BACKFLOW PREVENTER AND UTILIZES A DOUBLE CHECK VALVE TO PREVENT BACK PRESSURE AND A VACUUM BREAKER TO VENT IN THE CASE OF SIPHONAGE. |
| HOSE BIBB HB-3 | ---- | ---- | ---- | 3/4" | 3/4" | PRIER No. P-754MCC ANTI-SIPHON, FREEZELESS HYDRANT WITH INTEGRAL VACUUM BREAKER/BACKFLOW PREVENTER AND UTILIZES A DOUBLE CHECK VALVE TO PREVENT BACK PRESSURE AND A VACUUM BREAKER TO VENT IN THE CASE OF SIPHONAGE. |
| FLOOR DRAIN FD-1 | SEE PLAN | 2" | ---- | ---- | ---- | ZURN No. ZN-415 CAST IRON DRAIN WITH 6" DIAMETER TYPE 'B' STRAINER. PROVIDE TRAP PRIMER CONNECTION. |
| FLOOR DRAIN FD-2 | SEE PLAN | 2" | ---- | ---- | ---- | ZURN No. ZN-415 CAST IRON DRAIN WITH 7" DIAMETER TYPE 'E' STRAINER AND 4" DIAMETER FUNNEL GRATE. PROVIDE TRAP PRIMER CONNECTION. |
| FLOOR SINK FS-1 | 3" | 2" | ---- | ---- | ---- | ZURN No. ZN-1901-2-25-K, 12" SQUARE, 8" DEEP CAST IRON DRAIN WITH ENAMELED INTERIOR, SEDIMENT BUCKET STRAINER AND SECURED HALF GRATE. |
| WALL CLEANOUT WCO | ---- | ---- | ---- | ---- | ---- | ZURN No. Z-1440 AND No. Z1462 DURO-COATED CAST IRON CLEANOUT TEE WITH COUNTER-SUNK GASKET, WATERTIGHT THREADED PLUG AND SQUARE SMOOTH ACCESS COVER WITH VANDAL PROOF SCREWS. |
| CLEAN OUT TO GRADE COG | SEE PLAN | ---- | ---- | ---- | ---- | ZURN No. Z-1402 DURO-COATED CAST IRON CLEANOUT WITH WATERTIGHT COUNTER-SUNK PLUG AND SCORIATED SECURED TOP WITH FRAME. INSTALL IN 18" X 18" THICK CONCRETE PAD. |
| FLOOR CLEANOUT FCO | SEE PLAN | ---- | ---- | ---- | ---- | ZURN No. ZN-1400 DURO-COATED CAST IRON CLEANOUT WITH WATERTIGHT COUNTER-SUNK PLUG AND ADJUSTABLE SCORIATED SECURED TOP. |
| WALL HYDRANT WH-1 | ---- | ---- | ---- | 3/4" | ---- | ZURN No. Z-1300 RECESSED NON-FREEZE BRONZE WALL BOX, ANTI-SIPHON HYDRANT, WITH LOOSE KEY OPERATOR AND POLISHED NICKEL BRONZE LOCKING COVER. INSTALL WITH FACE FLUSH AND SQUARE TO FINISHED WALL. SECURE WITH WALL CLAMP AND SETSCREW. PROVIDE EXTENSION AS REQUIRED TO PLACE VALVE SEAT IN HEATED ROOM SPACE. |
| TRAP PRIMER TP-1 | ---- | ---- | 1/2" | ---- | ---- | PROVIDE SLOAN No. V6F-72-A1 FLUSH VALVE VACUUM BREAKER TRAP REFILL SUPPLY. AFFIX UNIT TO WATER CLOSET NEAREST TO THE FLOOR DRAIN SUPPLIED. ALL EXPOSED TO BE CHROME PLATED; CONCEALED DRAIN TUBING SHALL BE 1/2" TYPE "K" SOFT COPPER. |
| TRAP PRIMER TP-2 | ---- | ---- | ---- | 1/2" | ---- | MIFAB M-500 SERIES PRESSURE DROP ACTIVATED FULLY AUTOMATIC TRAP PRIMER VALVE WITH FOUR HOLE INTEGRAL AIR GAP/VACUUM BREAKER, RE- PLACEABLE INLET FILTER SCREEN, REMOVABLE INTERNAL PRE-CHARGE CARTRIDGE TUBE MODEL M2-500 WITH 1 MI-DU; UP TO THREE TRAPS. INSTALL TRAP PRIMER IN CONCEALED, ACCESSIBLE LOCATION, BEHIND APPROVED ACCESS PANEL OR EXPOSED IN MECHANICAL EQUIPMENT AREAS WITH APPROVED TRAP PRIMER DISTRIBUTION UNIT(S). INSTALL AT MINIMUM 15" A.F.F. |
| TRAP PRIMER TP-3 | ---- | ---- | ---- | 3/4" | ---- | PROVIDE EQUAL OR PPP No. PT-4 FULLY AUTOMATIC ELECTRONIC TRAP PRIMER (TP-3) VALVE ASSEMBLY, 3/4" SUPPLY, WITH VACUUM BREAKER AND SHOCK ABSORBER. MOUNTED IN 16 GAUGE STEEL RECESSED CABINET WITH PRIME COATED ACCESS DOOR AND WIRED FOR POWER AS SCHEDULED ON ELECTRICAL DRAWINGS FOR ALL FLOOR DRAINS. ALL INSTALLATIONS TO COMPLY WITH MANUFACTURER'S DETAILS AND RECOMMENDATIONS. NOTE: TP-3 IS CALLED OUT ON THE PLANS BUT LOCATION SHOULD BE COORDINATED WITH OWNER/ARCHITECT. NOTE: CONTRACTOR TO INSTALL TRAP PRIMER 12" TO 24" FROM THE FLOOR AND NOT ABOVE THE CEILING. |

## PLUMBING FIXTURE SCHEDULE

| PLAN MARK | MINIMUM ROUGH-IN SIZES WST & VENT | DRAIN | CW | HW | DESCRIPTION |
|---|---|---|---|---|---|
| TRENCH DRAIN TD-1A | ---- | ---- | ---- | ---- | ---- | DURATRENCH No. TD-DURATRENCH SFP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CHANNEL THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH SHALL HAVE A 0.51% SLOPE. CATCH BASIN TO BE No. CB-SJP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CATCH BASIN THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH DRAIN TO BE 94'-9". PROVIDE WITH TRAP PRIMER CONNECTION. |
| TRENCH DRAIN TD-1B & TD-1C | ---- | ---- | ---- | ---- | ---- | DURATRENCH No. TD-DURATRENCH SFP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CHANNEL THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH SHALL HAVE A 0.51% SLOPE. CATCH BASIN TO BE No. CB-SJP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CATCH BASIN THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH DRAIN TO BE 159'-0". PROVIDE WITH TRAP PRIMER CONNECTION. |
| TRENCH DRAIN TD-1D & TD-1E | ---- | ---- | ---- | ---- | ---- | DURATRENCH No. TD-DURATRENCH SFP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CHANNEL THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH SHALL HAVE A 0.51% SLOPE. CATCH BASIN TO BE No. CB-SJP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CATCH BASIN THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH DRAIN TO BE 23'-8". PROVIDE WITH TRAP PRIMER CONNECTION. |
| TRENCH DRAIN TD-1F & TD-1G | ---- | ---- | ---- | ---- | ---- | DURATRENCH No. TD-DURATRENCH SFP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CHANNEL THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH SHALL HAVE A 0.51% SLOPE. CATCH BASIN TO BE No. CB-SJP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CATCH BASIN THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH DRAIN TO BE 80'-0". PROVIDE WITH TRAP PRIMER CONNECTION. |
| TRENCH DRAIN TD-1H & TD-1J | ---- | ---- | ---- | ---- | ---- | DURATRENCH No. TD-DURATRENCH SFP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CHANNEL THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH SHALL HAVE A 0.51% SLOPE. CATCH BASIN TO BE No. CB-SJP3512 12" WIDE SQUARE BOTTOM FIBER REINFORCED POLYMER CATCH BASIN THAT HAS A REMOVABLE FRP FORM WITH SMOOTH EXTERIOR. CHANNEL SHALL INCLUDE A HEAVY DUTY T304 STAINLESS STEEL No. S62SC3S318E FRAME. INCLUDE A CLASS C14SHLF24SSC 14" WIDE ADA STAINLESS STEEL GRATE. TRENCH DRAIN TO BE 20'-8". PROVIDE WITH TRAP PRIMER CONNECTION. |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ADAM C. JONES 110008 LICENSED PROFESSIONAL ENGINEER 7/28/25

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

# P5.01

PLUMBING SCHEDULES


DBR
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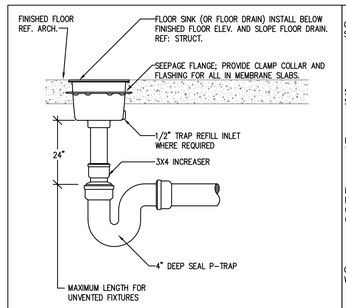
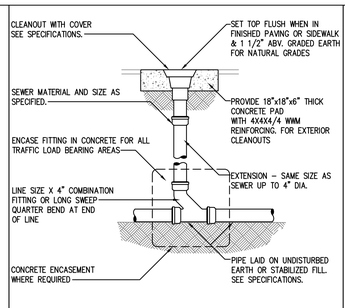
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070

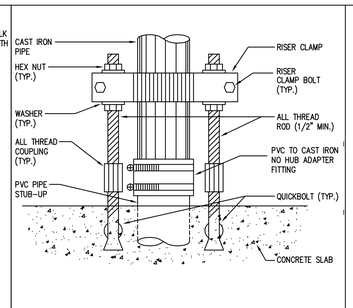

SS | CC/TD|DT/DL | JD | RT



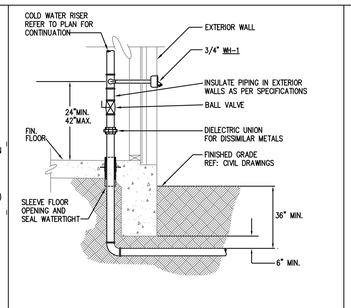

## 1 FLOOR DRAIN DETAIL
NOT TO SCALE PPWD100



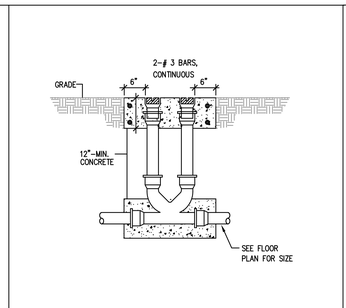

## 2 CLEANOUT DETAIL
NOT TO SCALE PPWV100



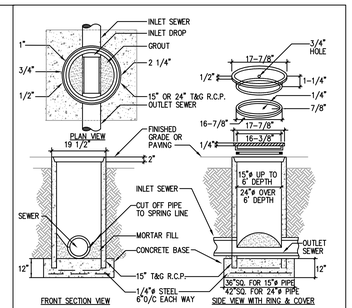

## 3 PVC TO CAST IRON SUPPORT
NOT TO SCALE PPGP105



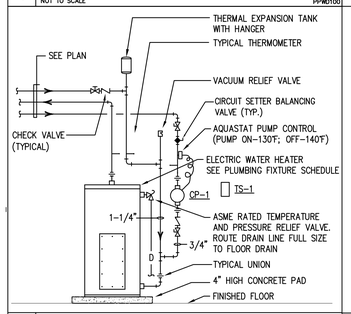

## 4 WATER PIPE ENTRY DETAIL
NOT TO SCALE



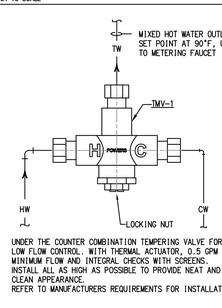

## 5 TWO WAY YARD CLEANOUT
NOT TO SCALE




## 6 SAMPLE WELL DETAIL
NOT TO SCALE

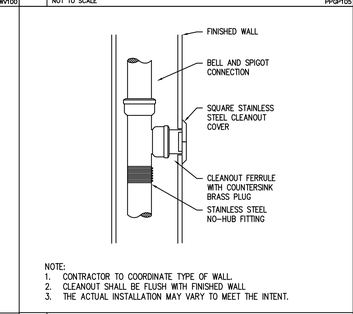



## 7 ELECTRIC WATER HEATER DETAIL
NOT TO SCALE PWHE307.DWG



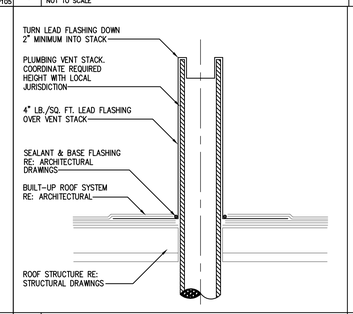

UNDER THE COUNTER COMBINATION TEMPERING VALVE FOR LOW FLOW CONTROL. WITH THERMAL ACTUATOR, 0.5 GPM MINIMUM FLOW AND INTEGRAL CHECKS WITH SCREENS. INSTALL ALL AS HIGH AS POSSIBLE TO PROVIDE NEAT AND CLEAN APPEARANCE. REFER TO MANUFACTURERS REQUIREMENTS FOR INSTALLATION.

## 8 THERMOSTATIC MIXING VALVE TMV-1
NOT TO SCALE

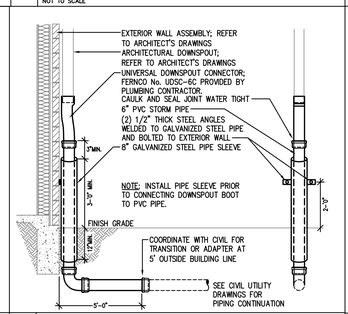



NOTE:
1. CONTRACTOR TO COORDINATE TYPE OF WALL.
2. CLEANOUT SHALL BE FLUSH WITH FINISHED WALL
3. THE ACTUAL INSTALLATION MAY VARY TO MEET THE INTENT.

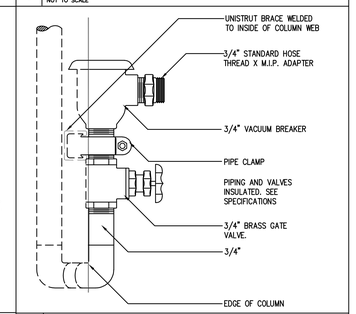
## 9 FLUSH WALL CLEANOUT
NOT TO SCALE



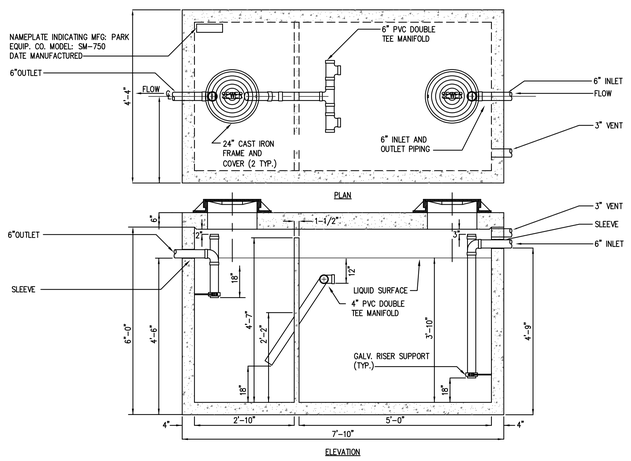

## 10 VENT THRU ROOF
NOT TO SCALE PPWV103




## 11 DOWNSPOUT ADAPTER DETAIL
NOT TO SCALE




## 12 HB-1 ASSEMBLY DETAIL
NOT TO SCALE




SPECIFICATIONS:
CONCRETE: CLASS 1 CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL AND BAFFLE WITH SECTIONAL RISER TO REQUIRED DEPTH.

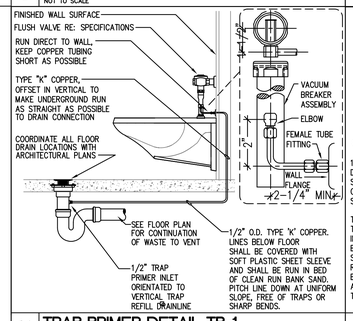
REINFORCEMENT: GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: MANHOLE FRAMES, COVERS, OR GATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30. MANHOLE SHALL HAVE 24" INSIDE DIAMETER AND BE TRAFFIC DUTY.

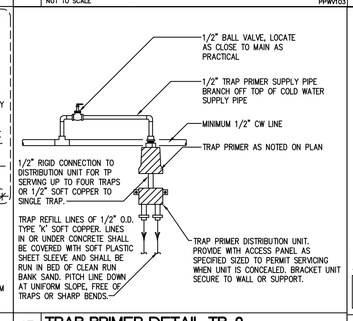
ENGINEERING DATA:
THE SAND AND MUD INTERCEPTOR IS STRUCTURALLY AND HYDRAULICALLY ENGINEERED TO CONFORM TO REQUIREMENTS OF INTERNATIONAL PLUMBING CODE.

FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF INTERCEPTOR. USE MANUFACTURERS DIMENSIONAL DATA.

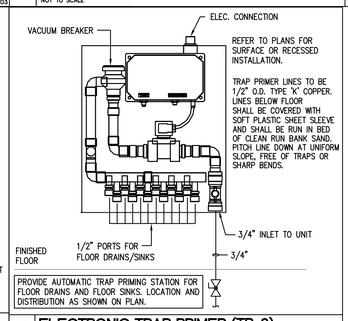
## 13 SAND-MUD_INTERCEPTOR_DETAIL
NOT TO SCALE




## 14 TRAP PRIMER DETAIL TP-1
NOT TO SCALE PPTP102




## 15 TRAP PRIMER DETAIL TP-2
NOT TO SCALE PPTP101




## 16 ELECTRONIC TRAP PRIMER (TP-3)
NOT TO SCALE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ADAM JONES 110008 LICENSED PROFESSIONAL ENGINEER

| | |
|---|---|
| PROJECT #: | 202414 |
| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

P6.01

PLUMBING DETAILS


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TBPE Firm Registration No. 2234
DBR Project # 250070


SS | CC/TD|DT/DL| JD | RT

# TECHNOLOGY LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | ▽ | INDICATES THE LOCATION OF A NEW TECHNOLOGY OUTLET. CONTRACTOR TO PROVIDE FACEPLATE WITH A MINIMUM OF 4-PORTS AT EACH LOCATION UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR TO PROVIDE A DOUBLE GANG BACK BOX WITH A SINGLE GANG REDUCER RING AND A 1" EMT CONDUIT FROM THE BOX TO THE NEAREST ACCESSIBLE CEILING. SOME EXISTING BUILDINGS MAY REQUIRE SURFACE MOUNTED RACEWAY. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL RACEWAY AS SPECIFIED AND DESIGNATE IN THE ELECTRICAL CONTRACT DOCUMENTS. SYSTEM INSTALLER TO PROVIDE AND INSTALL A PLASTIC PROTECTIVE BUSHING, ON EACH CONDUIT STUB-OUT, TO PREVENT CABLE DAMAGE. |
| | | INDICATES THE LOCATION OF A FLOOR MOUNTED TECHNOLOGY OUTLET. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL A FLOOR BOX WITH (1) 1" CONDUIT PER EVERY (6) CABLES INSTALLED. ALL CONDUITS SHALL ROUT FROM THE FLOOR BOX, DIRECTLY TO THE WALL INDICATED AND STUB-UP INTO THE NEAREST ACCESSIBLE PLENUM CEILING |
| | | INDICATES THE LOCATION OF A CEILING MOUNTED OUTLET. CONTRACTOR SHALL MOUNT THIS OUTLET AT +12" ABOVE THE CEILING AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 12" OF CLEARANCE FROM THE FRONT OF THE FACEPLATE FOR OWNER ACCESS. ELECTRICAL CONTRACTOR SHALL ROUTE (1) 1" CONDUIT FROM THE BUILDING STRUCTURE TO A SINGLE GANG BACK BOX MOUNTED AT 5' OR LESS ABOVE THE FINISHED CEILING. SECURE CONDUIT AND BACK BOX TO INSURE MINIMAL SWAY MOVEMENT. |
| | 'D#' | DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A NETWORK CONNECTION. THE '#' SHALL BE REPLACED WITH NUMERIC TEXT THAT IDENTIFIES THE TOTAL NUMBER OF CATEGORY 6, NETWORK CABLES THAT ARE TO BE INSTALLED AT THE TECHNOLOGY OUTLET LOCATION. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6 NETWORK CABLES, CATEGORY 6 CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL CONTAIN A MINIMUM 4-PORTS AND SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS TECHNOLOGY OUTLET LOCATION. MAXIMUM OF SIX(6) DATA CABLES PER OUTLET. |
| | 'W' | DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WALL MOUNTED TELEPHONE CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 NETWORK CABLE, (1) CATEGORY 6 CONNECTOR, STAINLESS STEEL WALL TELEPHONE FACEPLATE, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. CONTRACTOR SHALL MOUNT THIS OUTLET AT +42" AFF AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 8" OF CLEARANCE ON ALL FOUR SIDES OF THE BACK BOX. OUTLETS SHALL REMAIN CLEAR OF ROOM DOORS, CABINET DOORS, APPLIANCE DOORS, AND SLIDING DRAWERS. |
| | 'AP' | DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WIRELESS ACCESS POINT CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6A YELLOW NETWORK CABLE, (1) CATEGORY 6A CONNECTOR, STAINLESS STEEL FACEPLATE WITH IDENTIFICATION WINDOWS, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS. |
| | | INDICATES THE LOCATION OF AN IP VIDEO SURVEILLANCE CAMERA. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6 NETWORK CABLES, CATEGORY 6 CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS OUTLET LOCATION. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS. |
| | 'B' | INDICATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR FUTURE USE. CONTRACTOR TO PROVIDE STAINLESS STEEL, SINGLE-GANG WALL PLATE AT ALL LOCATIONS. |

NOTES:
REFERENCE TECHNOLOGY GENERAL NOTES, PLAN KEYED NOTES, AND ALL OTHER SYSTEM LEGENDS/NOTES. THE STRUCTURED CABLING SYSTEM CONTRACTOR SHALL PROVIDE AND INSTALL CATEGORY 6 CABLE TO ALL SYSTEMS' EQUIPMENT REQUIRING NETWORK CONNECTIVITY.

# VIDEO SURVEILLANCE LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | | INTERIOR VIDEO SURVEILLANCE CAMERA. |
| | | VANDAL RESISTANT, WEATHER PROOF, EXTERIOR SECURITY CAMERA. |
| | VRS | VIDEO RECORDING SERVER. REFERENCE SPECIFICATIONS FOR INFORMATION CONCERNING ANALOG OR IP BASED TYPE SYSTEM. |
| | #MU | INDICATES THE LOCATION OF A VIDEO SURVEILLANCE MAIN |

NOTES:
1. REFERENCE VIDEO SURVEILLANCE SCHEDULE AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

# INTRUSION DETECTION LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | IDP | DESIGNATES THE LOCATION OF THE INTRUSION DETECTION SYSTEM, CONTROL PANEL, ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER TO PANEL |
| | DC | FLUSH MOUNTED MAGNETIC DOOR CONTACT. |
| | SDC | SURFACE MOUNTED MAGNETIC DOOR CONTACT. |
| | ODC | OVERHEAD DOOR, SURFACE MOUNTED DOOR CONTACT. |
| | KP | INTRUSION DETECTION SYSTEM ARM/DISARM KEYPAD. |
| | M | STANDARD RANGE WALL MOUNTED MOTION DETECTOR. |
| | M | MEDIUM RANGE WALL MOUNTED MOTION DETECTOR. |
| | M | LONG RANGE WALL MOUNTED MOTION DETECTOR. |
| | M | CEILING MOUNTED, 360° MOTION DETECTOR. |
| | R | RELAY/MONITOR MODULE |
| | DB | DURESS BUTTON |
| | WSR | WIRELESS SECURITY RECEIVER. ELECTRICAL CONTRACTOR TO PROVIDE ONE (1) SINGLE GANG BACK BOX WITH A 1" CONDUIT ROUTING TO THE NEAREST ACCESSIBLE CEILING. MOUNT AT 12" BELOW THE FINISHED CEILING, BUT DO NOT EXCEED 12'-0" AFF. |
| | GB | CEILING MOUNTED GLASS BREAK DETECTOR |

NOTES:
1. REFERENCE ACCESS CONTROL SCHEDULE, DIVISION 8 AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

# ACCESS CONTROL LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | CR | WALL OR MULLION MOUNTED ACCESS CONTROL PROXIMITY CARD READER. |
| | CR | ACCESS CONTROL PROXIMITY CARD READER THAT IS INTEGRATED INTO THE DOOR HARDWARE. |
| | DR | DOOR RELEASE BUTTON |
| | PIR | MOTION REQUEST TO EXIT DEVICE |
| | ACP | DESIGNATES THE LOCATION OF THE ACCESS CONTROL SYSTEM, CONTROL PANEL. ELECTRICAL CONTRACTOR TO PROVIDE 120V. POWER TO PANEL. PROVIDE NETWORK CABLE TO PANEL AND COORDINATE WITH THE OWNER'S TECHNOLOGY DEPARTMENT ON ACQUIRING AN IP ADDRESS. |
| | DS | WALL OR MULLION MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION. |
| | DS | DOOR MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION. |
| | MS | 2-WAY AUDIO/VIDEO INTERCOM MASTER STATION. |
| | PB | ADA AUTO DOOR OPEN BUTTON. SHOWN FOR REFERENCE ONLY, BUTTON AND AUTO DOOR OPERATOR PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER. |
| | DO | AUTO DOOR OPERATOR. OPERATOR TO BE PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER. |
| | LA | WALL MOUNTED, LOCAL ALARM SOUNDER. |
| | DC | DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR. FLUSH MOUNTED IN DOOR FRAME, UNLESS NOTED OTHERWISE |

NOTES:
1. REFERENCE ACCESS CONTROL SCHEDULE, DETAILS, AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

# AUDIO/VIDEO LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | #MP' | INDICATES THE LOCATION OF A VIDEO PROJECTOR # TO BE REPLACED WITH "C" OR "W". "C" INDICATES THAT THE DEVICE IS A CEILING MOUNTED DEVICE AND "W" INDICATES IT IS TO BE WALL MOUNTED. CONTRACTOR TO PROVIDE AND INSTALL A PROJECTOR, CEILING OR WALL MOUNTING KIT, AND PATCH CABLES AS REQUIRED TO CONNECT AT BOTH ENDS. |
| | 'AV-*#' | INDICATES THAT THE DESIGNATED TECHNOLOGY OUTLET IS INTENDED FOR AN AUDIO/VIDEO (A/V) INPUT. CONTRACTOR TO PROVIDE AND INSTALL A FLOOR MOUNTED OR WALL MOUNTED BOX AS INDICATED. (2) 1.25" CONDUITS FROM THE BOX TO THE NEAREST, PLENUM ACCESSIBLE CEILING WITHIN THE SAME ROOM. ALL FLOOR AND WALL MOUNTED BOXES SHALL BE A MINIMUM OF 2-GANGS.<br>*# - WHEN REPLACED WITH A '1' (AV-1) ONLY, THE OUTLET SHALL BE A STANDALONE, LOCAL INPUT TIED TO A LOCAL VIDEO DISPLAY (FSD, CMP, WMP, AV-2, ETC.). THIS OUTLET WILL NOT BE ASSOCIATED WITH ANY SYSTEM FOR ROUTING TO DISPLAYS LOCATED IN ANY OTHER PORTION OF THE PROJECT. IF NOT REPLACED WITH A '1' SEE THE NOTES AT THE BOTTOM OF THE LEGEND FOR ADDITIONAL INSTRUCTIONS. |
| | 'FSD-*#' | INDICATES THE LOCATION OF A FLAT PANEL VIDEO DISPLAY. CONTRACTOR TO PROVIDE AND INSTALL TWO (2) CATEGORY 6 UTP NETWORK CABLE TO ALL LOCATIONS SHOWN ON THE ENTIRE PROJECT.<br>*# - WHEN REPLACED WITH A '1' (FSD-1) ONLY, THE OUTLET SHALL BE A STANDALONE AND ONLY HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA ROOM.<br>*# - WHEN REPLACED WITH A '2' (FSD-2) ONLY, THE OUTLET SHALL HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA, AND THE CABLING FROM THE ASSOCIATED AV-1.<br>EACH FSD OUTLET SHALL BE A 2-GANG BOX AND TWO (2) 1.25" CONDUITS STUBBING INTO THE ROOMS ACCESSIBLE CEILING. PROVIDE ONE DOUBLE-GANG FACEPLATE WITH TWO (2) DECORA PORTS. PROVIDE A DECORA STYLE INSERT THAT ACCEPTS THE STYLE OF DATA JACK BEING USED FOR STRUCTURED CABLING. WHEN THERE IS A LOCAL A/V INPUT ASSOCIATED WITH THE DISPLAY, PROVIDE A DECORA INSERT THAT CONFORMS WITH THE SYSTEMS SPECIFIED. OTHERWISE PROVIDE A BLANK INSERT IN THE SECOND PORT. |
| | 'IVD' | INDICATES THE LOCATION OF A WALL MOUNTED, INTERACTIVE VIDEO DISPLAY. PROVIDE AND INSTALL A/V CABLE FROM THE ASSOCIATED AV-1 AS PER SYSTEM SPECIFICATIONS. RACEWAY SHALL CONSIST OF A 2-GANG BOX AND TWO (2) 1.25" CONDUITS STUBBING INTO THE ROOMS ACCESSIBLE CEILING. PROVIDE ONE DOUBLE-GANG FACEPLATE WITH TWO (2) DECORA PORTS. PROVIDE A DECORA STYLE INSERT THAT ACCEPTS THE STYLE OF DATA JACK BEING USED FOR STRUCTURED CABLING. WHEN THERE IS A LOCAL A/V INPUT ASSOCIATED WITH THE DISPLAY, PROVIDE A DECORA INSERT THAT CONFORMS WITH THE SYSTEMS SPECIFIED. OTHERWISE PROVIDE A BLANK INSERT IN THE SECOND PORT. |
| | 'USB-T' | INDICATES THE LOCATION OF A USB INPUT PLATE THAT SHALL TRANSMIT USB SIGNAL TO THE ASSOCIATED USB OUTPUT PLATE. RACEWAY SHALL CONSIST OF ONE (1) 1" CONDUIT AND A SINGLE GANG BACK BOX. |
| | 'USB-R' | INDICATES THE LOCATION OF A USB OUTPUT PLATE THAT SHALL RECEIVE USB SIGNAL FROM THE USB ASSOCIATED INPUT PLATE. RACEWAY SHALL CONSIST OF ONE (1) 1" CONDUIT AND A SINGLE GANG BACK BOX. |
| | S *# | INDICATES THE THE LOCATION OF A LOCAL SOUND REINFORCEMENT/PRESENTATION SPEAKER.<br>*# - WHEN REPLACED WITH AN 'L', THE SPEAKER SHALL BE FOR LOCAL INSTRUCTIONAL PRESENTATION AUDIO AND POWERED BY THE SPECIFIED CLASSROOM PRESENTATION AMPLIFIER.<br>*# - WHEN REPLACED WITH 'SM', THE SPEAKER SHALL BE DEDICATED TO A SPEECH PRIIVACY/SOUND MASKING SYSTEM. |
| | AVC *# | INDICATES THE LOCATION OF AN AUDIO/VIDEO CONTROL PLATE. RACEWAY SHALL CONSIST OF ONE (1) A BACK BOX WITH A 1" CONDUIT ROUTING INTO THE ACCESSIBLE CEILING SPACE WITHIN THE SAME ROOM. AV SYSTEM INSTALLER TO COORDINATE THE CONTROL BACK BOX SIZE REQUIREMENT WITH THE PROJECT'S ELECTRICAL CONTRACTOR. |
| | S PA | WALL MOUNTED INTERCOM SYSTEM SPEAKER |
| | S L | WALL MOUNTED LOCAL SOUND SPEAKER. |
| | S PA | INTERCOM SYSTEM SPEAKER |

NOTES:
A. IN THE EVENT THAT "*#" IS NOT DEFINED IN THE OUTLET DESCRIPTION, THE DEVICE SHALL BE CONSIDERED A STANDALONE DEVICE, SERVING THE SYSTEM WITHIN THE SAME SPACE OR THE FOLLOWING SHALL APPLY:

*# - UNLESS SPECIFICALLY NOTED OTHERWISE, THE FOLLOWING SHALL APPLY TO EACH DEVICE SHOWN ON THE ENTIRE PROJECT:

* SHALL BE REPLACED WITH ALPHABETICAL CHARACTERS THAT SHALL INDICATE THE SPECIFIC VENUE THAT THE DEVICE IS ASSOCIATED WITH.

\# SHALL BE REPLACED WITH A NUMERIC VALUE THAT SHALL IDENTIFY THE SPECIFIC DEVICE WITHIN THE SPECIFIC VENUE.

B. THE AUDIO/VIDEO SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROOUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.

C. REFERENCE SCOPE MATRIX AND PROJECT SPECIFICATIONS FOR INSTRUCTIONS REGARDING THE PROVIDING AND INSTALLATION OF VIDEO DISPLAYS, PROJECTORS, SCREENS, MOUNTS, AND LIFTS.

# TYPICAL SUBSCRIPTS LEGEND

| TEXT | DESCRIPTION |
|---|---|
| 'WM' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE WALL MOUNTED AT SPECIFIED HEIGHT OR IN COMPLIANCE WITH CODE REQUIREMENTS. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN. |
| 'WP' | INDICATES THAT THE DESIGNATED DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS INSTALLATION. |
| 'AC' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE COUNTERTOP. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE COUNTER. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN. |
| 'AFF' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE FINISHED FLOOR. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE FINISHED FLOOR. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN. |
| 'AG' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE GRADE LEVEL. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE GRADE. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN. |
| 'SM' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE SURFACE MOUNTED. CONTRACTOR TO PROVIDE ALL MATERIALS REQUIRED FOR A COMPLETE, SURFACE MOUNTED SOLUTION. ALL SURFACE MOUNTED PRODUCTS SHALL BE APPROVED BY THE PROJECT'S ARCHITECT PRIOR TO PROCUREMENT AND/OR INSTALLATION. |
| 'UC' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY. |
| 'UF' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED UNDER A RAISED FLOOR SYSTEM. |
| 'CM' | INDICATES THAT THE DESIGNATED DEVICE IS TO BE CORNER MOUNTED AT SPECIFIED HEIGHT. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN. |

# GENERAL NOTES

1. ALL 120V POWER REQUIRED FOR THE FUNCTIONALITY OF EACH SYSTEM SHALL BE A DEDICATED CIRCUIT AND 0N EMERGENCY POWER WHEN AVAILABLE. PROJECTS ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER TO MAIN CONTROL PANELS, REMOTE POWER SUPPLIES AND ALL HEAD END EQUIPMENT. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
2. THE PROJECT'S ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL IN CONDUITS, BACK BOXES, JUNCTION BOXES, RACEWAYS, AND SLEEVES REQUIRED TO ESTABLISH CLEAR PATHWAYS FOR ALL SYSTEMS. ALL CONDUITS, SLEEVES, BOXES, AND RACEWAYS SHALL BE PROPERLY SIZED TO MAINTAIN A 40% MAXIMUM FILL RATIO.
3. ALL EXPOSED SYSTEM'S WIRING OR WIRING ROUTING ACROSS NON ACCESSIBLE CEILINGS SHALL BE ROUTED IN CONDUIT, PROVIDED AND INSTALLED BY THE PROJECT'S ELECTRICAL CONTRACTOR. SIZE CONDUIT AS REQUIRED TO ROUTE SYSTEMS WITH 40% CABLE FILL RATIO. MINIMUM CONDUIT SIZE SHALL BE 3/4".
4. EACH SYSTEM INSTALLER SHALL BE RESPONSIBLE FOR ENSURING ALL EXTERIOR WALL PENETRATIONS ARE PROPERLY SEALED TO PREVENT ANY MOISTURE FROM ENTERING BUILDING.
5. NO CONDUITS SHALL BE INSTALLED ON THE EXTERIOR OF THE BUILDING. IF EXTERIOR CONDUITS ARE REQUIRED FOR A COMPLETE INSTALLATION, EACH SYSTEM CONTRACTOR SHALL COORDINATE WITH THE PROJECTS CONSULTANT PRIOR TO ANY ROUGH-IN.
6. EACH SYSTEM INSTALLER SHALL PROVIDE AND INSTALL PROTECTIVE BUSHINGS ON ALL CONDUIT STUB OUTS AND SLEEVES TO PREVENT CABLE DAMAGE. BUSHING TO BE INSTALLED PRIOR TO CABLE INSTALLATION. CUTTING BUSHING AND INSTALLING AFTER CABLE IS INSTALLED WILL NOT BE EXCEPTED.
7. ALL CABLE SHALL BE ROUTED DOWN CORRIDORS, PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS AND STRUCTURE. CABLE TO EACH DEVICE SHALL BRANCH OFF OF A MAIN CORRIDOR TRUNK. ROUTING CABLES THROUGH CLASSROOMS, OFFICES, STORAGE ROOMS, RESTROOMS OR ANY TYPE OF ROOM OTHER THAN A CORRIDOR WILL NOT BE ACCEPTED. ENTER ALL ROOMS ABOVE THE ASSOCIATED ROOM DOORWAY.

# LOCAL SOUND SYSTEM LEGEND

| GROUP | SYMBOL | DESCRIPTION |
|---|---|---|
| DEVICES | S *# | VENUE SPECIFIC LOCAL SOUND SYSTEM SPEAKER. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND SPEAKER NUMBER. |
| | LSC *# | VENUE SPECIFIC LOCAL SOUND SYSTEM CONTROL PLATE. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND CONTROL PLATE NUMBER. |
| | M *# | VENUE SPECIFIC LOCAL SOUND SYSTEM MICROPHONE INPUT. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIC INPUT NUMBER. |
| | H *# | VENUE SPECIFIC LOCAL SOUND SYSTEM HANGING MICROPHONE. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIC NUMBER. |
| | ABM *# | VENUE SPECIFIC LOCAL SOUND SYSTEM 3.5MM AUXILIARY INPUT AND BLUETOOTH MIXER. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIXER NUMBER. CONTRACTOR TO PROVIDE AND INSTALL A RECESSED ENCLOSURE WITH FLUSH MOUNTED, LOCKABLE DOOR. DEVICE TO BE MOUNTED AT +42" AFF. |
| | RACK | INDICATED THE LOCATION OF THE VENUE SPECIFIC LOCAL SOUND SYSTEM HEAD END RACK. AMPLIFIERS, DSPS, AND ALL OTHER HEAD END EQUIPMENT SHALL BE INSTALLED IN THIS RACK/CABINET. |
| | WA | WIRELESS MICROPHONE ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION. |
| | ALA | ASSISTED LISTENING ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION. |

NOTES:
1. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

# SUBSCRIPTS LEGEND - EXISTING DEVICES

| TEXT | DESCRIPTION |
|---|---|
| 'E' | INDICATES THAT THE DEVICE IS EXISTING TO REMAIN. CONTRACTOR TO REMOVE DEVICE AND PLACE IN THE SAME LOCATION AS NEEDED. |
| 'D' | INDICATES THAT THE DEVICE IS EXISTING AN IS TO BE REMOVED. CONTRACTOR TO REMOVE THE DEVICE AND RETURN TO OWNER. |
| 'R' | INDICATES THAT THE DEVICE IS EXISTING AND SHALL BE REPLACED. REFERENCE NEW SYSTEM LAYOUT FOR EXACT LOCATIONS. |
| 'RR' | INDICATES THAT THE DEVICE IS EXISTING AND SHALL BE REMOVED AND RELOCATED TO A LOCATION INDICATED ON THE DRAWINGS. REFERENCE NEW SYSTEM LAYOUT FOR EXACT LOCATIONS. |

# COMMUNICATIONS

HS DS SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 42" AFF

VC VOLUME CONTROL - WALL MOUNTED

CB INTERCOM/PA SYSTEM CALL-IN OR CALL-BACK DEVICE

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 120" AFF OR 12" BELOW CEILING, WHICHEVER IS LOWER

S L INTERCOM/PA SPEAKER.
"L" LOCAL SOUND REINFORCEMENT

CEILING MOUNTED DEVICES:

S VC INTERCOM/PA SPEAKER
"VC" INDICATES VOLUME CONTROL ON SPEAKER.

# TECHNOLOGY GENERAL NOTES

1. CONTRACTOR SHALL COORDINATING WITH DBR ENGINEERING PRIOR TO THE INSTALLATION OF RACKS AND RACK EQUIPMENT. NO RACKS SHALL BE PERMANENTLY INSTALLED WITHOUT WRITTEN APPROVAL OF THE PROPOSED LOCATIONS.
2. THE SELECTED, INSTALLING CONTRACTOR MUST BE A CERTIFIED INTEGRATOR/ INSTALLER AUTHORIZED BY THE SPECIFIED SYSTEM MANUFACTURER TO INSTALL THE CABLE PLANT AND CONNECTIVITY PRODUCTS. REFER TO SPECIFICATIONS FOR PRODUCT TYPE AND DESCRIPTION.
3. SYSTEM WIRING AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AS ESTABLISHED BY ANSI/EIA/TIA, BICSI, AND THE NEC.
4. ALL WIRING SHALL MEET ALL STATE AND LOCAL ELECTRICAL CODES.
5. ALL TELECOMMUNICATIONS SYSTEMS EQUIPMENT AND MOUNTING LOCATIONS SHALL BE IN COMPLIANCE WITH ADA ACCESSIBILITY STANDARDS.
6. ALL INDUSTRY STANDARD CATEGORY 6 CABLING PRACTICES MUST BE FOLLOWED FOR ALL DATA CABLING.
7. ALL DATA CABLES ARE TO BE INSTALLED WITH A MINIMUM OF 12 INCHES OF SEPARATION FROM AC POWER CABLES, INTERCOM, FIRE ALARM, SECURITY CABLES IN ANY PARALLEL OPEN WIRE RUN.
8. ALWAYS CROSS OTHER SYSTEM CABLES AT A 90 DEGREE ANGLE.
9. ALL CABLES AND TERMINATION COMPONENTS SHALL BE MACHINE LABELED AT BOTH ENDS. LABEL ALL CABLES PER TS DRAWINGS AND/OR SPECIFICATIONS. FINAL CABLE/OUTLET IDENTIFICATION LABELS SHALL BE COORDINATED WITH THE OWNER AND DBR.
10. CONTRACTOR TO PROVIDE LIGHTNING PROTECTION ON ALL COMMUNICATION CABLE BETWEEN BUILDINGS.
11. ALL EXPOSED CABLING ROUTED IN PLENUM SHALL BE PLENUM-RATED. ALL NON PLENUM-RATED CABLING INSTALLED IN PLENUM SPACES SHALL BE INSTALLED IN CONDUIT.
12. NO TERMINATION OR SPLICES SHALL BE INSTALLED IN OR ABOVE CEILINGS UNLESS NOTED NOTED OTHERWISE.
13. CONTRACTOR SHALL MAINTAIN WALL RATING WITH PROPER FIRE BLOCKING.
14. ALL CABLE INSTALLED SHALL ROUTE TO THE CENTER OF THE ROOM IN WHICH IT SERVES AND THEN TO THE OUTLET LOCATION IT IS INTENDED FOR. EACH CABLE SHALL HAVE A 10' SERVICE LOOP AT THE CENTER OF EACH ROOM AND A 3' SERVICE LOOP ABOVE EACH OUTLET LOCATION.
15. THE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM A PANDUIT J-MOD CABLE SUPPORT SYSTEMS AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. PANDUIT J-MOD SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. IN LOCATION WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
16. CONTRACTOR TO PROVIDE AND INSTALL ALL REQUIRED CABLING AND COMPONENTS TO FURNISH TWO (2) ANALOG TELEPHONE CABLES TO THE FIRE ALARM SYSTEM. CONTRACTOR TO COORDINATE WITH THE SYSTEM INSTALLER FOR EXACT LOCATIONS AND TERMINATION INSTRUCTIONS PRIOR TO INSTALLATION.
17. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 CABLE TO THE BUILDING'S ACCESS CONTROL HEAD END PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
18. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 CABLE TO THE BUILDING'S INTRUSION DETECTION PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
19. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH LIGHTING CONTROL HUB ON THE ENTIRE PROJECT. COORDINATE EXACT QUANTITY AND LOCATIONS WITH THE LIGHTING CONTROL SYSTEM INSTALLER. CONTRACTOR TO ASSUME A MINIMUM OF FIVE (5) PER PROJECT.
20. CONTRACTOR TO PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUITS TO EACH PROJECTOR AND LCD ON THE ENTIRE PROJECT.
21. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO THE LOCAL AIR UNIT CONTROLLER IN EACH MDF AND IDF.
22. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO EACH ACCESS CONTROL VIDEO DOOR STATION ON THE ENTIRE PROJECT. COORDINATE EXACT LOCATION AND TERMINATION REQUIREMENTS WITH THE DOOR STATION INSTALLER, PRIOR TO INSTALLATION. 22.

# SECURITY GENERAL NOTES

1. THE SECURITY SYSTEM INSTALLERS SHALL BE RESPONSIBLE FOR CONNECTING ALL APPLICABLE SYSTEM EQUIPMENT TO THE OWNER'S NETWORK.
2. HE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM AN APPROVED CABLE SUPPORT SYSTEM AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. THE CABLE SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. AT LOCATIONS WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
3. ECURITY CAMERA SYSTEM INSTALLER SHALL PROVIDE A CEILING MOUNTED INSTALLATION KIT RECOMMENDED BY THE MANUFACTURER OF THE CAMERA. EACH CEILING MOUNTED CAMERA KIT SHALL HAVE A SUPPORT WIRE ATTACHED TO THE BUILDING'S STRUCTURE TO PREVENT THE CAMERA FROM DROPPING TO THE FLOOR AT ANY TIME. AT NO POINT SHALL THE WEIGHT OF THE CEILING MOUNTED SECURITY CAMERA BE SUPPORTED BY THE CEILING GRID SYSTEM OR CEILING TILES. ALL CEILING MOUNTED CAMERAS SHALL BE FLUSH MOUNTED.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.
5. PROVIDE AND INSTALL MAGNETIC DOOR CONTACT AT ALL ROOF HATCHES ON THE ENTIRE PROJECT. CONTACTS TO BE CONNECTED TO THE BUILDINGS INTRUSION DETECTION SYSTEM.
6. CONTRACTOR TO PROVIDE AND INSTALL A MONITOR RELAY AND ALL REQUIRED MATERIALS TO CONNECT THE RELAY TO THE FREEZER/COOLER TEMPERATURE GAUGE AND BACK TO THE INTRUSION DETECTION SYSTEM, THE INTRUSION DETECTION SYSTEM SHALL BE PROGRAMMED TO NOTIFY THE OWNER'S DESIGNATED PERSONNEL IN THE EVENT OF EXTENSIVE CHANGE IN TEMPERATURE.

# NOTES TO CONTRACTOR

1. EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS. REFER TO GENERAL ELECTRICAL NOTES FOR WALL-MOUNTED DEVICE MOUNTING HEIGHTS.
2. REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS.
3. COMPLETE INSTALLATION OF ALL PRODUCTS SHALL BE IN COMPLIANCE WITH ALL CODES, INDUSTRY STANDARDS, COMMON PRACTICES AND MANUFACTURER'S INSTRUCTIONS.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.

# RESPONSIBILITY MATRIX

| SCOPE OF WORK | RESPONSIBILITY | | |
|---|---|---|---|
| DIV 27 - COMMUNICATIONS | | | |
| TECHNOLOGY SCOPE | OFOI | OFCI | CFCI |
| STRUCTURED CABLING | | | X |
| CABLE TRAY IN MDF/IDF | | | X |
| CABLE TRAY OUTSIDE MDF/IDF | - | - | - |
| TELECOM GROUNDING SYSTEM | | | X |
| BACK BOXES, CONDUITS/SLEEVES | | | X |
| EQUIPMENT RACKS/CABINETS | | | X |
| WIRELESS ACCESS POINTS | X | | |
| NETWORK SWITCHES | X | | |
| RACK NETWORK UPS AND PDU | X | | |
| INTERCOM SYSTEM UPS AND PDU | | | X |
| WORKSTATION PC | X | | |
| TELEPHONES | X | | |
| POE INJECTORS | | | X |
| AUDIO-VIDEO SYSTEM | OFOI | OFCI | CFCI |
| PA SPEAKERS | | | X |
| PA UPS | | | X |
| PA SYSTEM EXPANSION MODULES | | | X |
| PA SYSTEM CABLING | | | X |
| PA SYSTEM NETWORK CABLING | | | X |
| AV SWITCHER | - | - | - |
| AV CONTROL PANEL | - | - | - |
| AV EQUIPMENT CABINETS | | | X |
| AV CABLING | | | X |
| NETWORK CABLING REQUIRED | | | X |
| LECTERN | - | - | - |
| BACK BOXES, CONDUITS/SLEEVES | | | X |
| DIV 28 - SECURITY SYSTEMS | | | |
| VIDEO SURVEILLANCE SYSTEM | OFOI | OFCI | CFCI |
| CAMERAS AND LICENSES | X | | |
| CAMERA MOUNTS | X | | |
| CAMERA NETWORK CABLING | | | X |
| PoE SWITCHES | X | | |
| VMS SERVERS | X | | |
| VIEWING STATION | X | | |
| POE INJECTORS | | | X |
| BACK BOXES, CONDUITS/SLEEVES | | | X |
| EQUIPMENT RACKS/CABINETS | | | X |
| ACCESS CONTROL SYSTEM | OFOI | OFCI | CFCI |
| CARD READERS | | | X |
| DOOR CONTACTS | | | X |
| ELECTRIFIED LOCKS | | | X |
| REX INSIDE DOOR | | | X |
| PUSH TO EXIT | | | X |
| PIR SENSORS | | | X |
| LOW VOLTAGE POWER SUPPLY | | | X |
| ACCESS CONTROL PANELS | | | X |
| EQUIPMENT RACKS/CABINETS | | | X |
| BACK BOXES, CONDUITS/SLEEVES | | | X |
| COMPOSITE CABLING | | | X |
| NETWORK CABLING REQUIRED | | | X |
| CREDENTIAL CARDS | | | X |

* - DENOTES COMPONENTS THAT ARE TO BE PROVIDED VIA ALLOWANCE.

** - DENOTES COMPONENT THAT IS EXISTING.

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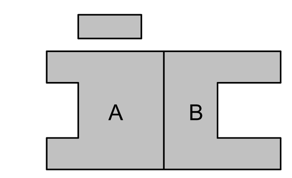


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| | |
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| DATE: | 2025-07-28 |
| DRAWN: | DBR |
| CHECKED: | DBR |

| DATE | ISSUE |
|---|---|
| 2025-07-28 | PERMIT AND PROPOSAL |

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| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|

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TECHNOLOGY SYMBOL LEGEND

## GENERAL SITE PLAN NOTES:

A. THE CONTRACTOR SHALL REFERENCE ALL OTHER TRADES' CONSTRUCTION DOCUMENTS FOR FULL EXTENT OF THE SITE WORK TO BE PERFORMED, AND FIELD VERIFY THE EXISTING JOB-SITE CONDITIONS BEFORE BIDDING. NO CHANGE ORDER IS ALLOWED FOR INCREASED COST ASSOCIATED WITH CONDITIONS WHICH COULD HAVE BEEN DETERMINED BY EXAMINING THE SITE AND WHOLE PROJECT DOCUMENTS BEFORE SUBMISSION OF PROPOSALS AND/OR BEFORE A CONTRACT IS AWARDED.

B. ALL CONDUIT AND CABLE RUNS SHOWN ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR SHALL COORDINATE WITH INCOMING SERVICE PROVIDERS AND OTHER TRADES (ELECTRICAL, CIVIL, ETC.) FOR THE EXACT ROUTE AND SHARED TRENCHES, IF APPLICABLE. CONTRACTOR SHALL MAKE ANY FIELD ADJUSTMENT TO THE ROUTE AS NECESSARY, AT NO ADDITIONAL COST TO THE PROJECT OR OWNER, TO AVOID COLLISION AND MEET THE PROJECT REQUIREMENTS.

C. ONLY SWEEP BENDS ARE ALLOWED FOR ALL OSP COMMUNICATIONS CONDUITS. ALL UNDERGROUND CONDUITS SHALL ENTER THE COMMUNICATIONS MANHOLE/HANDHOLE FROM THE SIDE WALLS AND BE PROPERLY SEALED TO PREVENT WATER INFILTRATION.

D. ALL UNDERGROUND COMMUNICATIONS CONDUITS SHALL BE BURIED AT MINIMUM 3 FEET FROM FINISHED GRADE, AND SLOPE AWAY FROM BUILDING, UNLESS OTHERWISE NOTED.

## TECHNOLOGY KEYED NOTES

T2.1 APPROXIMATE LOCATION OF BUILDING MDF ROOM ###.

T2.2 APPROXIMATE LOCATION OF BUILDING IDF ROOM.

T2.5 PROVIDE TWO (2) 4-INCH UNDERGROUND CONDUITS WITH 1800 LB TESTED PULL CORD IN EACH FOR COMMUNICATIONS SERVICES. PROVIDE NEW 12-STRAND ARMORED INDOOR OUTDOOR OS2 FROM EXISTING HIGH SCHOOL MDF TO NEW AG BARN IDF ROOM .

T2.9 PROVIDE A 24"W X 36"L X 36"D COMMUNICATIONS HANDHOLE OF HS-20 RATING WITH LOCKABLE COVER. STENCILED WITH "COMMUNICATIONS" MOUNTED FLUSH WITH FINISHED GRADE.

T2.10 PROVIDE A 24"W X 36"L X 36"D COMMUNICATIONS HANDHOLE OF HS-20 RATING WITH LOCKABLE COVER. STENCILED WITH "COMMUNICATIONS" MOUNTED FLUSH WITH FINISHED GRADE.

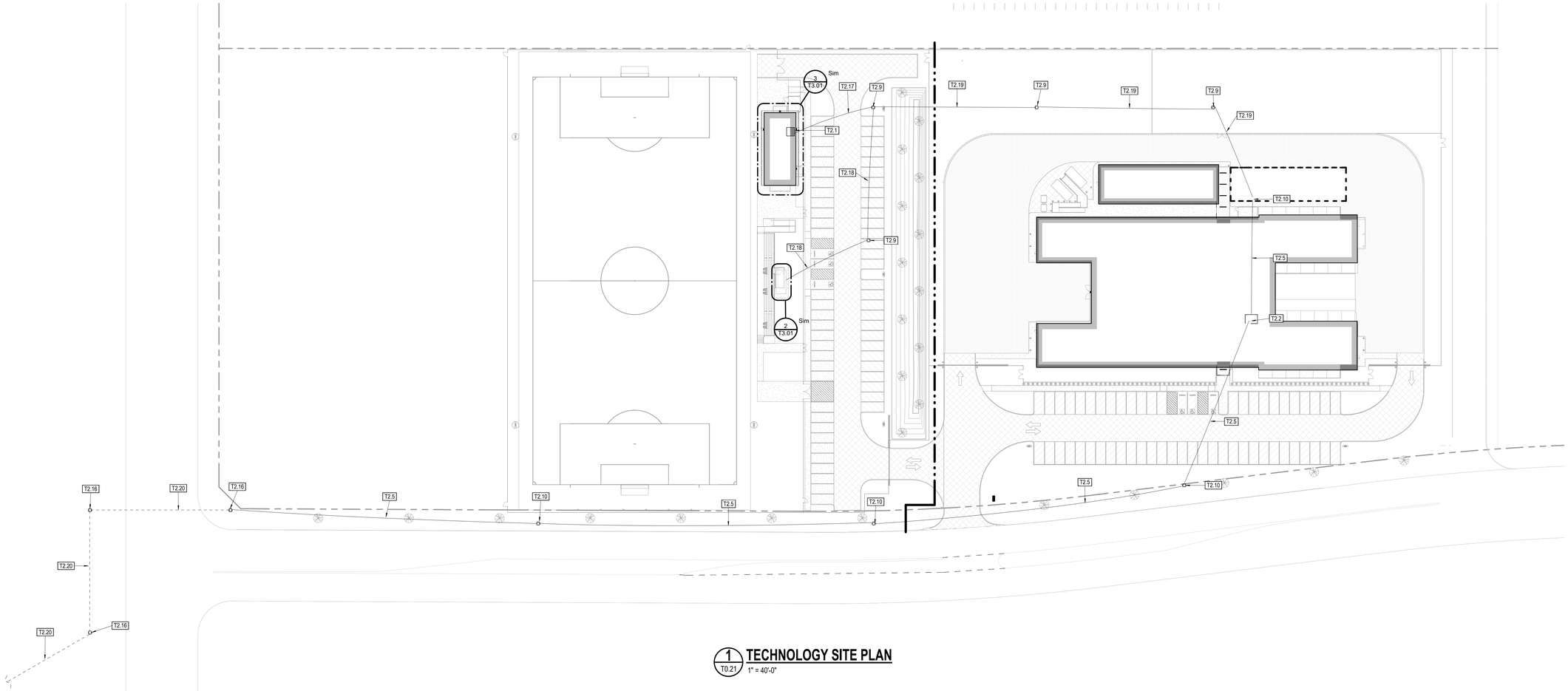
T2.16 APPROXIMATE LOCATION OF EXISTING COMMUNICATIONS HANDHOLE.

T2.17 PROVIDE TWO (2) 4-INCH UNDERGROUND CONDUITS WITH 1800 LB TESTED PULL CORD AND TWO (2) SETS OF 3-IN 3-CELL MAXCELL INNERDUCTS IN EACH FOR COMMUNICATIONS CABLING. PROVIDE NEW 12-STRAND ARMORED INDOOR OUTDOOR OS2 FROM NEW AG BARN IDF ROOM TO FIELD HOUSE MDF .

T2.18 PROVIDE TWO (2) 4-INCH UNDERGROUND CONDUITS BURIED 36-IN BELOW FINISHED GRADE FOR COMMUNICATIONS CABLING. CONDUITS ARE TO STUB INTO SPORTS FIELD PRESS-BOX. COORDINATE EXACT STUB IN LOCATION WITH OWNER AND ARCHITECT PRIOR TO ROUGH-IN.

T2.19 PROVIDE TWO (2) 4-INCH UNDERGROUND CONDUITS WITH 1800 LB TESTED PULL CORD IN EACH FOR COMMUNICATIONS SERVICES. PROVIDE NEW 12-STRAND ARMORED INDOOR OUTDOOR OS2.

T2.20 APPROXIMATE LOCATION OF EXISTING UNDERGROUND CONDUIT ROUTING INTO HIGH SCHOOL.




1 T0.21 **TECHNOLOGY SITE PLAN**
1" = 40'-0"

PLAN NORTH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REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Michael Quiri
BICSI ID # 157703
EXPIRES 12-31-26
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# T0.21

TECHNOLOGY SITE PLAN


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TBPE Firm Registration No. 2234
DBR Project # 250070


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## TECHNOLOGY KEYED NOTES

T2.15 PROVIDE TWO (2) 4-INCH CONDUITS IN CEILING FOR COMMUNICATIONS CABLING.

T5.12 ROUGH IN DATA LOCATION FOR FUTURE DROP FOR SECURITY CAMERA.

T5.13 ELECTRICAL CONTRACTOR IS TO SUSPEND JUNCTION BOX NO HIGHER THAN 14' FOR SECURITY CAMERA.

T5.14 ELECTRICAL CONTRACTOR IS TO SUSPEND JUNCTION BOX NO HIGHER THAN 14' FOR WIRELESS ACCESS POINT.

T5.15 ROUGH IN DATA LOCATION FOR FUTURE DROP FOR WIRELESS ACCESS POINT.

## GENERAL FLOOR PLAN NOTES:

1. ALL TECHNOLOGY DEVICES, OUTLETS AND CABLE/CONDUIT PATHWAYS SHOWN ARE DIAGRAMMATIC ONLY AND ARE NOT MEANT TO SHOW THE EXACT LOCATION OR ROUTE. CONTRACTOR SHALL VERIFY WITH ARCHITECT AND OWNER FOR EXACT ROUTE, MOUNTING HEIGHT, AND LOCATION BEFORE INSTALLATION, AND SHALL COORDINATE WITH OTHER TRADES TO MAKE ANY FIELD ADJUSTMENTS AS NECESSARY TO AVOID COLLISIONS AND MEET THE PROJECT REQUIREMENTS.
2. CONDUITS AND BACKBOXES, SIZED PER DIV 27/28 SPECIFICATIONS, SHALL BE PROVIDED (BY DIV 26) FOR ALL TECHNOLOGY SYSTEM DEVICES MOUNTED ON WALL, FLOOR, AND OPEN OR SOLID FINISH CEILING. CONDUITS/SLEEVES SHALL BE PROVIDED FOR ALL CABLES ROUTED IN WALLS, OR THROUGH FULL HEIGHT PARTITIONS, OR THROUGH INACCESSIBLE CEILING PLENUM, OR THROUGH SPACES WITH EXPOSED CEILING DECK.
3. UTP CABLES OF DIFFERENT RATING (CAT 6, CAT 6A, CLASS 4 POWER) OR JACKETING (SHIELDED OR COLORED SHEATH) OR DIFFERENT MEDIA TYPE CABLES (UTP, FIBER, COAX, ETC.) SHALL BE ROUTED IN SEPARATE J-HOOKS, CONDUITS, SLEEVES, CORES, DUCTS, ETC. THROUGHOUT THE ENTIRE PATHWAY. INSTRUMENTATION, SIGNAL, AND TELECOMMUNICATIONS CABLING (INCLUDING CLASS 4 POWER), SHALL BE SEPARATED FROM POWER CABLING WITH A SEPARATE CABLE TRAY OR BY A DIVIDER WITHIN A CABLE TRAY.
4. BUSHINGS SHALL BE INSTALLED AT EACH END OF THE CONDUITS BEFORE CABLES BEING PULLED THROUGH. PROVIDE PULL STRING IN EACH CONDUIT INSTALLED AND LEAVE ONE FOR FUTURE PULLING AFTER CABLE INSTALLATION IS COMPLETE.
5. NO NETWORK DATA CABLE RUN SHALL EXCEED 295 FEET IN TOTAL LENGTH INCLUDING UP/DOWN AND SERVICE LOOPS WITHOUT PRIOR APPROVAL FROM THE ARCHITECT AND ENGINEER. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PROPER PATHWAY PLANNING.
6. ALL CONDUITS FOR TECHNOLOGY DEVICES SHALL ROUTE FROM THE DEVICE LOCATION AND TERMINATE ABOVE LAY IN CEILING IN THE SAME ROOM (AN OPEN CEILING OR CLOUD TYPE CEILING IS NOT CONSIDERED AN ACCESIBLE CEILING) WHERE THE DEVICE IS LOCATED. IF THE ROOM WHERE THE DEVICE IS LOCATED DOES NOT HAVE A LAY IN CEILING TO PREVENT THE CABLES FROM BEING EXPOSED, THE CONDUIT SHALL BE INSTALLED TO THE SHORTEST ROUTE TO THE MAIN CORRIDOR OR THE NEAREST MDF/IDF TO REDUCE THE CABLE LENGTH ENSURING THE CABLES DOES NOT EXCEED THE 250 FEET. ALL CONDUITS AND FITTINGS SHALL BE PAINTED TO MATCH STRUCTURE UNLESS NOTED OTHERWISE.

## 1 TECHNOLOGY PLAN LEVEL 1

T2.11 — 1/8" = 1'-0"

PLAN NORTH


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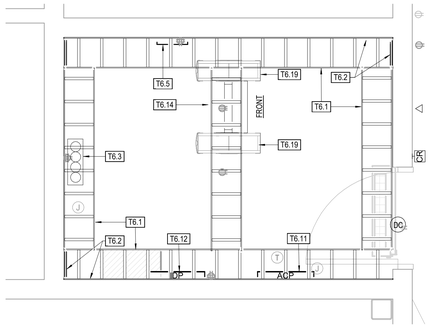
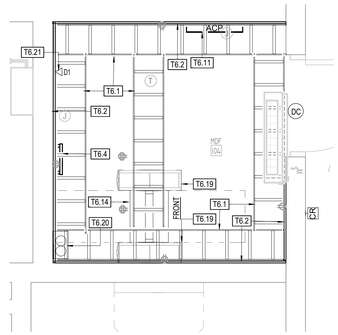
# T2.11

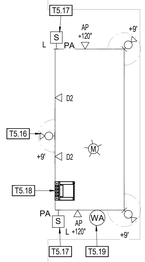
TECHNOLOGY PLAN LEVEL 1



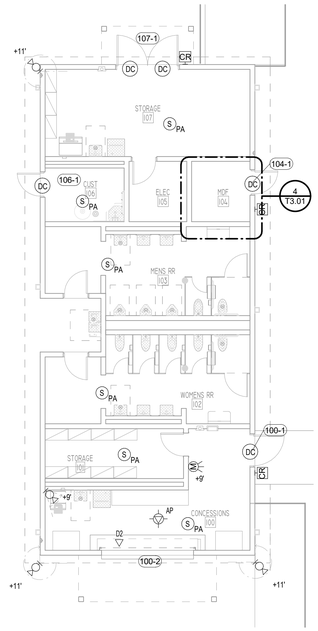

1 T3.01 **TECHNOLOGY PLAN LEVEL 1 - IDF A266**
1/2" = 1'-0"




4 T3.01 **TECHNOLOGY ENLARGED PLAN FIELD HOUSE/RESTROOM - MDF 104**
1/2" = 1'-0"




2 T3.01 **TECHNOLOGY ENLARGED PLAN - PRESS BOX**
1/8" = 1'-0"




3 T3.01 **TECHNOLOGY ENLARGED PLAN - FIELD HOUSE/RESTROOM**
1/8" = 1'-0"

## TECHNOLOGY KEYED NOTES

T5.16 CAMERA ON PARAPET MOUNT.

T5.17 LOCAL SOUND SPEAKER WITH YOKE BRACKET MOUNT.

T5.18 PROVIDE AND INSTALL WALL MOUNTED AV CABINET. REFERENCE SPECIFICATIONS FOR MODEL INFORMATION. CONTRACTOR SHALL PROVIDE AND INSTALL AS PER THE SYSTEM SPECIFICATIONS. PROJECT ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER AS REQUIRED.

T5.19

T6.1 PROVIDE 12" OVERHEAD LADDER RACK. MOUNT AT 96" AFF. (TYPICAL)

T6.2 PROVIDE 3/4" GRADE A/C FIRE RESISTANT PLYWOOD ON WALL, WITH GRADE A SIDE FACING OUT. INSTALL PLYWOOD TO PROVIDE COVERAGE BETWEEN 6" AND 102"" AFF ON WALL.

T6.3 FOUR (4) 4-IN UNDERGROUND COMMUNICATIONS SERVICES ENTRANCE CONDUITS TERMINATED TO 4" AFF

T6.4 PROVIDE 4"W X 12"L SECONDARY BONDING BUSBAR (SBB). MOUNT AT 90" AFF.

T6.5 PROVIDE 4"W X 20"L PRIMARY BONDING BUSBAR (PBB). MOUNT AT 90" AFF.

T6.11 APPROXIMATE LOCATION OF ACCESS CONTROL PANEL(S). COORDINATE WITH OTHER TRADES ON EXACT LOCATION PRIOR TO INSTALLATION.

T6.12 APPROXIMATE LOCATION OF INTRUSION DETECTION PANEL(S). COORDINATE WITH OTHER TRADES ON EXACT LOCATION PRIOR TO INSTALLATION.

T6.14 PROVIDE 19"W X 84"H 2-POST EQUIPMENT RACK. (TYPICAL)

T6.19 PROVIDE AND INSTALL ONE (1) 7"X6", FRONT AND REAR MANAGED, VERTICAL CABLE MANAGER (BLACK IN COLOR). CABLE MANAGERS SHALL BE INSTALLED ON EACH END OF THE RACK SYSTEMS AND BETWEEN EACH RACK. CABLE MANAGERS SHALL HAVE A SINGLE, SOLID, FULL HEIGHT HINGED DOOR IN THE FRONT AND WIDE SPACED CABLE RINGS WITH SPIN-OPEN LATCHES IN THE REAR. TYPICAL FOR ALL SHOWN ON THE ENTIRE PROJECT.

T6.20 TWO (2) 4-IN UNDERGROUND COMMUNICATIONS SERVICES ENTRANCE CONDUITS TERMINATED TO 4" AFF

T6.21 DATA DROP RESERVED FOR DDC PANEL.

## GENERAL ENLARGED PLAN NOTES:

1. CONTRACTOR SHALL VERIFY WITH OWNER IT ON THE EXACT PLACEMENT OF ALL EQUIPMENT RACK AND OVERHEAD CABLE TRAYS BEFORE COMMENCEMENT OF INSTALLATION WORK.
2. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES ON ANY OTHER EQUIPMENT, PIPING, CONDUITS NOT SHOWN ON THIS LAYOUT AND SUBMIT REQUEST FOR LAYOUT CHANGES, IF NECESSARY, TO ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL.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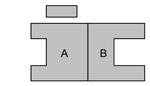


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T3.01

TECHNOLOGY ENLARGED PLAN


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DBR Project # 250070


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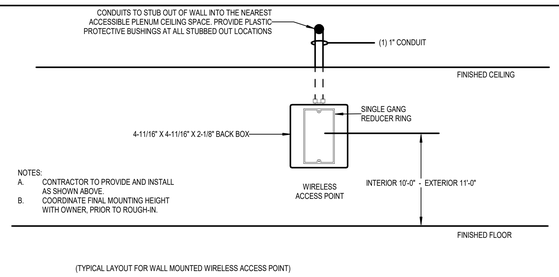
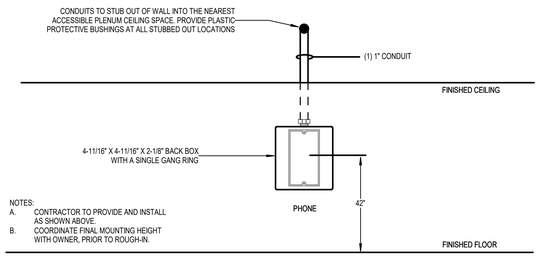
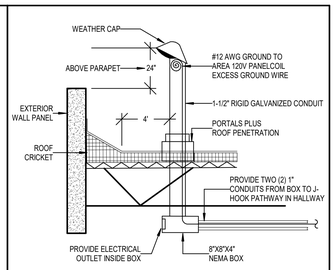



(TYPICAL LAYOUT FOR WALL MOUNTED WIRELESS ACCESS POINT)

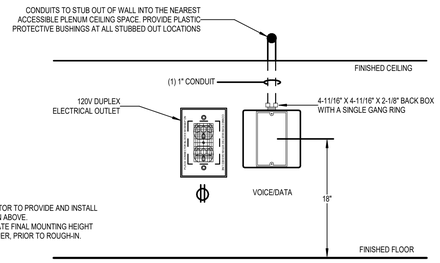
**8 RACEWAY DETAIL - WALL MOUNTED WIRELESS AP**
NOT TO SCALE



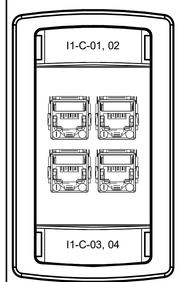

**9 RACEWAY DETAIL - WALL MOUNTED TELEPHONE**
NOT TO SCALE




**10 LOW VOLTAGE - TYPICAL ROOF PENETRATION**
NOT TO SCALE

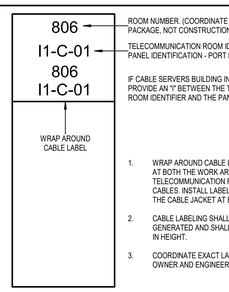



**4 RACEWAY DETAIL - TYPICAL VOICE/DATA OUTLET**
NOT TO SCALE




1. FACEPLATE LABELING SHALL BE MACHINE GENERATED AND SHALL NOT BE LESS THEN 1/4" IN HEIGHT.
2. PROVIDE BLANK INSERTS FOR ANY UNUSED PORTS.
3. COORDINATE EXACT LABELING SCHEME WITH OWNER AND ENGINEER.

**6 FACEPLATE LABEL DETAIL**
NOT TO SCALE



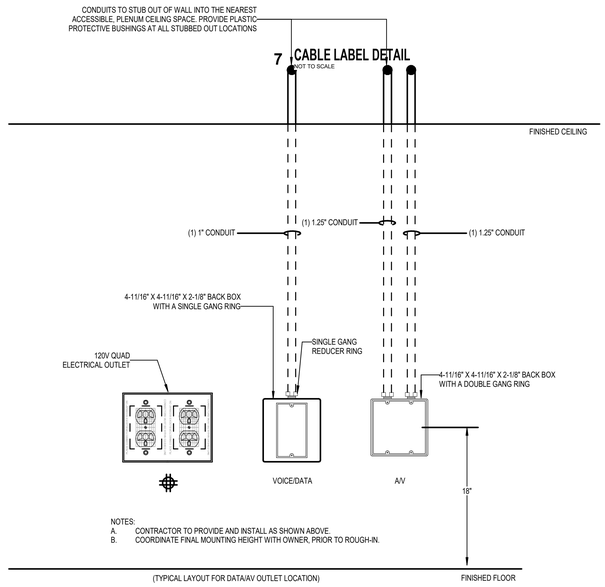

ROOM NUMBER. (COORDINATE WITH FINAL GRAPHICS PACKAGE, NOT CONSTRUCTION NUMBERS)

TELECOMMUNICATION ROOM IDENTIFICATION - PANEL IDENTIFICATION - PORT IDENTIFICATION

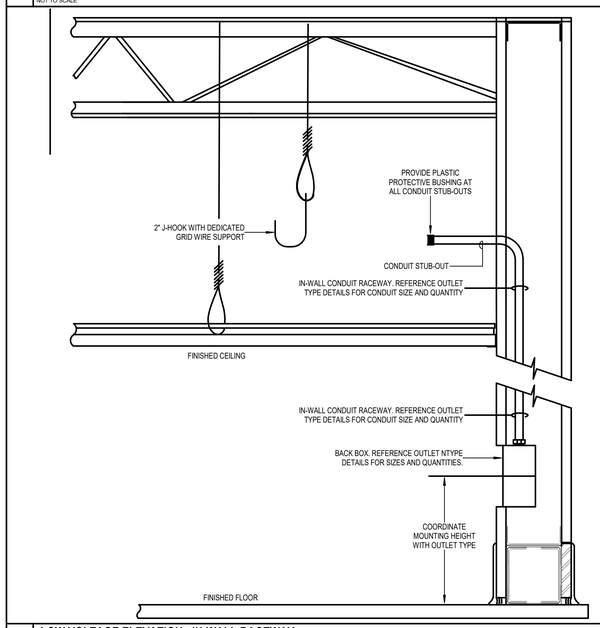
IF CABLE SERVERS BUILDING INTERCOM SYSTEM PROVIDE AN "I" BETWEEN THE TELECOMMUNICATION ROOM IDENTIFIER AND THE PANEL: EXAMPLE I1-C-01

1. WRAP AROUND CABLE LABEL TO BE INSTALLED AT BOTH THE WORK AREA OUTLET AND TELECOMMUNICATION ROOM ENDS OF ALL CABLES. INSTALL LABEL 1" FROM THE END OF THE CABLE JACKET AT BOTH ENDS.
2. CABLE LABELING SHALL BE MACHINE GENERATED AND SHALL NOT BE LESS THAN 1/8" IN HEIGHT.
3. COORDINATE EXACT LABELING SCHEME WITH OWNER AND ENGINEER.

**7 CABLE LABEL DETAIL**
NOT TO SCALE




**3 TYPICAL TEACHERS WORK AREA OUTLET**
NOT TO SCALE




**1 LOW VOLTAGE ELEVATION - IN-WALL RACEWAY**
NOT TO SCALE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# T6.01

TECHNOLOGY DETAILS


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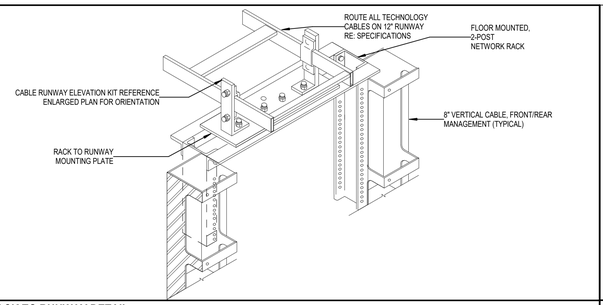
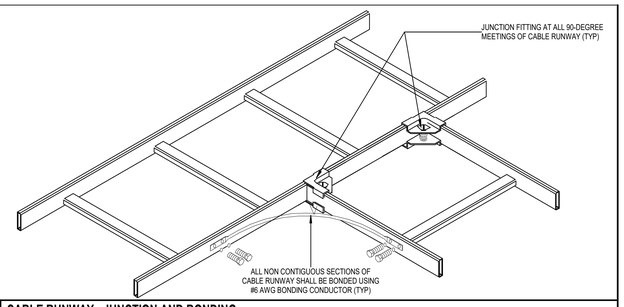
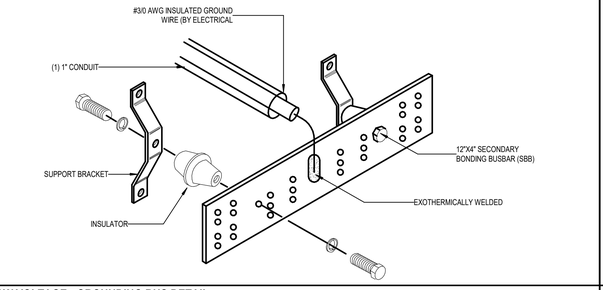


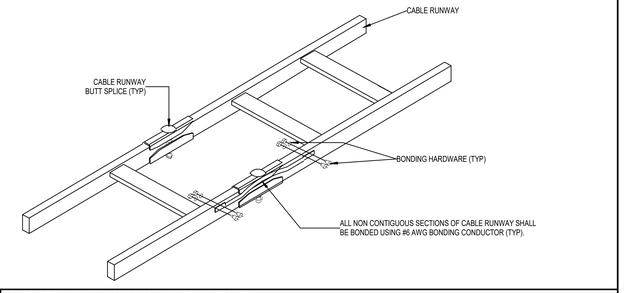

**5 RACK TO RUNWAY DETAIL**
NOT TO SCALE



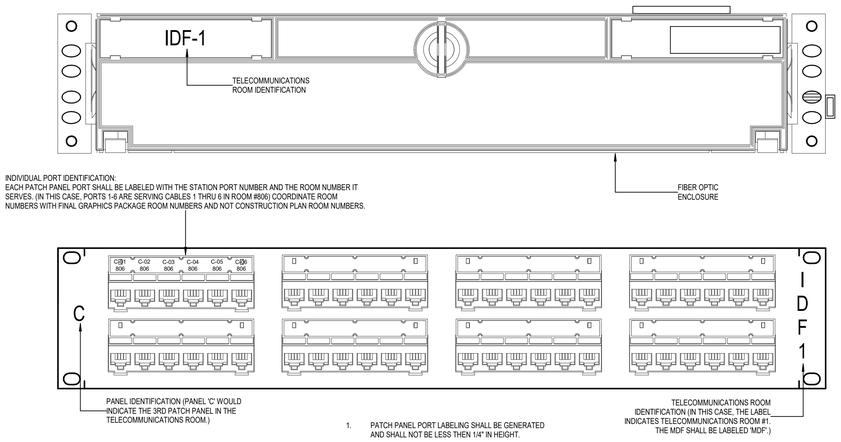

**6 CABLE RUNWAY - JUNCTION AND BONDING**
NOT TO SCALE



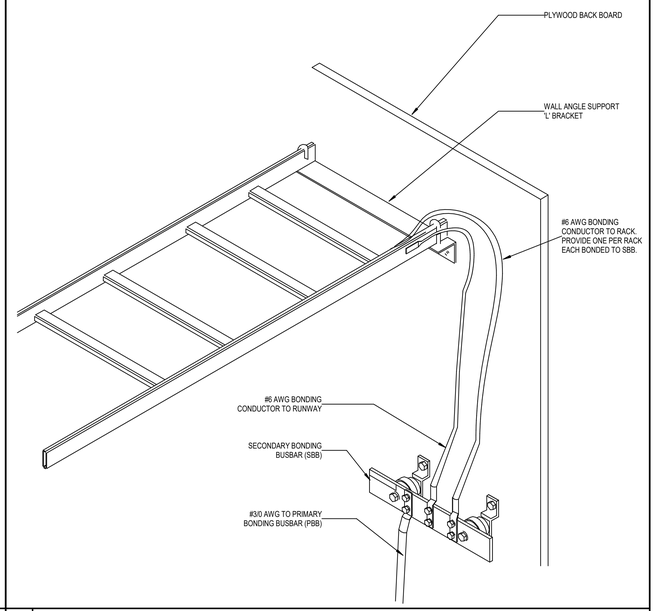

**3 LOW VOLTAGE - GROUNDING BUS DETAIL**
NOT TO SCALE




**4 CABLE RUNWAY - BONDING AND BUTT SPLICE**
NOT TO SCALE




**1 FIBER ENCLOSURE/ COPPER PATCH PANEL LABELING**
NOT TO SCALE




**2 CABLE RUNWAY - GROUNDING AND BONDING**
NOT TO SCALE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EXPIRES 12-31-26
RCDD

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| CHECKED: | Checker |

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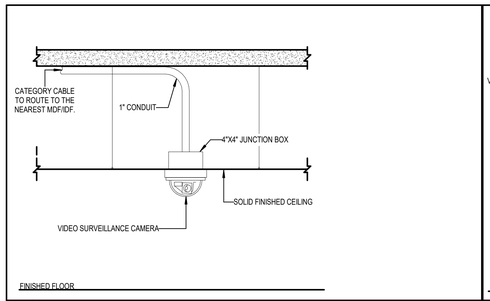
| 2025-07-28 | PERMIT AND PROPOSAL |

# T6.02

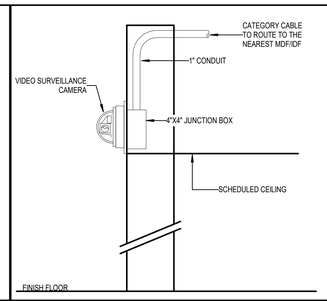
TECHNOLOGY DETAILS


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070

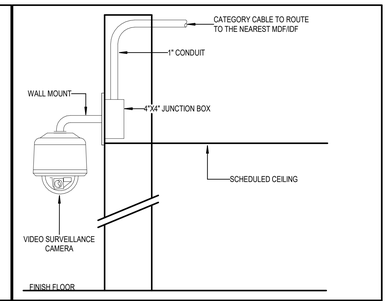

| SS | CC/TD | DT/DL | JD | RT |
|---|---|---|---|---|



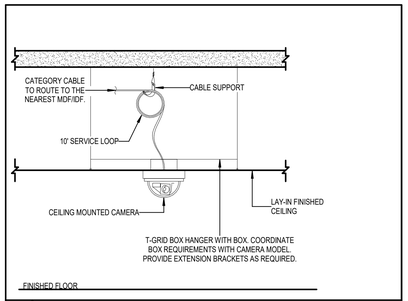

**5 EXTERIOR/INTERIOR SOLID CEILING MOUNT CAMERA**
NOT TO SCALE



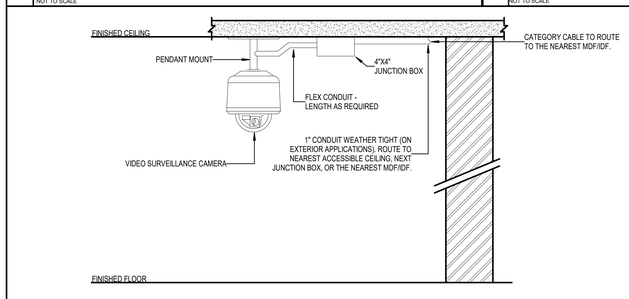

**6 INTERIOR WALL MOUNT CAMERA-VERTICAL**
NOT TO SCALE



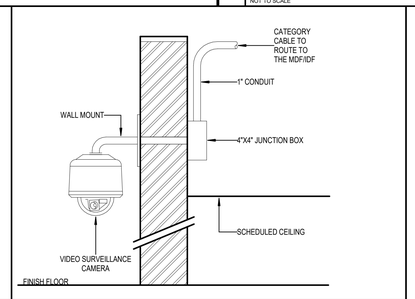

**7 INTERIOR WALL MOUNTED DOME CAMERA**
NOT TO SCALE



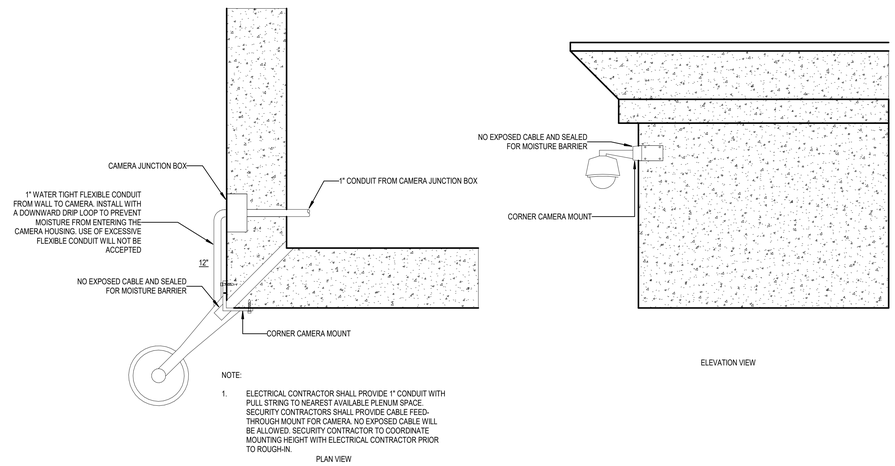

**8 INTERIOR LAY-IN CEILING MOUNTED CAMERA**
NOT TO SCALE




**3 EXTERIOR/INTERIOR PENDANT MOUNTED**
NOT TO SCALE




**4 EXTERIOR WALL MOUNTED DOME CAMERA**
NOT TO SCALE




NOTE:

1. ELECTRICAL CONTRACTOR SHALL PROVIDE 1" CONDUIT WITH PULL STRING TO NEAREST AVAILABLE PLENUM SPACE. SECURITY CONTRACTORS SHALL PROVIDE CABLE FEED-THROUGH MOUNT FOR CAMERA. NO EXPOSED CABLE WILL BE ALLOWED. SECURITY CONTRACTOR TO COORDINATE MOUNTING HEIGHT WITH ELECTRICAL CONTRACTOR PRIOR TO ROUGH-IN.

PLAN VIEW

**1 CORNER MOUNTING DETAIL**
NOT TO SCALE


CONSULTANTS

CIVIL
Talon Engineering, LLC
16225 Park Ten Place, Suite 500
Houston, Texas 77084
Tel: 832.287.9874

STRUCTURAL
CJG Engineers
3200 Wilcrest Drive, Suite 305
Houston, TX 77042
Tel: 713.780.3345
Fax: 713.780.3712

MEP
DBR Engineering Consultants, Inc.
9990 Richmond Avenue, Suite 300
Houston, TX 77042
Tel: 713.914.0888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# WEST AGRICULTURAL SCIENCE FACILITY

TOMBALL INDEPENDENT SCHOOL DISTRICT
BERRY POINT DR, CYPRESS TX, 77433


ARCADIS

ARCADIS INC.
1330 POST OAK BOULEVARD, SUITE 2250
HOUSTON, TX 77056
tel 281.286.6605, fax 713.977.4620


REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Michael Quirl
BICSI ID # 157703
EXPIRES 12-31-26
RCDD

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# T6.03

SECURITY DETAILS


DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070


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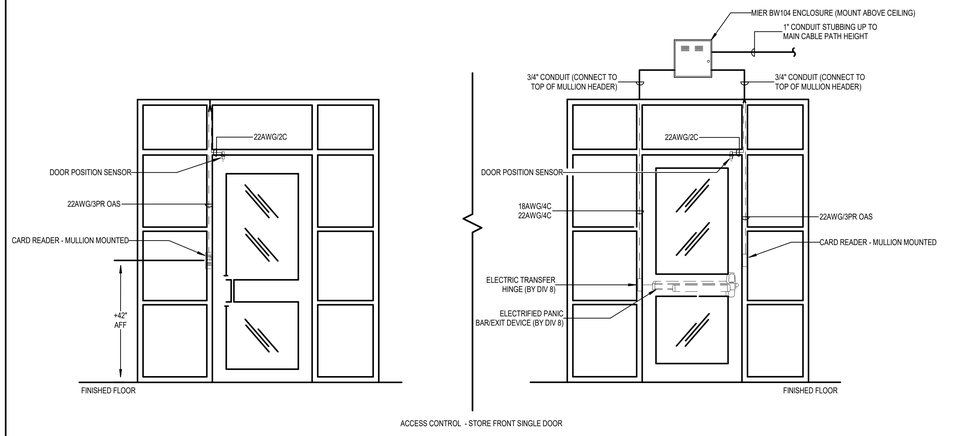
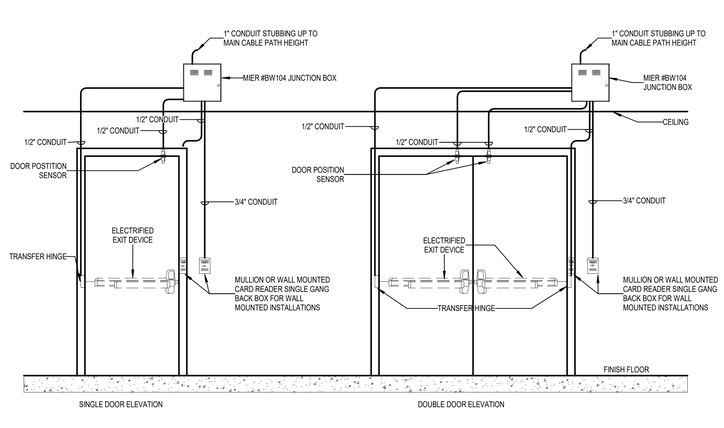
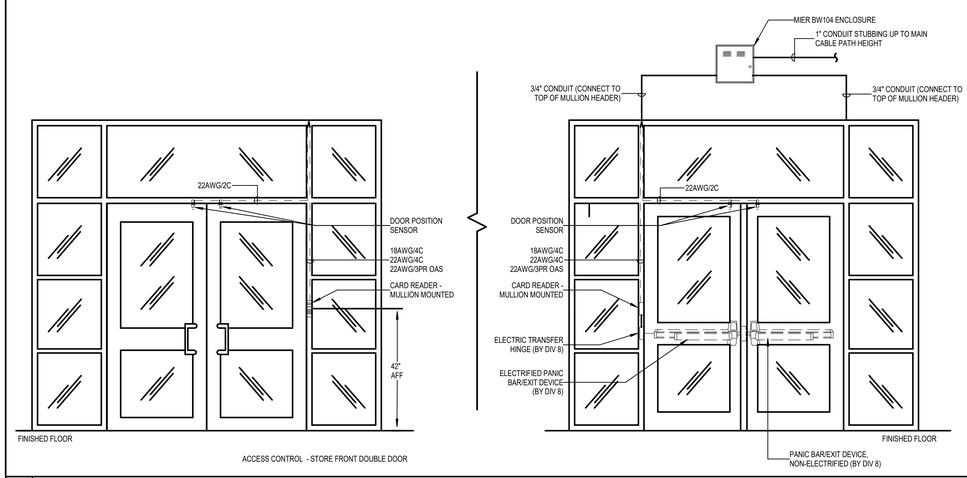


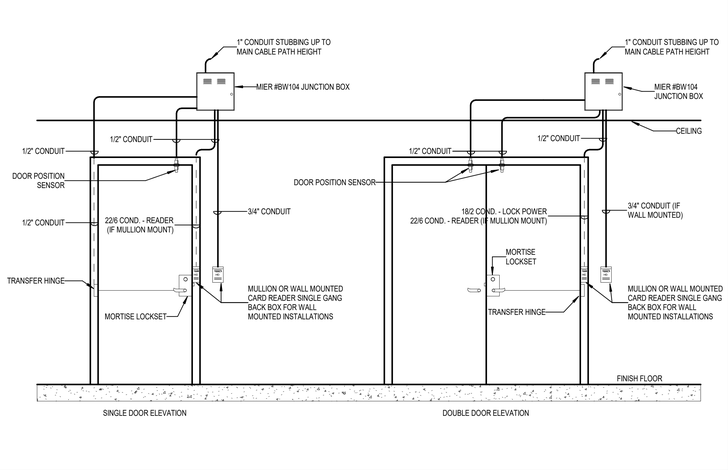

2 **ACCESS CONTROL - STORE FRONT SINGLE DOOR**
NOT TO SCALE




3 **ACCESS CONTROL - EXIT DEVICE DOOR ELEVATION**
NOT TO SCALE




1 **ACCESS CONTROL - STORE FRONT DOUBLE DOOR**
NOT TO SCALE




4 **ACCESS CONTROL - MORTISE LOCK DOOR ELEVATION**
NOT TO SCALE

CONSULTANTS

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Fax: 713.780.3712

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9990 Richmond Avenue, Suite 300
Houston, TX 77042
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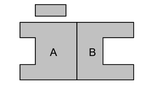


# WEST AGRICULTURAL SCIENCE FACILITY

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T6.04

SECURITY DOOR DETAILS

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 250070

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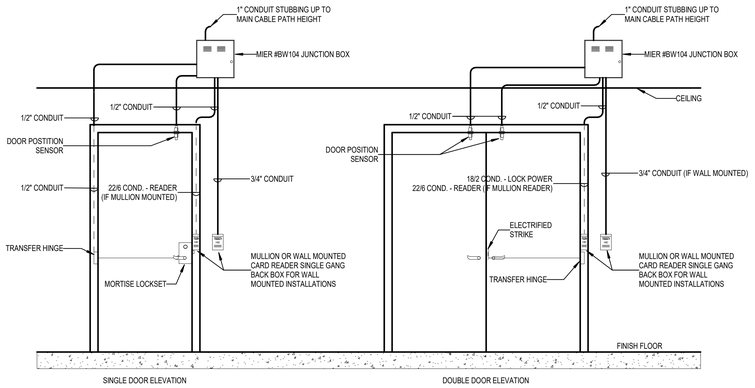
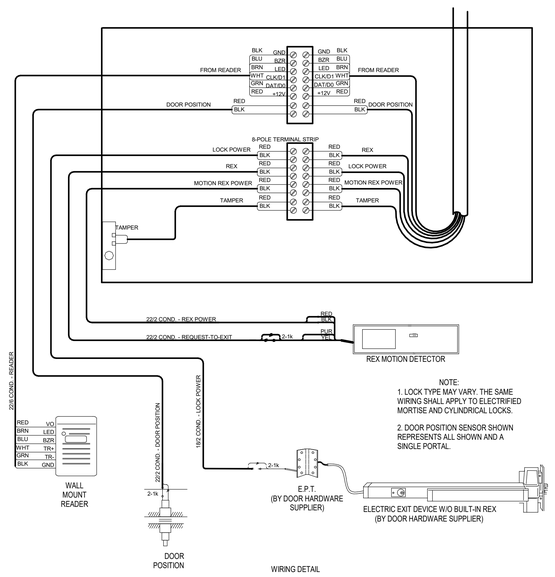
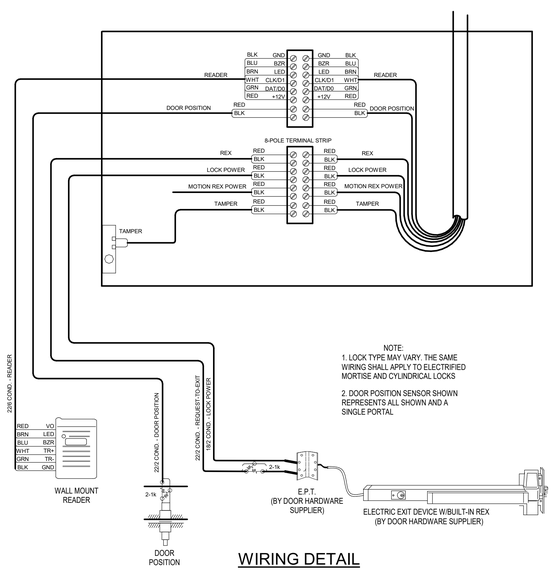
|---|---|---|---|




3 **ACCESS CONTROL - ELECTRIFIED STRIKE DOOR ELEV**
NOT TO SCALE




1 **ACCESS CONTROL - EXIT DEVICE W/ MOTION REX**
NOT TO SCALE




2 **ACCESS CONTROL - EXIT DEVICE W/BUILT-IN REX**
NOT TO SCALE

CONSULTANTS

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# T6.05

SECURITY DOOR DETAILS

DBR
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DBR Project # 250070

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