

# CHEROKEE NATION TAG OFFICE

## CONSTRUCTION DOCUMENTS



Sheet Number	SHEET NAME
GENERAL	
G0.00	COVER / INDEX
CIVIL	
C002	GENERAL NOTES
CS100	OVERALL EXISTING SITE PLAN
CS101	DEMOLITION PLAN
CE100	EROSION CONTROL PLAN
CE500	EROSION CONTROL NOTES & DETAILS
CD100	EXISTING DRAINAGE MAP
CD101	PROPOSED DRAINAGE MAP
CD102	PROPOSED DRAINAGE TABLES
CI100	PROPOSED SITE PLAN
CP100	PROPOSED PAVING PLAN
CP101	PROPOSED STRIPING PLAN
CP102	PROPOSED JOINTING PLAN
CP500	TYPICAL PAVING DETAILS
CP501	TYPICAL JOINTING DETAILS
CP502	TYPICAL STRIPING DETAILS
CP503	TYPICAL STRIPING DETAILS
CP504	TYPICAL DUMPSTER DETAILS
CG100	OVERALL GRADING KEY MAP
CG101	ENLARGED GRADING PLAN
CG102	ENLARGED GRADING PLAN
CU100	WATER LINE A PLAN & PROFILE
CU101	WATER LINE B PLAN & PROFILE
CU102	SEWER LINE 1 PLAN & PROFILE
CU103	STORM LINE 1 & 2 PLAN & PROFILE
CU104	CULVERT 1, 2, 3 & 4 PLAN & PROFILE
CU500	TYPICAL UTILITY DETAILS
CU501	TYPICAL UTILITY DETAILS
CU502	TYPICAL UTILITY DETAILS
CIVIL - WATER LINE	
GE01	COVER SHEET
GE02	GENERAL NOTES
WL01	WATER LINE PLAN AND PROFILE
WL02	WATER LINE PLAN AND PROFILE
LANDSCAPE	
LS001	LANDSCAPE PLAN
LS002	TREE PLANTING DETAIL
ARCHITECTURAL	
AS1.00	CODE ANALYSIS / LIFE SAFETY PLAN
AS.00	ARCHITECTURAL SITE PLAN

Sheet Number	SHEET NAME
A1.00 FLOOR PLANS	
A1.01	FINISH PLAN AND INFORMATION
A2.01	EXTERIOR ELEVATIONS
A3.00	BUILDING SECTIONS WALL SECTIONS
A3.01	EXTERIOR PLAN DETAILS / WALL SECTION DETAILS / PARTITION TYPES
A4.00	INTERIOR ELEVATIONS
A4.10	TOILET INFORMATION
A5.00	SPECIFICATIONS
A5.01	SPECIFICATIONS
A5.02	SPECIFICATIONS
STRUCTURAL	
S1.1 STRUCTURAL NOTES	
S1.1	FOUNDATION AND SLAB PLAN
S2.1	WALL AND ROOF FRAMING PLAN
S3.1	BUILDING SECTIONS
S4.1	STRUCTURAL DETAILS
PLUMBING	
P1.00 PLUMBING LEGENDS, NOTES, AND SCHEDULES	
P1.01	PLUMBING DETAILS
P2.00	PLUMBING DRAIN AND SUPPLY PLANS
P2.01	PLUMBING DRAIN/VENT ISOMETRIC
P3.00	PLUMBING SPECIFICATIONS
P3.01	PLUMBING SPECIFICATIONS
MECHANICAL	
M1.00 MECHANICAL LEGEND AND NOTES	
M1.01	MECHANICAL DETAILS
M2.00	MECHANICAL HVAC PLAN AND RCP
M2.01	MECHANICAL ZONING PLAN
M3.00	MECHANICAL SCHEDULES
M4.00	MECHANICAL SPECIFICATIONS
M4.01	MECHANICAL SPECIFICATIONS
ELECTRICAL	
E1.00 ELECTRICAL NOTES AND LEGENDS	
E1.01	POWER PLAN
E1.02	MECHANICAL POWER PLAN
E1.03	SYSTEMS PLAN
E1.04	FIRE ALARM PLAN
E2.01	LIGHTING PLAN
E2.02	SITE LIGHTING PLAN
E3.01	ELECTRICAL SCHEDULES AND RISER
E4.00	ELECTRICAL SPECIFICATIONS
E4.01	ELECTRICAL SPECIFICATIONS



VICINITY MAP

**BARKER & ASSOCIATES INC.**  
3902 UNIVERSITY BOULEVARD  
DURANT, OKLAHOMA 74701  
(580) 931-8045

**CIVIL ENGINEER**

**WALLACE ENGINEERING**  
123 N. MARTIN LUTHER KING JR. BLVD  
TULSA, OKLAHOMA 74103  
(918) 584-5858

**CIVIL ENGINEER - WATER LINE**

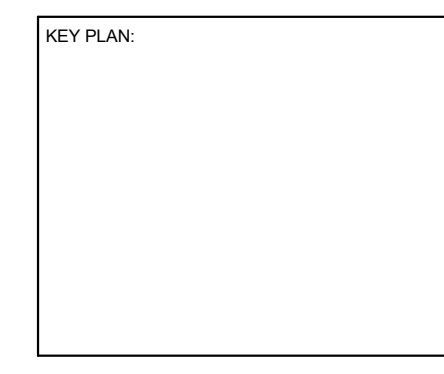
**MYERS-BEATTY ENGINEERING**  
2411 FAYETTEVILLE RD. #B  
VAN BUREN, AR 72956  
(479) 474-4412

**STRUCTURAL ENGINEER**

**HP ENGINEERING, INC.**  
5214 W. VILLAGE PARKWAY, SUITE 120  
ROGERS, AR 72758  
(479) 899-6370

**MECHANICAL, ELECTRICAL & PLUMBING ENGINEER**

CHEROKEE NATION  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA



PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

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COVER / INDEX



**GENERAL NOTES**

- THE CONTRACTOR SHALL HAVE EXISTING UTILITIES LOCATED PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CALL "OKIE" 1-800-522-6543 IN ADDITION TO DIRECT NOTIFICATION. CONTRACTOR SHALL BRACE UTILITY POLES AS NECESSARY. UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED TO THE UTILITY OWNER'S SPECIFICATIONS BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL ESTABLISH, INSTALL, OPERATE, AND MAINTAIN COMPLETE AND ADEQUATE AND SAFE TRAFFIC CONTROLS DURING THE ENTIRE CONSTRUCTION PERIOD. ALL TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY THE ENGINEER.
- ALL DIMENSIONS OR ELEVATIONS WITH ± SHALL BE CONFIRMED BY THE CONTRACTOR.
- ALL DIMENSIONS OF EXISTING STRUCTURES AND EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER & OWNER.
- TOPSOIL IN THE DISTURBED AREAS SHALL BE REMOVED, STOCKPILED, AND RESTORED AFTER CONSTRUCTION OPERATIONS, IN ACCORDANCE WITH PROJECT SPECIFICATIONS. ALL EXCESS TOPSOIL SHALL BE CONSIDERED WASTE AND STOCKPILED ON-SITE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
- ALL DISTURBED ROADWAY AND DRIVEWAY SURFACES SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION.
- FALL PROTECTION AROUND ALL OPENINGS AND EXCAVATION SHALL BE MAINTAINED AT ALL TIMES.
- NORTH ARROWS SHOWN ON DRAWINGS INDICATE LOCAL COORDINATE SYSTEM ESTABLISHED BY THE SURVEYOR, UNLESS OTHERWISE NOTED.
- TRENCH SAFETY AND SHORING IN ACCORDANCE WITH CURRENT OSHA REGULATIONS SHALL BE EMPLOYED BY CONTRACTOR AT ALL TIMES.
- IF AT ANY POINT CONSTRUCTION ACTIVITIES EXPOSE ARCHEOLOGICAL MATERIALS SUCH AS CHIPPED STONE, TOOLS, POTTERY, BONE, HISTORIC CROCKERY, GLASS, METAL ITEMS OR BUILDING MATERIALS, THE STATE ARCHEOLOGIST SHALL BE CONTACTED IMMEDIATELY.
- ALL STATIONS SHOWN ON THE PLANS ARE CENTERLINE STATIONS UNLESS NOTED OTHERWISE.
- THE TOPOGRAPHIC SURVEY WAS COMPLETED BY BENNETT SURVEYING INC. ALL EXISTING INFORMATION IS SHOWN AS ACCURATELY AS POSSIBLE BASE UPON FIELD RECONNAISSANCE AND RESEARCH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING INFORMATION. IF CONTRACTOR BELIEVES EXISTING INFORMATION IS INACCURATE, THE CONTRACTOR MAY HAVE A NEW SURVEY COMPLETED AT NO ADDITIONAL COST TO THE OWNER, ARCHITECT, OR ENGINEER.
- DIMENSIONS SHOWN ARE TO BACK OF CURB OR CENTERLINE OF PIPE UNLESS NOTED OTHERWISE. DIMENSIONS TO BUILDING ARE TO EDGE OF FOUNDATION.
- CONTRACTOR SHALL REVIEW AND COORDINATE W/ ARCH, MECH., ELEC., AND PLUMBING DISCIPLINES DRAWINGS, SPECIFICATIONS AND DETAILS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. IN THE EVENT THAT THE ARCH. AND/OR CONTRACTOR DEVIATES CONSTRUCTION FROM THESE PLANS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE ENGINEER, THE ARCH. AND/OR CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THOSE MODIFICATIONS.

**EROSION CONTROL NOTES:**

- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING STORM WATER POLLUTION PREVENTION PLAN & SUBMITTING TO AUTHORITY HAVING JURISDICTION.
- SILT FENCE SHALL BE MAINTAINED AND SEDIMENT BUILDUP REGULARLY REMOVED UNTIL PAVING OPERATIONS ARE COMPLETE AND/OR SEEDING IS IN PLACE AND 75% VEGETATION STABILIZATION IS OBTAINED.
- ALL TREES, BRUSH, AND OTHER DEBRIS THAT MIGHT INTERFERE WITH THE FLOW OF WATER IS TO BE CLEANED OUT TO THE RIGHT-OF-WAY LINE AT EACH STRUCTURE, IN A MANNER APPROVED BY THE ENGINEER.
- ALL FLOW LINES THAT ARE TO BE FILLED SHALL BE THOROUGHLY COMPACTED TO 95% STANDARD PROCTOR DENSITY BEFORE CONSTRUCTION OR EXTENSION OF DRAINAGE STRUCTURES.
- IN ORDER TO ALLEVIATE DUST CONDITIONS DURING GRADING OPERATIONS, AND AFTER GRADING OPERATIONS ARE COMPLETED, BUT BEFORE PAVEMENT AND/OR PERMANENT EROSION CONTROL WORK IS COMPLETED, THE CONTRACTOR SHALL SPRINKLE GRADING AT INTERVALS APPROVED BY THE OWNERS REPRESENTATIVE.
- AT THE BEGINNING OF THE TURF OPERATIONS, ANY AREAS INCLUDED IN PLANNED QUANTITIES THAT HAVE GROWN A SATISFACTORY VOLUNTEER TURF OF PERENNIAL GRASS AS DETERMINED BY THE OWNER'S REPRESENTATIVE, SHALL BE FERTILIZED AND WATERED BUT SHALL NOT BE SEED, SODDED OR SPRIGGED.
- VEGETATIVE MULCH AND SEEDING SHALL BE UTILIZED FOR TEMPORARY EROSION CONTROL.
- SEED: THE FOLLOWING KINDS OF SEEDS, AT ACRES-RATES INDICATED BELOW, SHALL BE PLANTED ON THE AREAS DESIGNATED FOR SEEDING.

KINDS OF SEED TO BE FURNISHED	TEMPORARY SEEDING QUANTITY PER ACRE
COOL SEASON MIX- PERENNIAL RYEGRASS (LOLIUM PERENNE)	20 LBS. OF SEED
CRIMSON CLOVER (TRIFOLIUM INCARNATUM)	12 LBS. OF SEED

WARM SEASON MIX- KOREAN LESPEDEZA (LESPEDEZA STRIATA)	12 LBS. OF SEED
CRIMSON CLOVER (TRIFOLIUM INCARNATUM)	20 LBS. OF SEED
LITTLE BLUESTEM (ANDROPOGON SCOPARIUS)	12 LBS. OF SEED
COMMON BERMUDA (CYNODON DACYLON)	4 LBS. OF SEED

VEGETATIVE MULCHING: THE VEGETATIVE MULCH SHALL BE ANCHORED IN ACCORDANCE WITH THE "ADHESIVE SPRAY METHOD", AS SPECIFIED IN 233.04(b) OF THE ODOT STANDARD SPECIFICATIONS.

SEASONAL PLANTING RESTRICTIONS  
THE PLANTING OF SPRIGGING SHALL BE RESTRICTED TO THE PERIOD FROM APRIL 1ST TO JUNE 30TH.

THE PLANTING OF TEMPORARY SEEDS (COOL SEASON MIX) SHALL BE RESTRICTED TO THE PERIOD FROM SEPTEMBER 1ST TO NOVEMBER 15TH.

THE PLANTING OF TEMPORARY SEEDS (WARM SEASON MIX) SHALL BE RESTRICTED TO THE PERIOD FROM MARCH 15TH TO JUNE 30TH.

AREAS ON WHICH SALVAGED TOPSOIL IS TO BE REPLACED SHALL HAVE 0-46-0 FERTILIZER APPLIED, AT THE RATE OF 150 LBS. PER ACRE, JUST PRIOR TO THE REPLACEMENT OF SALVAGED TOPSOIL.

**ABBREVIATION LEGEND:**

THESE ABBREVIATIONS WILL BE FOUND ON THE PROPOSED GRADING SHEETS.	THESE ABBREVIATIONS WILL BE FOUND ON THE PROPOSED PAVING SHEETS
TG = TOP OF GRATE	PRC = POINT REVERSE CURVATURE
TR = TOP OF RIM	BOP = BEGIN POINT
TS = TOP OF SLAB	EOP = END POINT
TW = TOP OF WALL	PC = POINT OF CURVATURE
EL = PROPOSED ELEV.	PT = POINT OF INTERSECTION
ME EL = MATCH EXISTING ELEV.	
TC = TOP OF CURB ELEV.	
FL = FLOW LINE ELEV.	
RE: = REFER	
FL = FLOW LINE	
TYP = TYPICAL	
CL = CENTERLINE	
N: = NORTHING	
E: = EASTING	
STA. = STATION	
MIN. = MINIMUM	

**SITE WORK NOTES:**

- ALL EARTHWORK & PAVING MATERIALS & METHODS SHALL CONFORM WITH OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST REVISION.
- CONTRACTOR SHALL REVIEW THE FINAL GEOTECHNICAL REPORT PREPARED BY PALMERTON & PARRISH, INC., DATED MARCH 26, 2020. THIS REPORT SHALL BE CONSIDERED A PART OF THE CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES BETWEEN PLANS AND GEOTECHNICAL REPORT SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER & ENGINEER FOR CLARIFICATION.
- ONLY REMOVE TREES THAT DIRECTLY INTERFERE WITH CONSTRUCTION. CONTRACTOR SHALL LIMIT CLEARING & GRUBBING TO BUILDING & DRIVEWAY AREA FOOTPRINT, AS MUCH AS POSSIBLE.
- CONTRACTOR SHALL DISPOSE OF TREES, STUMPS, DEBRIS, ETC. OFF SITE IN A MANNER APPROVED BY THE OWNER.
- ALL AREAS TO RECEIVE PAVING SHALL BE STRIPPED OF VEGETATION, TOPSOIL, SOFT OR OTHERWISE UNSUITABLE MATERIAL. UNSTABLE SUBGRADE CONDITIONS ARE ANTICIPATED WITHIN PAVEMENT AREAS. SUBGRADE SHALL BE SCARIFIED AND REWORKED. MOISTURE CONDITIONED ABOVE OPTIMUM MOISTURE CONTENT AND COMPACTED TO STANDARD PROCTOR PER GEOTECHNICAL RECOMMENDATIONS. SUBGRADE SHALL BE PROOF ROLLED WITH A ROLLER OR TRUCK (GROSS WEIGHT OF 25 TONS OR MORE). PROOF ROLLING SHALL BE WITNESSED BY OWNER'S REPRESENTATIVE. OWNER SHALL DETERMINE SUITABILITY OF AGGREGATE BASE.
- SUBGRADE AREAS APPROVED AFTER PROOF-ROLLING SHOULD BE SCARIFIED TO A DEPTH OF AT LEAST 8 INCHES & SOIL MOISTURE ADJUSTED & COMPACTED TO COMPLY WITH PROJECT SPECIFICATIONS.
- REMOVE ANY STUMPS AND ROOTS LARGER THAN 2 INCHES IN DIAMETER TO FULL DEPTH, ROCKS LARGER THAN 3 INCHES AND ANY SMALL MATTED ROOTS, TO A DEPTH OF 18 INCHES BELOW ORIGINAL GROUND SURFACE.
- POSSIBLE UNDOCUMENTED FILL FROM PREVIOUS OR FOEMER BUILDING ELEMENTS ARE UNKNOWN. IF UNDOCUMENTED FILL IS NOTED IN THE BUILDING LOCATION, BUILDING FOUNDATION EXCAVATIONS SHOULD BE EXTENDED THROUGH THE UNDOCUMENTED FILL THEN REPLACED BACK WITH STRUCTURAL FILL WITH A MINIMUM 2FT OF LVC MATERIAL PLACED IMMEDIATELY BELOW THE FOOTING. UNDOCUMENTED FILL IN FLOOR SLABS AND PAVEMENT AREAS SHOULD PASS A PROOF-ROLL PRIOR TO PLACEMENT OF CONTROLLED FILL.
- FILL SHOULD BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND COMPACTED TO AT LEAST 95 PERCENT OF THE MATERIAL'S MAXIMUM DRY DENSITY. FILL SHOULD BE MOISTURE CONDITIONED WITHIN 2% BELOW TO 2% ABOVE THE OPTIMUM MOISTURE AS DETERMINED BY ASTM D 698.
- REFER TO GEOTECHNICAL REPORT FOR SELECT FILL AND GENERAL FILL SPECIFICATIONS AND CHEMICAL STABILIZED AND ACCEPTABLE APPLICATION LOCATIONS. RE-USE OF ON-SITE SOILS OF FILL SHALL BE SAMPLED BY GEOTECHNICAL ENGINEER AND LABORATORY TESTED TO CONFIRM THE APPARENT CLASSIFICATION OF THESE SOILS AND TO DETERMINE TARGET MOISTURE CONTENT AND DENSITY FOR THE DIFFERENT MATERIALS, PRIOR TO REUSE OR REWORKING IN PLACE. SEE GEOTECH REPORT FOR ADDITIONAL INFORMATION.
- EARTHWORKS SHALL BE PERFORMED IN SUCH A MANNER TO MINIMIZE PONDING WATER ON THE SUBGRADE. SITE SHALL MAINTAIN DRAINAGE AT ALL TIMES. MOISTURE CONTENT OF SOIL SHOULD BE MAINTAINED NEAR OPTIMUM DURING CONSTRUCTION.
- ROADSIDE HAZARDS SHALL BE COMPLETELY BARRICADED AROUND THEIR PERIMETER FOR THE SAFETY OF PEDESTRIANS AND VEHICLES.
- ONLY THE AMOUNT OF TRENCH THAT CAN BE BACK FILLED OR SURFACED IN (2) DAYS SHALL BE ALLOWED OPEN UNLESS APPROVED BY OWNER'S REPRESENTATIVE.
- CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT EXISTING STRUCTURES/PAVEMENTS FROM DAMAGE DURING CONSTRUCTION AND PREVENT MIGRATION OF DEBRIS, TRASH, AND SEDIMENT.
- CONTRACTOR SHALL TAKE PRECAUTION TO AVOID DAMAGE TO THE EXISTING STORM WATER DRAINAGE STRUCTURES AND SHOULD BE KEPT FUNCTIONAL.
- TRAFFIC CONTROL & ADVANCED WARNING FOR WORK THAT AFFECTS THE LOCAL ROAD AND STATE HIGHWAYS ADJACENT TO THE SITE: CONTRACTOR SHALL EMPLOY THE SERVICES OF A QUALIFIED TRAFFIC CONTROL SUBCONTRACTOR, FAMILIAR WITH OKLAHOMA DEPARTMENT OF TRANSPORTATION REQUIREMENTS FOR ADVANCED WARNING SIGNAGE & LANE CLOSURES AS REQUIRED TO CONSTRUCT THE ELEMENTS OF THE PROJECT THAT ARE DIRECTLY CONNECTED TO THE HIGHWAYS. THIS SHOULD ALSO INCLUDE SIGNAGE OR ADVANCED WARNING DEVICES TO WARN THE TRAVELING PUBLIC OF CONSTRUCTION TRAFFIC ENTERING/EXITING THE SITE. COST FOR SAID ADVANCED WARNING AND SIGNAGE SHALL BE INCLUDE IN PRICE BID. CONSTRUCTION SIGNAGE DETAILS INCLUDED IN THIS SET ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHOULD CONSULT WITH HIS TRAFFIC CONTROL SUBCONTRACTOR TO DETERMINE TRAFFIC CONTROL SCOPE OF WORK PRIOR TO BID.

**MATERIALS NOTES**

- ALL UTILITY MATERIALS & METHODS SHALL BE AS APPROVED BY CITY OF TULSA. MATERIALS LISTED BELOW ARE PROVIDED FOR REFERENCE PRIOR TO CITY OF TULSA REVIEW.
- ALL NEW WATER LINE PIPING SHALL BE DUCTILE IRON PIPE OR AWWA C900, DR14, CLASS 200 AS APPROVED AND PERMITTED BY CITY OF TULSA.
- GRAVITY SANITARY SEWER PIPE SHALL BE PVC SDR 26 ASTM D3034. PRESSURE SEWER PIPE SHALL BE PVC ASTM D2241 SDR 21 OR APPROVED EQUAL AND AS APPROVED BY CITY OF TULSA.
- ALL FITTINGS (TEES, BENDS, VALVES, ETC.) SHALL BE DUCTILE IRON MECHANICAL JOINTS (MJ) AND RESTRAINED (RJ). RESTRAINTS SHALL BE "MIDCO" AS MANUFACTURED BY MIDLAND MANUFACTURING COMPANY OR APPROVED EQUAL. THRUST BLOCKING SHALL ALSO BE REQUIRED. ALL FITTINGS TO BE POLY WRAPPED.
- TAPPING SLEEVES SHALL BE SMITH-BLAIR 665 STAINLESS STEEL OR EQUAL. 200PSI.
- STORM SEWER PIPING SHALL BE EITHER SDR 35 PVC PIPE (UP TO 15" DIAMETER) OR CORRUGATED HDPE UNLESS NOTED OTHERWISE ON PLANS. PIPES SHALL BE WATER & SOIL TIGHT.

**UTILITY NOTES**

- ALL SANITARY SEWER AND PUBLIC WATER SUPPLY IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARD CONSTRUCTION SPECIFICATIONS.
- THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND SERVICES FROM DAMAGE. UTILITIES SHALL REMAIN IN SERVICE AT ALL TIMES, AND ANY DISRUPTION OF SERVICE SHALL BE AT THE CONTRACTOR'S SOLE EXPENSE.
- ALL STRUCTURES AND MANHOLES SHALL BE CONSTRUCTED ON A MINIMUM THICKNESS OF 4" OF CLEAN COMPACTED CRUSHED ROCK UNLESS OTHERWISE NOTED. SUCH BEDDING SHALL BE APPROVED PRIOR TO PLACEMENT.
- CONTRACTOR SHALL VERIFY PROPOSED WATER LINE ELEVATIONS TO INSURE NO CONFLICTS WITH EXISTING OR PROPOSED UTILITIES. MINOR FIELD ADJUSTMENTS NECESSARY TO AVOID CONFLICTS SHALL BE COORDINATED WITH THE APPROVAL OF THE ENGINEER.
- CONTRACTOR SHALL VERIFY EXISTING PIPE SIZE, TYPE AND LOCATION PRIOR TO ORDERING MATERIALS, TO INSURE PROPER CONNECTION.
- ALL BURIED FITTINGS, SUCH AS BENDS, TEES, ETC., SHALL BE BLOCKED FOR THRUST, AS SHOWN ON THE STANDARD DETAIL DRAWING. THIS REQUIREMENT SHALL INCLUDE ALL PRESSURE PIPING AND LOW HEAD (GRAVITY) PIPING. COST SHALL BE INCLUDED IN OTHER ITEMS OF WORK.
- MINIMUM DEPTH OF COVER SHALL BE 36 INCHES UNLESS OTHERWISE NOTED.
- NO. 12 COPPER WIRE ( TRACER WIRE ) AND MYLAR DETECTABLE MARKING TAPE SHALL BE BURIED 12" ABOVE THE TOP OF ALL LINES.
- WATER LINE SHALL BE PRESSURE & LEAK TESTED IN ACCORDANCE WITH SPECIFICATIONS.
- WATER LINE SHALL BE DISINFECTED IN ACCORDANCE WITH SPECIFICATIONS PRIOR TO USE.
- DEFLECTION OF WATER LINE SHALL NOT EXCEED MANUFACTURERS RECOMMENDATION.
- ALL SERVICE LINES CROSSINGS & TAPS SHALL BE INSTALLED PRIOR TO PAVING.
- WATERLINES AND SANITARY SEWER LINES SHALL MAINTAIN A MINIMUM SEPARATION OF 10' HORIZONTAL AND 2' VERTICAL.
- GRAVITY PIPE LENGTHS MEASURED FROM CENTER OF MANHOLE TO CENTER OF MANHOLE.
- GRAVITY SEWER SHALL BE LEAK & DEFLECTION TESTED IN ACCORDANCE W/ SPECIFICATIONS.
- ALL MANHOLE TOP OF RIM ELEVATIONS SHOWN SHALL BE VERIFIED BY CONTRACTOR IN THE FIELD TO FIT GRADE.
- THE PLANS HAVE BEEN PREPARED TO SHOW THE APPROXIMATE LOCATION OF EXISTING KNOWN UTILITIES. THE CONTRACTOR SHALL CONTACT OKIE, EACH RESPECTIVE UTILITY COMPANY AND THE PROJECT OWNER TO DETERMINE THE EXACT LOCATION OF UNDERGROUND UTILITIES PRIOR TO EXCAVATION. ANY CHANGE IN ALIGNMENT OR GRADE CAUSED BY INTERFERING UTILITIES SHALL BE MADE BY THE CONTRACTOR AT NO COST TO THE OWNER AND THE ENGINEER NOTIFIED.
- DEPTHS OF ANY EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL AT HIS OWN EXPENSE UNCOVER AND VERIFY THE LOCATION AND ELEVATION OF EXISTING UTILITIES IN ADVANCE OF THE CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ANY TAPS, CROSS-OVERS, VALVES, ETC. AS REQUIRED TO FLUSH, HYDROSTATIC TEST AND DISINFECT ALL NEW LINES PRIOR TO BEING PLACED IN SERVICE.
- CONTRACTOR SHALL COORDINATE ANY ACTIVITIES INVOLVING WATER & SANITARY SEWER SYSTEM WITH UTILITY AND OWNER'S REPRESENTATIVE. CONTRACTOR SHALL CONTACT UTILITY TO COORDINATE RELOCATION OR REPLACEMENT OF EXISTING WATER METER TO A LOCATION TO CLEAR CONSTRUCTION.
- UTILITY TRENCH PENETRATIONS INTO OR UNDER BUILDING FOUNDATION SHALL BE SEALED OR PLUGGED PER DETAIL PROVIDED.
- CONTRACTOR SHALL PROVIDE OR OTHERWISE PAY ANY BUILDING PERMITS, TAP/METER FEES, CONNECTION FEES ETC. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY TO DETERMINE ANY SPECIFIC REQUIREMENTS.

**UTILITY CONTACTS:**

UTILITY	CONTACT	NAME	PHONE
POWER	AEP	BILLY WOOD	918-691-0959
SEWER	CITY OF TULSA	ALLEN HOLDMAN	918-596-2569
GAS	ONG	LOGAN	918-831-8385
WATER	CITY OF TULSA	ALLEN HOLDMAN	918-596-2569

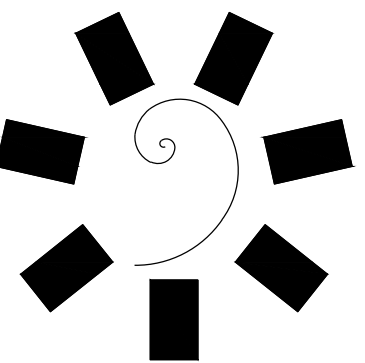
**EXISTING LEGEND**

BC	BOTTOM OF CURB
BM	BENCHMARK
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
DO	DOOR OPENING
DO-OH	DOOR OPENING-OVERHEAD
DS	DOWN SPOUT
EM	ELECTRIC METER
FH	FIRE HYDRANT
FL	FLOW LINE
GM	GAS METER
ICV	IRRIGATION CONTROL VALVE
LP	LIGHT POLE
OE	OVERHEAD ELECTRIC
PP	POWER POLE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
SD	STORM DRAIN
SS	SANITARY SEWER
SSCO	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
TC	TOP OF CURB
TPED	TELEPHONE PEDESTAL
TR	TOP OF RIM
UC	UNDERGROUND CABLE
UE	UNDERGROUND ELECTRIC
UTMH	UTILITY MANHOLE
WL	WATER LINE
WM	WATER METER
WV	WATER VALVE
XFMR	ELECTRIC TRANSFORMER
W	WATER LINE
OHE	OVERHEAD ELECTRIC LINE
UGE	UNDERGROUND ELECTRIC LINE
T	TELEPHONE LINE
SS	SANITARY SEWER LINE
SD	STORM LINE
PL	EASEMENT LINE
XXX	PROPERTY LINE
---	MAJOR CONTOUR
---	MINOR CONTOUR
---	TREE LINE

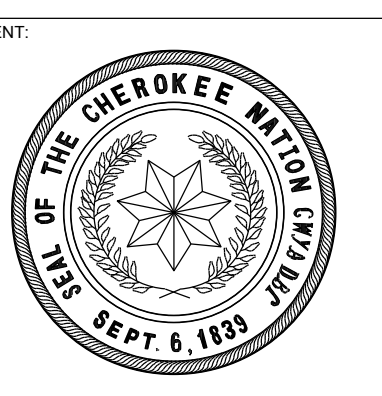
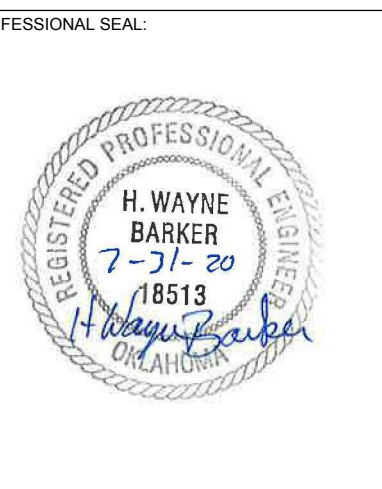
	ASPHALT PAVING
	GRAVEL PAVING
	CONCRETE PAVING

**PROPOSED LEGEND:**

	PROPOSED WATER METER
	PROPOSED GATE VALVE
	PROPOSED FIRE HYDRANT
	PROPOSED REMOTE FDC
	PROPOSED CLEAN OUT
	PROPOSED GAS METER
	PROPOSED LIGHT POLES
	PROPOSED WATER LINE
	PROPOSED SAN. SEWER LINE
	PROPOSED GAS LINE
	SIDEWALK PAVING



**James R. Childers Architect, Inc.**  
45 South 4th Street  
Ft. Smith, AR 72301  
479-783-2480  
www.childersarchitect.com



**CHEROKEE NATION TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN

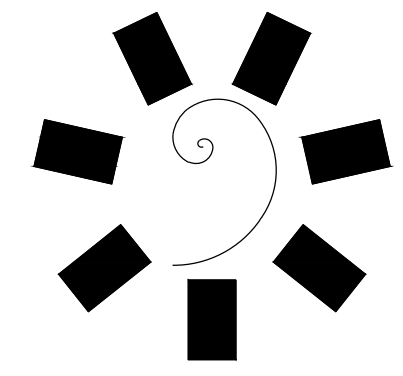
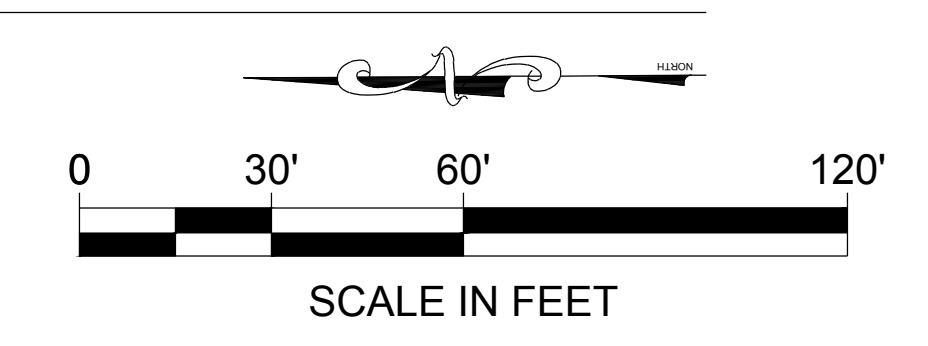
PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

SHEET NUMBER:  
**C002**  
GENERAL NOTES

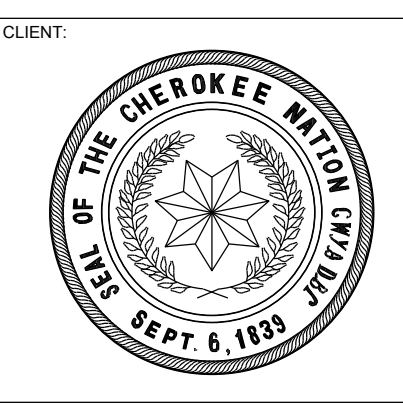




**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72801  
479-783-2480  
www.childersarchitect.com



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EXP. 06/30/2022



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN

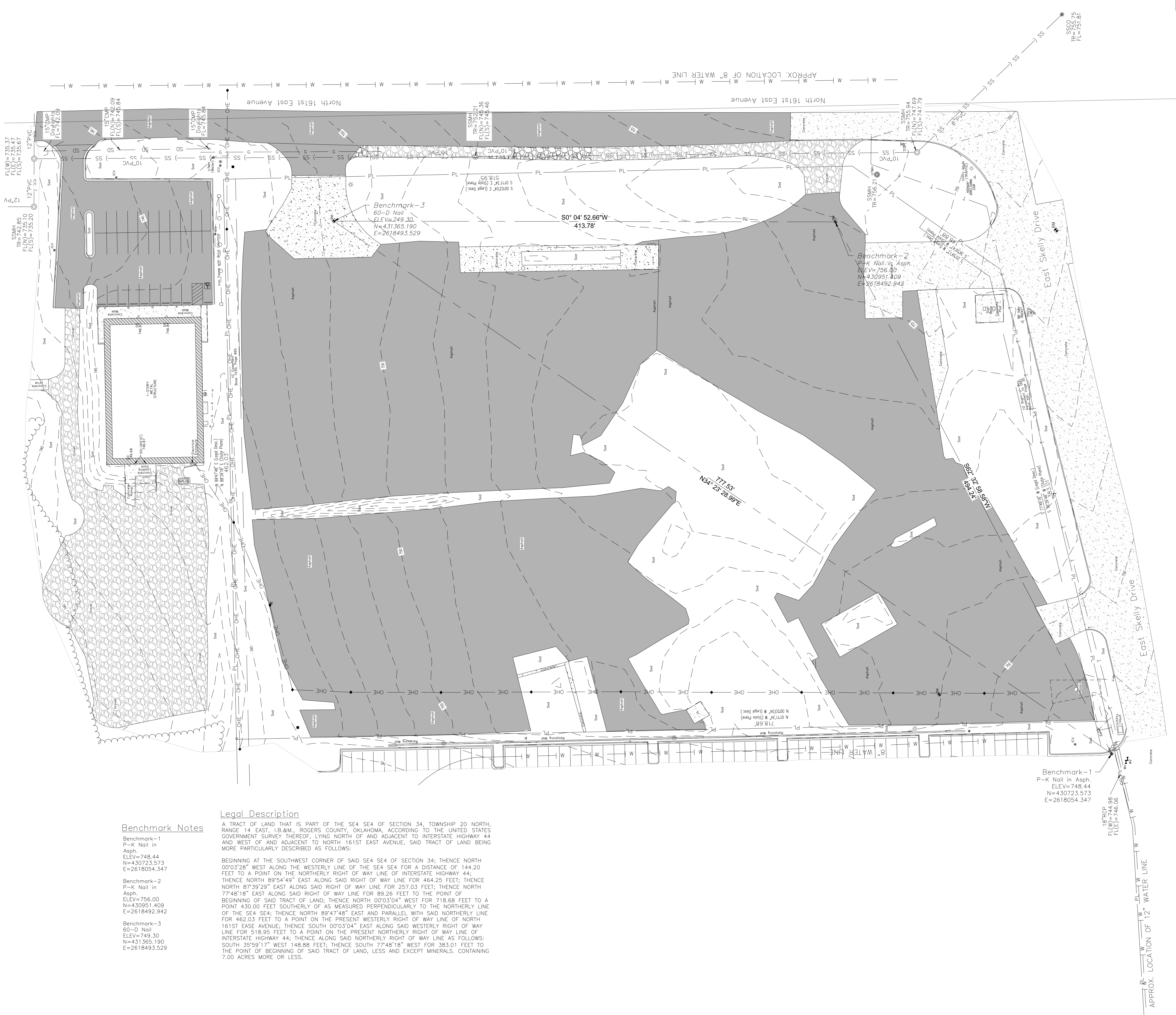
PROJECT PHASE:  
**CONSTRUCTION  
DOCUMENTS**

#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20      JOB NUMBER: 18-001.10

SHEET NUMBER:  
**CS100**

OVERALL EXISTING  
SITE PLAN



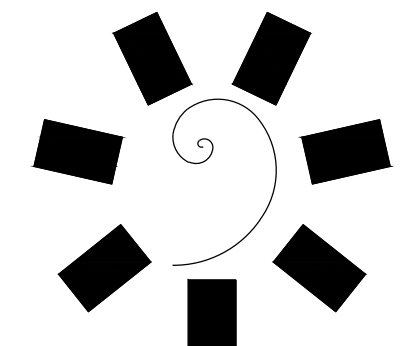
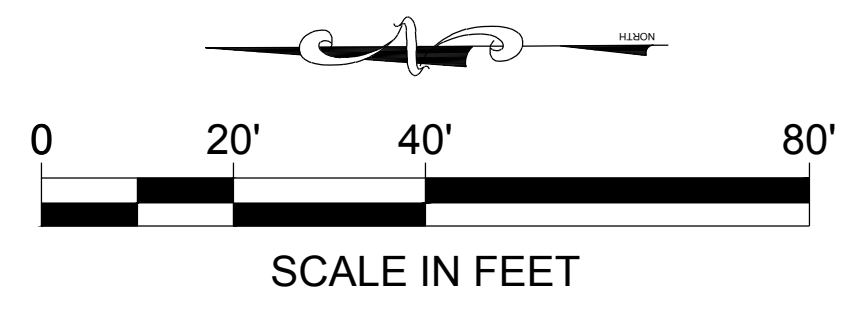
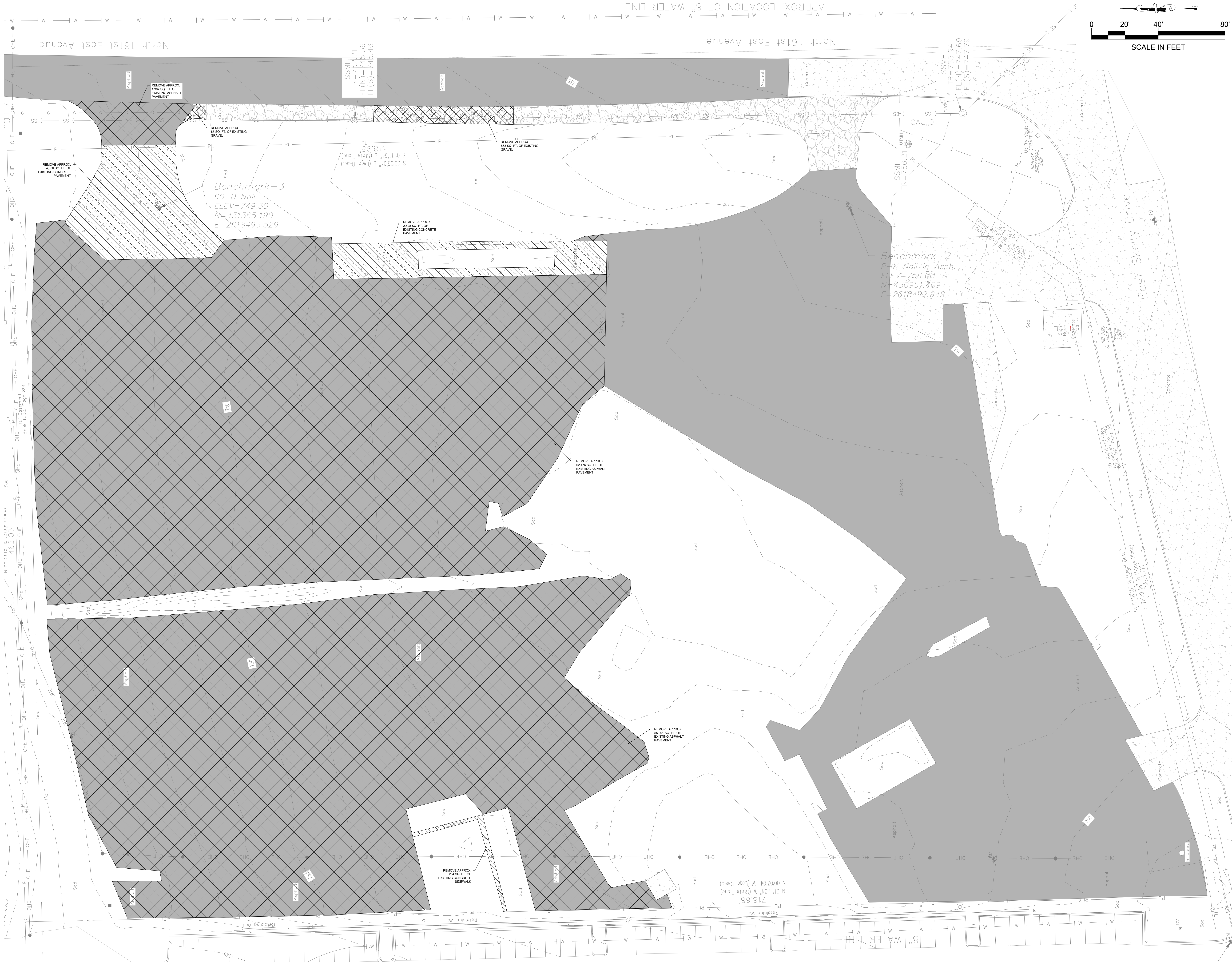
**Benchmark Notes**

- Benchmark-1**  
P-K Nail in  
Asph.  
ELEV=748.44  
N=430723.573  
E=2618054.347
- Benchmark-2**  
P-K Nail in  
Asph.  
ELEV=756.00  
N=430951.809  
E=2618492.942
- Benchmark-3**  
60-D Nail  
ELEV=749.30  
N=431365.190  
E=2618493.529

**Legal Description**

A TRACT OF LAND THAT IS PART OF THE SE4 SE4 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 14 EAST, 1B-8M, ROGERS COUNTY, OKLAHOMA, ACCORDING TO THE UNITED STATES GOVERNMENT SURVEY THEREOF, LYING NORTH OF AND ADJACENT TO INTERSTATE HIGHWAY 44 AND WEST OF AND ADJACENT TO NORTH 161ST EAST AVENUE, SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
  
BEGINNING AT THE SOUTHWEST CORNER OF SAID SE4 SE4 OF SECTION 34; THENCE NORTH 00°03'28" WEST ALONG THE WESTERLY LINE OF THE SE4 SE4 FOR A DISTANCE OF 144.20 FEET TO A POINT ON THE NORTHERLY RIGHT OF WAY LINE OF INTERSTATE HIGHWAY 44; THENCE NORTH 89°54'49" EAST ALONG SAID RIGHT OF WAY LINE FOR 464.25 FEET; THENCE NORTH 87°39'29" EAST ALONG SAID RIGHT OF WAY LINE FOR 257.03 FEET; THENCE NORTH 77°48'18" EAST ALONG SAID RIGHT OF WAY LINE FOR 89.26 FEET TO THE POINT OF BEGINNING OF SAID TRACT OF LAND; THENCE NORTH 00°03'04" WEST FOR 718.68 FEET TO A POINT 430.00 FEET SOUTHERLY OF AS MEASURED PERPENDICULARLY TO THE NORTHERLY LINE OF THE SE4 SE4; THENCE NORTH 89°47'46" EAST AND PARALLEL WITH SAID NORTHERLY LINE FOR 462.03 FEET TO A POINT ON THE PRESENT WESTERLY RIGHT OF WAY LINE OF NORTH 161ST EAST AVENUE; THENCE SOUTH 00°03'04" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR 518.95 FEET TO A POINT ON THE PRESENT NORTHERLY RIGHT OF WAY LINE OF INTERSTATE HIGHWAY 44; THENCE ALONG SAID NORTHERLY RIGHT OF WAY LINE AS FOLLOWS: SOUTH 35°59'17" WEST 148.88 FEET; THENCE SOUTH 77°48'18" WEST FOR 383.01 FEET TO THE POINT OF BEGINNING OF SAID TRACT OF LAND, LESS AND EXCEPT MINERALS, CONTAINING 7.00 ACRES MORE OR LESS.

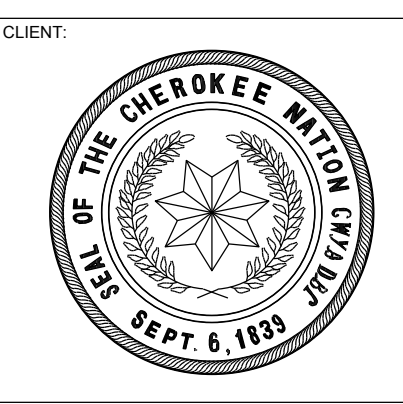




**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72501  
479-783-2480  
www.childersarchitect.com



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**Barker & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
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**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

**KEY PLAN**

**PROJECT PHASE:**  
CONSTRUCTION DOCUMENTS

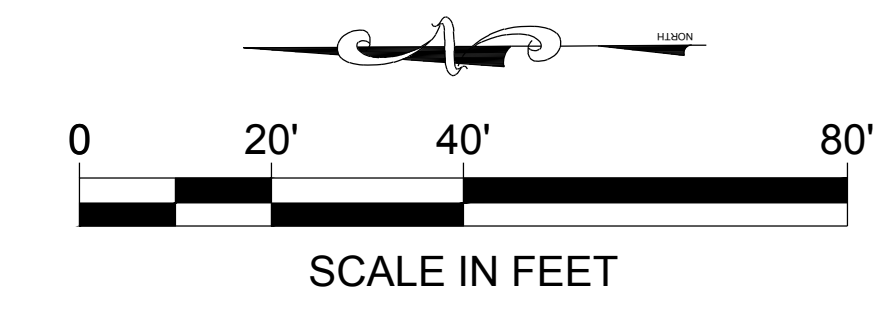
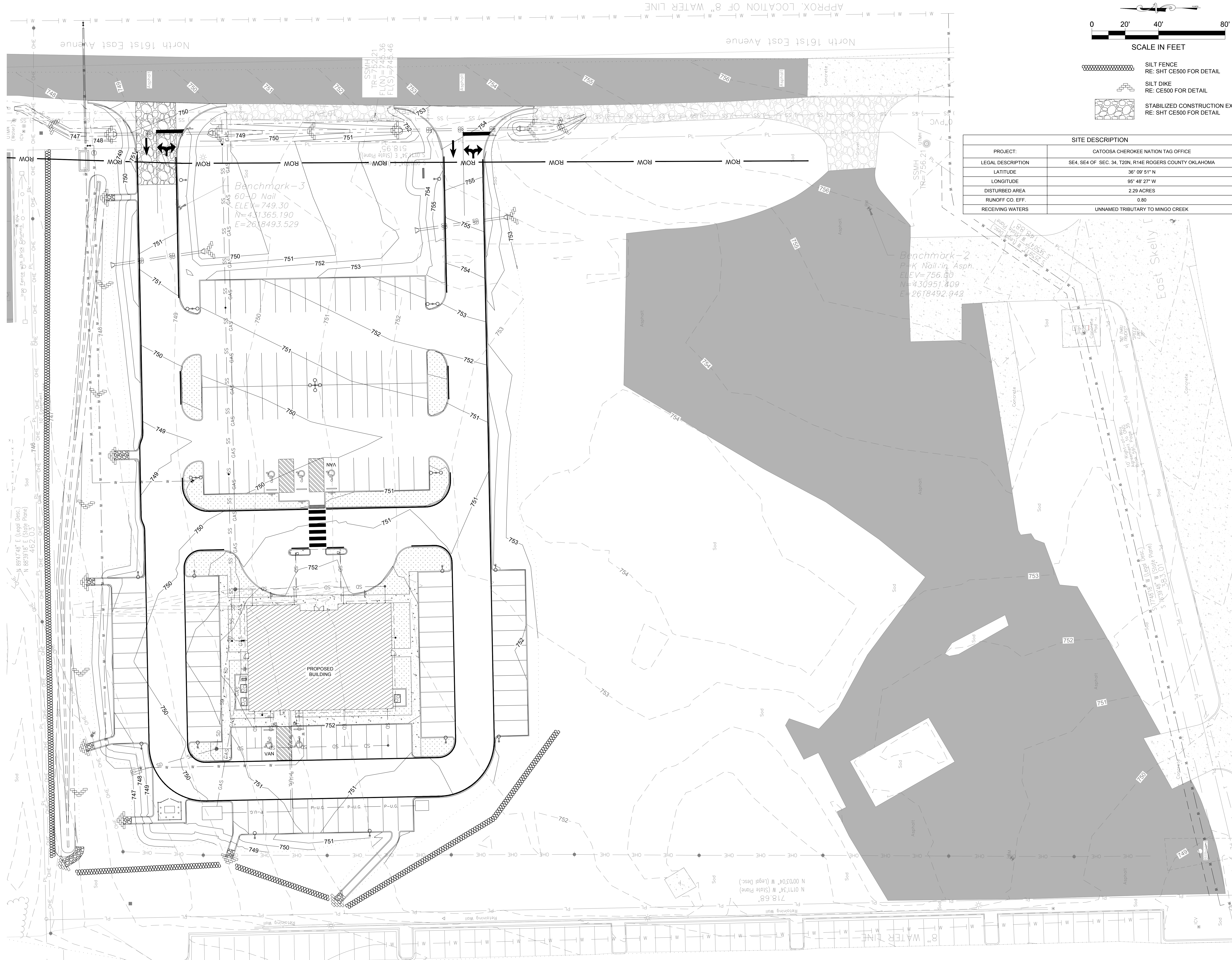
#	DATE	REVISIONS DESCRIPTION




**DATE:** 07/31/20 **JOB NUMBER:** 18-01.10

**SHEET NUMBER:** CS101

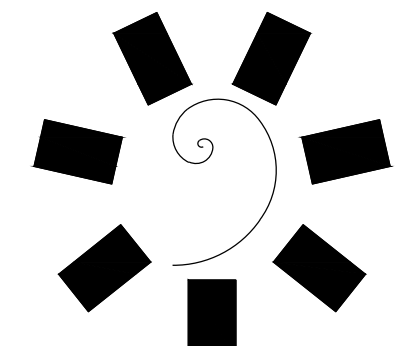
**DEMOLITION PLAN**





-  SILT FENCE  
RE: SHT CE500 FOR DETAIL
-  SILT DIKE  
RE: CE500 FOR DETAIL
-  STABILIZED CONSTRUCTION EXIT  
RE: SHT CE500 FOR DETAIL

SITE DESCRIPTION	
PROJECT:	CATOOSA CHEROKEE NATION TAG OFFICE
LEGAL DESCRIPTION	SE4, SE4 OF SEC. 34, T20N, R14E ROGERS COUNTY OKLAHOMA
LATITUDE	36° 09' 51" N
LONGITUDE	95° 48' 27" W
DISTURBED AREA	2.29 ACRES
RUNOFF CO. EFF.	0.80
RECEIVING WATERS	UNNAMED TRIBUTARY TO MINGO CREEK



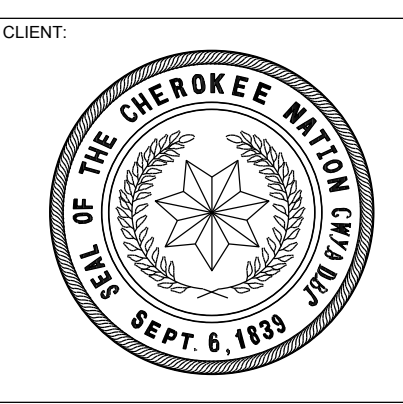
**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Ft. Smith, AR 72301  
479-783-2480  
www.childersarchitect.com



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**Banner & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
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CD# 08/30/2022



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

#	DATE	REVISIONS DESCRIPTION

DATE: **07/31/20** JOB NUMBER: **18-01.10**

SHEET NUMBER: **CE100**

**EROSION CONTROL PLAN**



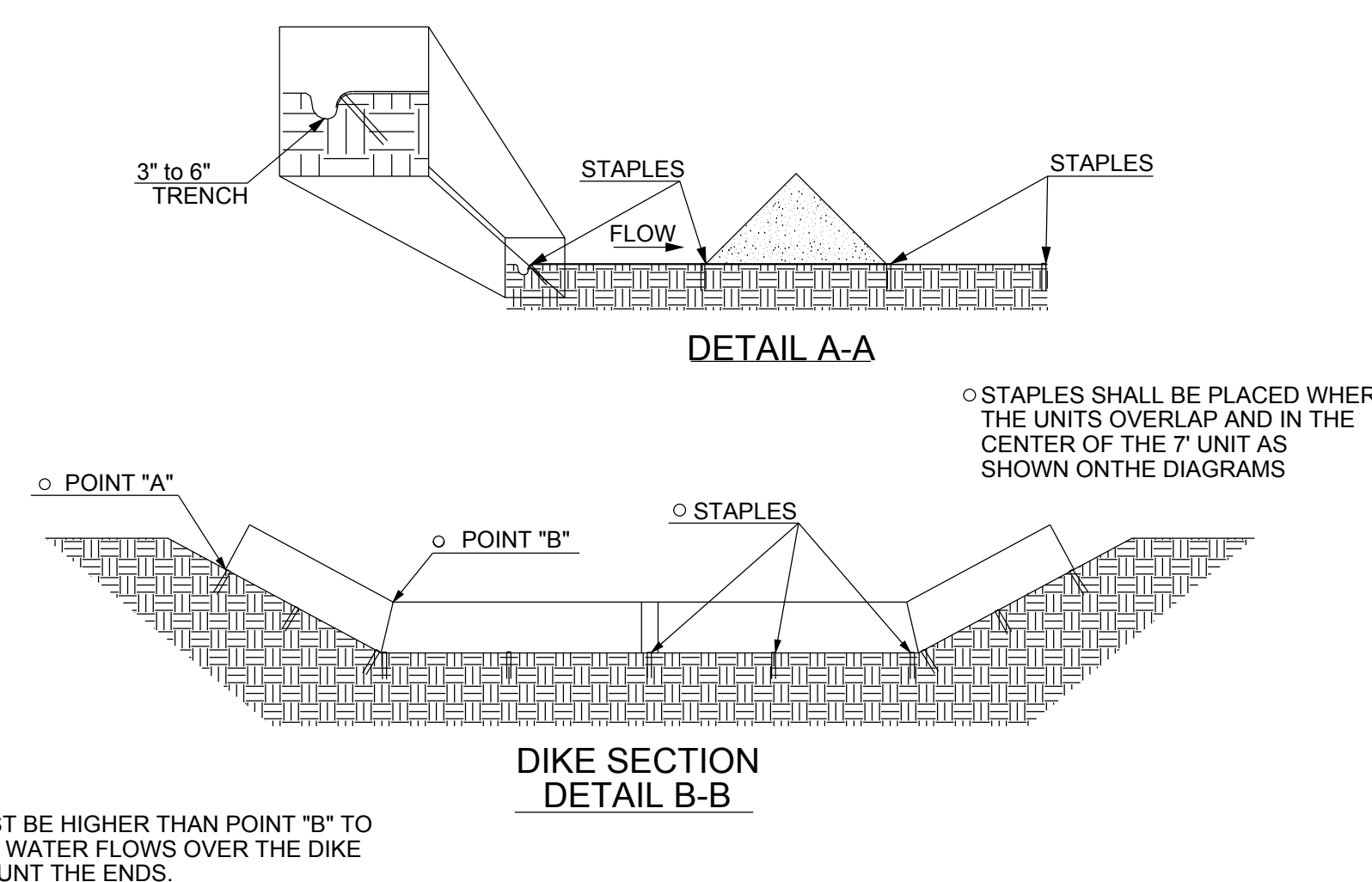
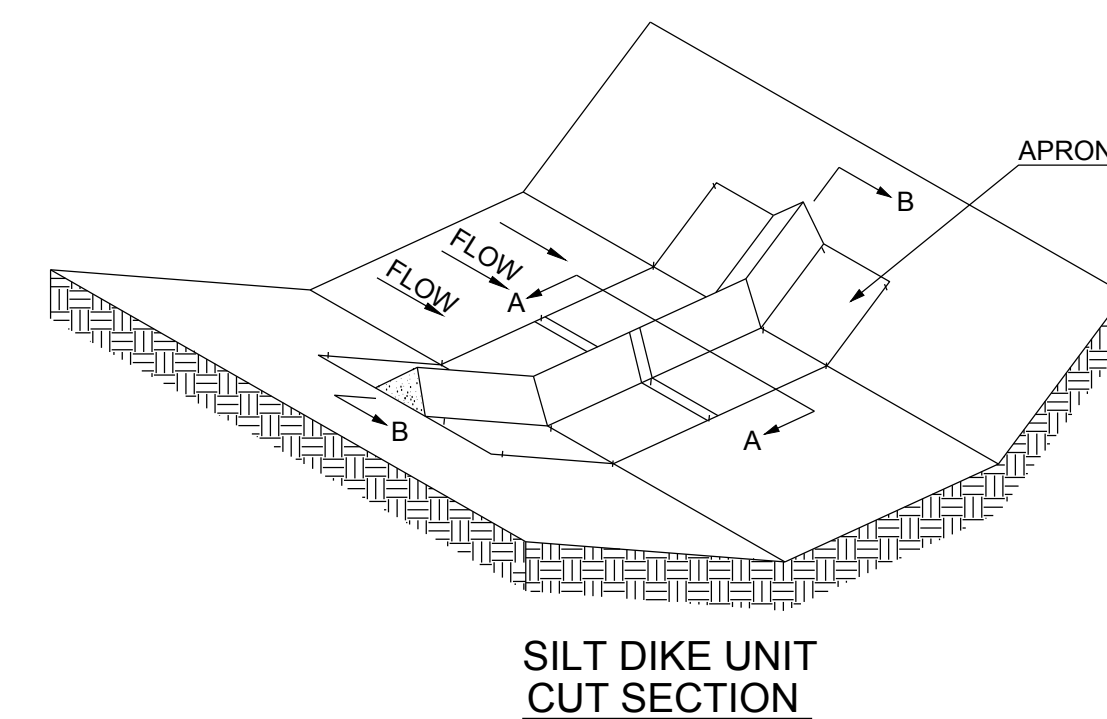
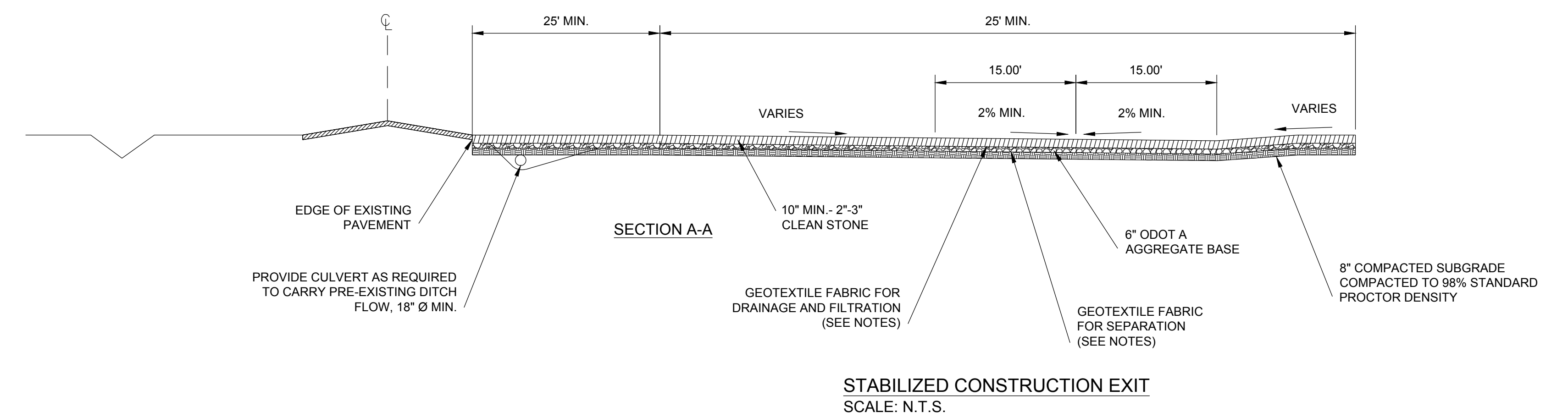
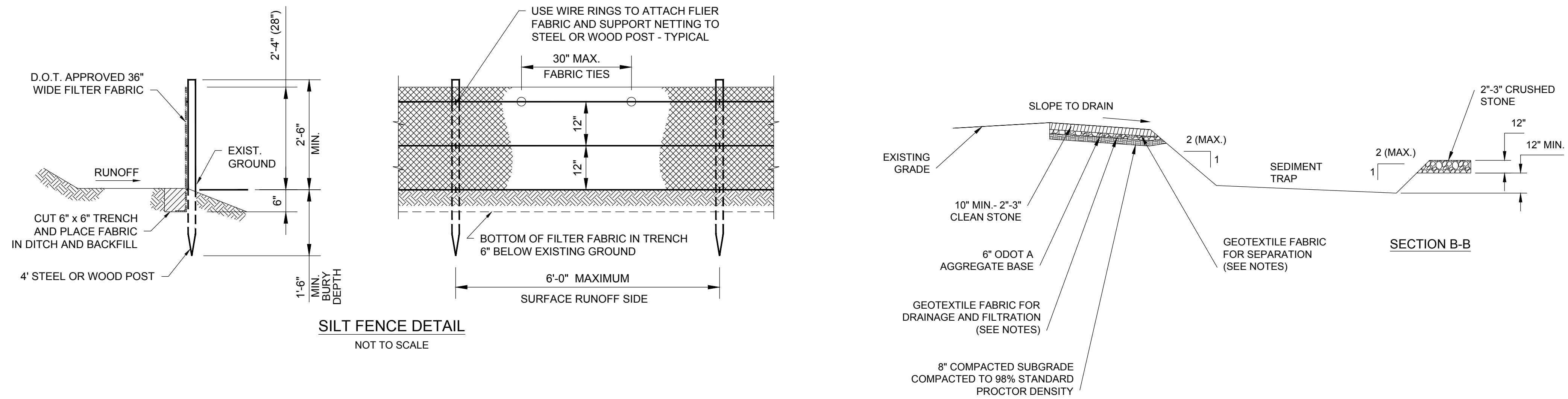
**GENERAL EROSION NOTES**

1. THE STORM WATER POLLUTION PREVENTION PLAN IS COMPRISED OF THIS DRAWING (SITE MAP), THE STANDARD DETAILS, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
2. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS.
3. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST OF OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION
4. BEST MANAGE PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
5. SITE MAP MUST CLEARLY DELINEATE ALL STATE WATERS, PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATER OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
6. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
7. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES. CONTRACTOR SHALL CONSTRUCT TEMPORARY BERM ON DOWN STREAM SIDES.
8. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
9. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
10. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
11. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS, MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
12. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
13. ALL DENUDED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE, MUST BE STABILIZED TEMPORARY WITH THE USE OF FAST-GERMINATING ANNUAL GRASS/GRAIN VARIETIES, STRAW/HAY MULCH, WOOD CELLULOSE FIBERS, TACKIFIERS NETTING OR BLANKETS AS SHOWN ON SITE MAP.
14. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY STABILIZED AS SHOWN ON THE PLANS. THESE AREAS SHALL BE SEEDED, SODDED, AND/OR VEGETATED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN.
15. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISION MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE ONLY USE INGRESS/EGRESS LOCATIONS AS PROVIDED.
16. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAY OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
17. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN DETENTION POND AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
18. ON-SITE AND OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
19. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
20. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION AND SEDIMENT CONTROL MEASURES (SILT FENCES, ETC.) TO PREVENT EROSION AND POLLUTANT DISCHARGE.
21. GENERAL CONTRACTOR IS TO DESIGNATE/IDENTIFY AREAS ON THE SITE MAPS, INSIDE OF THE LIMITS OF DISTURBANCE, FOR WASTE DISPOSAL AND DELIVERY AND MATERIAL STORAGE.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING & SUBMITTING NOTICE OF INTENT(N.O.I.) & NOTICE OF TERMINATION (N.O.T.).
23. CONTRACTOR TO LIMIT DISTURBANCE OF SITE IN STRICT ACCORDANCE WITH EROSION CONTROL SEQUENCING SHOWN ON THIS PLAN. NO UNNECESSARY OR IMPROPERLY SEQUENCED CLEARING AND/OR GRADING SHALL BE PERMITTED.

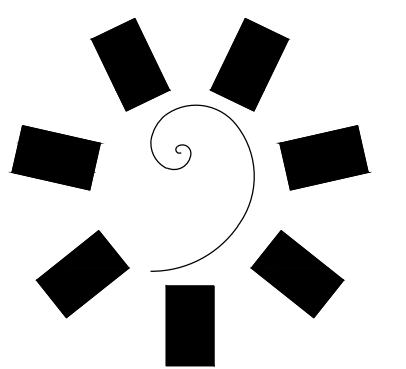
**BMP MAINTENANCE EROSION NOTES**

ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

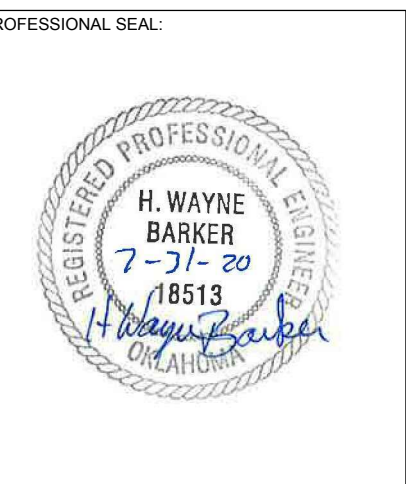
1. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEDED AS NEEDED.
3. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL DE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
4. THE CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-A-WAY. THIS MAY REQUIRED PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
5. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
6. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
7. PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.



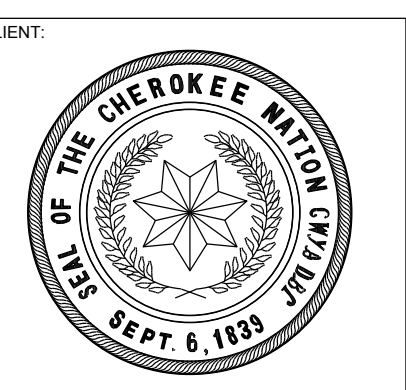
**TRIANGULAR SILT DIKE INSTALLATION FOR ROADWAY DITCH OR DRAINAGE DITCH**  
NOT TO SCALE



**James R. Childers Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
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**Barker & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
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**CHEROKEE NATION TAG OFFICE**  
CATOOSA, OKLAHOMA

**KEY PLAN**

**PROJECT PHASE:**  
CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

**DATE:** 07/31/20 **JOB NUMBER:** 18-01.10

**SHEET NUMBER:** CE500

**EROSION CONTROL NOTES & DETAILS**











Summary Discharge							
Discharge Point	Flows Q=CiA						
	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR	
	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	
Existing	1	10.780	12.990	15.090	18.210	19.500	21.710
	2	1.697	2.030	2.345	2.831	3.010	3.335
Proposed	1	9.583	12.168	13.703	16.083	17.812	19.493
	2	1.648	2.097	2.365	2.776	3.082	3.374

OVERALL DRAINAGE TOTALS SUMMARY						
Discharge Point	Flows Q=CiA					
	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.
Existing	12.477	15.020	17.435	21.041	22.510	25.045
Proposed	11.231	14.265	16.068	18.859	20.894	22.867

Note: Existing site was mostly paved consisting mainly impervious area. Proposed site added green space and therefore impervious area is less then proposed condition reducing runoff.

LAND USAGE			
Existing		Proposed	
Impervious	Pervious	Impervious	Pervious
Acre	Acre	Acre	Acre
3.43	1.44	2.43	2.44

ODOT RUNOFF COEFFICIENTS		
Type of Drainage Area	Runoff Coefficient (C)	Assumed
Lawns		
Heavy Soil, (Average 2-7%)	0.18-0.22	0.2
Streets		
Concrete	0.80-0.95	0.9
Roofs	0.75-0.95	0.9

Existing Drainage												
CHEROKEE NATION TAG OFFICE												
Drainage Area Name	Total Drainage Area Acres	Land Use	Runoff Coefficient, C	Flow Length, Lo (ft)	Slope (%)	Tc (min)	Flows Q=CiA					
							2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
							c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.
EX - 1	4.21	Lawn; Concrete	0.71 <sup>1</sup>	839.78	1.68	17.12	10.780	12.990	15.090	18.210	19.500	21.710
EX - 2A	0.31	Lawn; Concrete	0.56 <sup>2</sup>	254.73	1.72	12.95	0.712	0.854	0.989	1.194	1.273	1.413
EX - 2B	0.36	Lawn; Concrete	0.58 <sup>3</sup>	242.34	2.96	10.15	0.985	1.176	1.356	1.637	1.737	1.922
Total	4.88	---	---	---	---	---	12.477	15.020	17.435	21.041	22.510	25.045

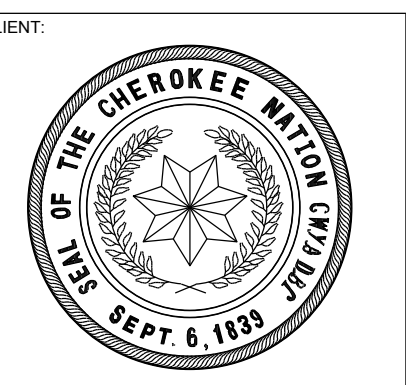
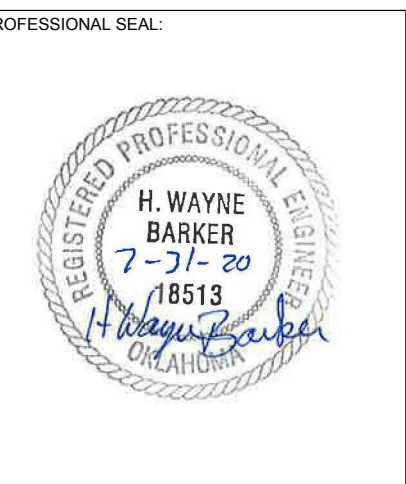
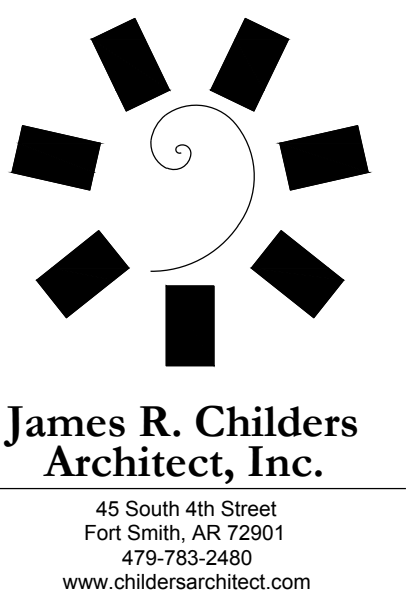
NOTE

- Composite Coefficient (Area/C) = [(3.080 x 0.90) + (1.120 x 0.20)] / 4.200
- Composite Coefficient (Area/C) = [(0.155 x 0.90) + (0.152 x 0.20)] / 0.310
- Composite Coefficient (Area/C) = [(0.195 x 0.90) + (0.168 x 0.20)] / 0.360

Proposed Drainage												
CHEROKEE NATION TAG OFFICE												
Drainage Area Name	Total Drainage Area Acres	Land Use	Runoff Coefficient, C	Flow Length, Lo (ft)	Slope (%)	Tc (min)	Flows Q=CiA					
							2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
							c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.	c.f.s.
1-A	0.403	Lawn; Concrete	0.71 <sup>1</sup>	287.35	1.57	10.24	1.225	1.559	1.758	2.064	2.292	2.509
1-BE1	0.013	Roofs	0.9	43.64	25.00	0.81	0.080	0.099	0.108	0.127	0.134	0.147
1-BE2	0.019	Roofs	0.9	39.39	25.00	0.77	0.116	0.143	0.157	0.184	0.194	0.212
1-BE3	0.012	Roofs	0.9	47.61	25.00	0.85	0.073	0.089	0.098	0.115	0.121	0.133
1-BE4	0.012	Roofs	0.9	46.80	25.00	0.84	0.073	0.089	0.098	0.115	0.121	0.132
1-BE5	0.018	Roofs	0.9	38.63	25.00	0.77	0.111	0.137	0.150	0.176	0.186	0.203
1-BE6	0.013	Roofs	0.9	44.04	25.00	0.82	0.080	0.099	0.108	0.127	0.134	0.147
1-BW1	0.014	Roofs	0.9	44.99	25.00	0.83	0.087	0.107	0.118	0.138	0.145	0.159
1-BW2	0.021	Roofs	0.9	46.50	25.00	0.84	0.130	0.159	0.175	0.206	0.217	0.237
1-BW3	0.017	Roofs	0.9	46.46	25.00	0.84	0.103	0.126	0.139	0.163	0.171	0.187
1-BW4	0.002	Roofs	0.9	16.68	25.00	0.50	0.012	0.014	0.016	0.018	0.019	0.021
1-BW5	0.002	Roofs	0.9	17.09	25.00	0.51	0.012	0.015	0.017	0.020	0.021	0.023
1-BW6	0.010	Roofs	0.9	37.91	25.00	0.76	0.062	0.076	0.084	0.099	0.104	0.114
1-BW7	0.008	Roofs	0.9	37.64	25.00	0.76	0.080	0.099	0.108	0.127	0.134	0.147
1-C	0.057	Concrete	0.9	85.39	3.09	2.28	0.349	0.431	0.476	0.558	0.593	0.649
1-D	0.071	Lawn; Concrete	0.85 <sup>2</sup>	100.02	1.78	4.00	0.340	0.425	0.472	0.554	0.598	0.655
1-E	0.082	Lawn; Concrete	0.84 <sup>3</sup>	92.20	4.09	2.81	0.407	0.506	0.561	0.658	0.705	0.772
1-F	0.078	Lawn; Concrete	0.85 <sup>4</sup>	91.97	4.06	2.70	0.412	0.512	0.568	0.666	0.714	0.781
1-G	1.238	Lawn; Concrete	0.74 <sup>5</sup>	311.53	1.88	14.17	3.289	4.218	4.785	5.617	6.311	6.906
1-H	0.690	Lawn; Concrete	0.61 <sup>6</sup>	241.53	1.55	14.99	1.198	1.539	1.748	2.052	2.310	2.528
1-I	0.279	Lawn	0.2	126.86	2.53	13.39	0.221	0.283	0.321	0.376	0.422	0.462
1-J	0.037	Concrete	0.9	45.82	2.14	1.89	0.215	0.266	0.293	0.344	0.366	0.400
1-K	1.129	Lawn; Concrete	0.28 <sup>7</sup>	439.56	2.71	22.20	0.908	1.177	1.345	1.579	1.800	1.969
2-A	0.224	Lawn; Concrete	0.5 <sup>8</sup>	510.46	1.87	19.81	0.360	0.466	0.532	0.624	0.709	0.776
2-B	0.279	Lawn; Concrete	0.65 <sup>9</sup>	274.36	2.20	10.09	0.740	0.942	1.062	1.247	1.385	1.516
2-C	0.152	Lawn; Concrete	0.71 <sup>10</sup>	164.05	3.05	6.20	0.548	0.689	0.771	0.905	0.988	1.082
Total	4.88	---	---	---	---	---	11.231	14.265	16.068	18.859	20.894	22.867

NOTE

- Composite Coefficient (Area/C) = [(0.290 x 0.90) + (0.110 x 0.20)] / 0.400
- Composite Coefficient (Area/C) = [(0.065 x 0.90) + (0.005 x 0.20)] / 0.070
- Composite Coefficient (Area/C) = [(0.075 x 0.90) + (0.008 x 0.20)] / 0.080
- Composite Coefficient (Area/C) = [(0.072 x 0.90) + (0.006 x 0.20)] / 0.080
- Composite Coefficient (Area/C) = [(0.900 x 0.90) + (0.340 x 0.20)] / 1.240
- Composite Coefficient (Area/C) = [(0.280 x 0.90) + (0.410 x 0.20)] / 0.690
- Composite Coefficient (Area/C) = [(0.108 x 0.90) + (1.020 x 0.20)] / 1.130
- Composite Coefficient (Area/C) = [(0.100 x 0.90) + (0.130 x 0.20)] / 0.230
- Composite Coefficient (Area/C) = [(0.170 x 0.90) + (0.090 x 0.20)] / 0.260
- Composite Coefficient (Area/C) = [(0.111 x 0.90) + (0.041 x 0.20)] / 0.150



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CONSTRUCTION DOCUMENTS

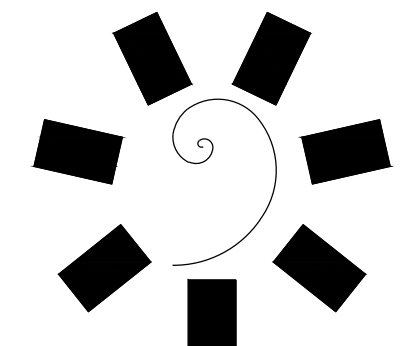
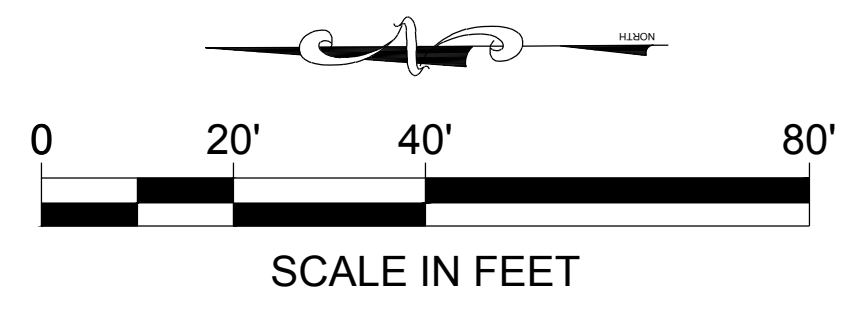
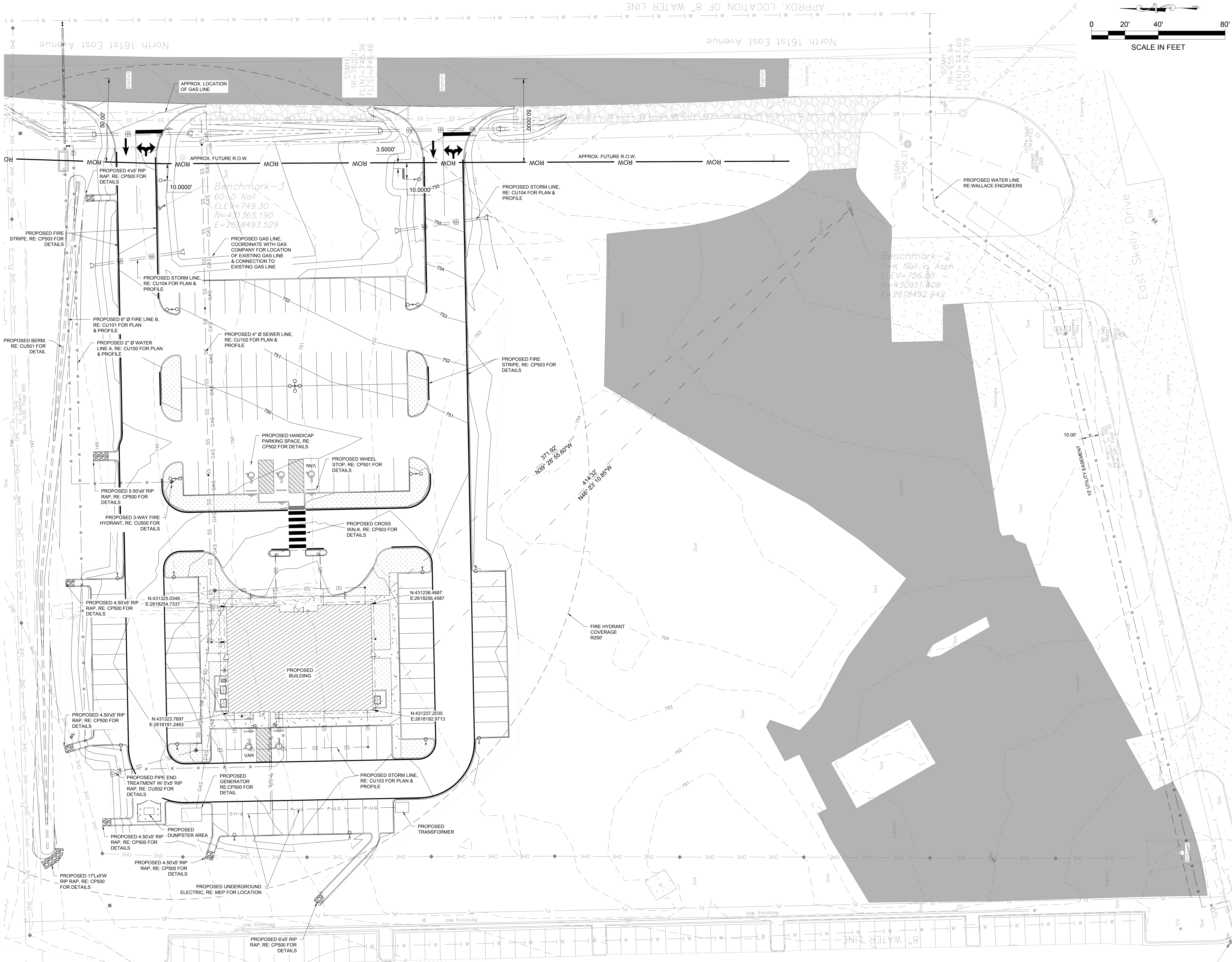
#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

SHEET NUMBER: CD102

PROPOSED DRAINAGE TABLES

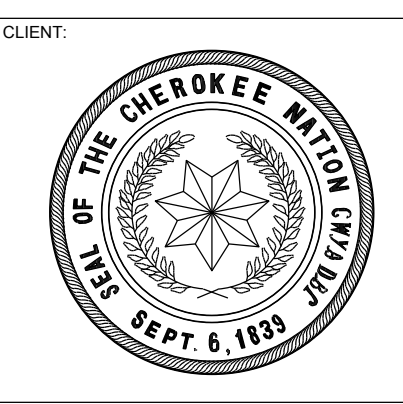




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Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.childersarchitect.com



**Banker & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK CD. 3858  
EXP. 08/30/2022



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KEY PLAN

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**CONSTRUCTION DOCUMENTS**

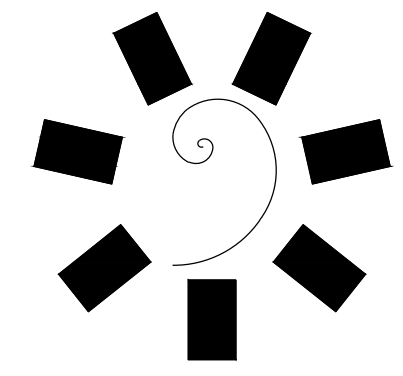
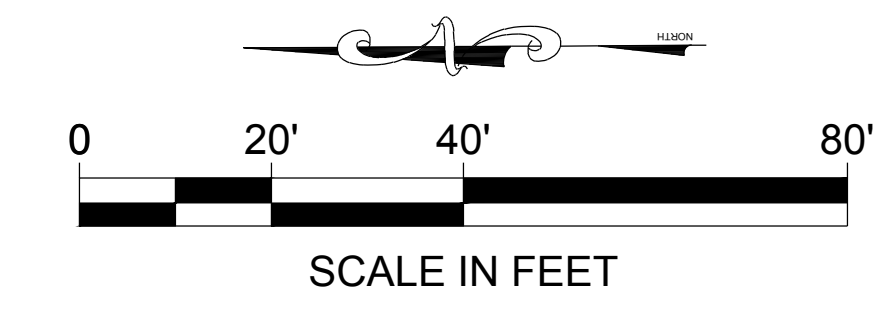
#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

SHEET NUMBER: C1100

**PROPOSED SITE PLAN**





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45 South 4th Street  
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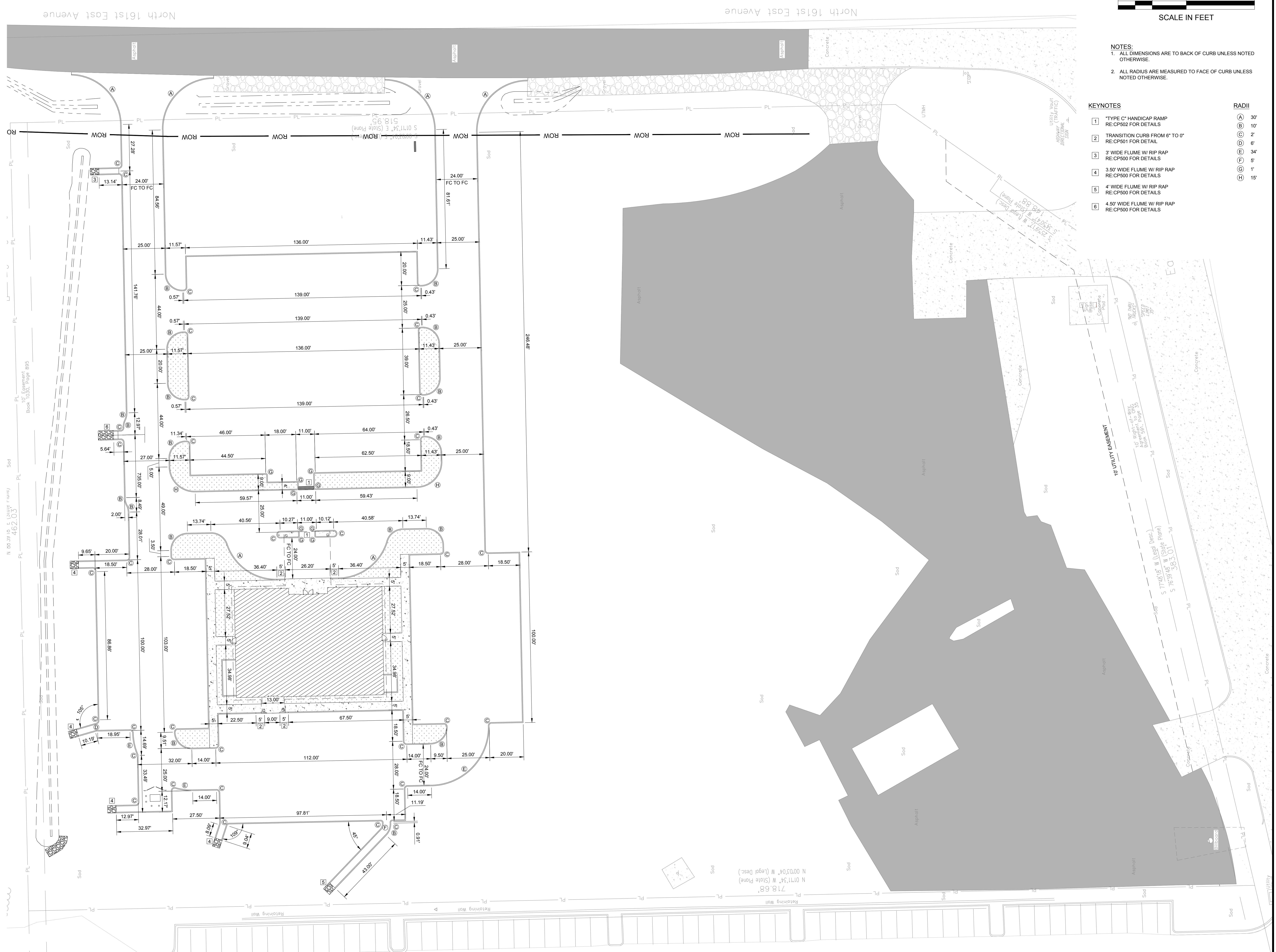
**NOTES:**  
1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.  
2. ALL RADII ARE MEASURED TO FACE OF CURB UNLESS NOTED OTHERWISE.

**KEYNOTES**

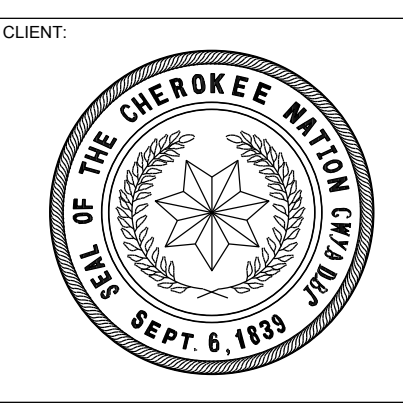
- 1 TYPE C\* HANDICAP RAMP  
RE:CP502 FOR DETAILS
- 2 TRANSITION CURB FROM 6" TO 0"  
RE:CP501 FOR DETAIL
- 3 3' WIDE FLUME W/ RIP RAP  
RE:CP500 FOR DETAILS
- 4 3.50' WIDE FLUME W/ RIP RAP  
RE:CP500 FOR DETAILS
- 5 4' WIDE FLUME W/ RIP RAP  
RE:CP500 FOR DETAILS
- 6 4.50' WIDE FLUME W/ RIP RAP  
RE:CP500 FOR DETAILS

**RADII**

- (A) 30'
- (B) 10'
- (C) 2'
- (D) 6'
- (E) 34'
- (F) 5'
- (G) 1'
- (H) 15'



**CONSULTANT LOGO**  
**Barker & Associates**  
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DURANT, OK 74701  
580 931 9045  
OK CD. 3858  
EXP. 06/30/2022



**CHEROKEE NATION  
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KEY PLAN

PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

#	DATE	REVISIONS DESCRIPTION

DATE: **07/31/20** JOB NUMBER: **18-01-10**

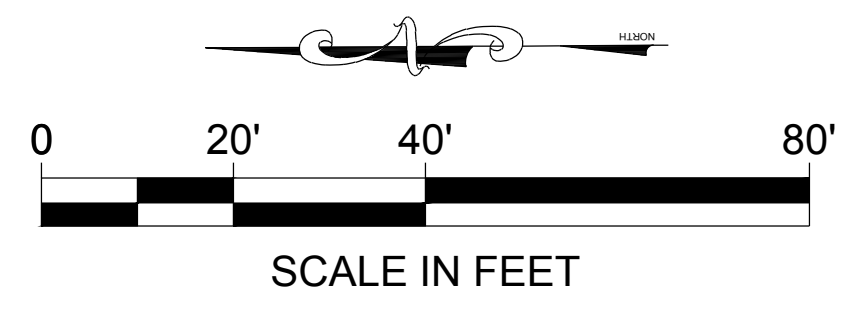
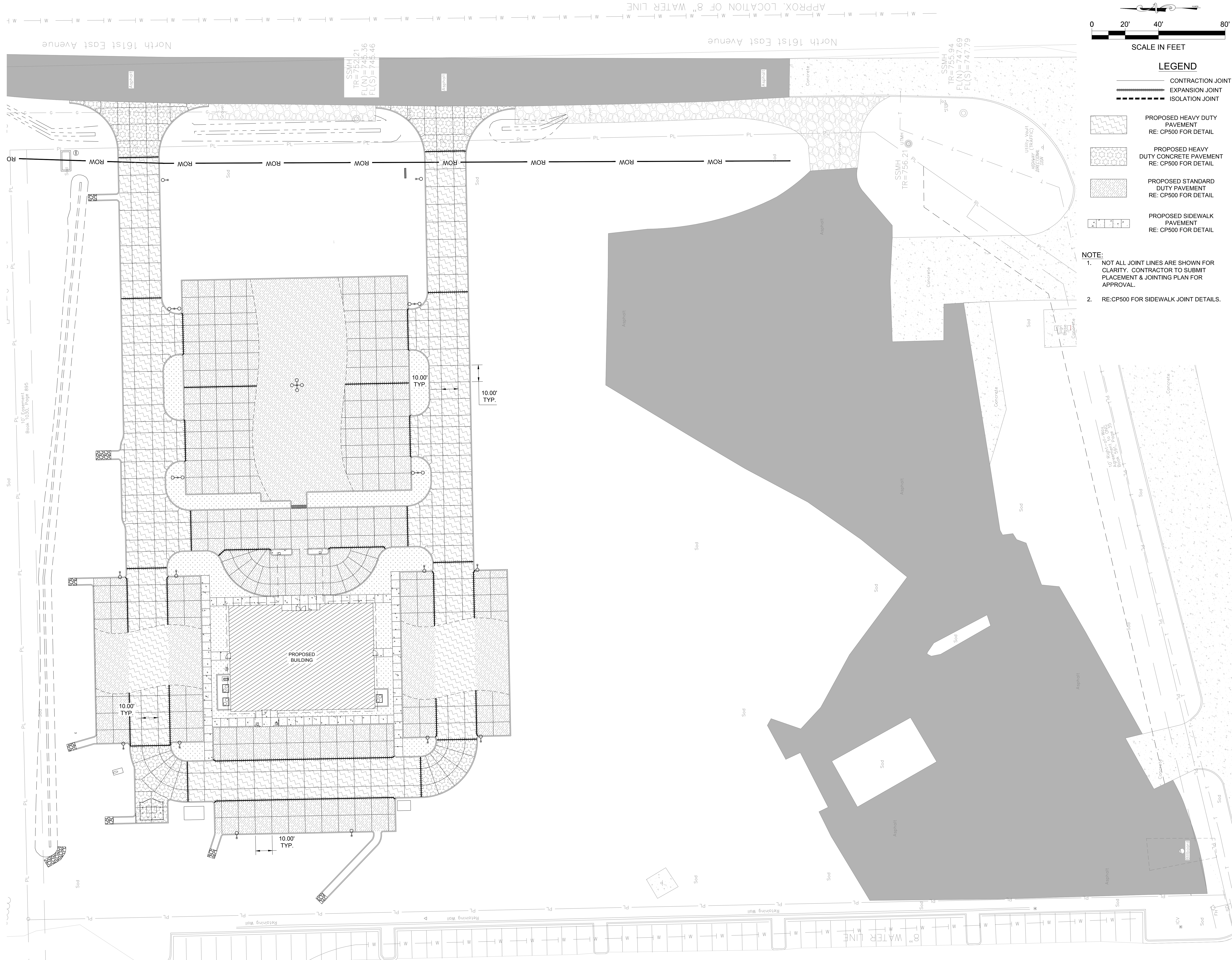
SHEET NUMBER: **CP100**

PROPOSED PAVING PLAN





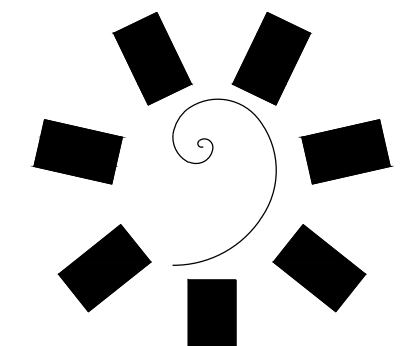




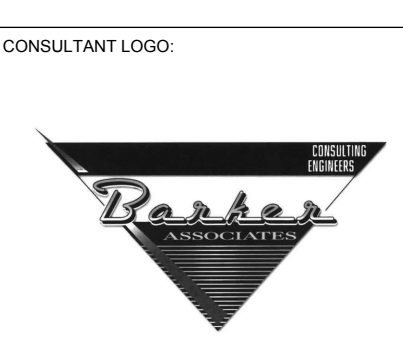
**LEGEND**

- CONTRACTION JOINT
- EXPANSION JOINT
- ISOLATION JOINT
- PROPOSED HEAVY DUTY PAVEMENT  
RE: CP500 FOR DETAIL
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT  
RE: CP500 FOR DETAIL
- PROPOSED STANDARD DUTY PAVEMENT  
RE: CP500 FOR DETAIL
- PROPOSED SIDEWALK PAVEMENT  
RE: CP500 FOR DETAIL

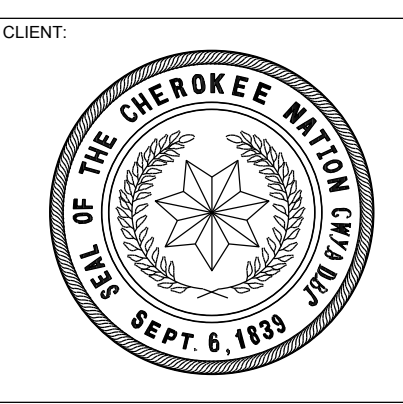
- NOTE:**
1. NOT ALL JOINT LINES ARE SHOWN FOR CLARITY. CONTRACTOR TO SUBMIT PLACEMENT & JOINTING PLAN FOR APPROVAL.
  2. RE:CP500 FOR SIDEWALK JOINT DETAILS.



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45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



**Barker & Associates, Inc.**  
3002 UNIVERSITY BLVD  
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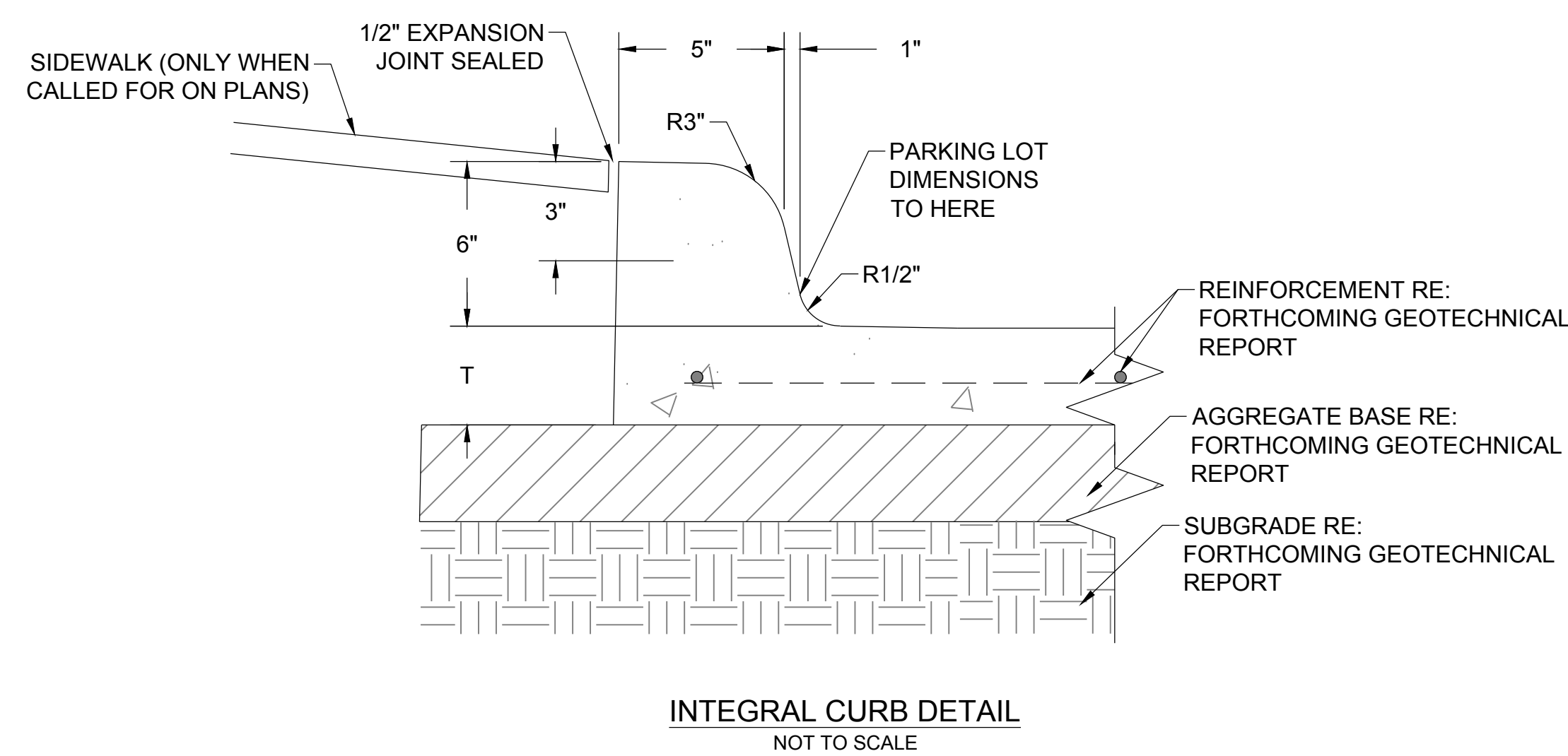
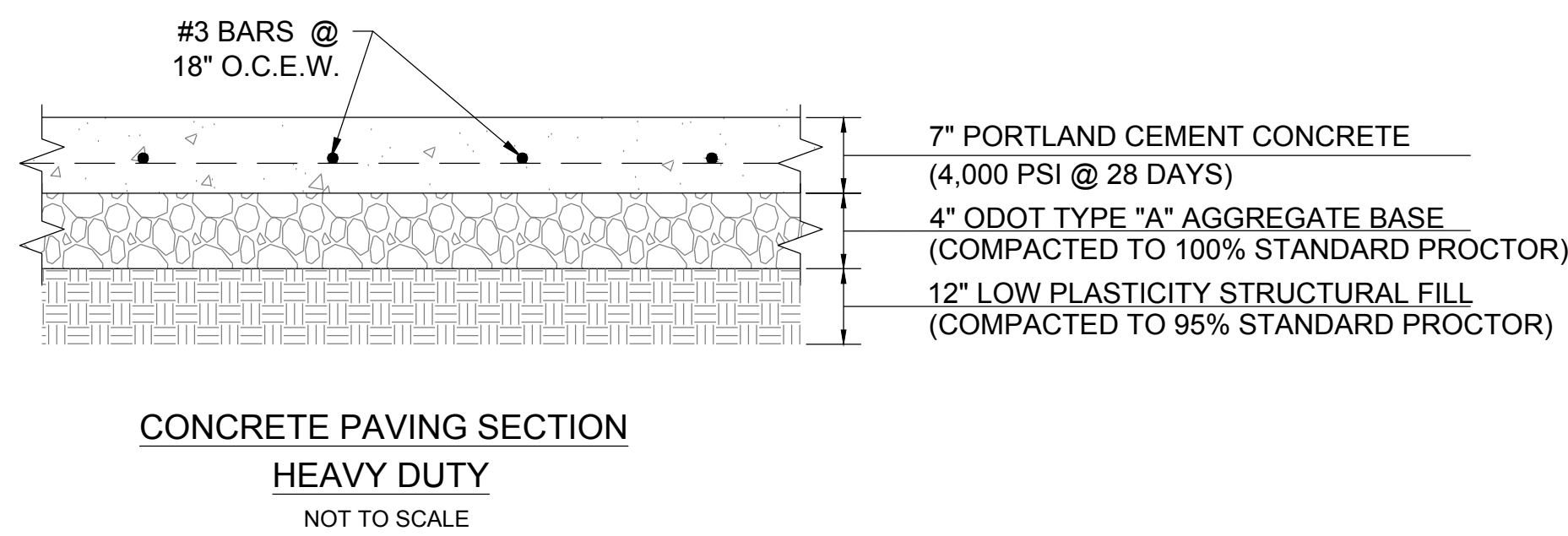
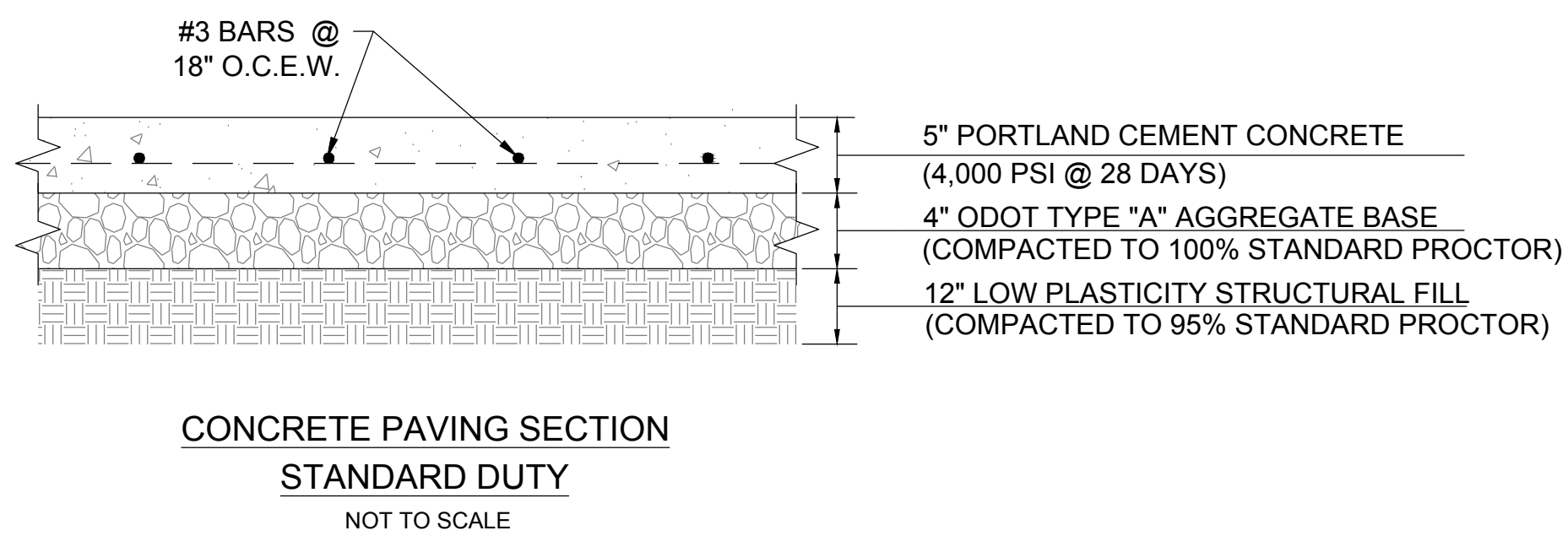
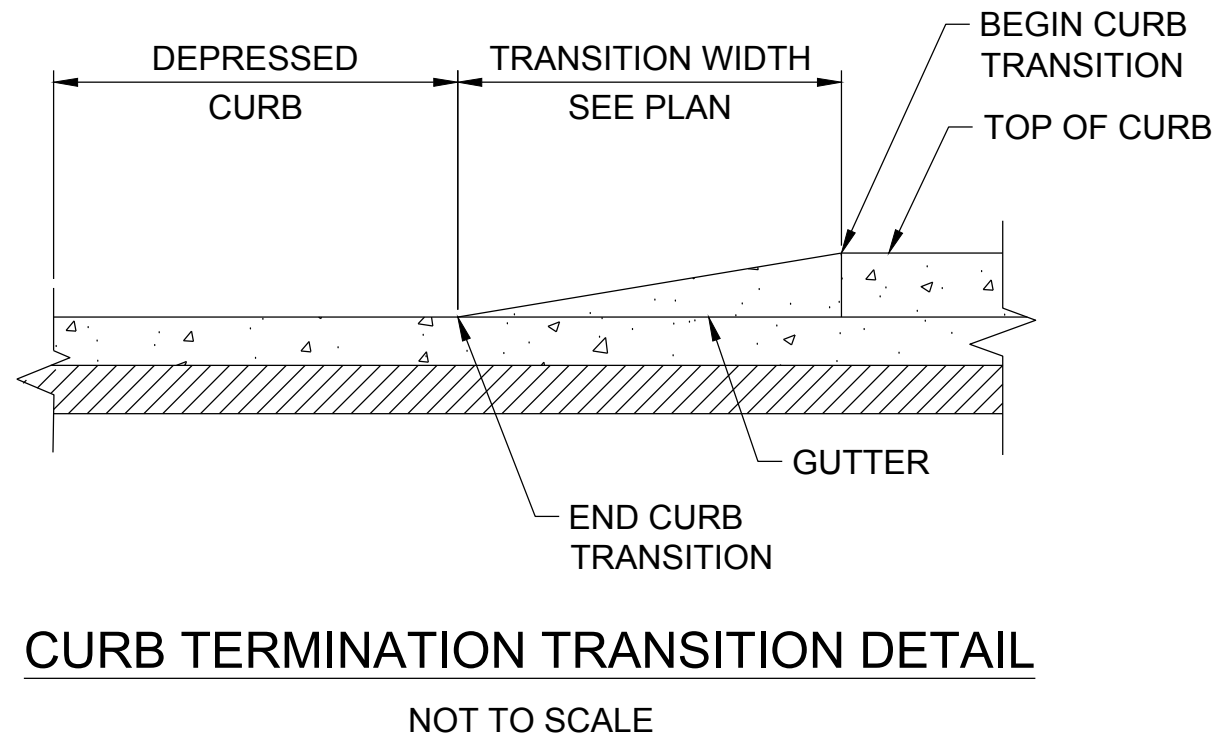
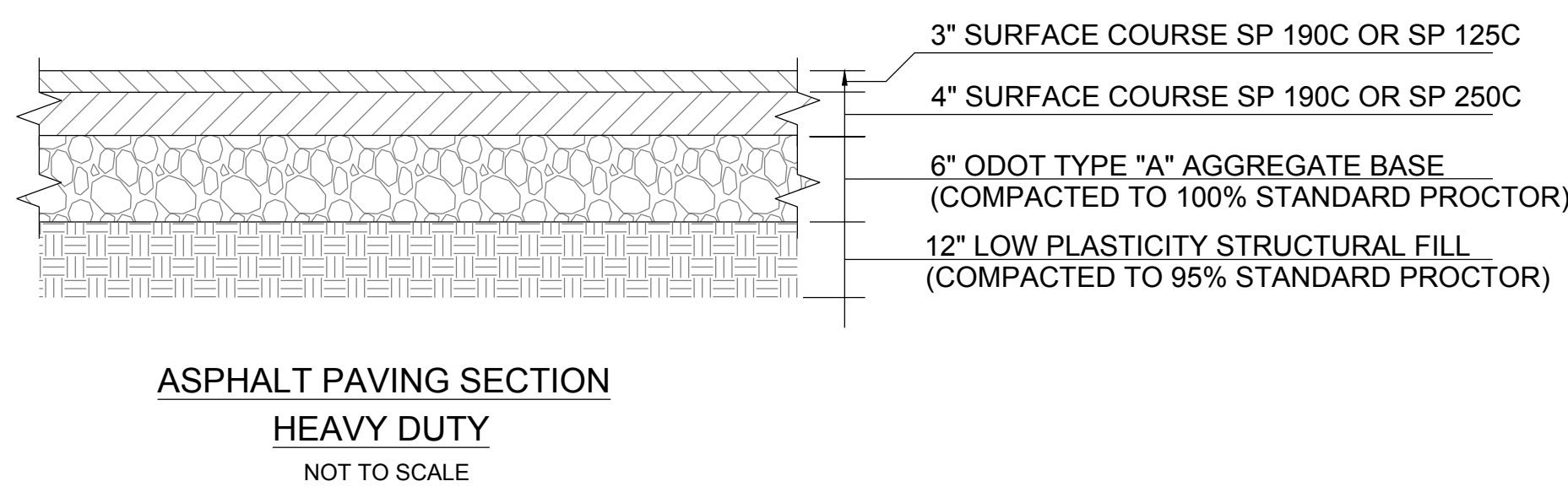
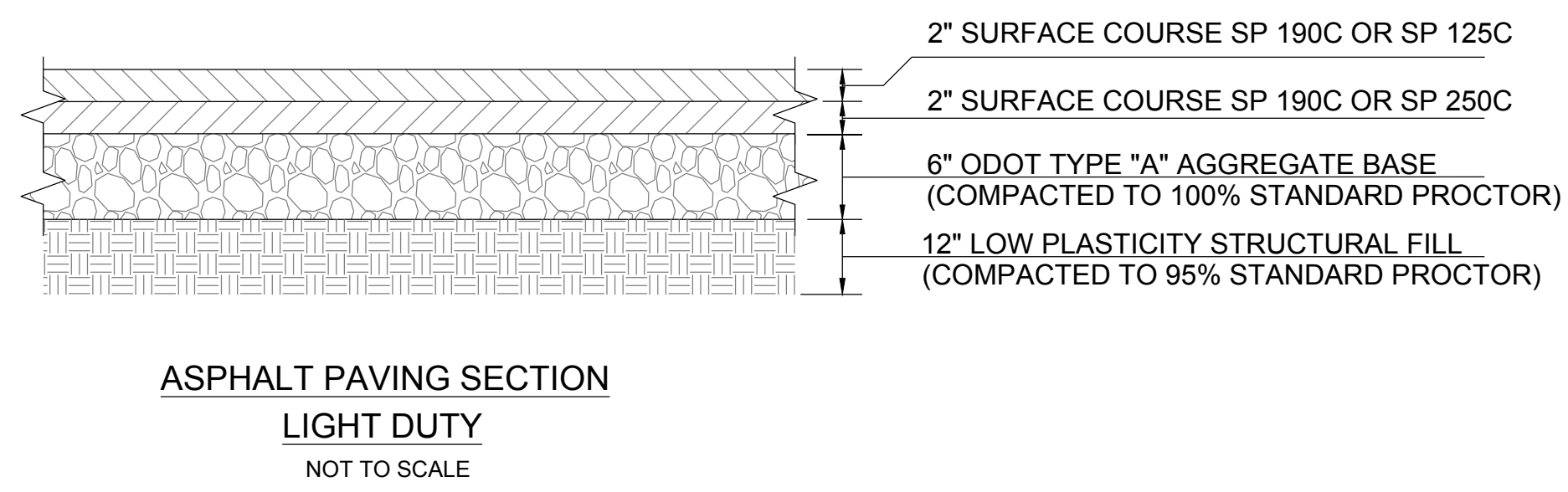
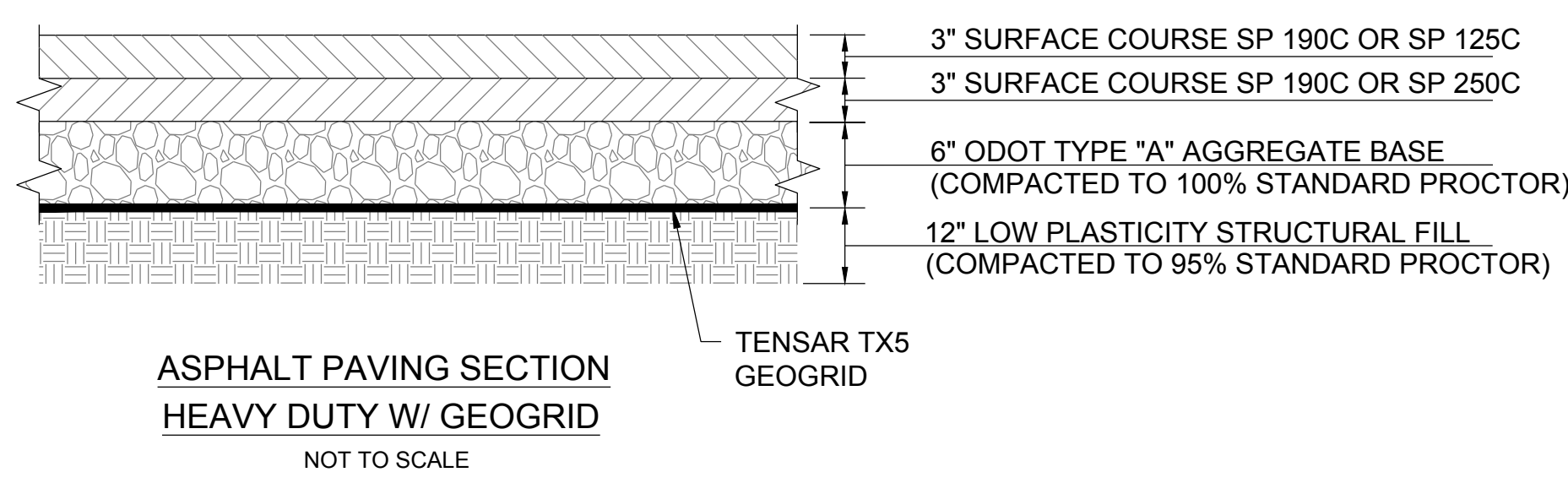
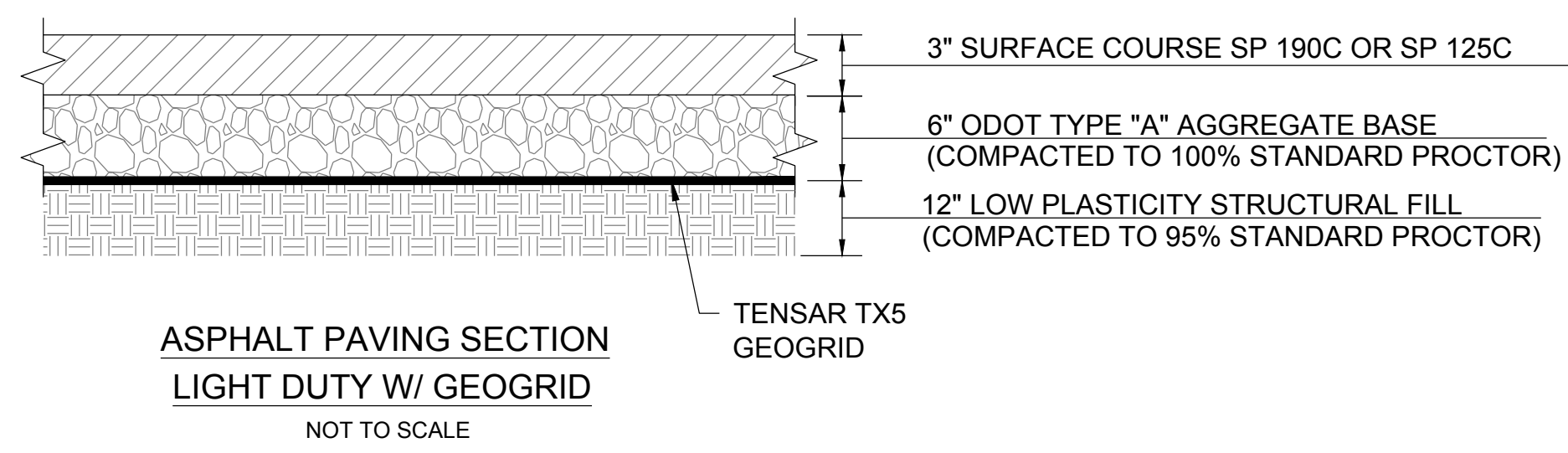
#	DATE	REVISIONS	DESCRIPTION

DATE: 07/31/20      JOB NUMBER: 18-01.10

SHEET NUMBER: **CP102**

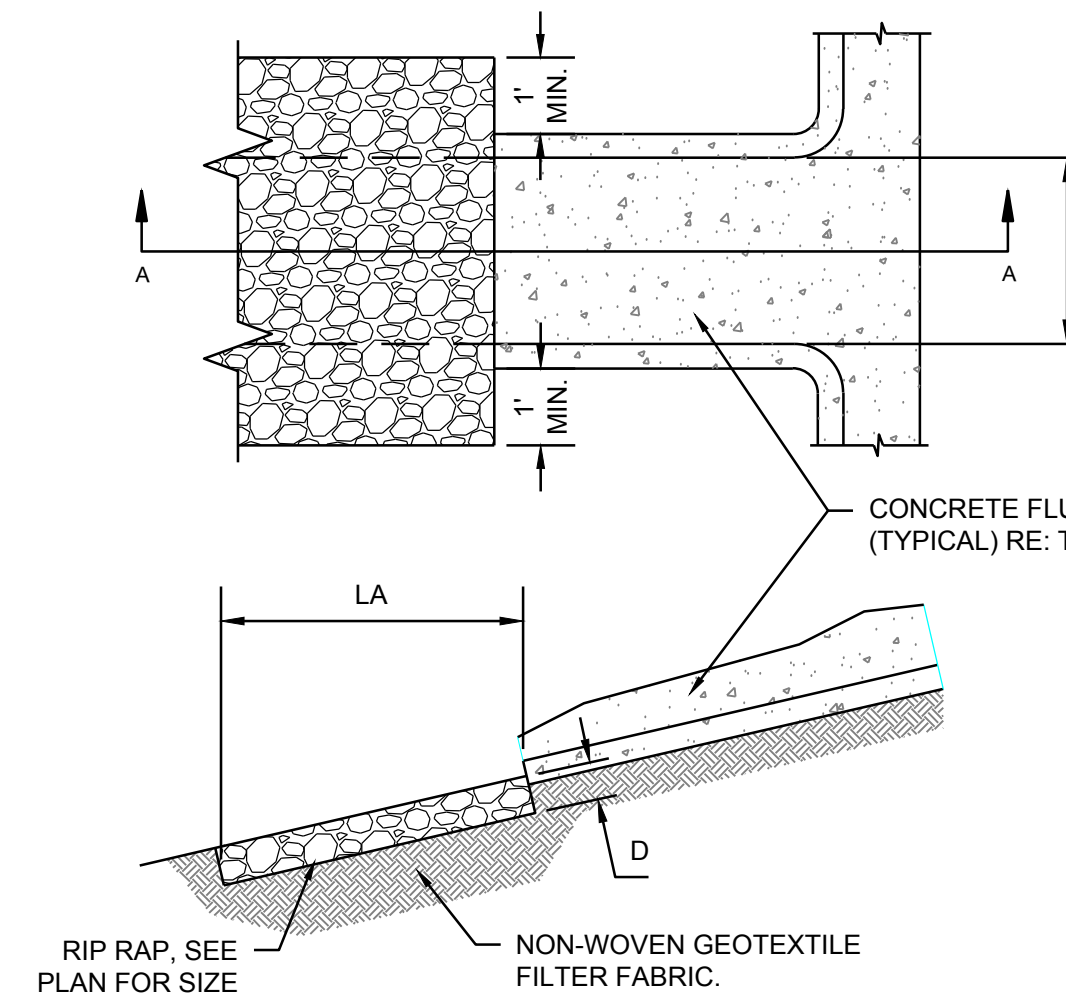
**PROPOSED JOINTING PLAN**



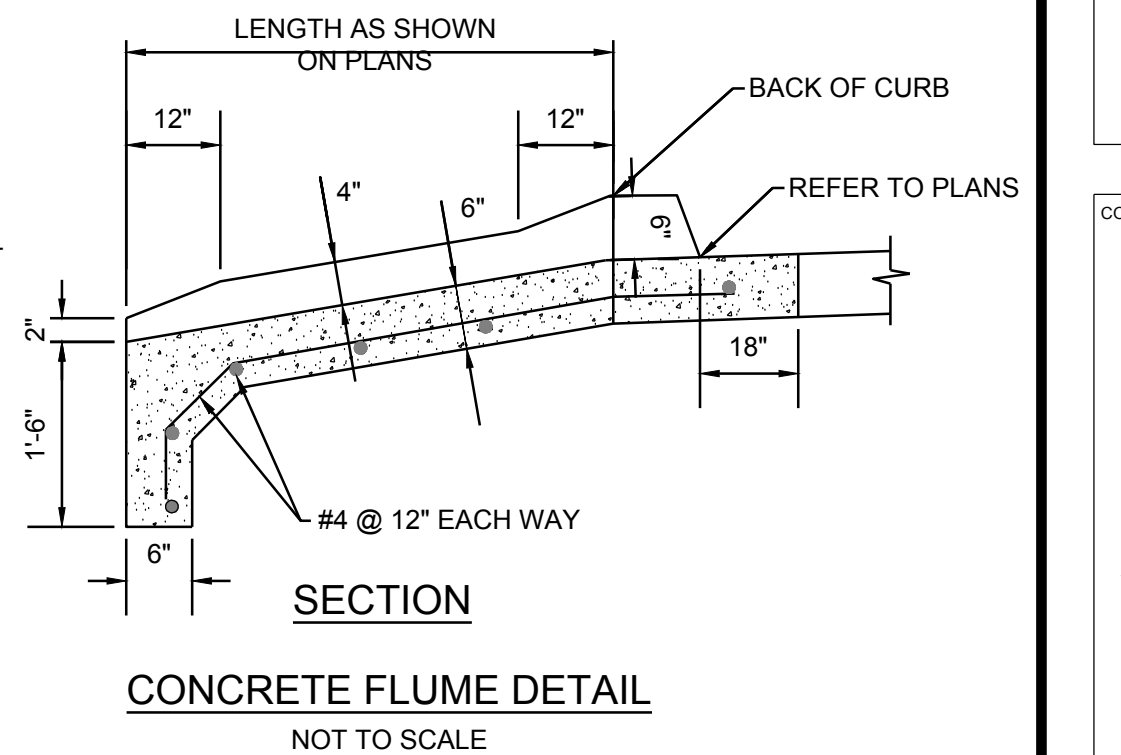
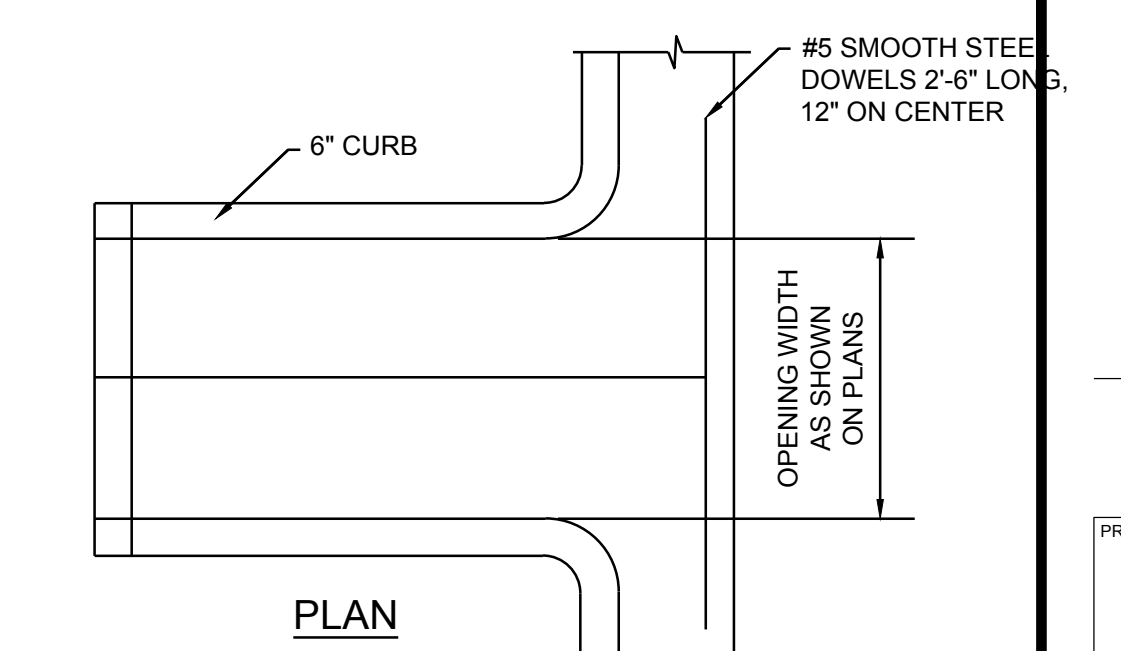


**NOTES:**

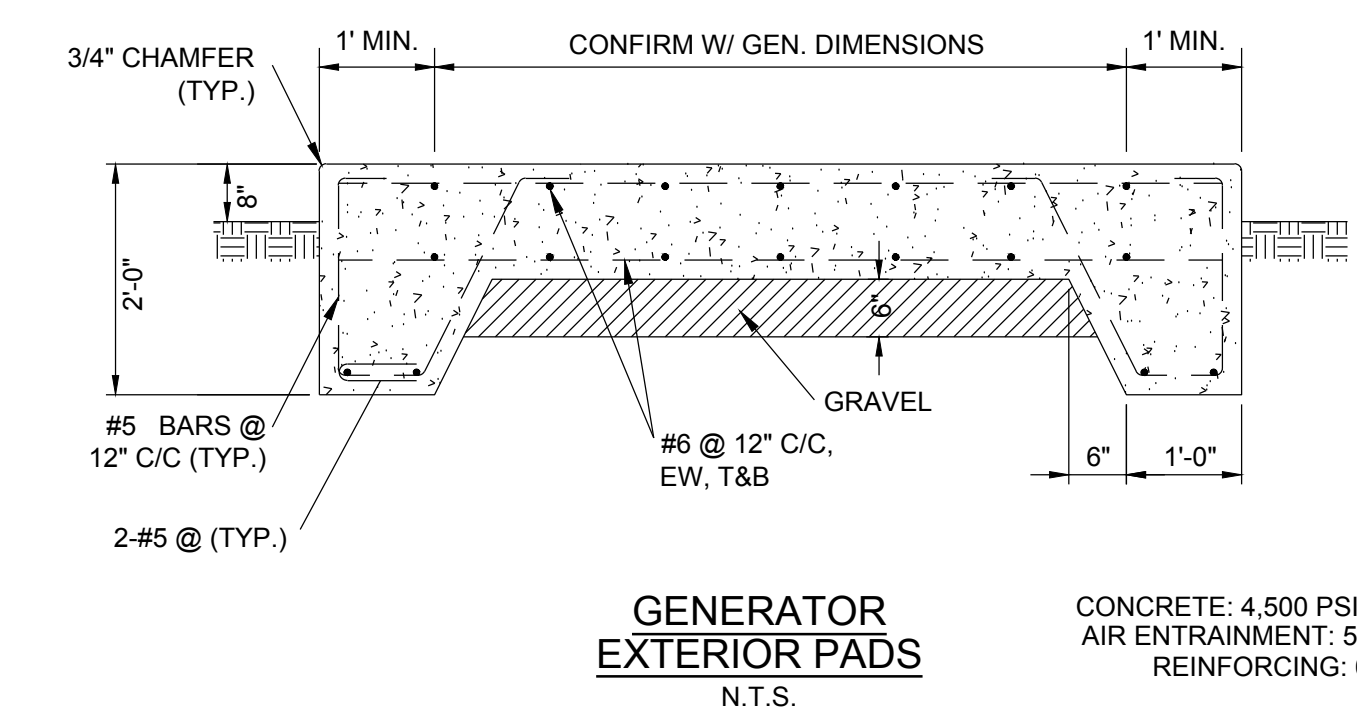
1. LA IS THE LENGTH OF RIPRAP APRON SEE PLAN.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6 INCHES.
3. IN A WELL - DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION EQUAL TO THE TOP OF THE BANK.
4. A FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION. AASHTO M-288-97 CLASS 2.
5. OVER LAP FILTER FABRIC 3' MIN.



**CONCRETE FLUME W/ RIP RAP PROTECTION**  
NOT TO SCALE

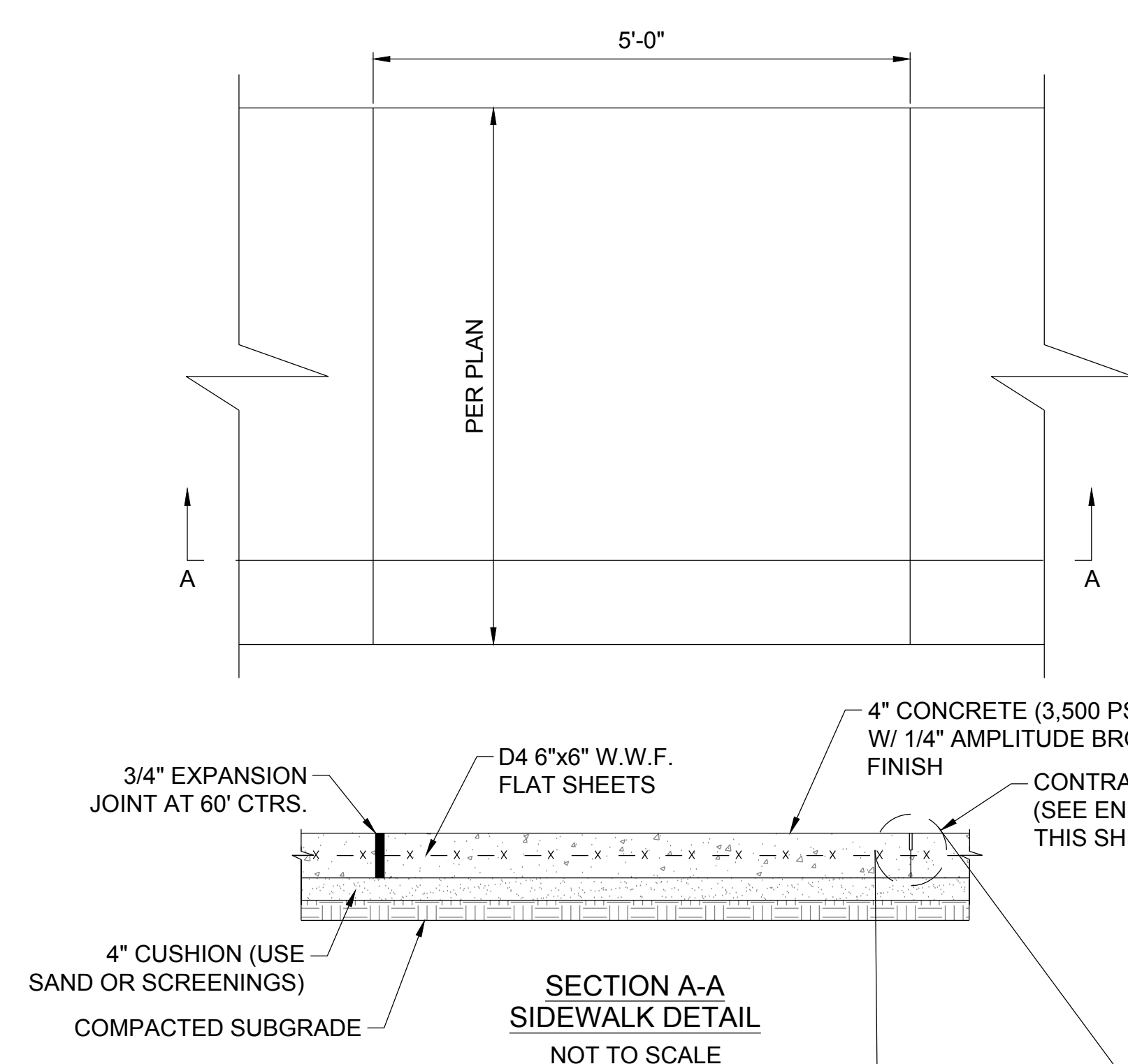


**CONCRETE FLUME DETAIL**  
NOT TO SCALE



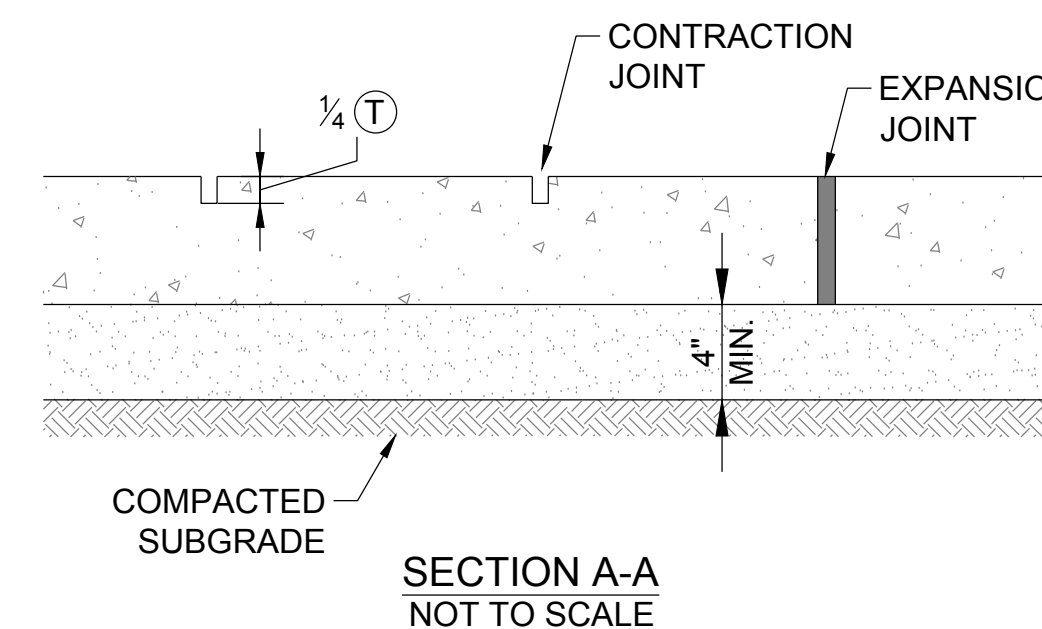
**GENERATOR EXTERIOR PADS**  
N.T.S.

CONCRETE: 4,500 PSI @ 28 DAYS  
AIR ENTRAINMENT: 5.5% (+/- 1.5)  
REINFORCING: 60 KSI

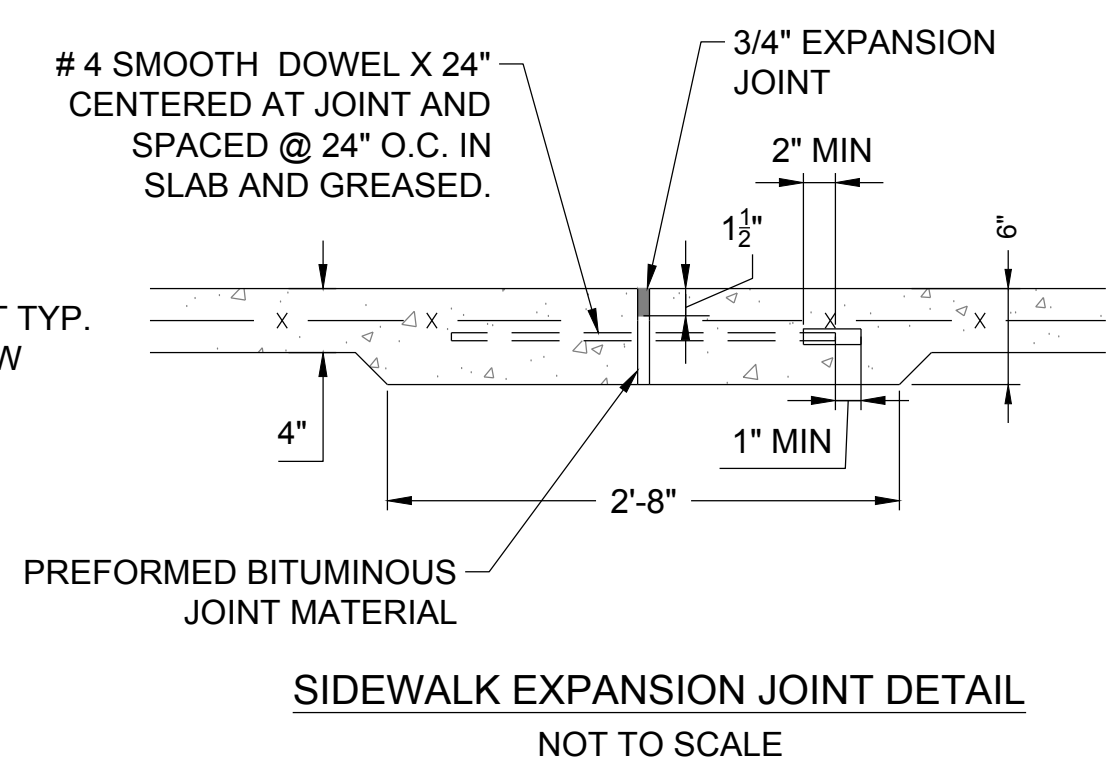


**NOTE:**

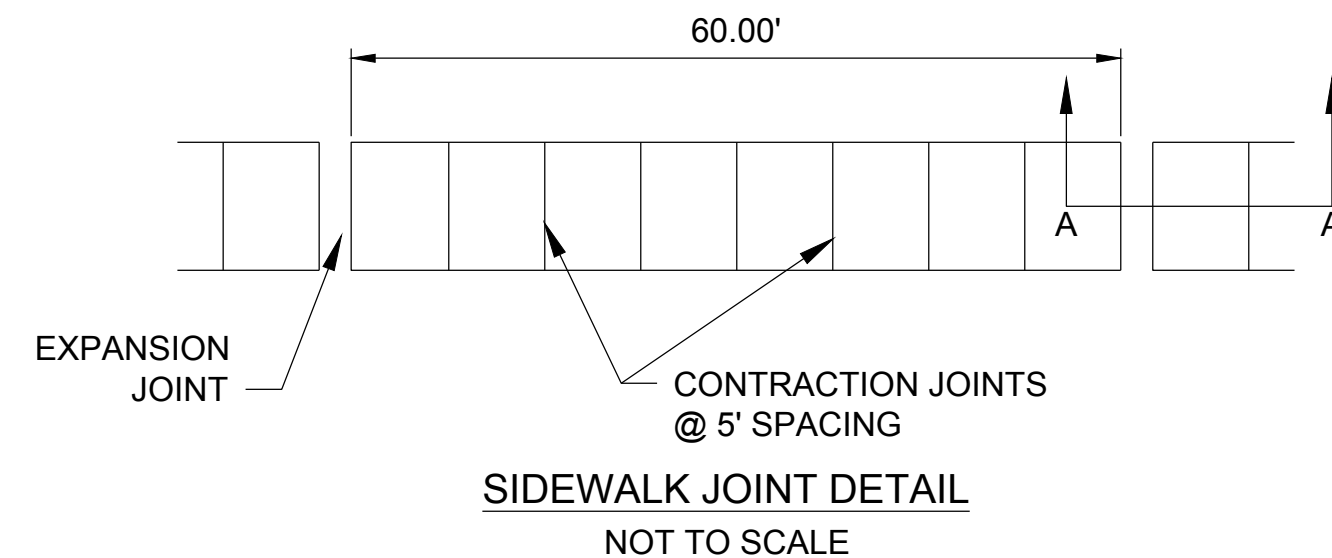
1. JOINT SEALANT SHALL BE A ONE-PART POLYURETHANE SEALANT. SEALANT SHALL BE MANUFACTURED AND APPROVED FOR SEALING JOINTS IN CONCRETE. EXPOSURE TO WEATHER AND SUBJECT TO TRAFFIC. SEALANT SHALL MEET OR EXCEED ASTM C920 TYPE S, GRADE NS, CLASS 25. SEALANT SHALL BE VULKEM 116 OR APPROVED EQUAL.
2. JOINT SEALANT SHALL BE PLACED OVER BACKER ROD AS REQUIRED AND RECOMMENDED BY MANUFACTURER.
3. JOINT SEALANT AND FILLER SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.



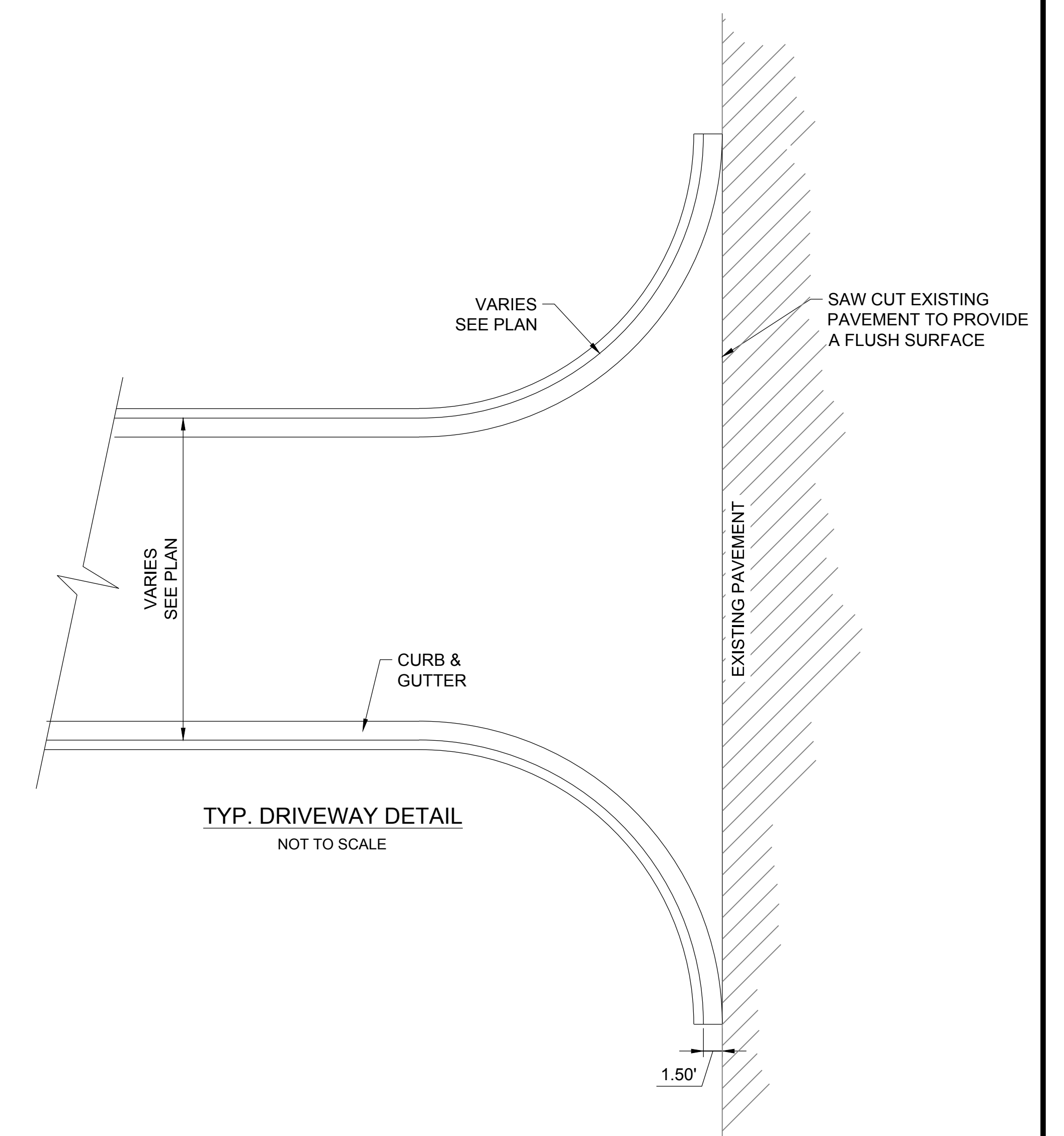
**SECTION A-A**  
NOT TO SCALE



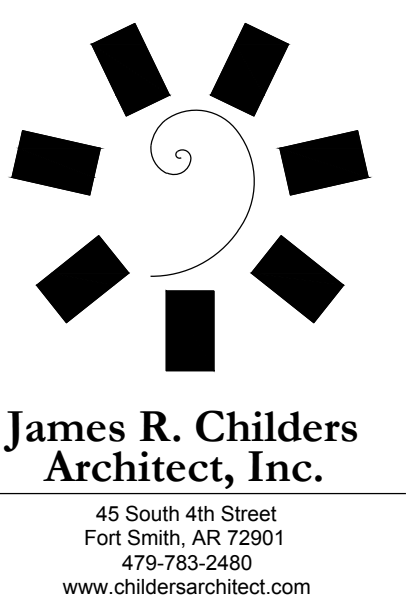
**SIDEWALK EXPANSION JOINT DETAIL**  
NOT TO SCALE



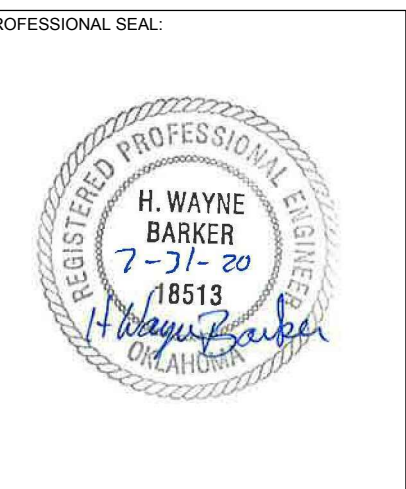
**SIDEWALK JOINT DETAIL**  
NOT TO SCALE



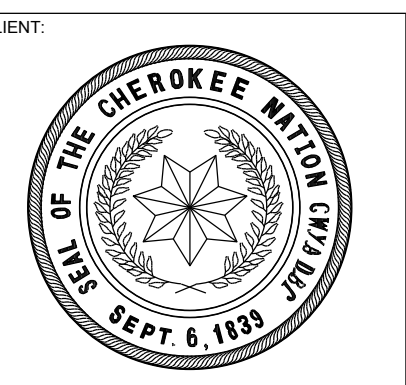
**TYP. DRIVEWAY DETAIL**  
NOT TO SCALE



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45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
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KEY PLAN

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20  
JOB NUMBER: 18-01.10

SHEET NUMBER:

CP500

TYPICAL PAVING DETAILS

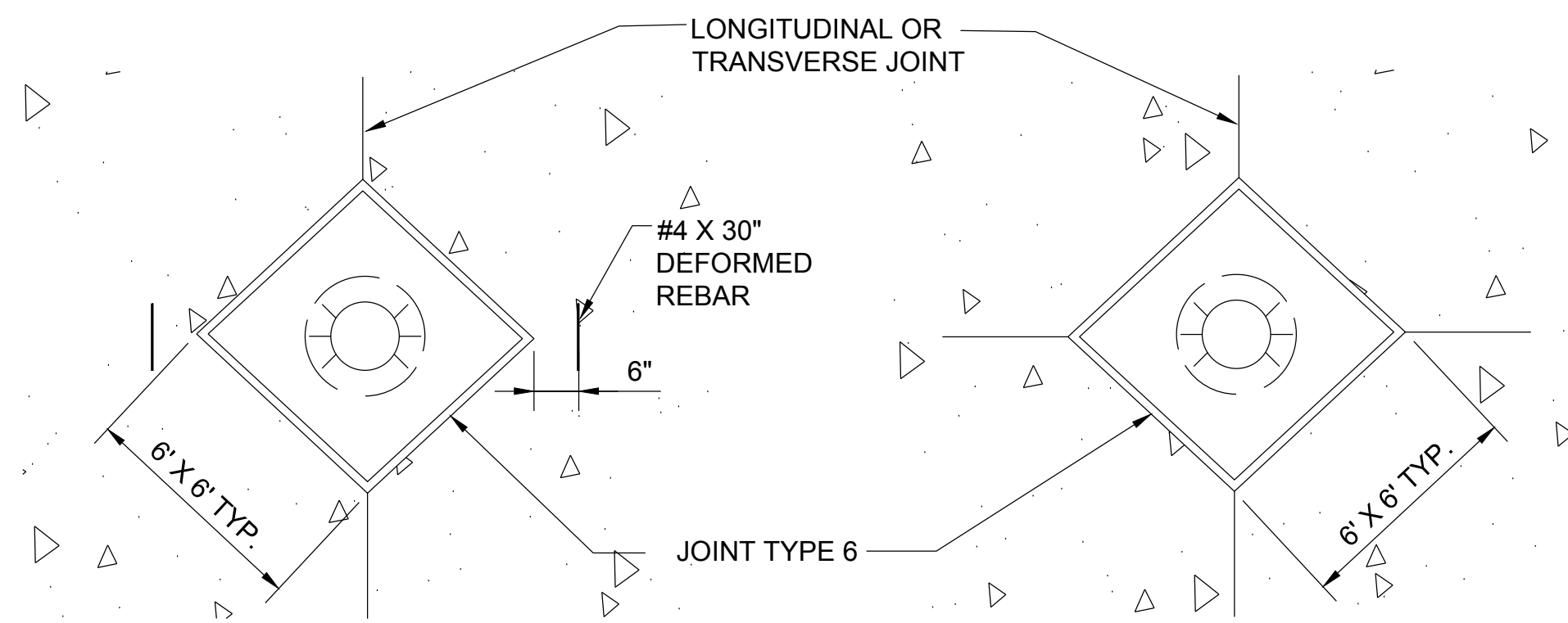


**CONSTRUCTION NOTES**

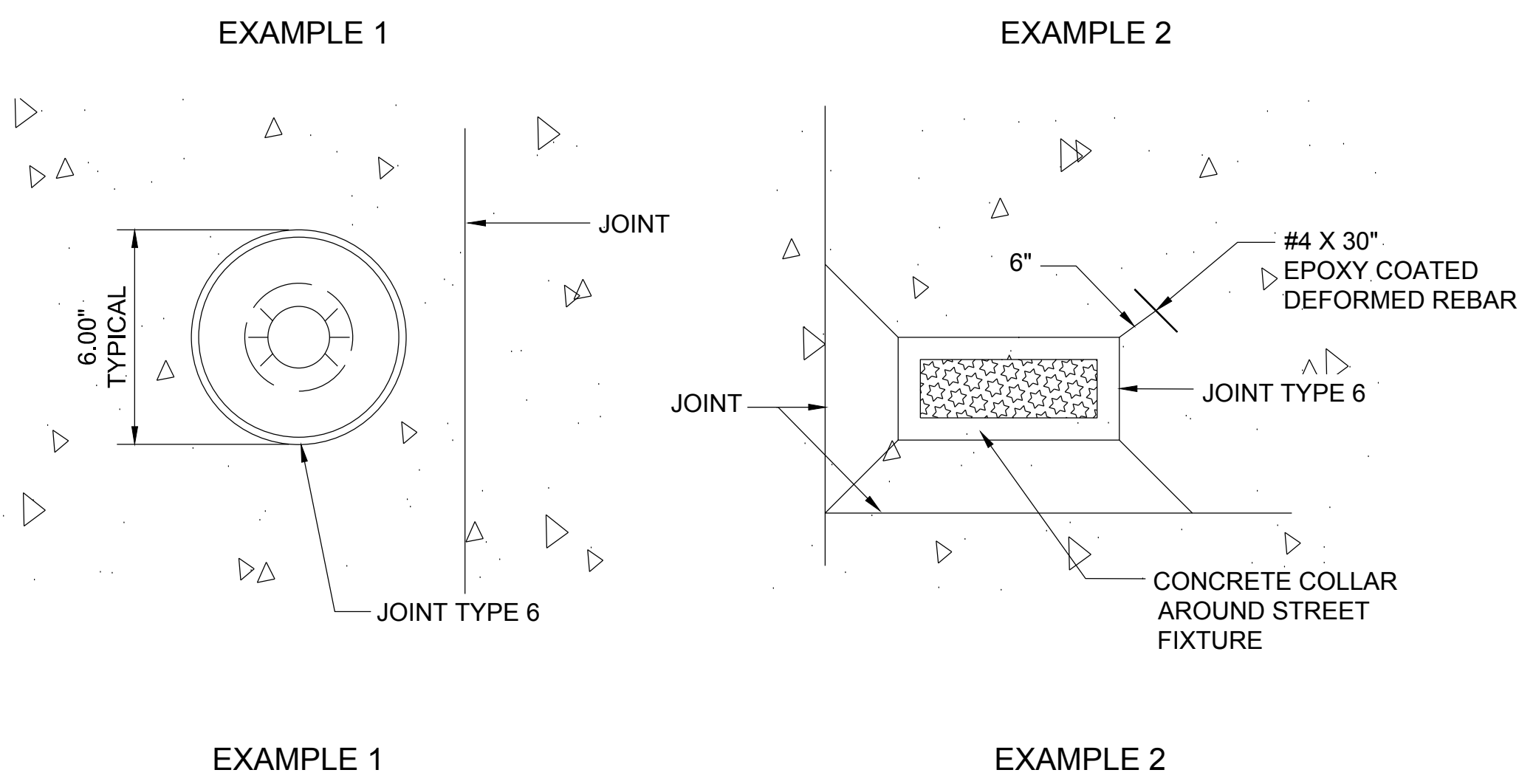
- A. JOINT SEALANT SHALL BE A ONE-PART POLYURETHANE SEALANT. SEALANT SHALL BE MANUFACTURED AND APPROVED FOR SEALING JOINTS IN CONCRETE. EXPOSURE TO WEATHER AND SUBJECT TO TRAFFIC. SEALANT SHALL MEET OR EXCEED ASTM C920 TYPE S, GRADE NS, CLASS 25. SEALANT SHALL BE VULKEM 116 OR APPROVED EQUAL.  
JOINT SEALANT SHALL BE PLACED OVER BACKER ROD AS REQUIRED AND RECOMMENDED BY MANUFACTURER.  
JOINT SEALANT AND FILLER SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
- B. 5" AND LESS THICK PAVING - 5/8"Øx12" SMOOTH DOWEL BAR @ 12" O.C., 1/2 GREASED 1/2 PAINTED.  
6" THICK PAVING - 3/4"Øx14" SMOOTH DOWEL BAR @ 12" O.C., 1/2 GREASED 1/2 PAINTED.  
7" THICK PAVING - 7/8"Øx14" SMOOTH DOWEL BAR @ 12" O.C., 1/2 GREASED 1/2 PAINTED.  
8" THICK PAVING - 1"Øx14" SMOOTH DOWEL BAR @ 12" O.C., 1/2 GREASED 1/2 PAINTED.  
9" THICK PAVING - 1 1/8"Øx16" SMOOTH DOWEL BAR @ 12" O.C., 1/2 GREASED 1/2 PAINTED.
- C. NO. 4 DEFORMED BARS, 3'-0" LONG AT 2'-0" O.C.
- D. THICKNESS OF SLAB.
- E. PREFORMED BITUMINOUS JOINT MATERIAL.

**GENERAL NOTES**

- THICKNESS OF SLAB SHALL BE AS INDICATED ON DRAWINGS. SEE TABLE BELOW. DAILY CONCRETE PLACEMENT SHALL TERMINATE AT A JOINT.
1. EXPANSION JOINTS
    - A. FULL DEPTH 1/2 INCH THICK JOINT FILLER MATERIAL. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.
    - B. EXPANSION JOINTS ARE NOT REQUIRED IN SLIP FORMWORK EXCEPT AT THE START OR END OF THE INSTALLATION ACTIVITY.
    - C. USE DOWEL BASKETS TO INSURE ALIGNMENT.
  2. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
    - A. MAKE JOINTS AT LEAST 1/8 INCH WIDE AND 1 INCH DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4 INCHES THICK.
    - B. PROVIDE A 1/2 INCH RADIUS TOOLED TOP.
    - C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.25 TO 1.
    - D. MAXIMUM PANEL LENGTH IS 10 FEET FOR PAVEMENT THICKNESS LESS THAN 5 INCHES AND 12 FEET FOR PAVEMENT THICKNESS 5 INCHES AND GREATER, UNLESS NOTED OTHERWISE.
  3. FINE HAIR BRUSH ON LONGITUDINAL GRADES UNDER 6% AND ROUGH HAIR BRUSH ON LONGITUDINAL GRADES OVER 6%.

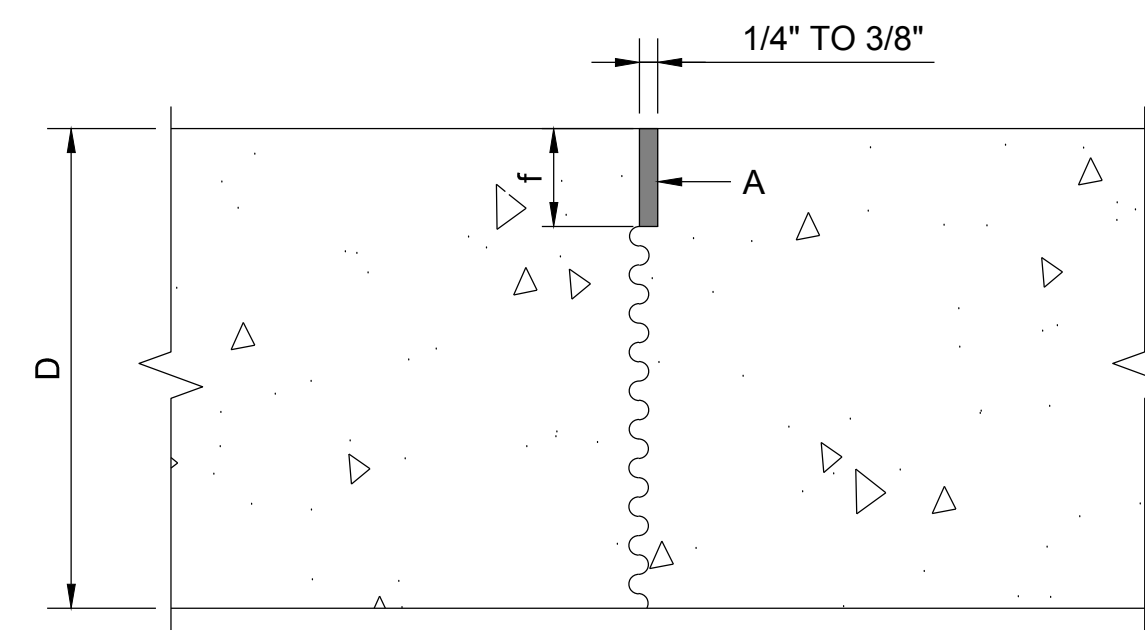


REBAR AT ALL CORNERS OF ISOLATION JOINTS THAT DO NOT INTERSECT A LONGITUDINAL OR TRANSVERSE JOINT

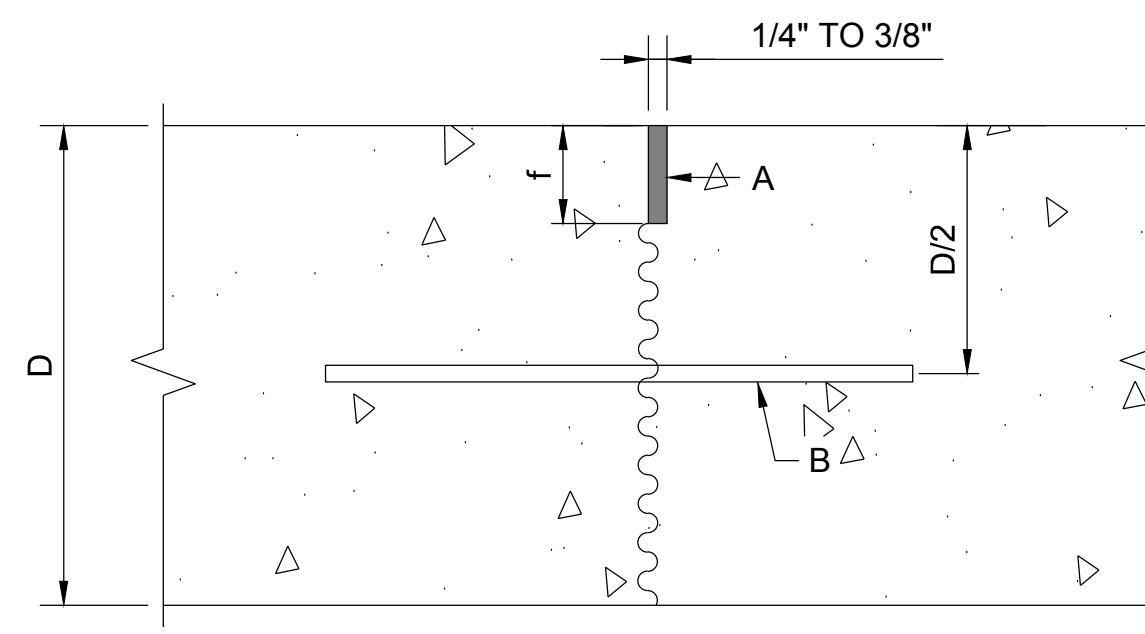


TYPICAL STREET FIXTURE ISOLATION JOINTS

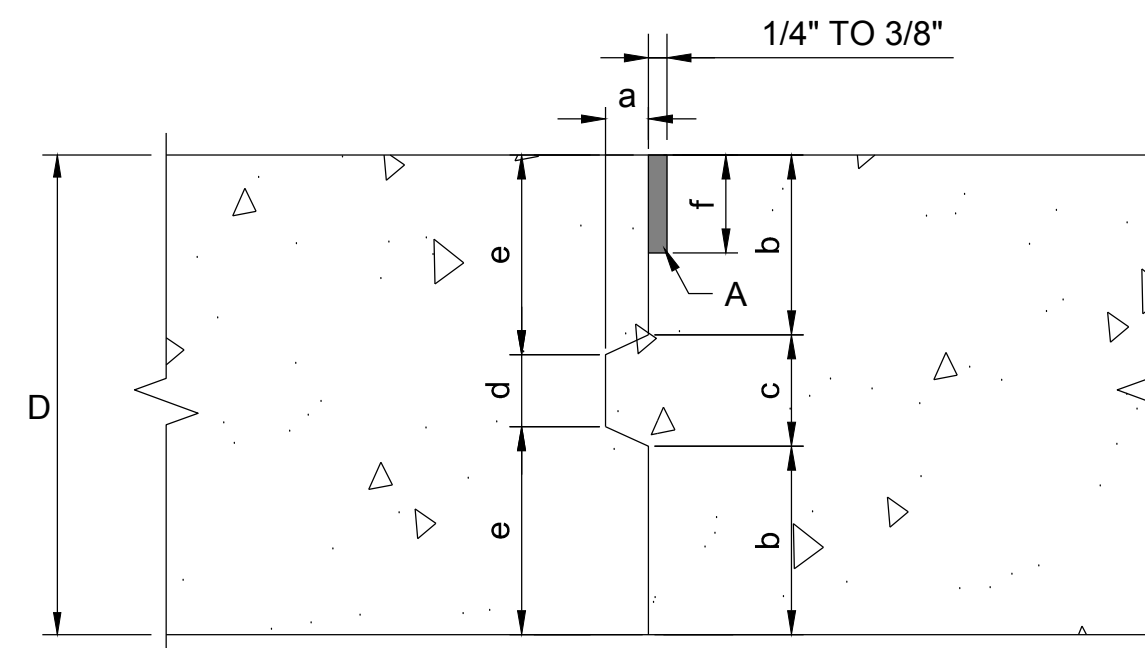
JOINT DIMENSIONS								
TRANS. JOINTS					LONG. JOINTS			
D	A	B	C	D	E	F-MIN	F-MAX	G
4 1/2"	1"	1 1/2"	1 1/2"	1"	1 3/4"	1/4 D	1/3 D	1/2 D
5"	1"	1 3/4"	1 1/2"	1"	2"	1/4 D	1/3 D	1/2 D
5 1/2"	1"	2"	1 1/2"	1"	2 1/4"	1/4 D	1/3 D	1/2 D
6"	1"	2 1/4"	1 1/2"	1"	2 1/2"	1/4 D	1/3 D	1/2 D
7"	1"	2 1/2"	2"	1 1/4"	2 7/8"	1/4 D	1/3 D	1/2 D
8"	1"	3"	2"	1 1/2"	3 1/4"	1/4 D	1/3 D	1/2 D



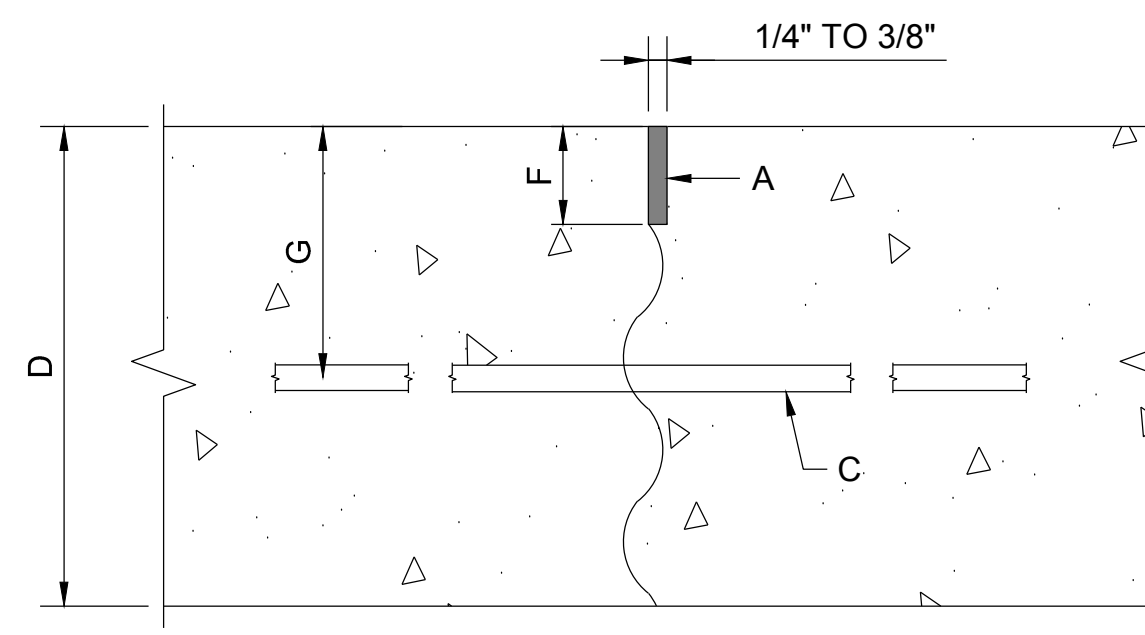
TYPE 1  
SAWED JOINT / CONTRACTION  
(LONGITUDINAL OR TRANSVERSE)



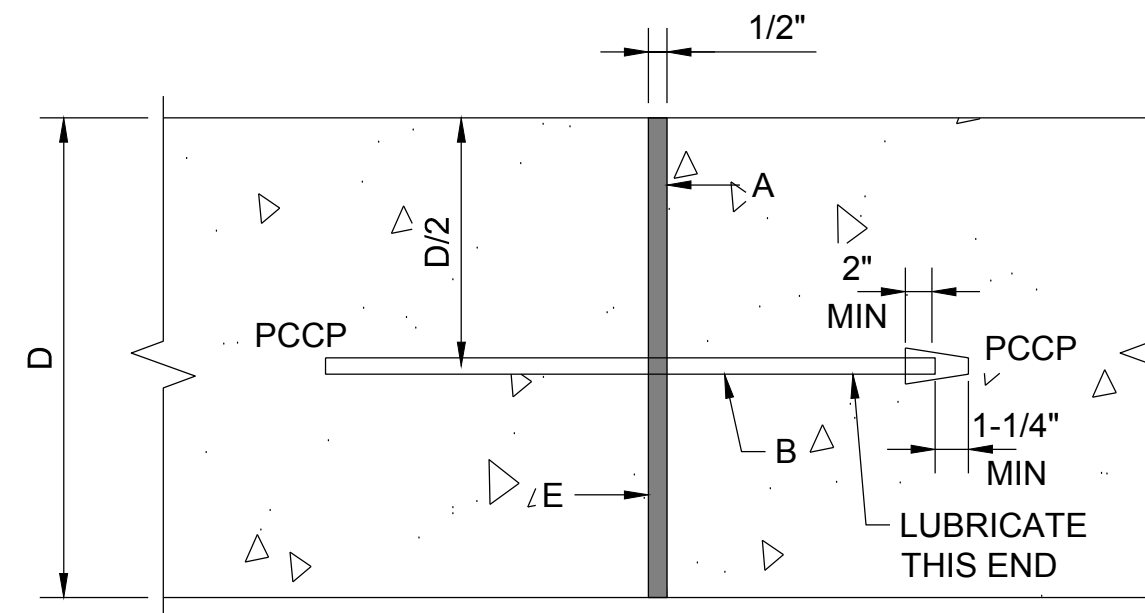
TYPE 2  
DOWELED JOINT (CONTRACTION / CONSTRUCTION)  
(TRANSVERSE)



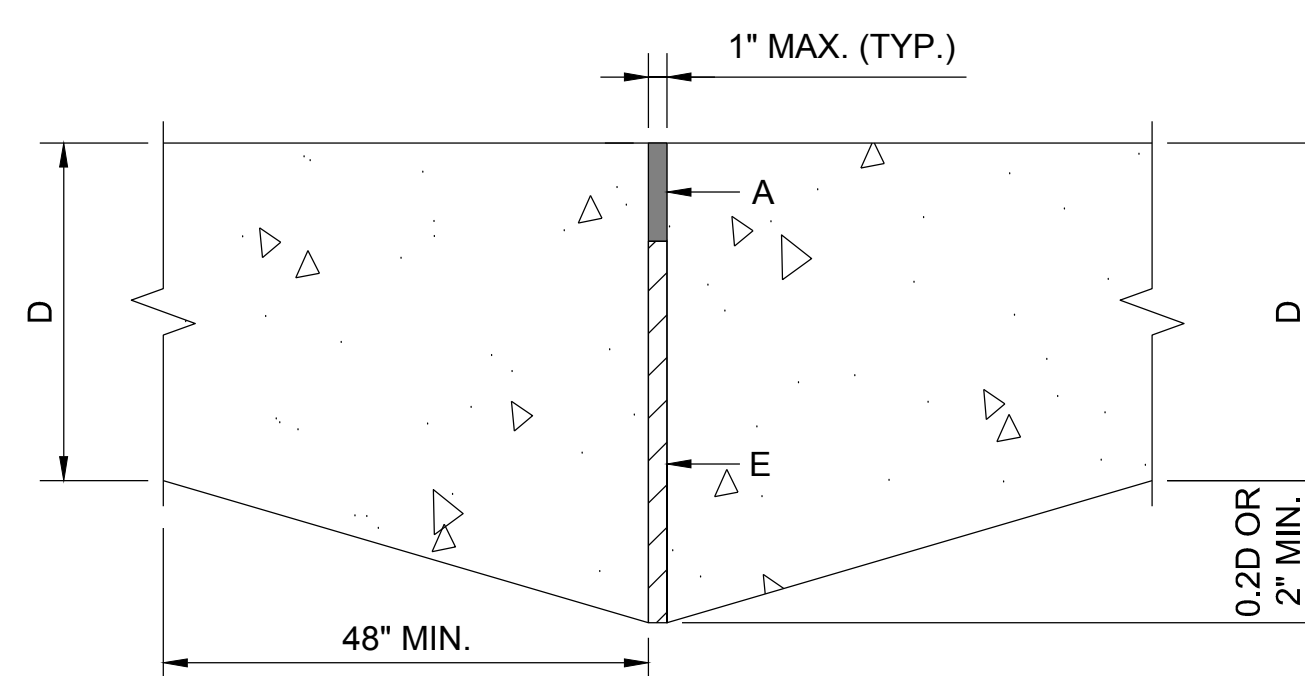
TYPE 3  
KEYED JOINT  
(LONGITUDINAL OR TRANSVERSE)



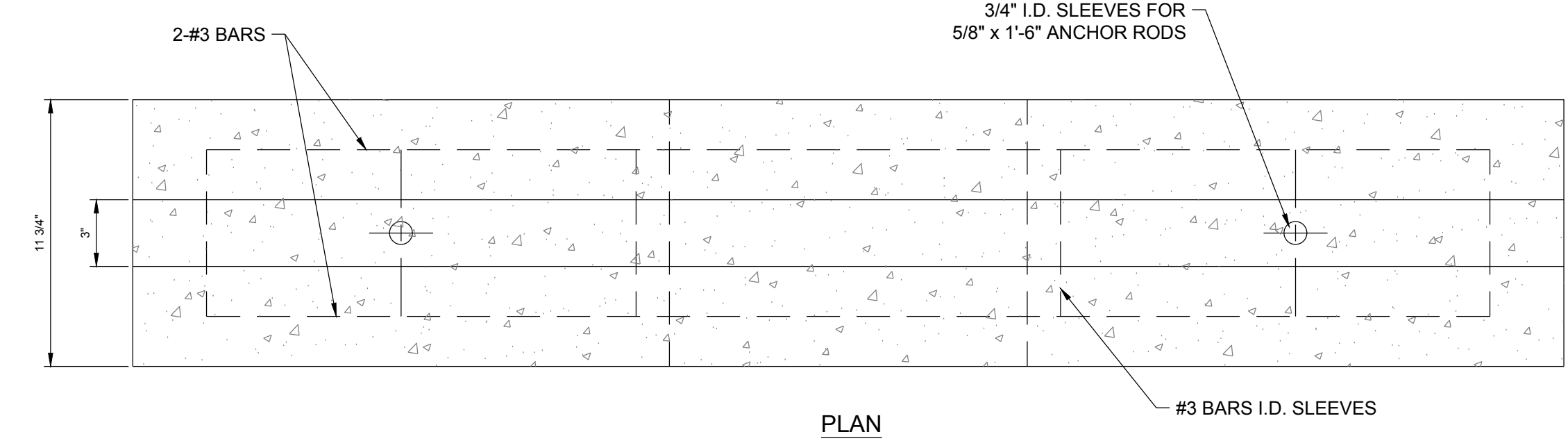
TYPE 4  
TIED JOINT (CONTRACTION / CONSTRUCTION)  
(LONGITUDINAL OR TRANSVERSE)



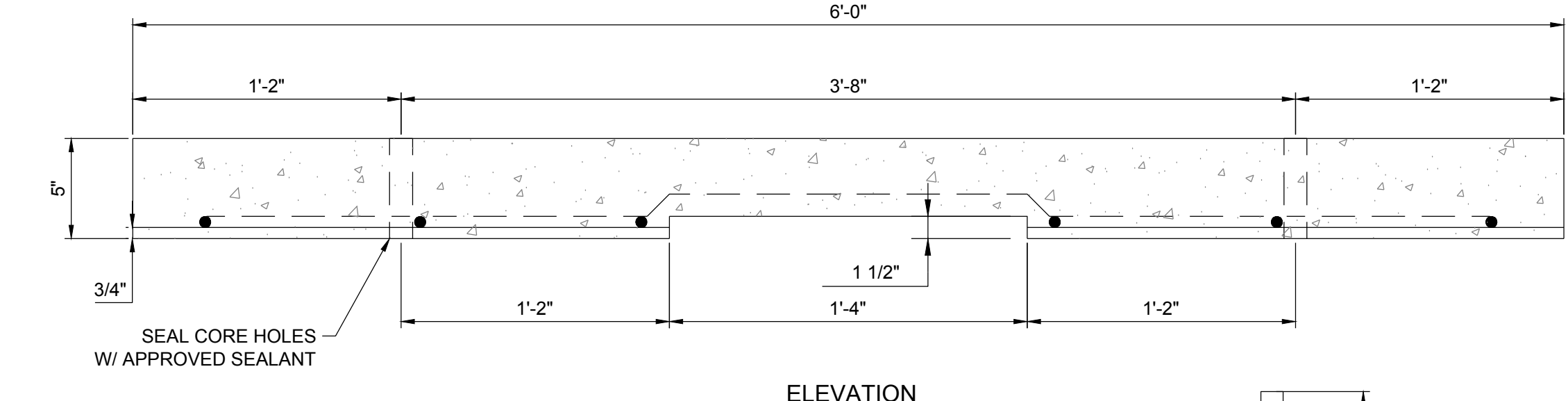
TYPE 5  
EXPANSION JOINT



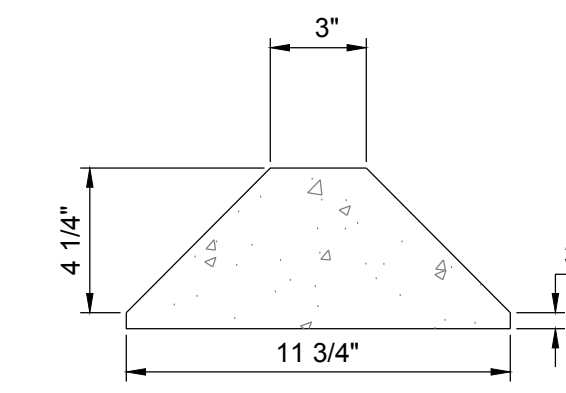
TYPE 6  
ISOLATION JOINT  
(TRANSVERSE)



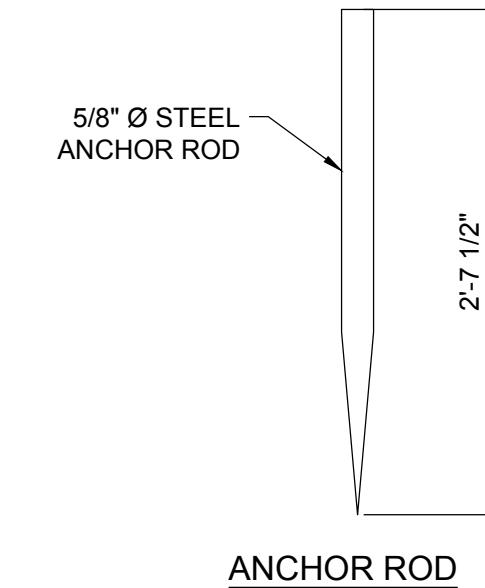
PLAN



ELEVATION

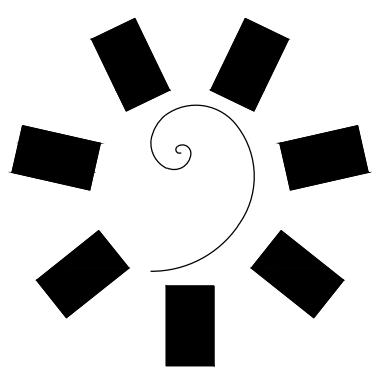


END VIEW

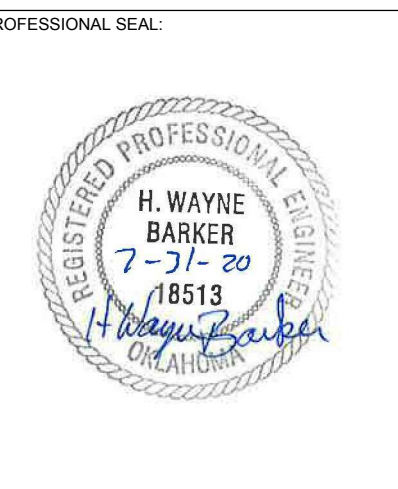


ANCHOR ROD

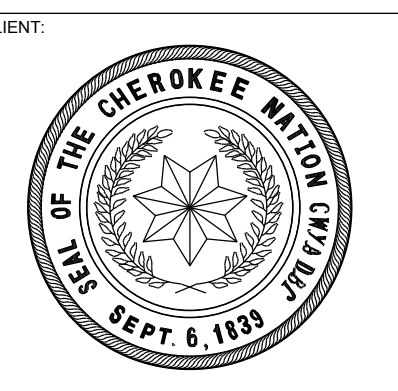
WHEEL STOP DETAILS  
NOT TO SCALE



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Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.childersarchitect.com



**Barker & Associates, P.C.**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK. C.O. 35589  
EXP. 06/30/2022



CHEROKEE NATION  
TAG OFFICE  
CATOOSA, OKLAHOMA

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

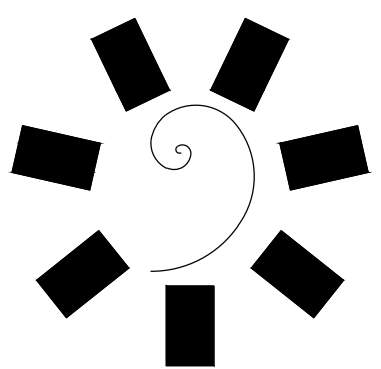
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JOB NUMBER: 18-01.10

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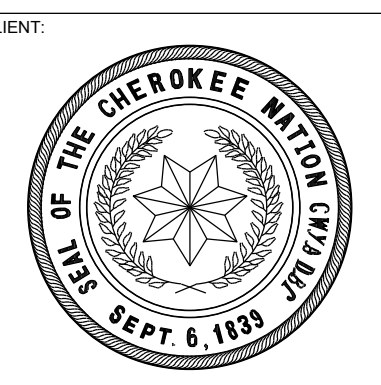
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TYPICAL JOINTING DETAILS

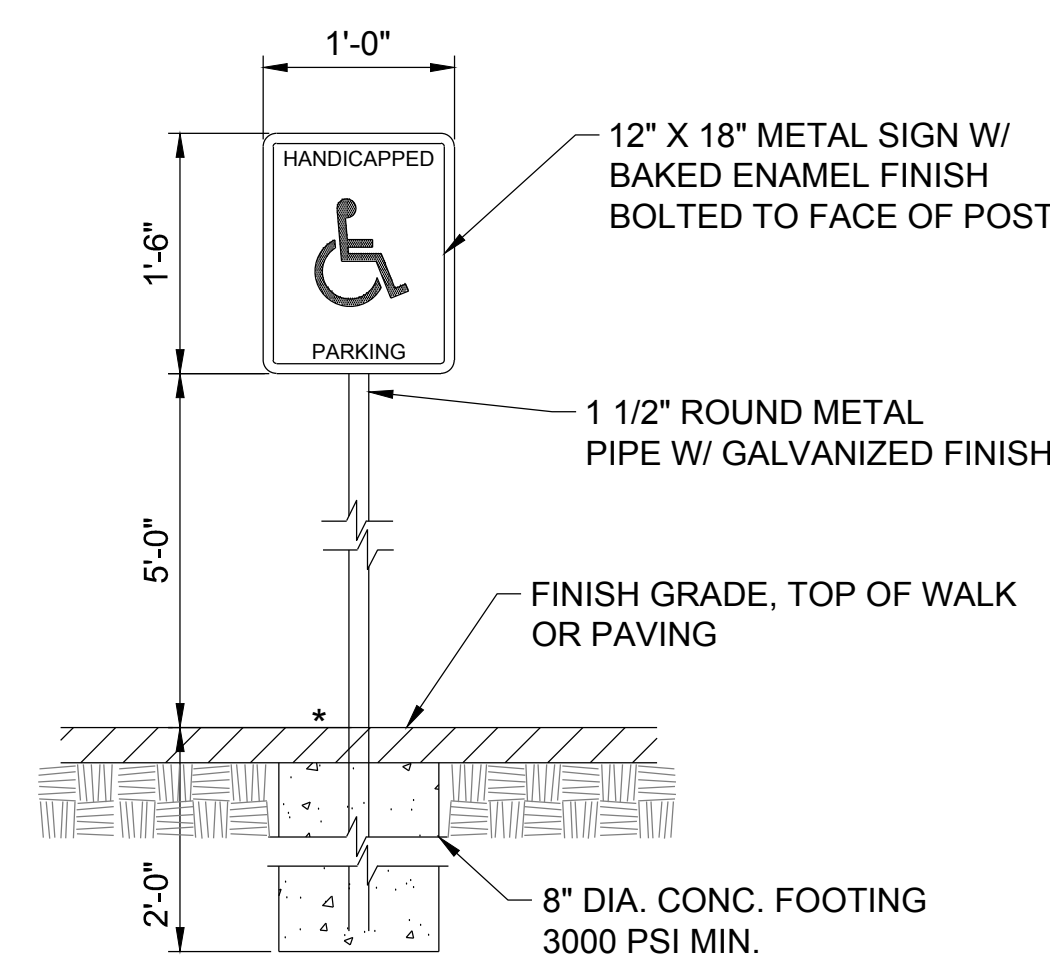
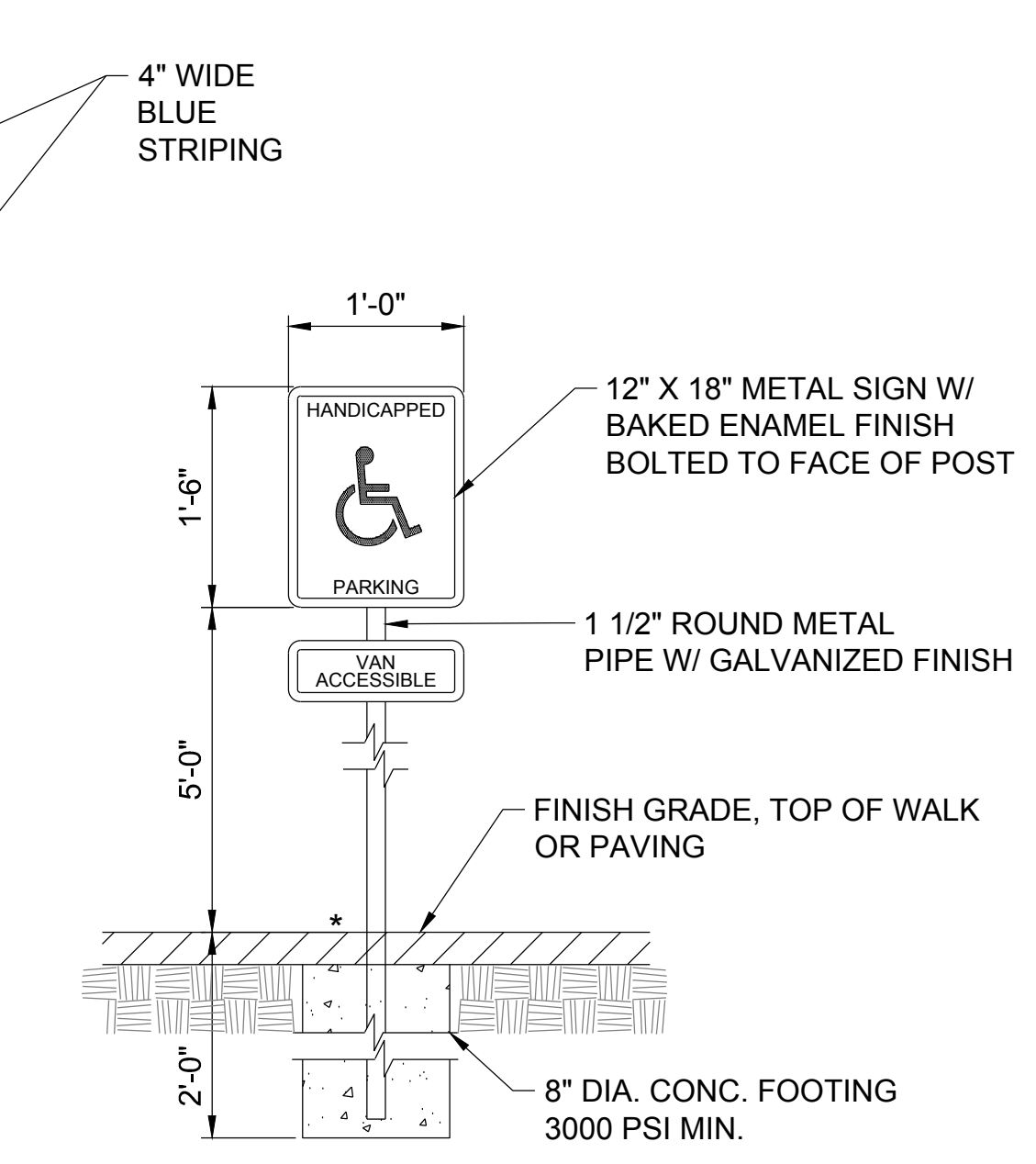
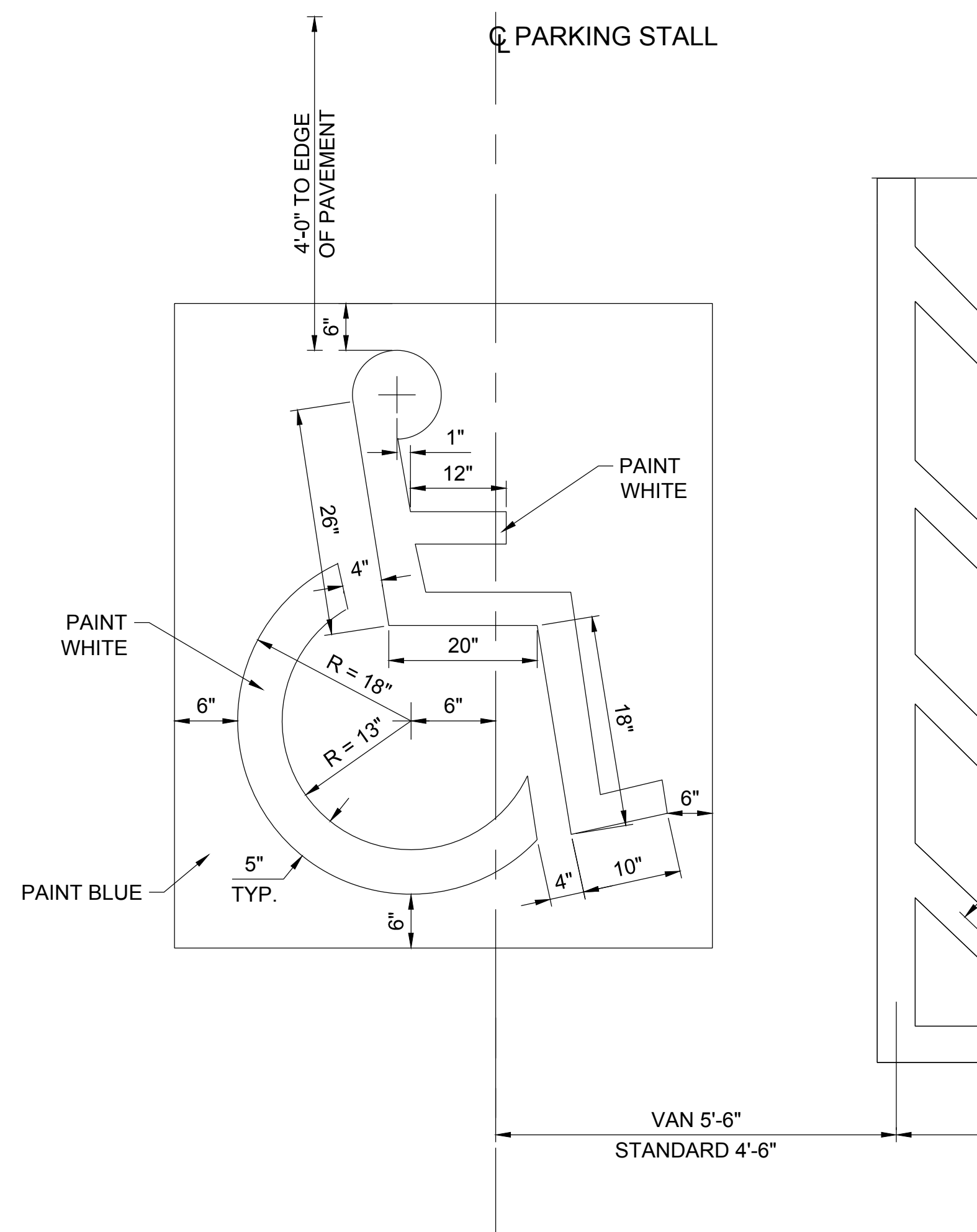




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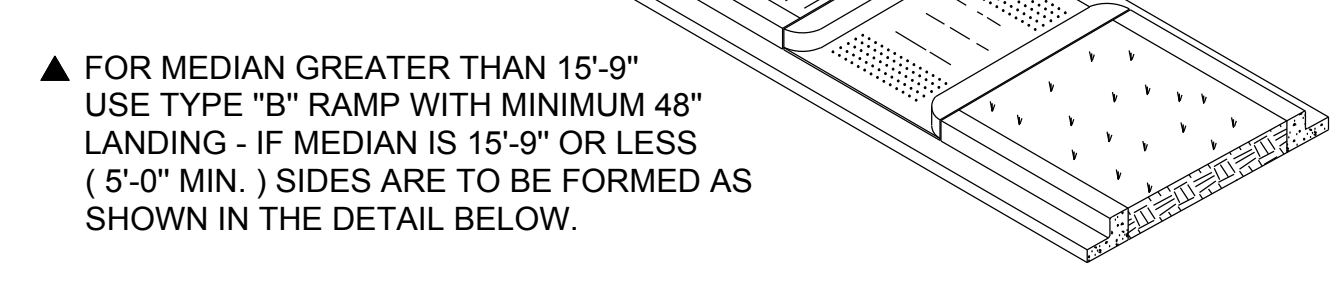


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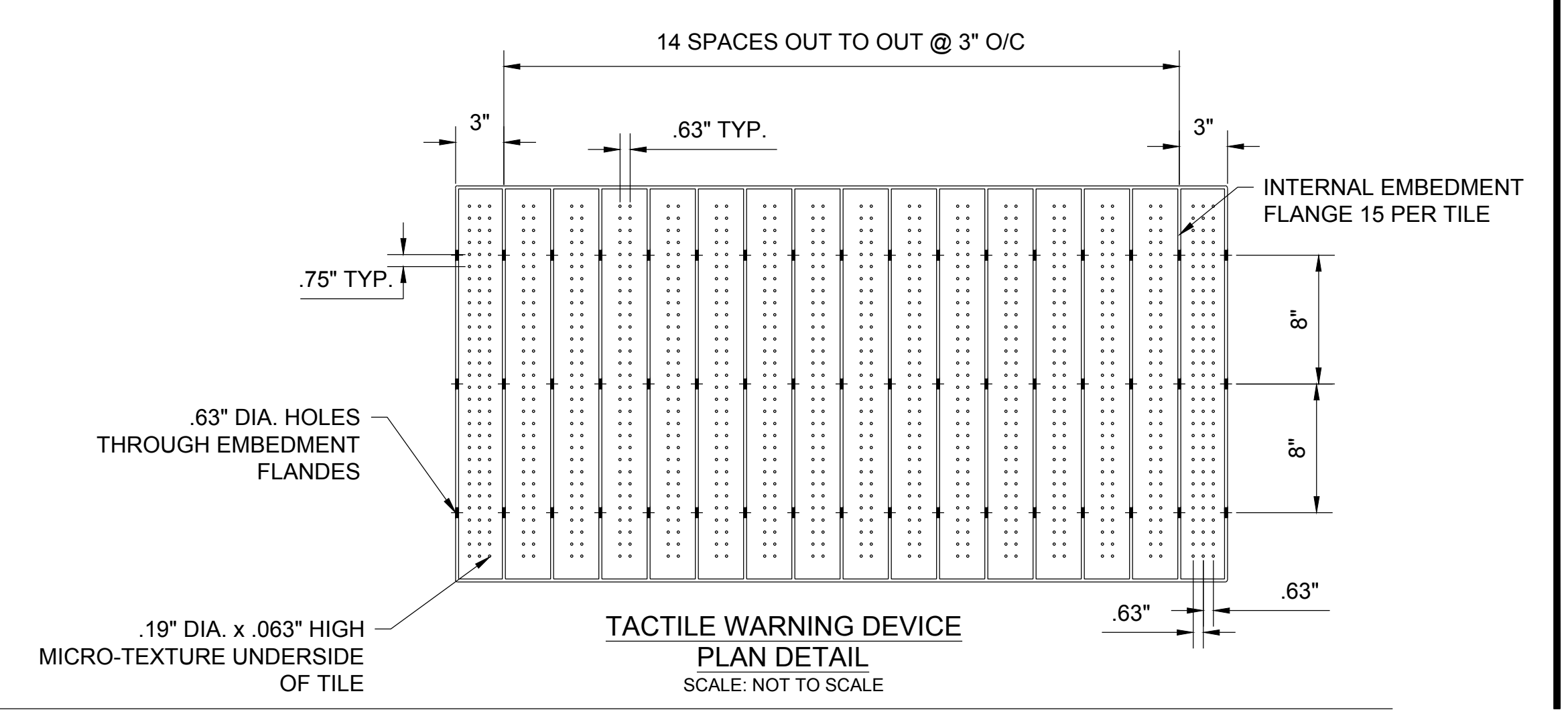
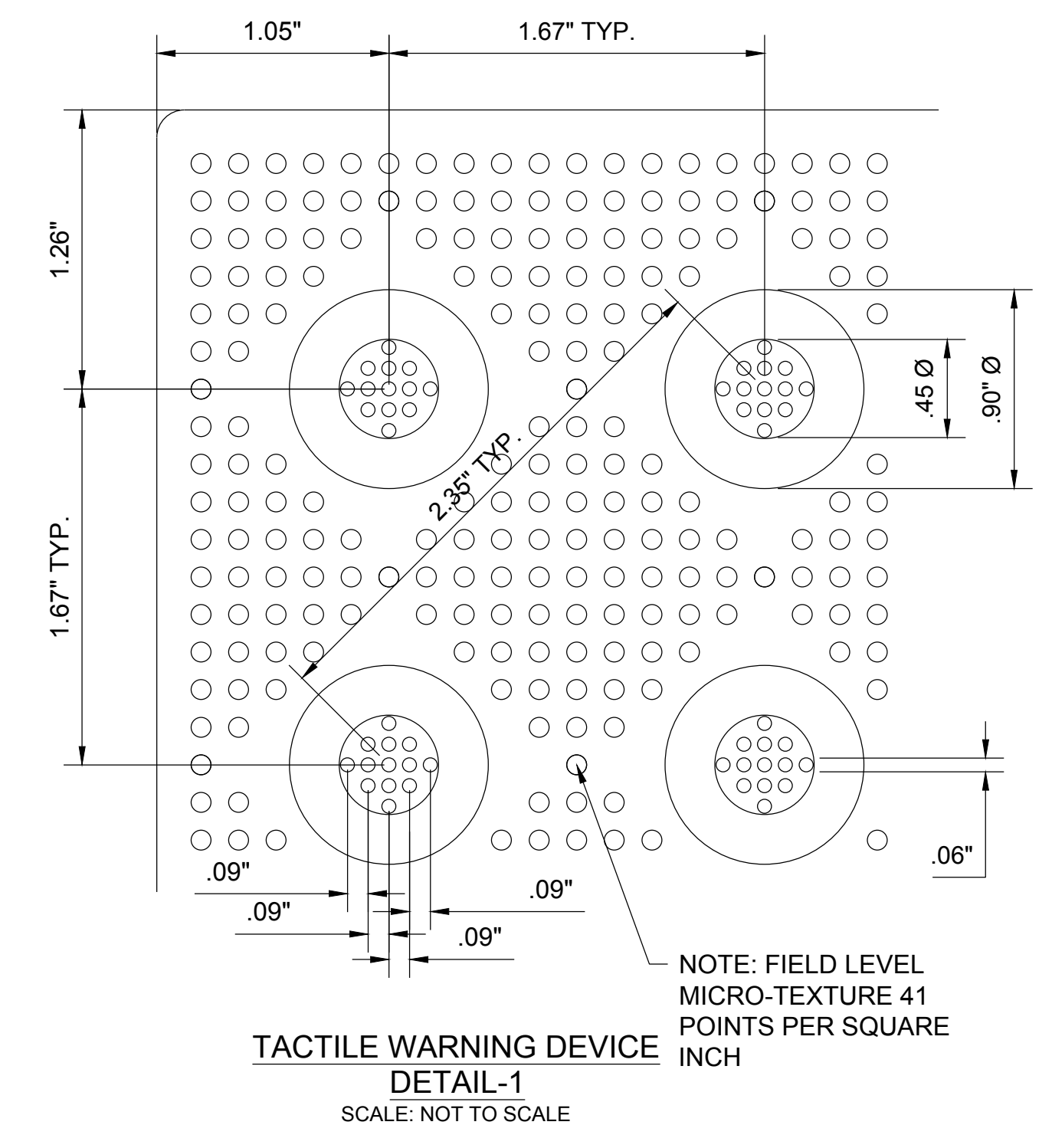
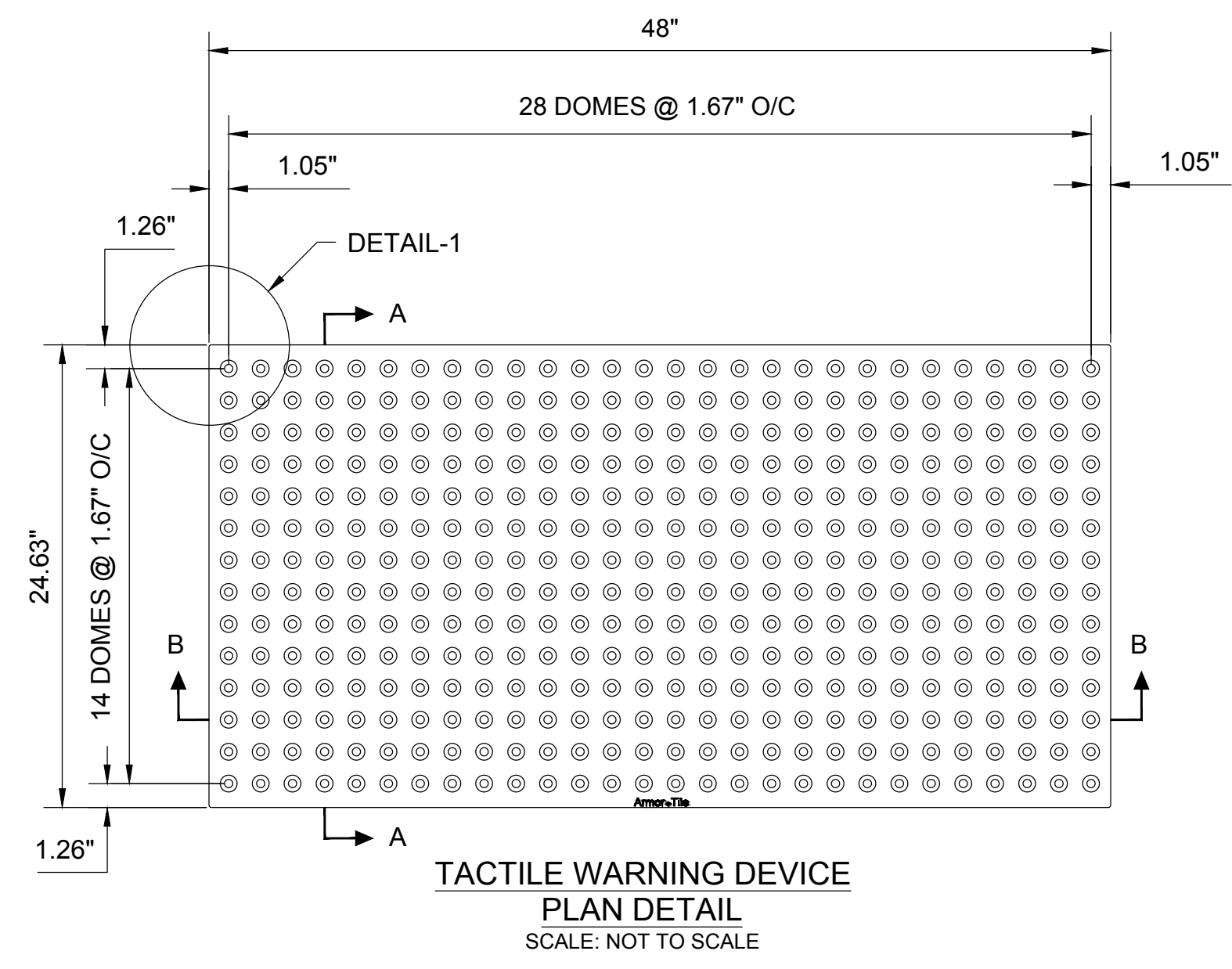
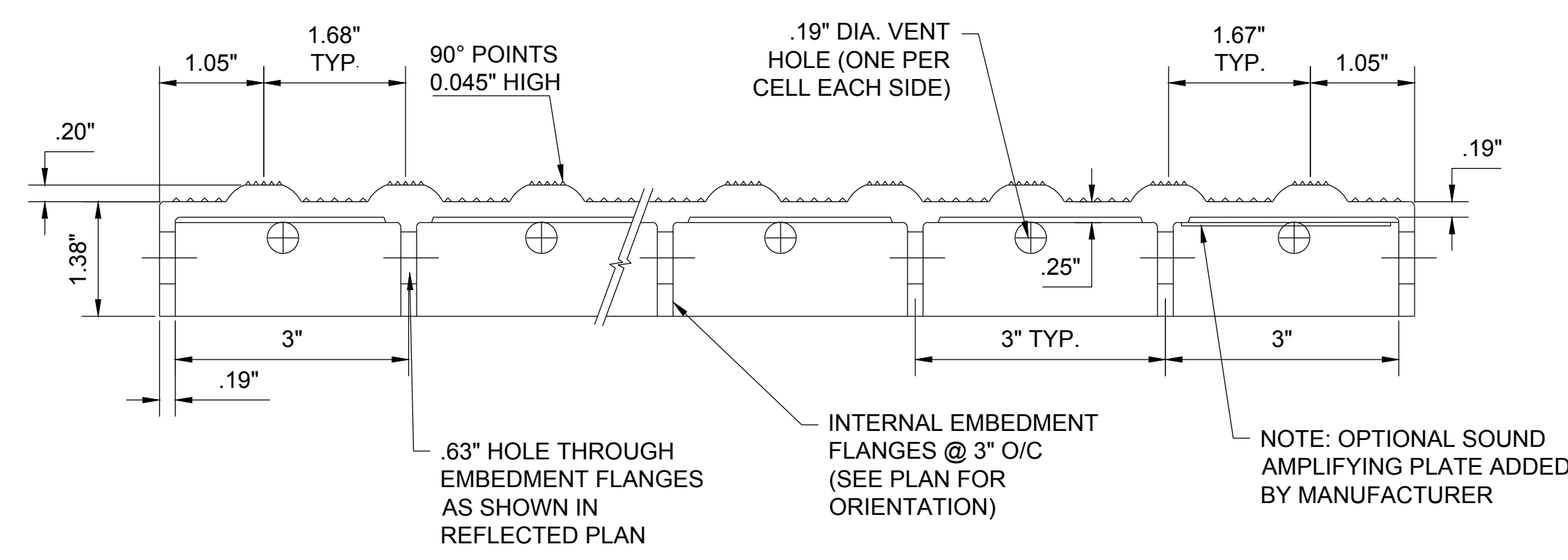
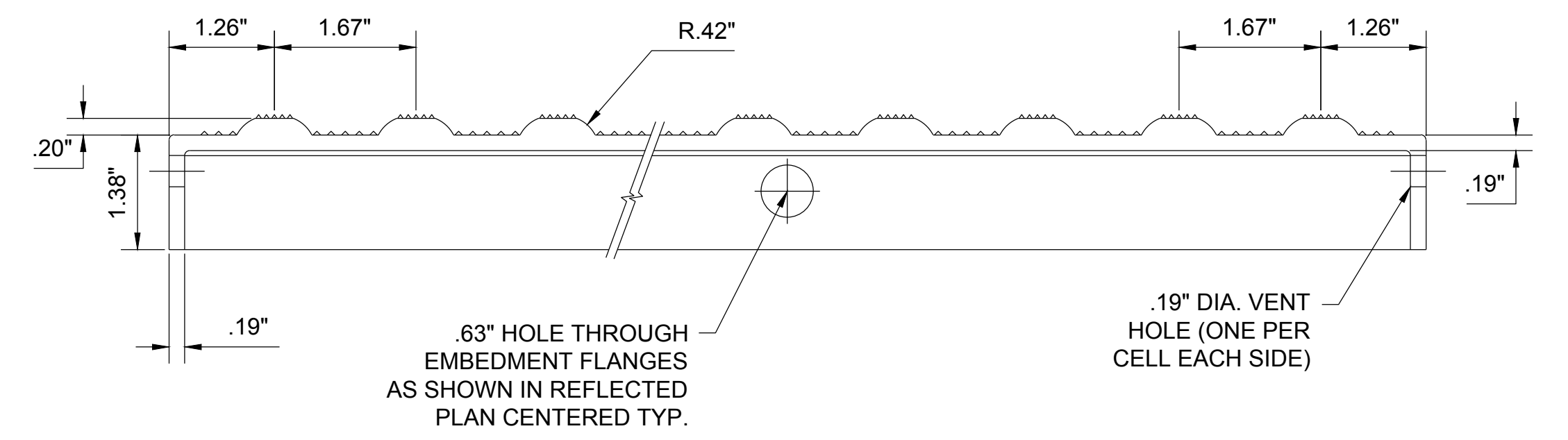
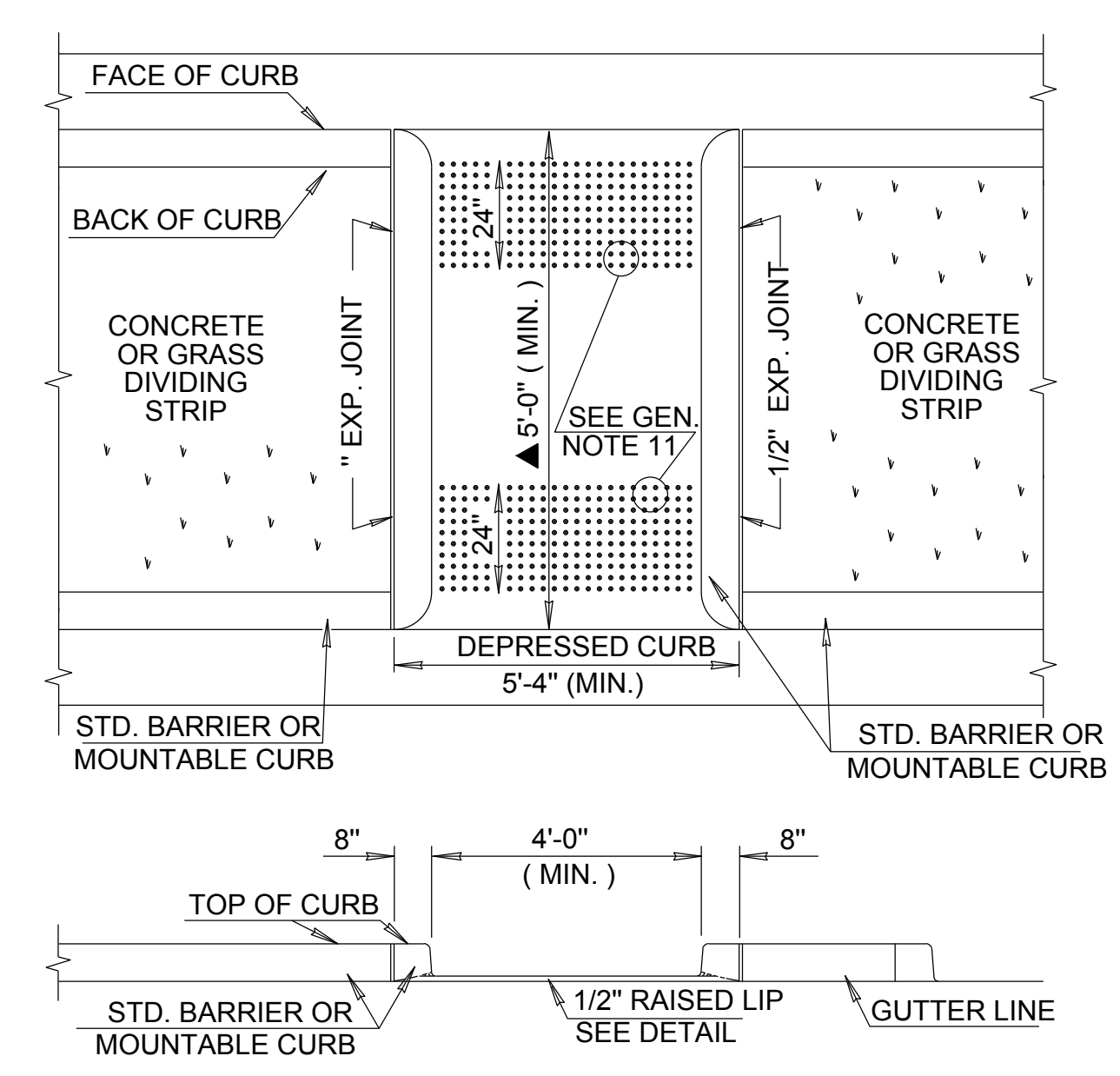


**NOTES:**  
\* LEAVE FOOTING BELOW GRADE WHERE PLACED IN SIDEWALK OR PAVEMENT.

- GENERAL NOTES:**
- ALL FEATURES OF TACTILE WARNING DEVICE DESIGN AND FINAL INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG). WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THE ADAAG, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURE(S). THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADAAG WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADAAG, FOR WHICH CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
  - TACTILE WARNING SURFACE SHALL EXTEND FROM EDGE TO EDGE OF WALKWAY ENTERING THE CROSSWALK AT STREET LEVEL.
  - TRUNCATED DOME SURFACE SHALL CONTRAST VISUALLY WITH THE ADJOINING WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE TRUNCATED SURFACE.
  - SURFACE BONDED TACTILE SYSTEMS MAY ONLY BE PLACED ON NEWLY POURED CONCRETE AFTER AN APPROPRIATE PERIOD OF CURING, IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
  - ROWS OF TACTILE DOME TREATMENT SHOULD BE ORIENTED PARALLEL WITH CENTERLINE OF SIDEWALK/RAMP OR TOWARD THE CENTERLINE OF MARKED CROSSWALK.
  - TACTILE SYSTEMS, DOME PATTERNS OR FEATURES DIFFERING FROM THOSE SHOWN ON THIS DETAIL, BUT MEETING CURRENT ADAAG SPECIFICATIONS, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
  - THE SAME TACTILE DOME PATTERN AND COLOR SHALL BE USED THROUGHOUT ANY NEW OR RETROFIT PROJECT. DOME PATTERN & LOCATION OF EXISTING RAMPS TO BE RETROFIT WITH TACTILE DEVICES SHALL BE DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
  - WET OR DRY STATIC COEFFICIENT OF FRICTION SHALL BE 0.7 FOR TACTILE SURFACES AND MEET ASTM 1028.
  - TACTILE WARNING SURFACES MAY NOT BE STAMPED IN WET CONCRETE.
  - TACTILE SYSTEMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 200 PSI. COMPRESSIVE TEST SHALL CONFIRM TO ASTM D695.



- GENERAL NOTES:**
- THERE WILL BE NO DEDUCTION OF PAYMENT FOR CONCRETE CURB & GUTTER AND/OR INTEGRAL CURB FOR THE LENGTH OF THE DEPRESSED CURB.
  - RAMP DIMENSIONS SHOWN ARE BASED ON A CURB HEIGHT OF SIX INCHES. THE DIMENSIONS SHOULD BE ADJUSTED FOR OTHER CURB HEIGHTS. THE MAXIMUM PERMISSIBLE SLOPES OF THE WHEELCHAIR RAMPS IS 8.33% (12:1). RAMP SLOPE MAY BE 10:1 (MAX.) ALONG FACE OF TAPERED CURB.
  - TRANSVERSE GROOVING SHALL BE REQUIRED ON RAMPS, AS SHOWN ON THIS SHEET. SEE 1999 ENGLISH STANDARD SPECIFICATIONS, SECTION 414.04(k). (PAINT RAMPS BLUE)
  - DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS.
  - THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP WITH A 50:1 SLOPE (MAX.), SEE NOTE NO. 10.
  - WHEELCHAIR RAMPS SHOULD BE LOCATED SO THAT THE RAMP WILL BE ON THE TRAFFIC APPROACH SIDE OF ANY OBSTACLE.
  - WHEELCHAIR RAMPS SHOULD BE BUILT AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THE TYPE OF RAMP WILL BE DESIGNATED ON THE PLANS. IF A RAMP IS TO BE CONSTRUCTED AS A COMBINATION OF TWO TYPES, (ONE SIDE TYPE A AND ONE SIDE TYPE B) THE RAMP SHALL BE DESIGNATED AS TYPE A-B.
  - PIPE RAILING CONSTRUCTION DETAILS, WHEN REQUIRED AT TYPE B WHEEL CHAIR RAMPS, WILL BE SHOWN ON THE PLANS.
  - EXCAVATION, BACKFILL, EXPANSION JOINT MATERIAL, SEALERS, AND OTHER RELATED MISCELLANEOUS ITEMS WILL NOT BE PAID FOR SEPARATELY BUT THE COST THEREOF SHALL BE INCLUDED IN THE COST OF THE SIDEWALK.
  - ALL FEATURES OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, SIDEWALKS, CURB RAMPS AND CROSSWALK MARKINGS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT, ACCESSIBILITY GUIDELINES (ADAAG). WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THE ADAAG, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURE(S). THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADAAG WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADAAG, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
  - TACTILE WARNING DEVICES ARE REQUIRED. A SPECIAL CONSTRUCTION STANDARD DRAWING OR DETAIL SHEET WILL BE INCLUDED IN THE PLANS.



KEY PLAN

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

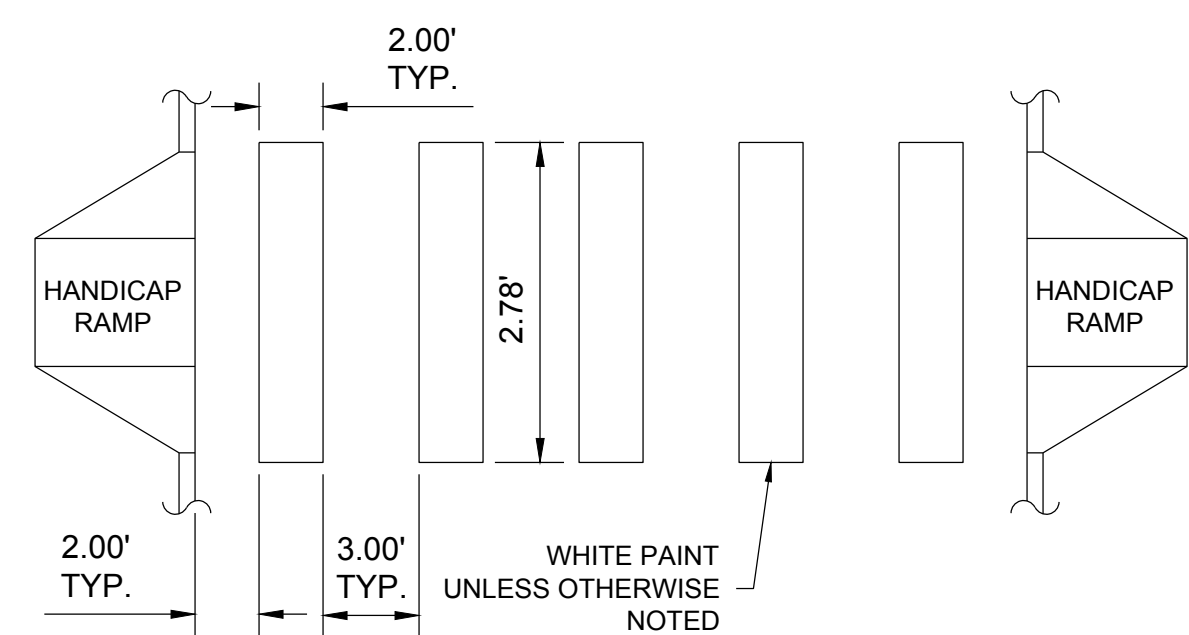
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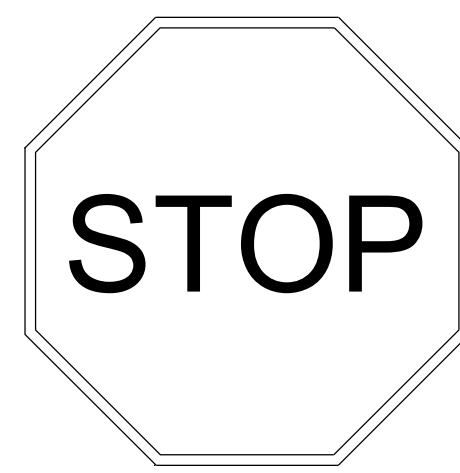
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TYPICAL STRIPING DETAILS

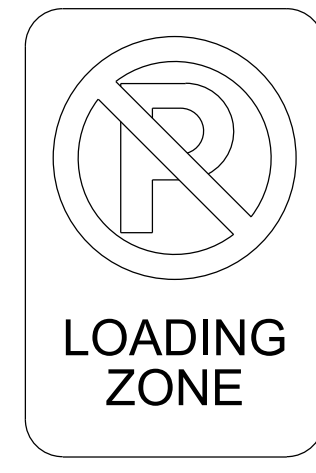




TYP. CROSSWALK INSTALLATION  
NOT TO SCALE



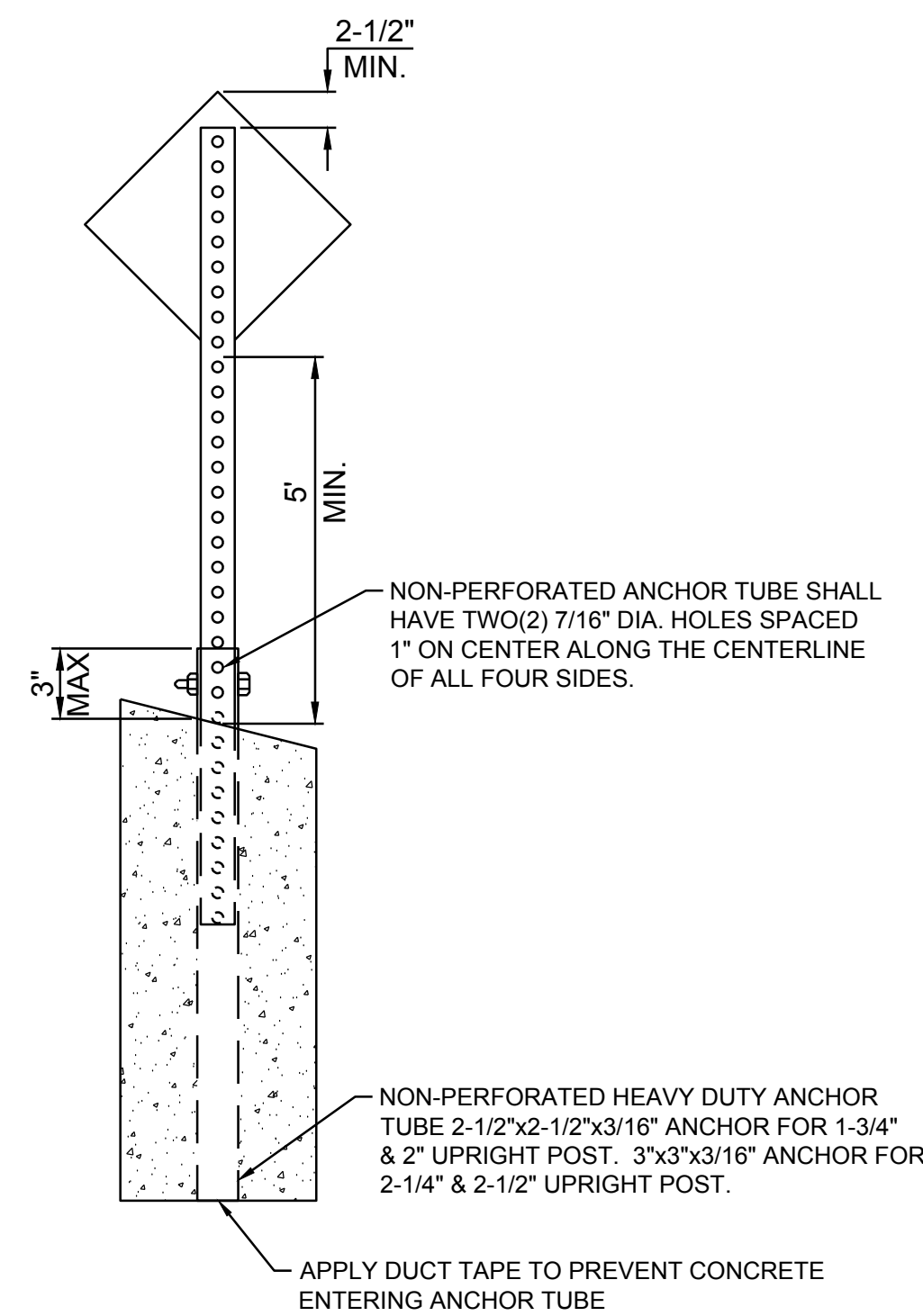
R1-1



R7-6

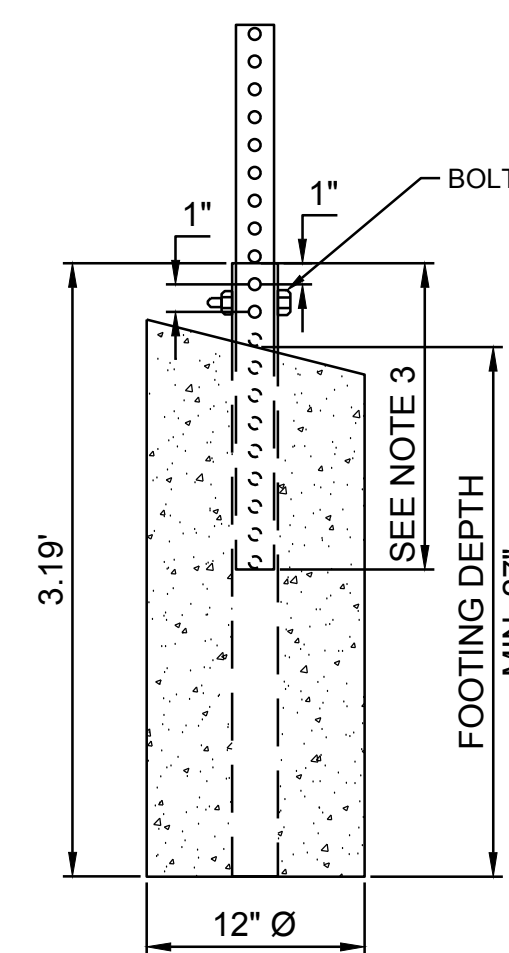
- 2 STOP R1-1 30"x30"
- 2 NO PARKING LOADING ZONE R7-6 12"x18"

NOTE:  
1. ALL SIGNS MOUNTED 7' TO BOTTOM OF SIGN

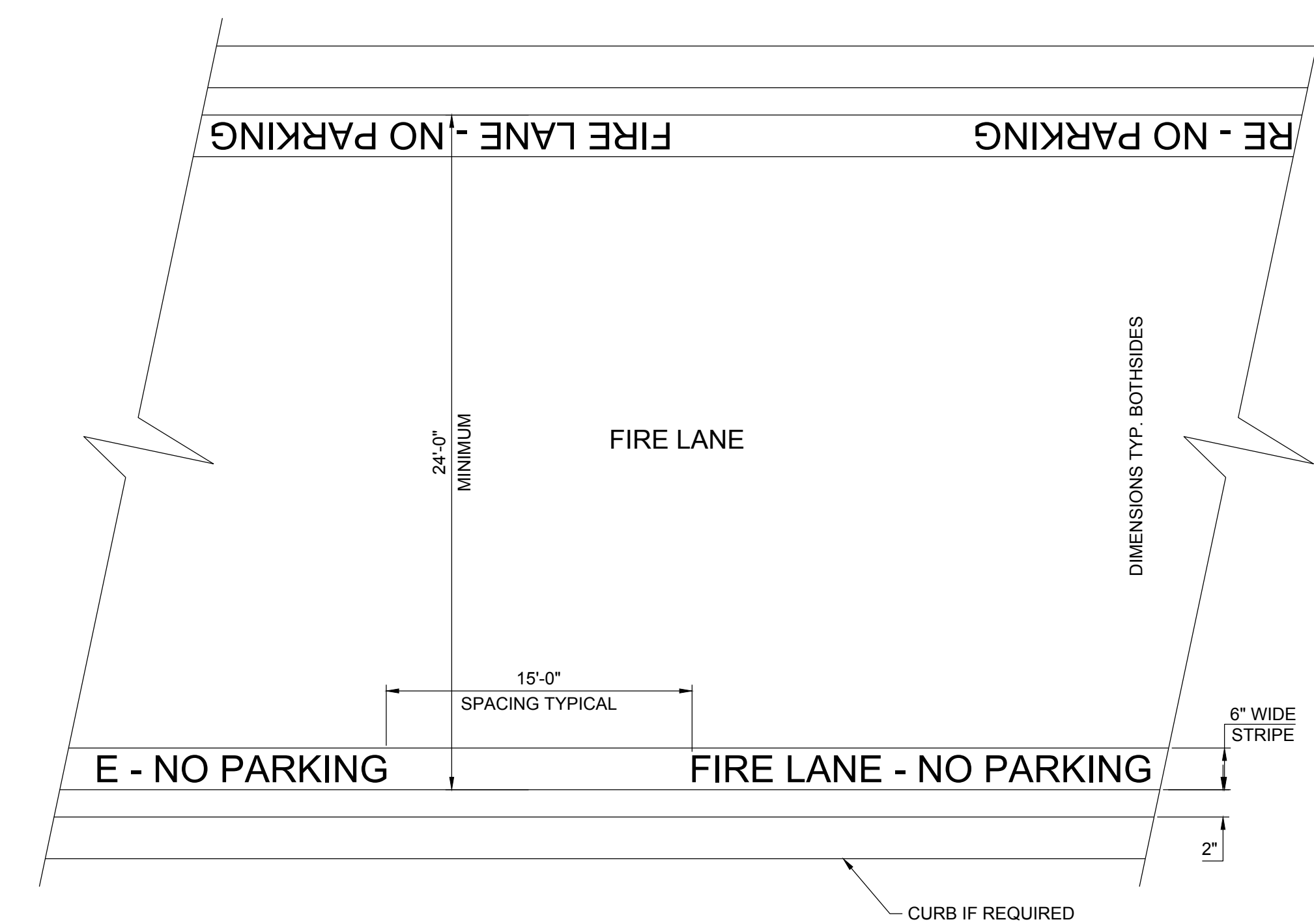


TYPICAL POST INSTALLATION  
NOT TO SCALE

- NOTES:
- POST TUBE SHALL MEET ASTM A1011 GRADE 50. POST TUBE GALVANIZED AS PER ASTM A653 GRADE 90.
  - HEAVY DUTY ANCHOR TUBE SHALL MEET ASTM A500 GRADE B STRUCTURAL TUBE AND STEEL SHALL BE HOT DIP GALVANIZED PER ASTM A123.
  - THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE A MINIMUM OF 12". ANCHOR TUBE SHALL BE MINIMUM OF 30" WITH IN 3" MAXIMUM AS SHOWN ON DETAIL.



ANCHOR TUBE & HEAVY DUTY ANCHOR TUBE DETAIL  
NOT TO SCALE



FIRE LANE STRIPING DETAIL  
NOT TO SCALE

FIRE LANE DESIGN SPECIFICATION:

DESIGNATED FIRE LANES:

TO MEET THE REQUIREMENTS OF THE FIRE DEPARTMENT FOR ADEQUATE HORIZONTAL EMERGENCY ACCESS, ALL PARTS OF ALL BUILDINGS MUST BE WITHIN ONE HUNDRED FIFTY(150) FEET OF A PUBLIC STREET OR A DESIGNATED FIRE LANE.

- FIRE LANE WIDTH: MINIMUM FIRE LANE WIDTH SHALL BE AT LEAST TWENTY-FOUR(24) FEET CLEAR (FACE TO FACE OF CURBS) WITHOUT HORIZONTAL OBSTRUCTIONS.
- FIRE LANE VERTICAL CLEARANCE: MINIMUM FIRE LANE VERTICAL CLEARANCE SHALL BE AT LEAST FOURTEEN FEET ZERO INCHES (14'-0").
- INTERSECTION: THE FIRE LANE MUST INTERSECT WITH A DEDICATED STREET R.O.W. IN ADDITION IF THIS FIRE LANE EXCEED ONE HUNDRED FIFTY(150) FEET IN LENGTH, IT MUST INTERSECT WITH A DEDICATED STREET R.O.W. AT EACH END OF THE FIRE LANE OR TERMINATE IN A CONFIGURATION TO ALLOW ADEQUATE TRUCK TURN AROUND.
- PAVING SURFACE: THE FIRE LANE SHALL BE PAVED IN ACCORDANCE WITH THE STANDARDS AS HEREIN DETAILED.

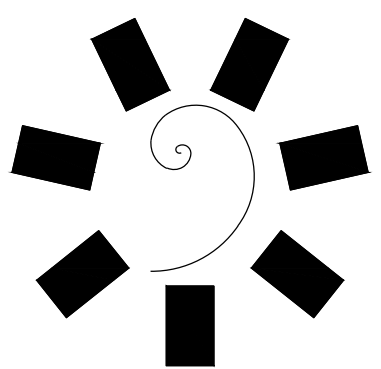
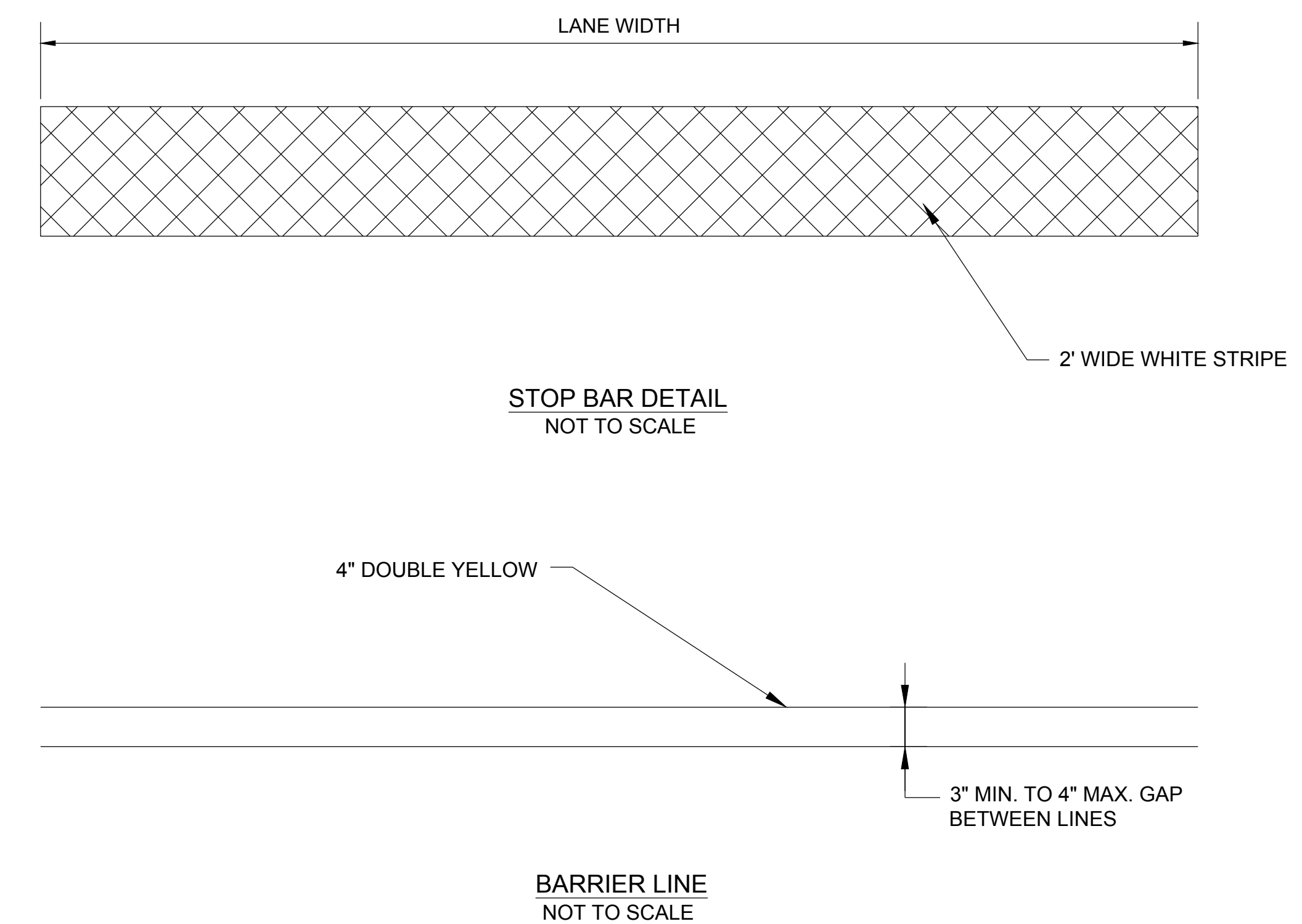
FIRE LANE STRIPING DETAILS AND SPECIFICATION:

A. PAINT:

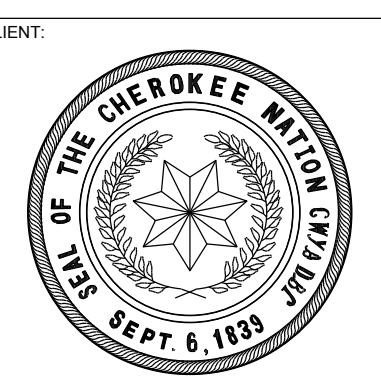
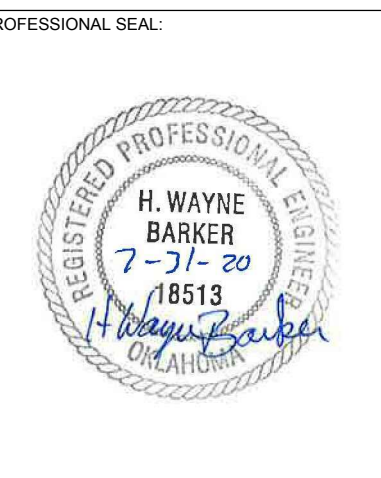
- STRIPE SHALL BE SIX(6) INCHES HIGH PAINTED WITH AN EXTERIOR ACRYLIC PAINT. COLOR SHALL BE "TRAFFIC RED" GLIDDEN NO. 63251 OR EQUAL.
- LETTERS SHALL BE FOUR(4) INCHES HIGH PAINTED WITH AN EXTERIOR ACRYLIC PAINT. COLOR SHALL BE "TRAFFIC WHITE" GLIDDEN NO. 563245 OR EQUAL.

B. APPLICATION:

- PAVEMENT SHALL BE PREPARED BY SAND BLASTING OR GRINDING FOLLOWED BY HIGH PRESSURE AIR TO BLOW OFF DEBRIS. ALL CURE SHALL BE REMOVED FROM NEW PAVEMENT TO ALLOW PROPER BONDING OF PAINT.
- STRIPE MAY BE BRUSHED OR SPRAYED. ONE COAT TO FINISH.
- LETTERS SHALL BE STENCIL FORM, BRUSH APPLIED AND SPACED AS DETAILED ON THIS SHEET.



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CATOOSA, OKLAHOMA

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

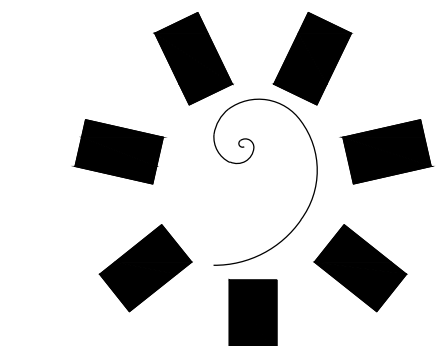
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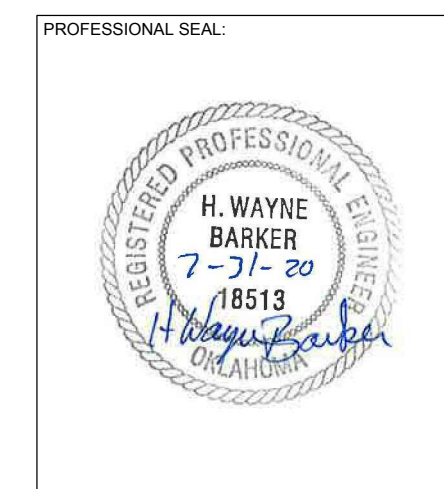
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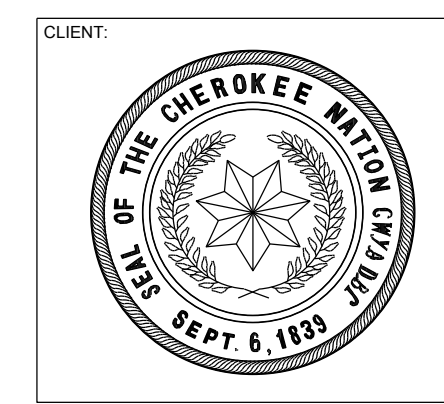




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KEY PLAN

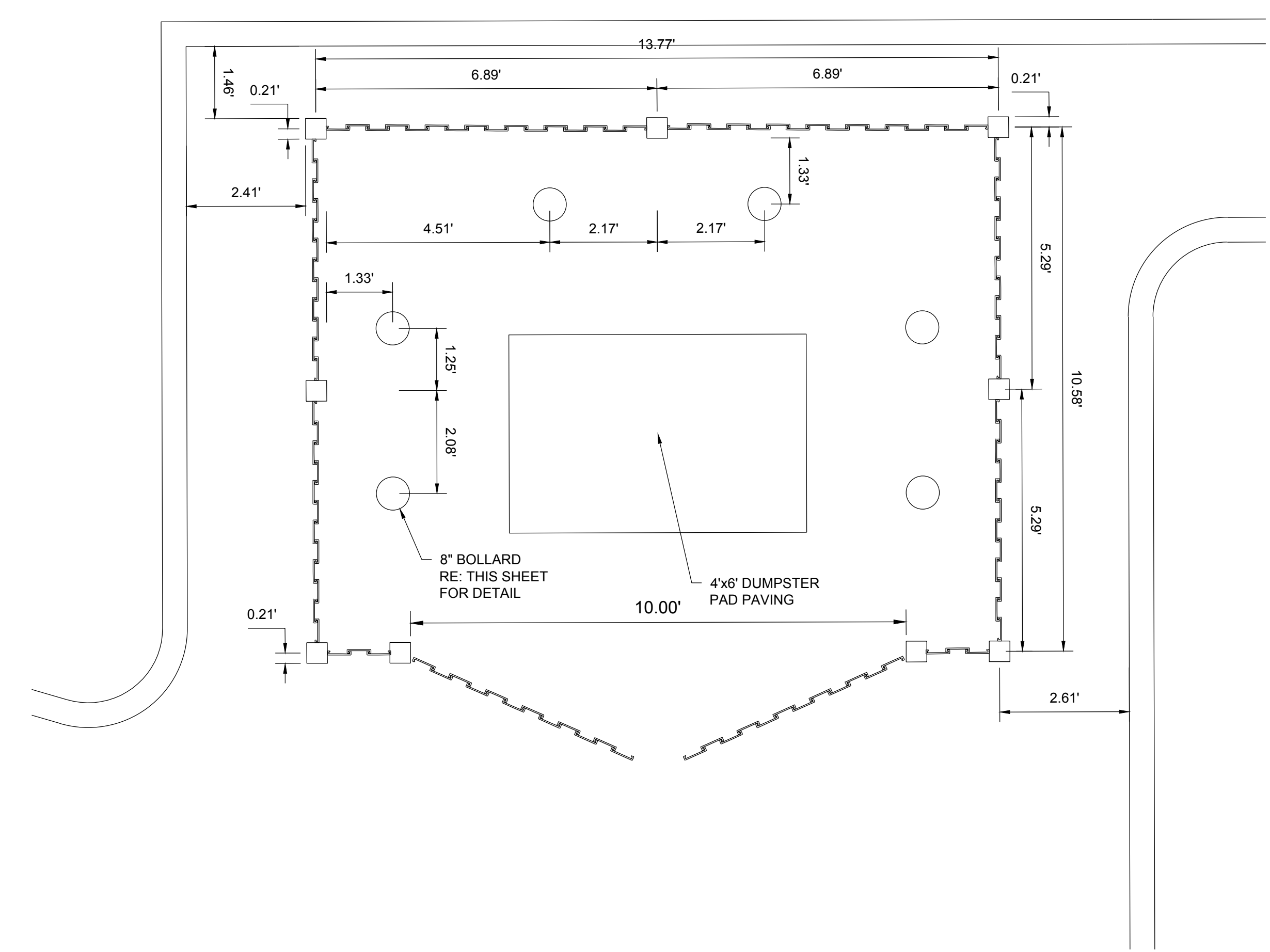
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**CONSTRUCTION DOCUMENTS**

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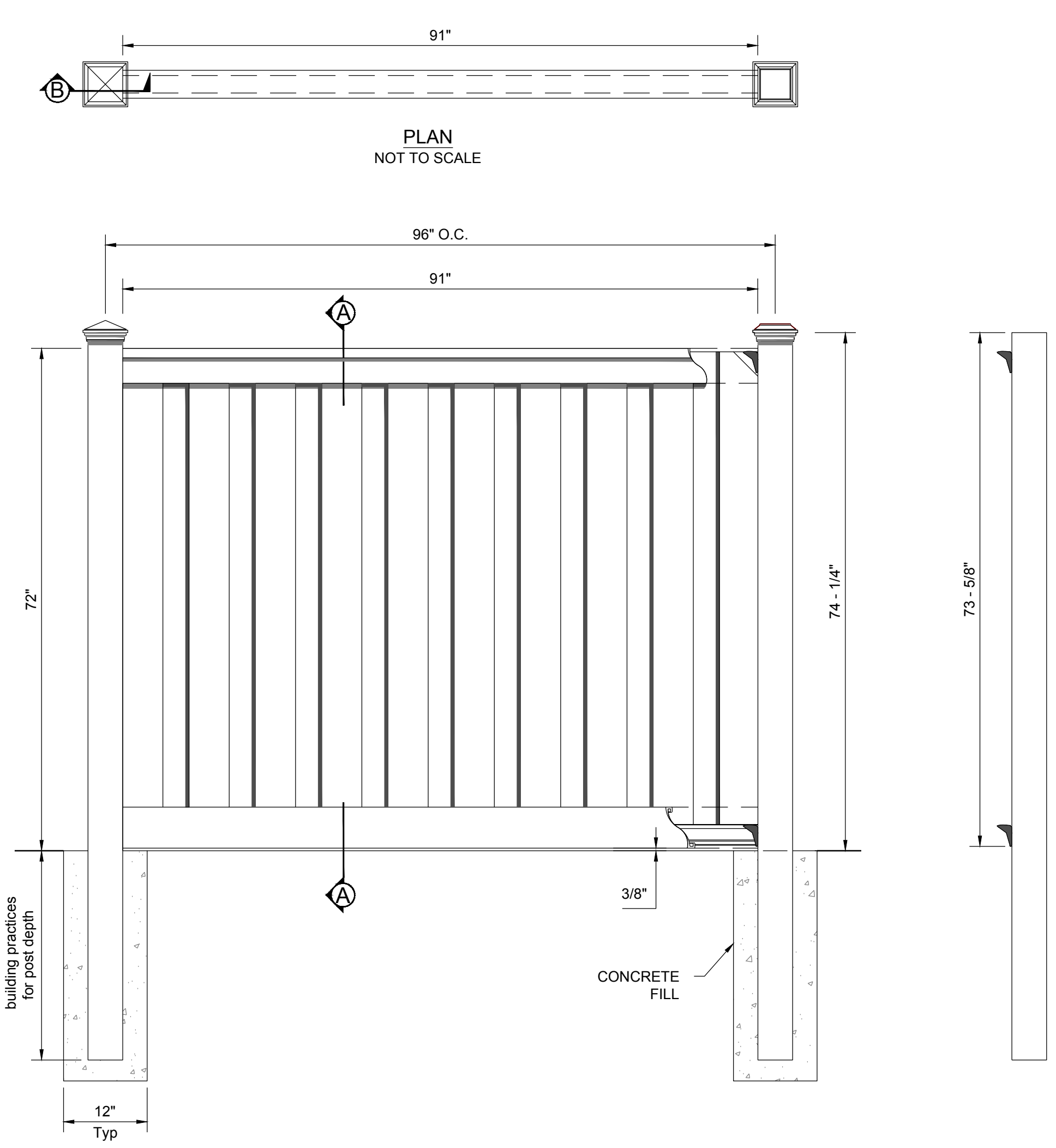
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SHEET NUMBER: **CP504**

TYPICAL DUMPSTER DETAILS

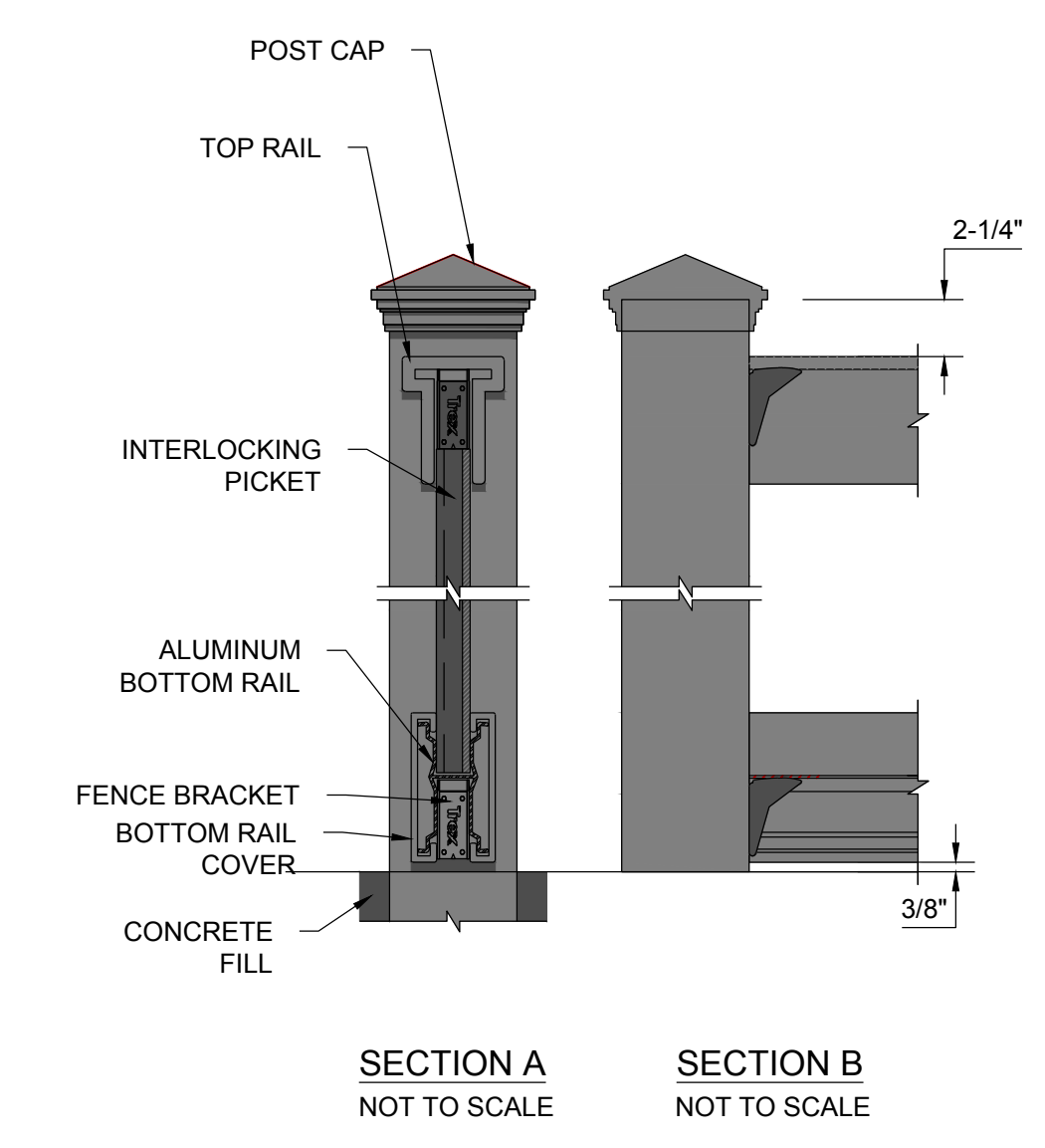


**DUMPSTER ENCLOSURE  
PLAN VIEW  
NOT TO SCALE**



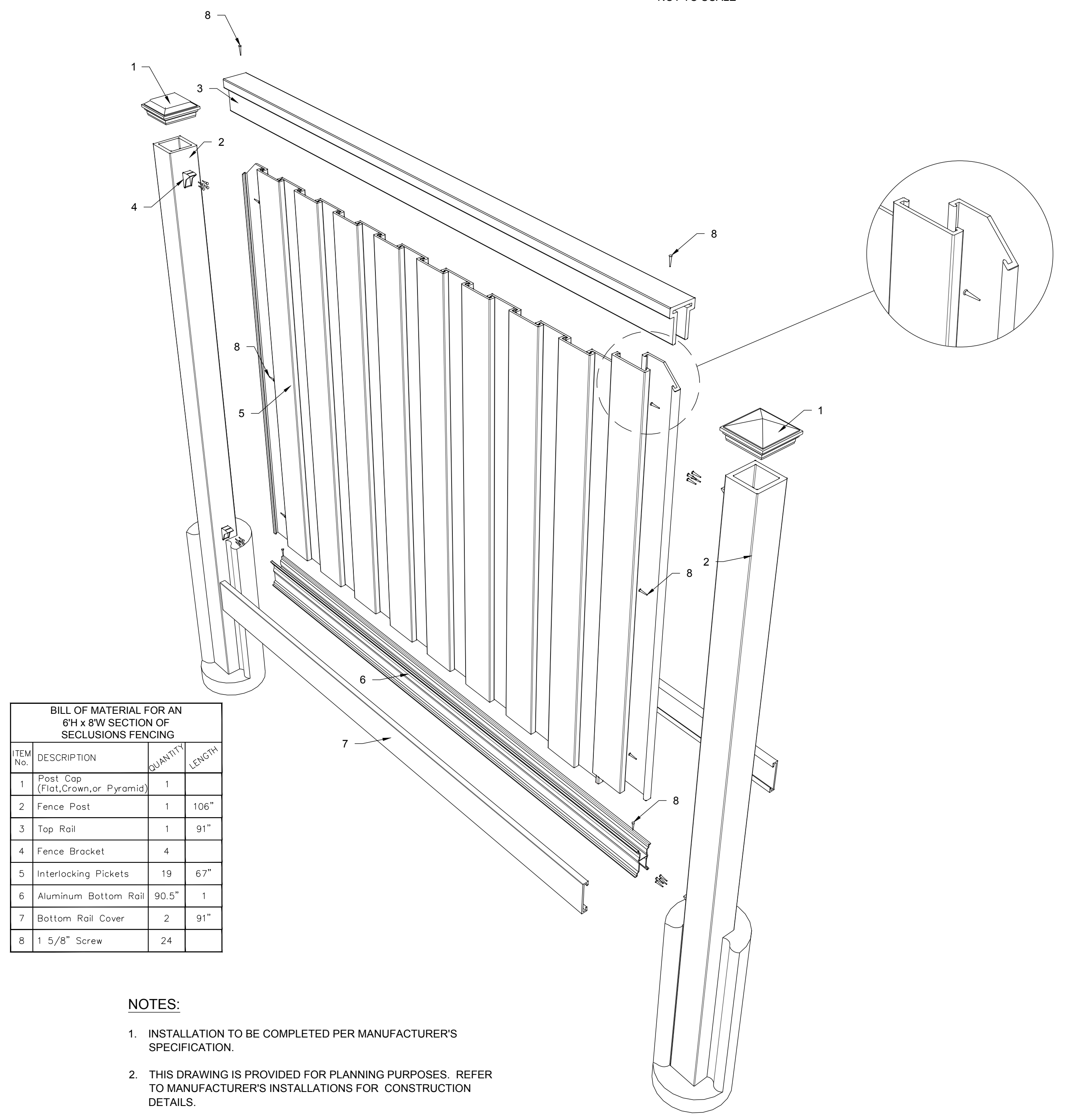
**WALL FRAMING  
NOT TO SCALE**

- NOTES:**
1. INSTALLATION TO BE COMPLETED PER MANUFACTURER'S SPECIFICATION.
  2. THIS DRAWING IS PROVIDED FOR PLANNING PURPOSES. REFER TO MANUFACTURER'S INSTALLATIONS FOR CONSTRUCTION DETAILS.
  3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT INFORMATION.
  4. DRAWING NOT TO SCALE.



**SECTION A  
NOT TO SCALE**

**SECTION B  
NOT TO SCALE**

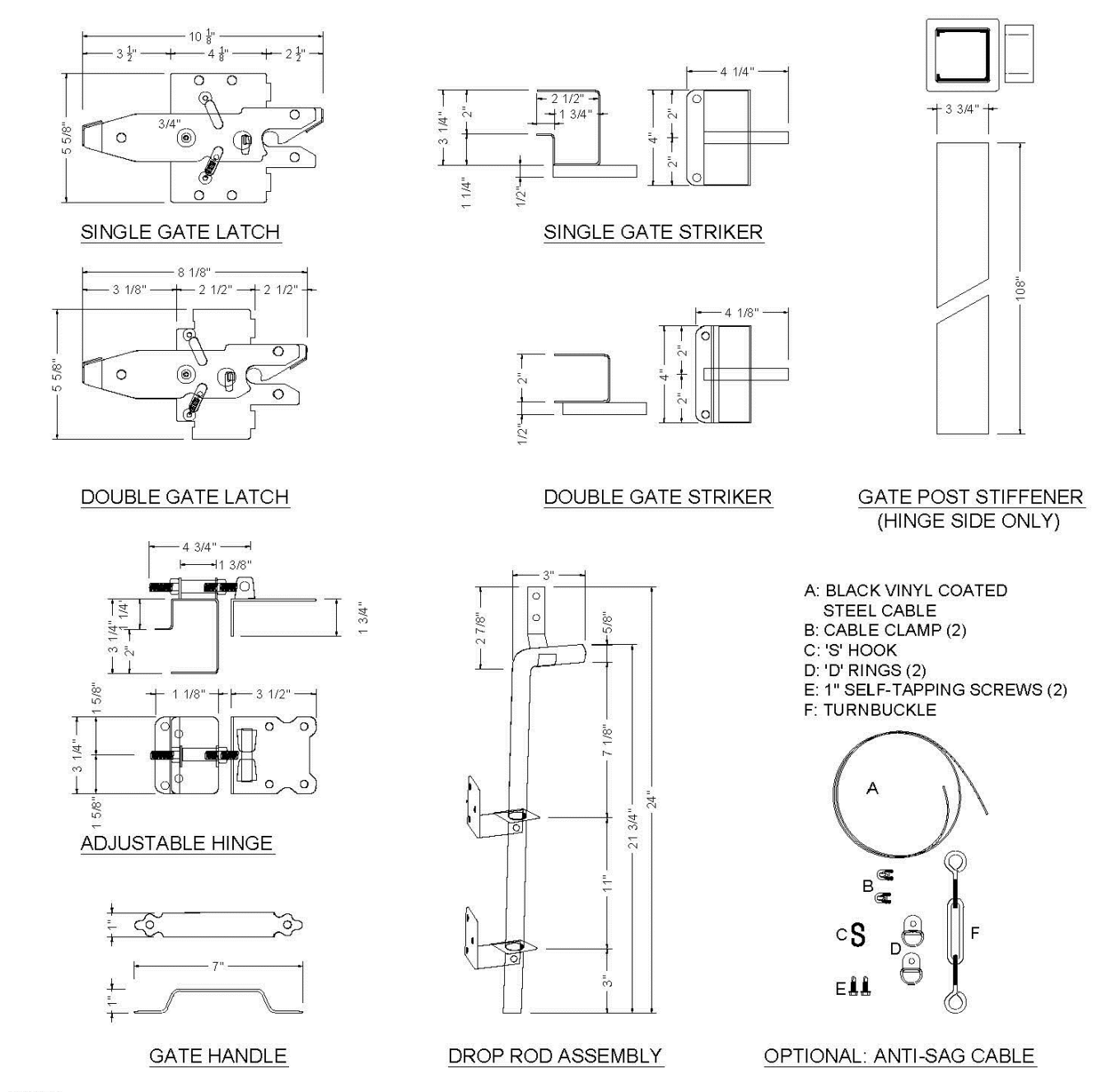


**BILL OF MATERIAL FOR AN 6'H x 8'W SECTION OF SECLUSIONS FENCING**

ITEM No.	DESCRIPTION	QUANTITY	LENGTH
1	Post Cap (Flat, Crown, or Pyramid)	1	106"
2	Fence Post	1	106"
3	Top Rail	1	91"
4	Fence Bracket	4	
5	Interlocking Pickets	19	67"
6	Aluminum Bottom Rail	90.5"	1
7	Bottom Rail Cover	2	91"
8	1 1/8" Screw	24	

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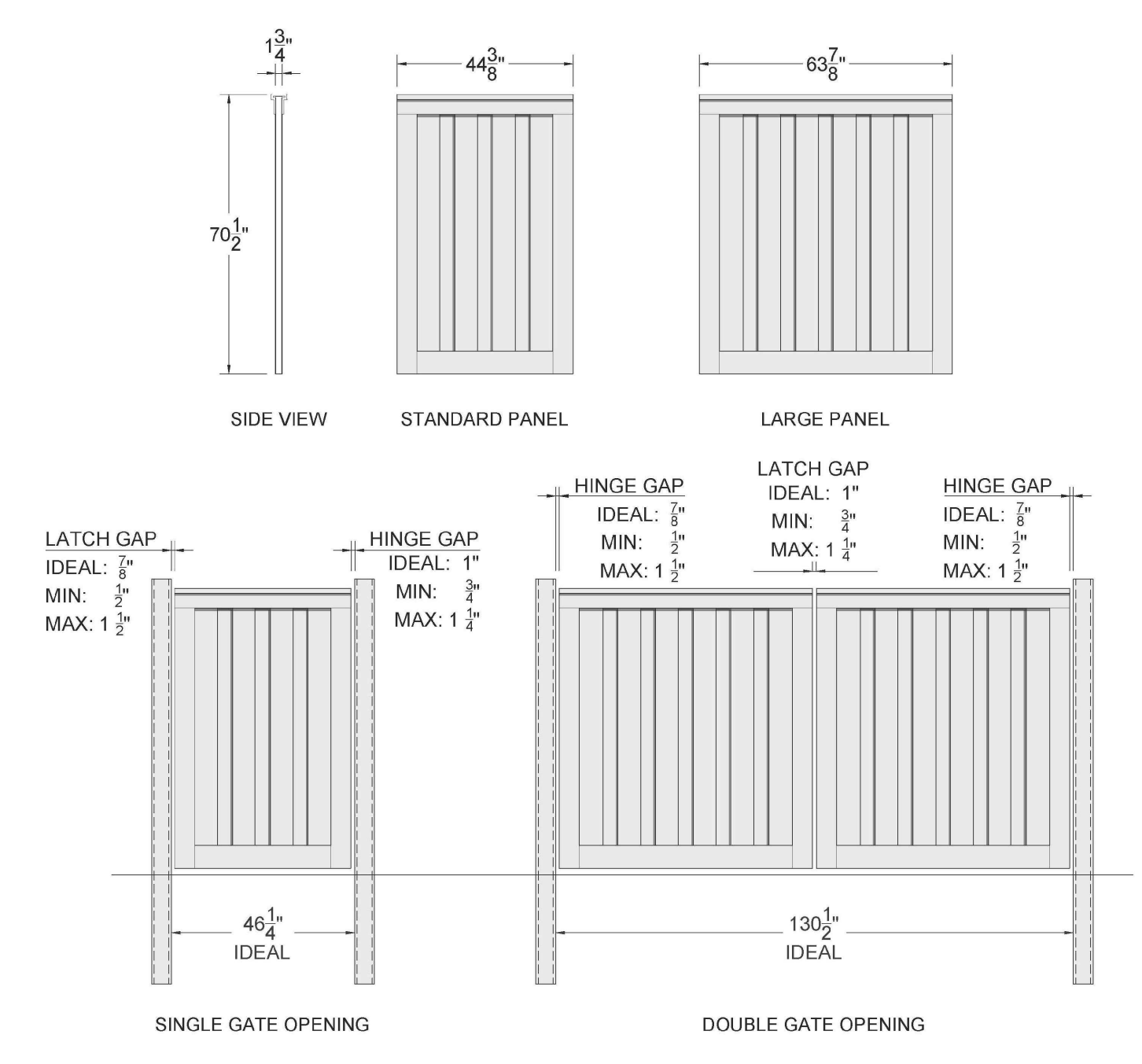
**TREX SECLUSIONS FENCING  
EXPLODED VIEW  
NOT TO SCALE**



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  3. REFER TO MANUFACTURER'S WEBSITE FOR PRODUCT INFORMATION.
  4. DRAWING NOT TO SCALE.
- ALL TREX GATE HARDWARE IS MADE OF STAINLESS STEEL AND IS POWDER-COATED BLACK. SELF-TAPPING SCREWS ARE INCLUDED.

**TREX FENCING GATE HARDWARE  
NOT TO SCALE**

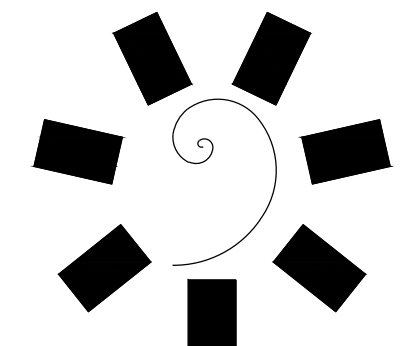
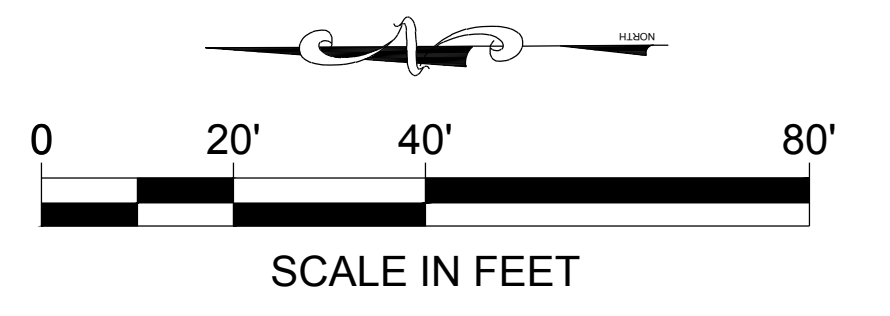
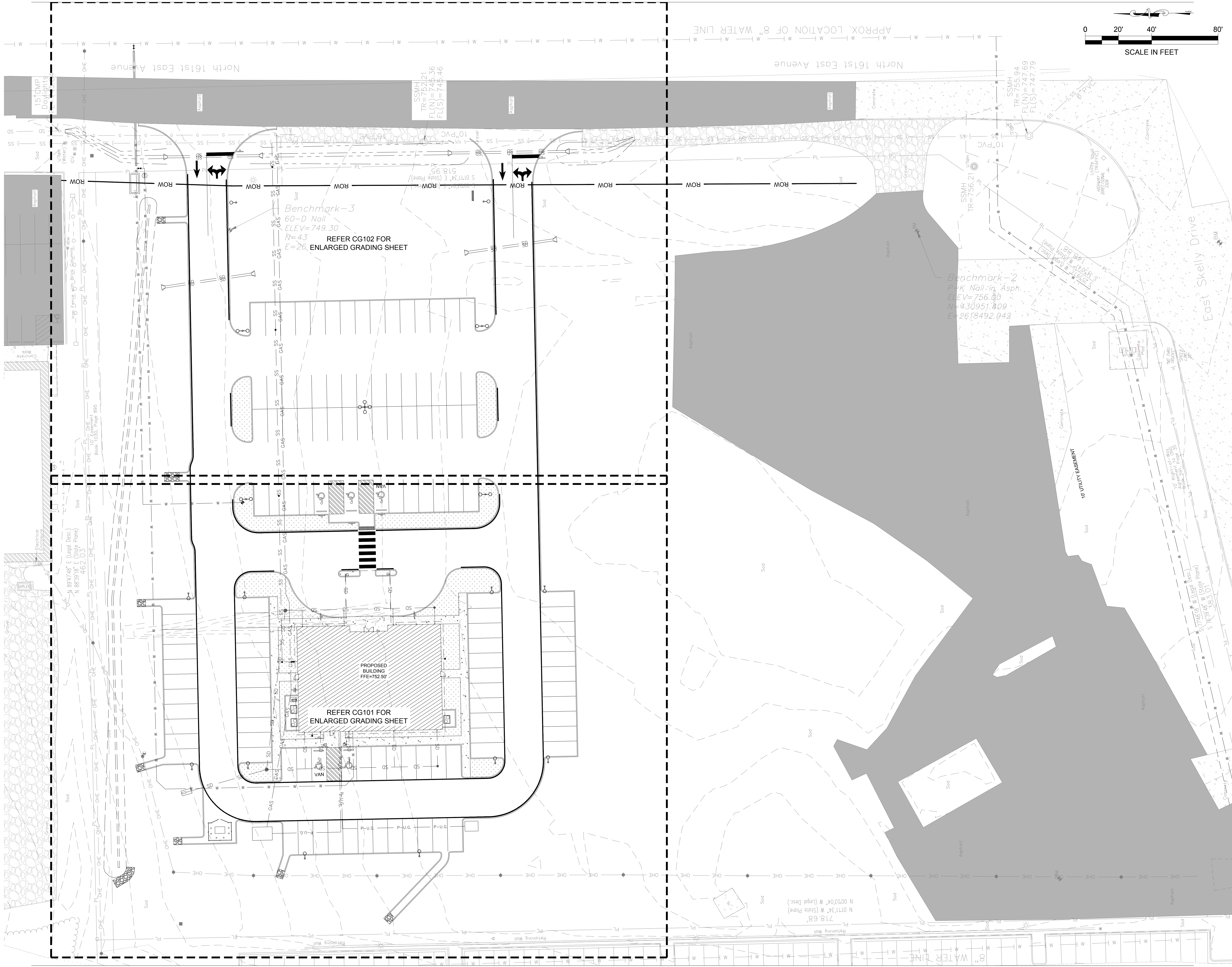
**TREX SECLUSION FENCE DETAILS  
NOT TO SCALE**



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  4. DRAWING NOT TO SCALE.

**TREX SECLUSIONS  
FENCING GATE DETAILS  
NOT TO SCALE**

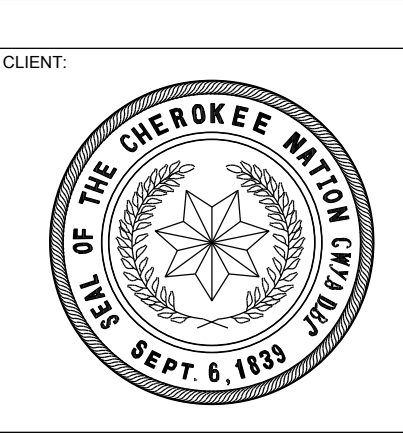




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3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580 931 9045  
OK CD 18584  
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KEY PLAN

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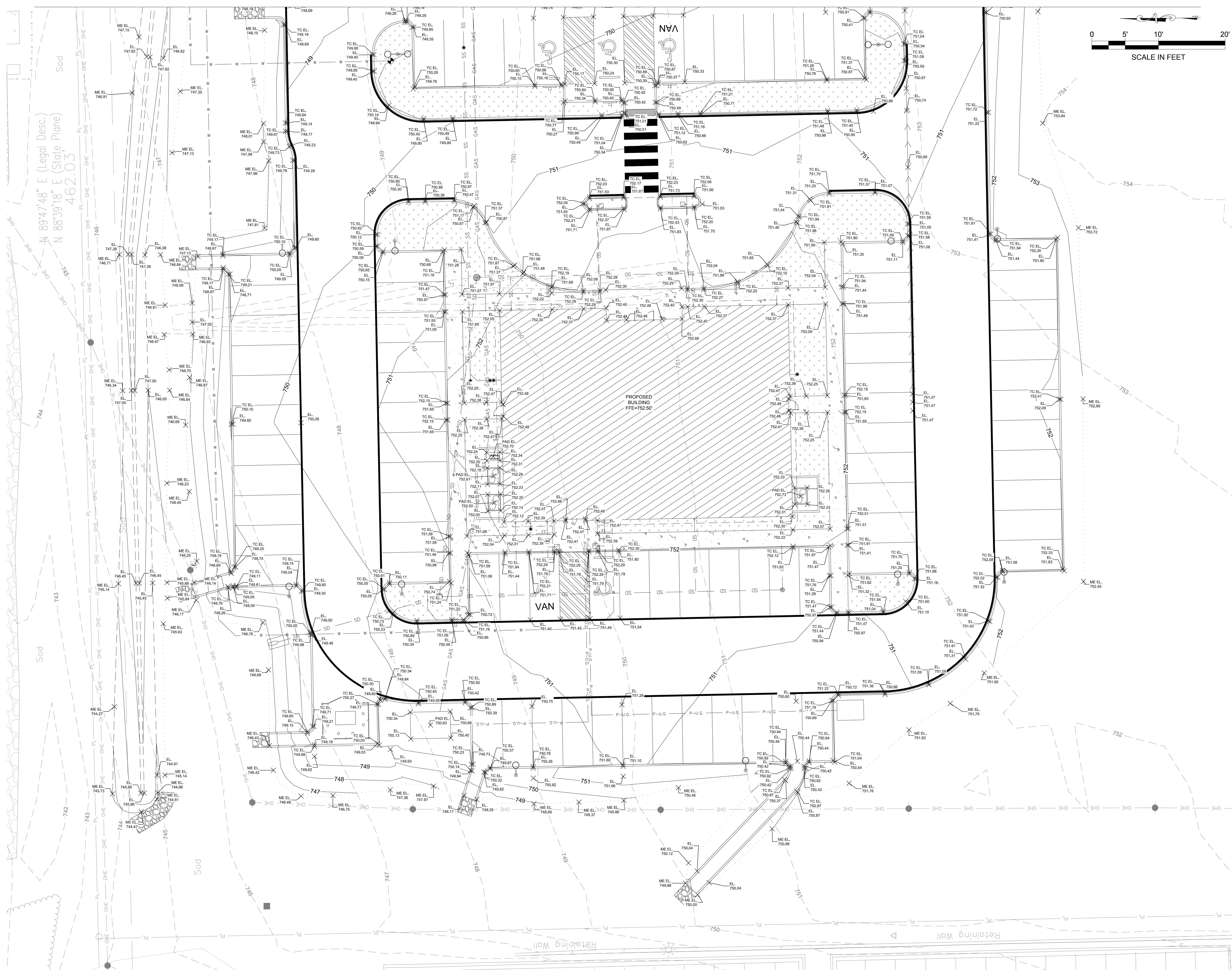
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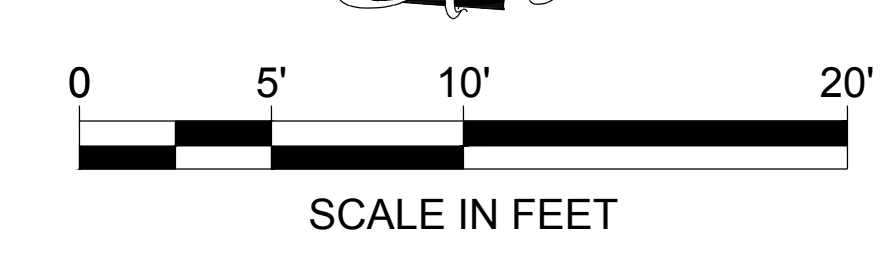
SHEET NUMBER: **CG100**

OVERALL GRADING KEY MAP





N 89°47'48" E (Legal Desc.)  
N 88°39'18" E (State Plane)  
462.03'



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PROFESSIONAL SEAL

H. WAYNE  
BARKER  
7-31-20  
18513  
H. Wayne Barker  
Oklahoma

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3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK. CIV. 38589  
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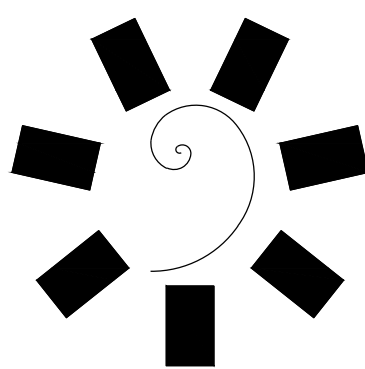
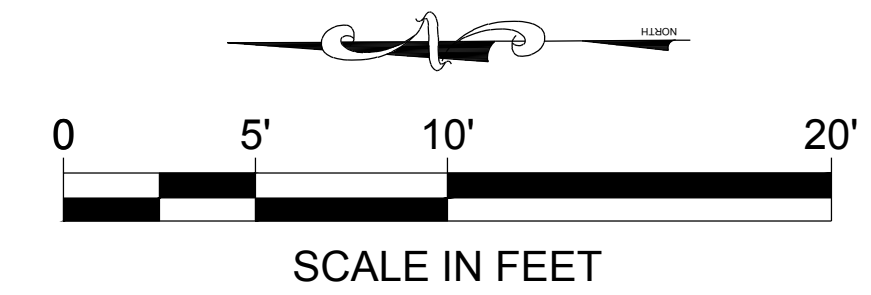
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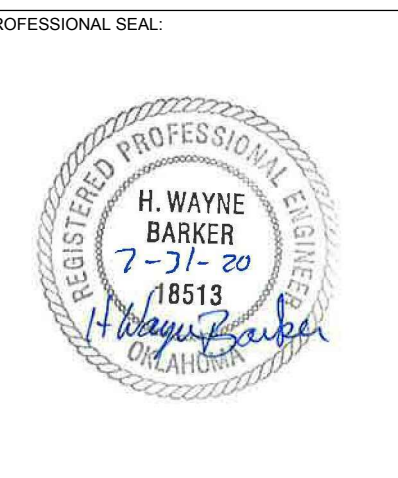
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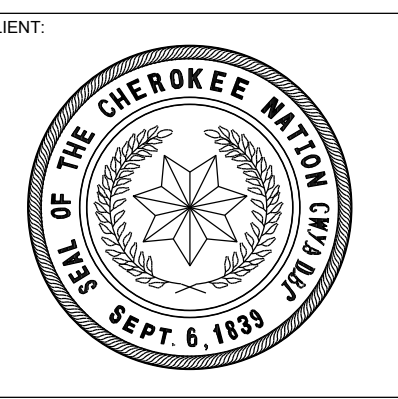




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PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

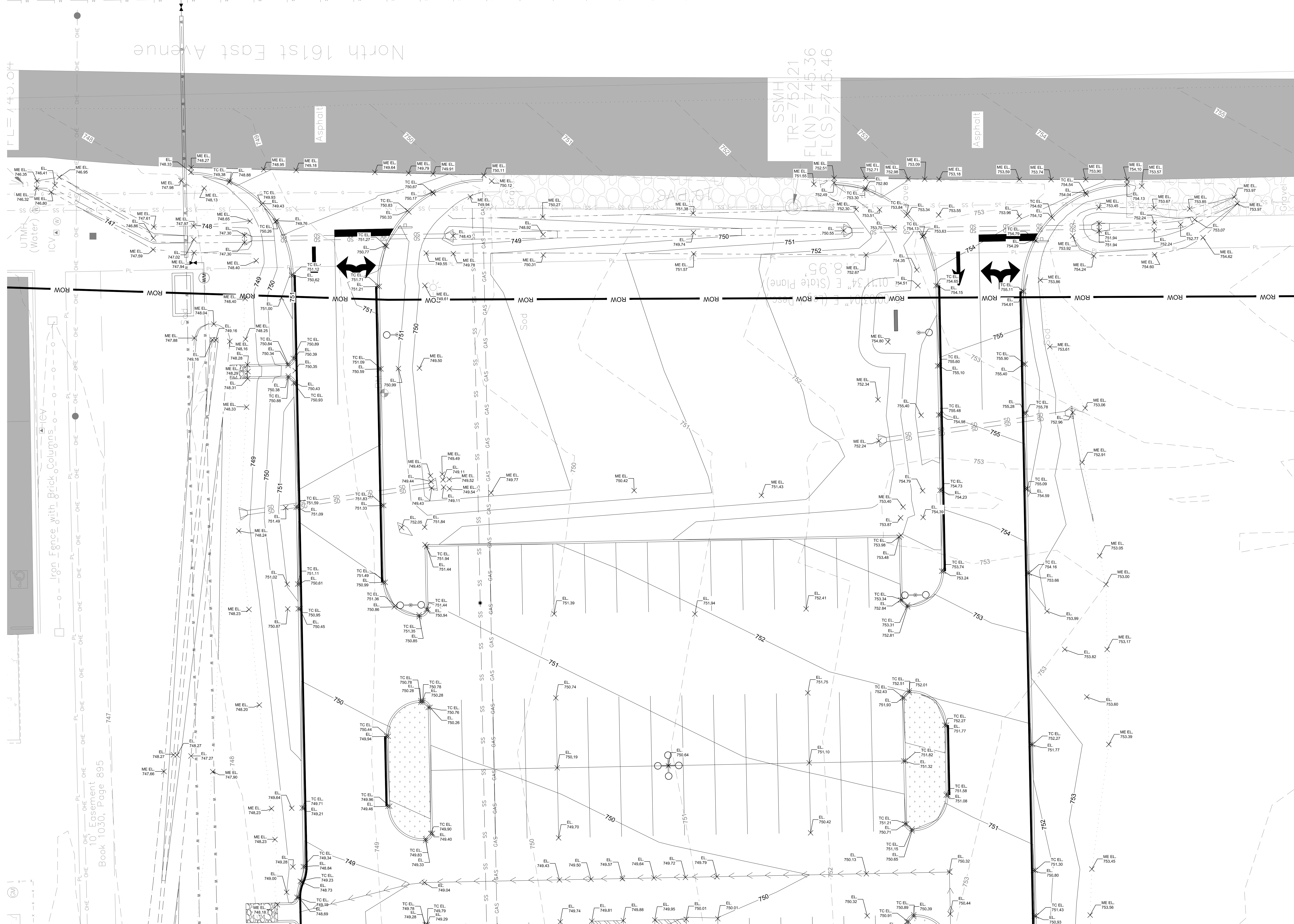
#	DATE	REVISIONS	DESCRIPTION

DATE: **07/31/20** JOB NUMBER: **18-01.10**

SHEET NUMBER: **CG102**

**ENLARGED GRADING PLAN**

APPROX. LOCATION OF 8" WATER LINE



SSMH  
TR=752.21  
FL(N)=745.36  
FL(S)=745.46

0.1134 E (State Plane)  
8.95

North 161st East Avenue

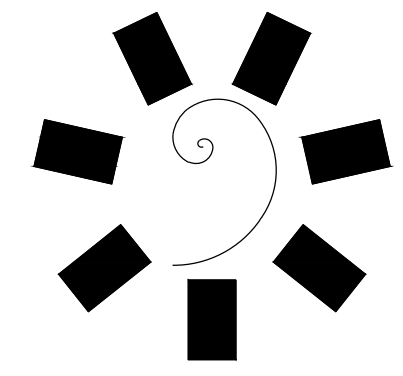
TL=140.04

Book 1030, Page 895





NOTE:  
WATER PIPE SHALL BE DIP OR AS PERMITTED AND APPROVED BY THE CITY OF TULSA.



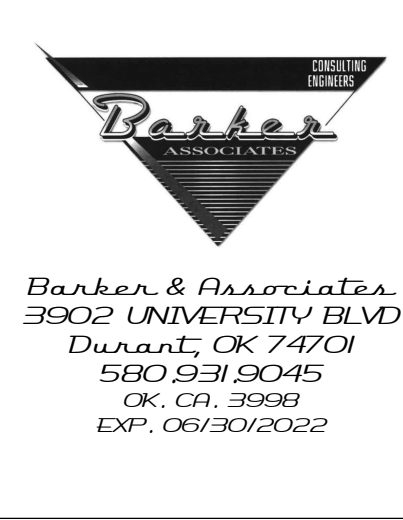
**James R. Childers  
Architect, Inc.**

45 South 4th Street  
Ft. Smith, AR 72901  
479-783-2450  
www.childersarchitect.com

PROFESSIONAL SEAL



CONSULTANT LOGO



CLIENT



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN

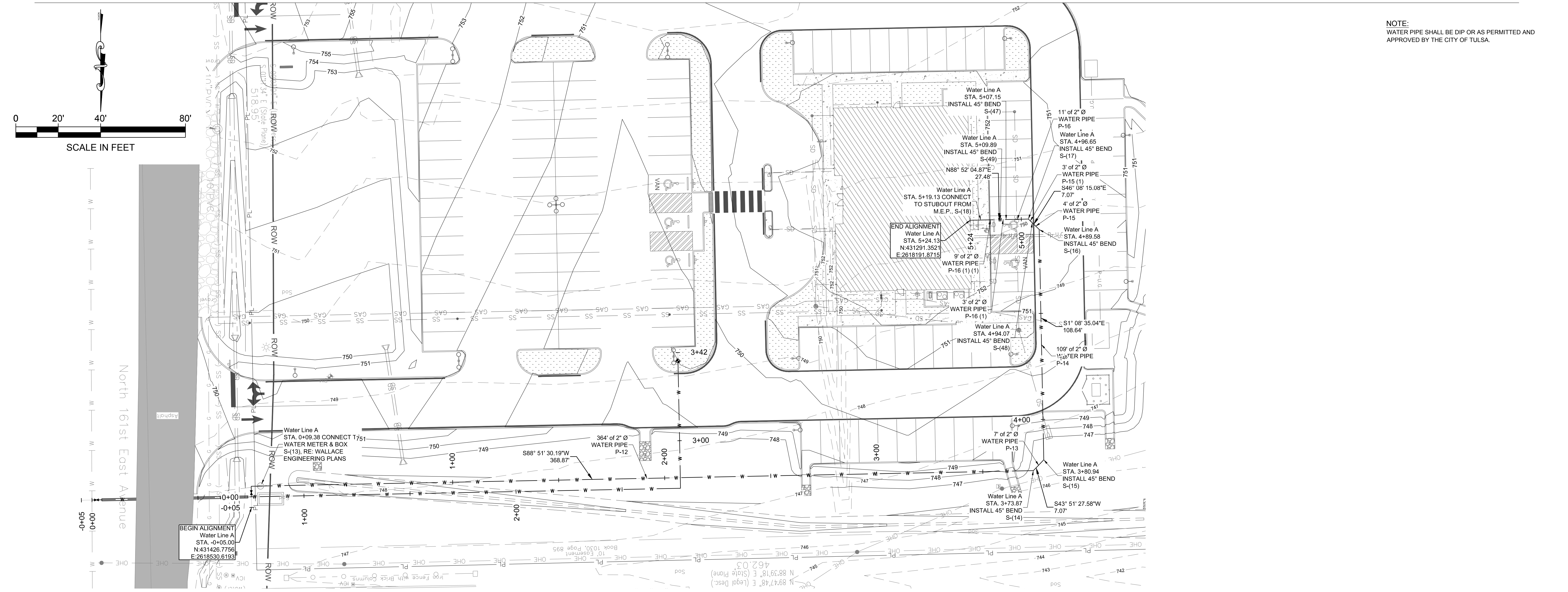
PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

#	DATE	REVISIONS DESCRIPTION

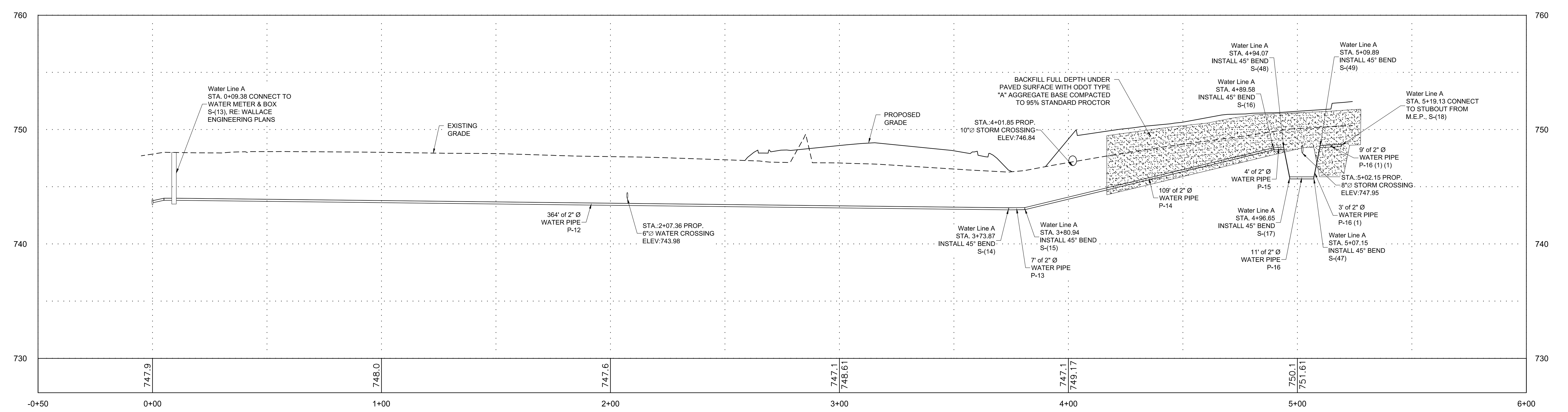
DATE: 07/31/20      JOB NUMBER: 18-01.10

SHEET NUMBER: **CU100**

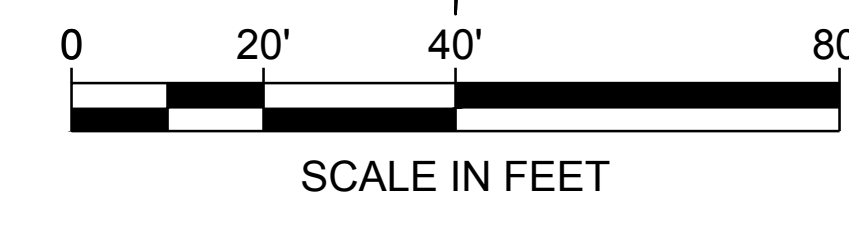
WATER LINE A  
PLAN & PROFILE



**WATER LINE A PLAN**  
(STA. 0+00.00 TO STA. 5+16.52)



**WATER LINE A PROFILE**  
(STA. 0+00.00 TO STA. 5+16.52)

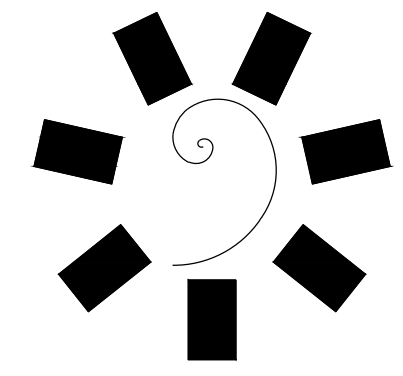


0+00  
0+05  
1+00  
2+00  
3+00  
4+00  
5+00

North 161st East Avenue



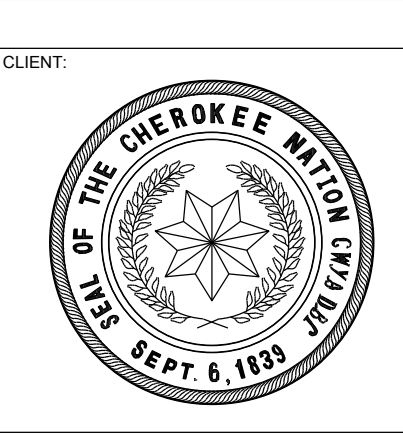
NOTE:  
WATER PIPE SHALL BE DIP OR AS PERMITTED AND  
APPROVED BY THE CITY OF TULSA.



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Ft. Smith, AR 72801  
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**Barker & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK CD. 8858  
EXP. 06/30/2022



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN

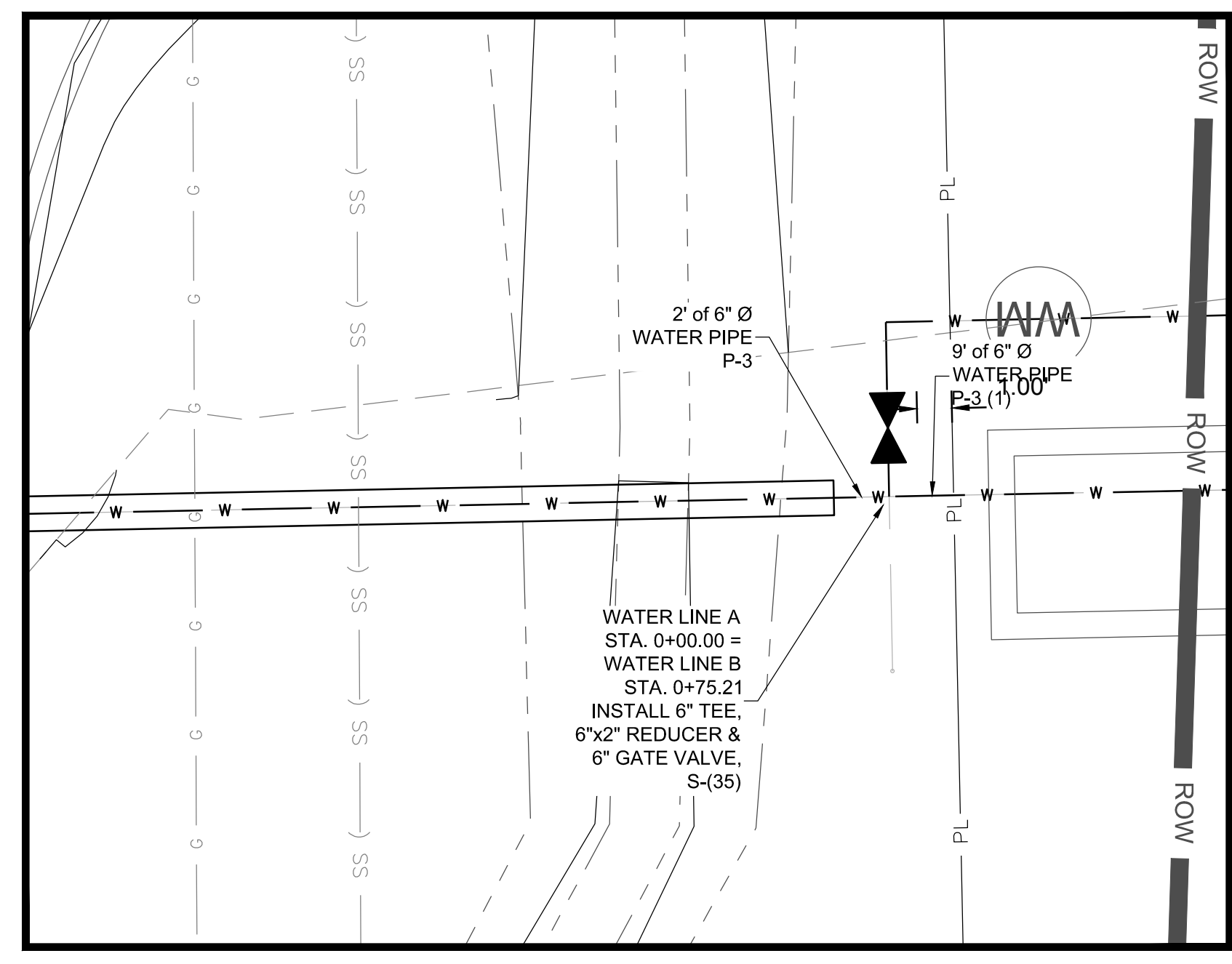
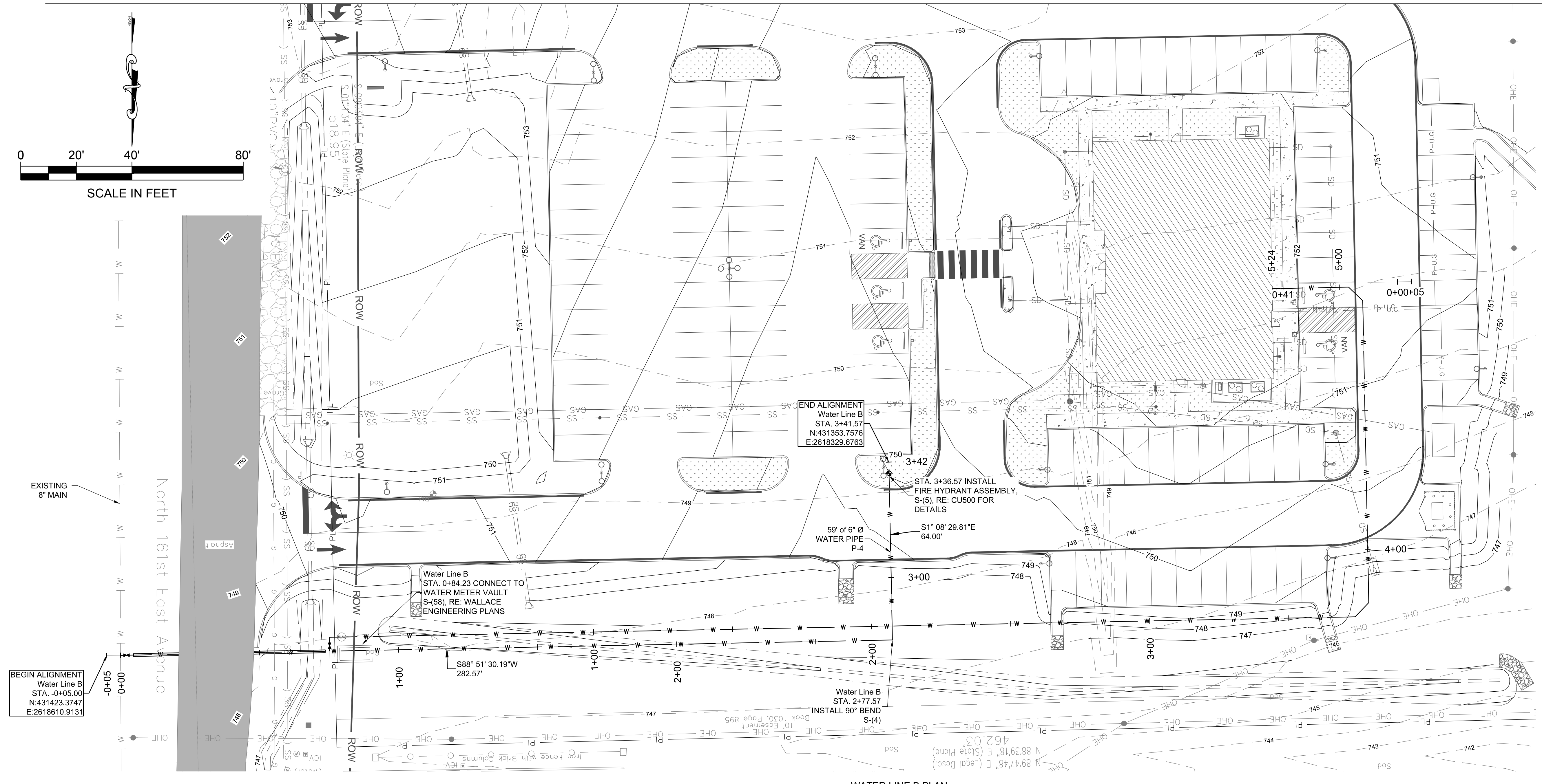
PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

REVISIONS	
#	DESCRIPTION

DATE: 07/31/20  
JOB NUMBER: 18-01-10

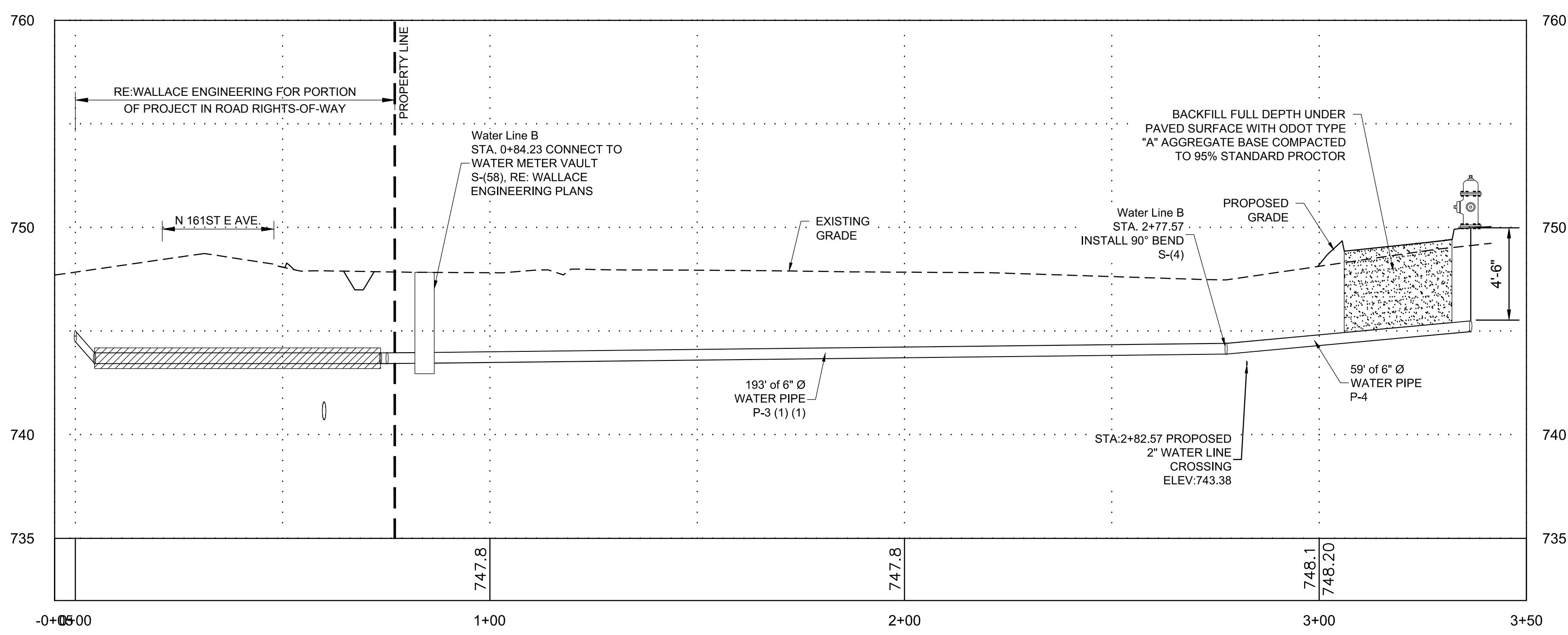
SHEET NUMBER:  
CU101

WATER LINE B  
PLAN & PROFILE

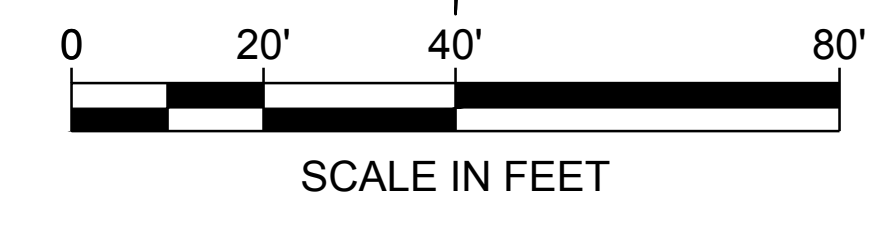


**WATER LINE B PLAN**  
(STA. 0+00.00 TO STA. 3+36.57)

**ENLARGED VIEW**  
SCALE: 1"=4'



**WATER LINE B PROFILE**  
(STA. 0+00.00 TO STA. 3+36.57)



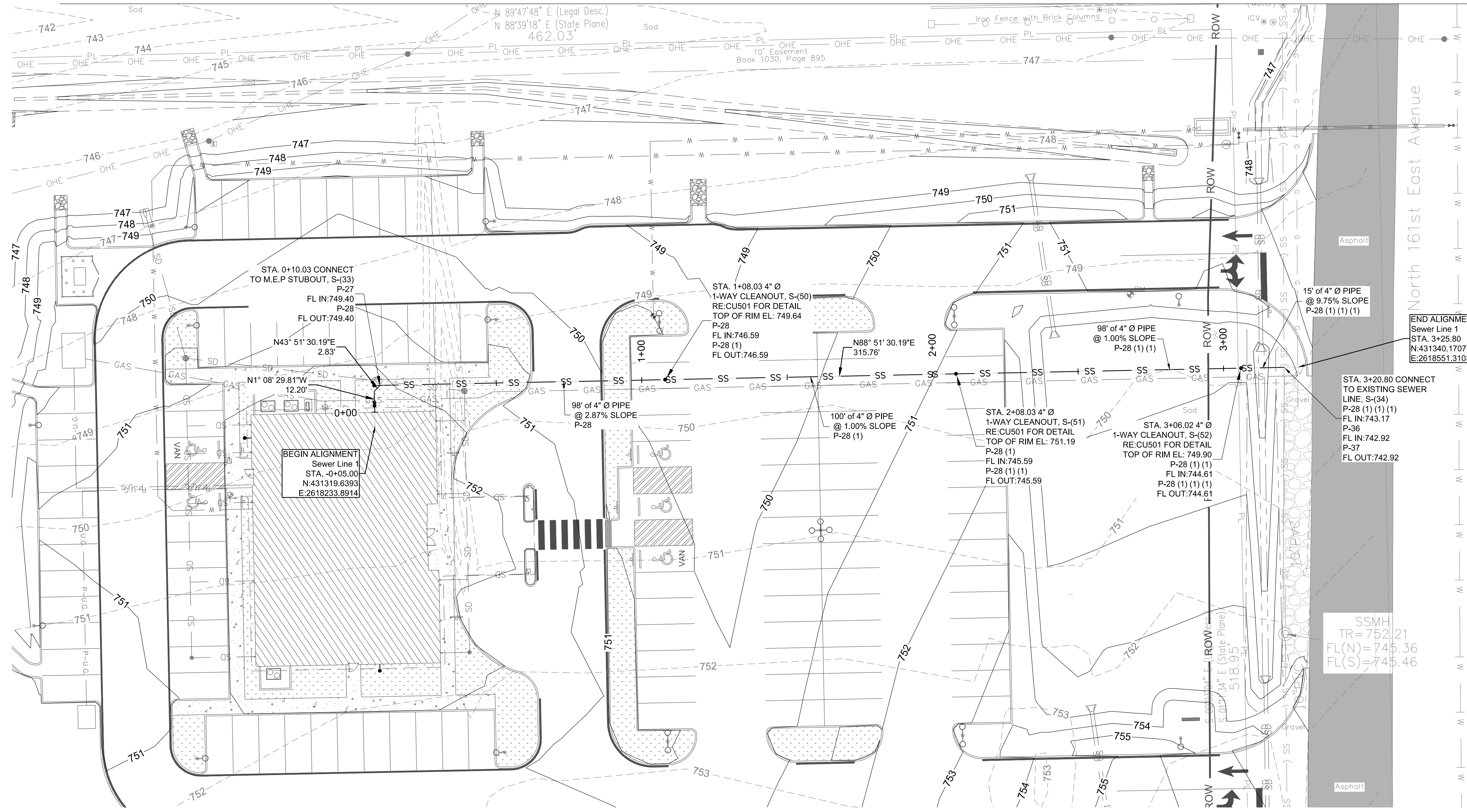
0 20' 40' 80'  
SCALE IN FEET

North 161st East Avenue

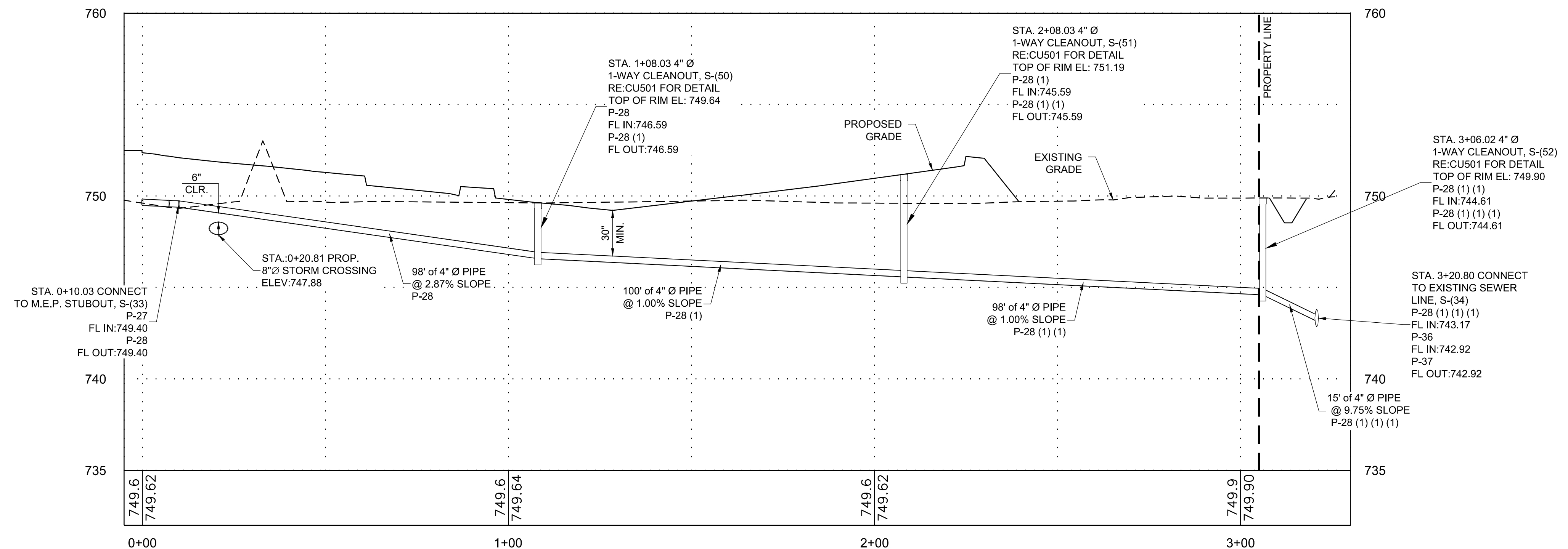
EXISTING 8" MAIN

BEGIN ALIGNMENT  
Water Line B  
STA. 0+05.00  
N:431423.3747  
E:2618610.9131

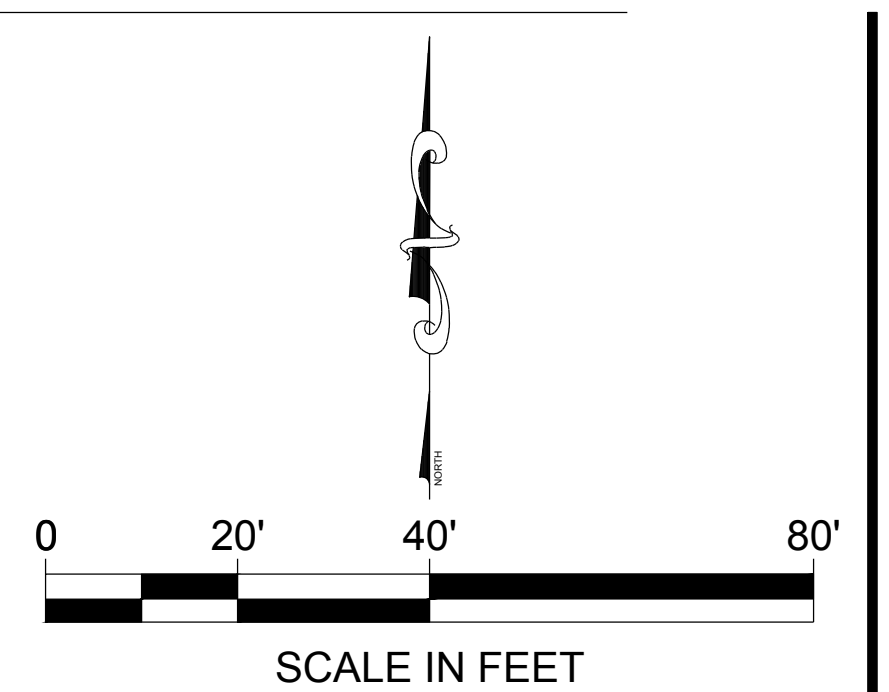




SEWER LINE 1 PLAN  
(STA. 50+05.83 TO STA. 53+28.23)



SEWER LINE 1 PROFILE  
(STA. 50+05.83 TO STA. 53+28.23)



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 45 South 4th Street  
 Fort Smith, AR 72901  
 479-783-2480  
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 DURANT, OK 74701  
 580.931.9045  
 OK. CD. 39589  
 EXP. 06/30/2022



**CHEROKEE NATION  
TAG OFFICE**  
 CATOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

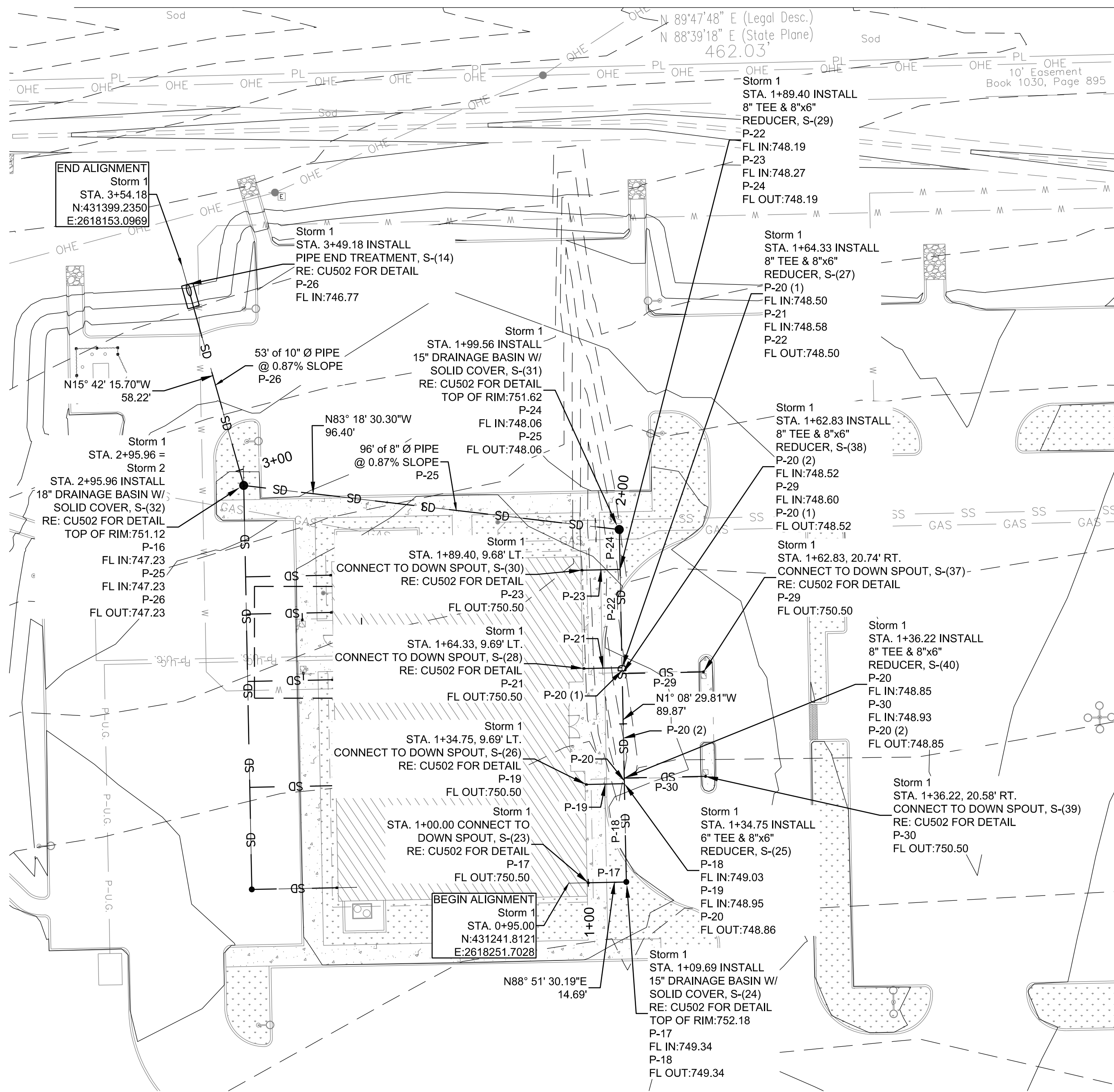
REVISIONS	
#	DESCRIPTION

DATE: 07/31/20      JOB NUMBER: 18-01.10

SHEET NUMBER:  
**CU102**

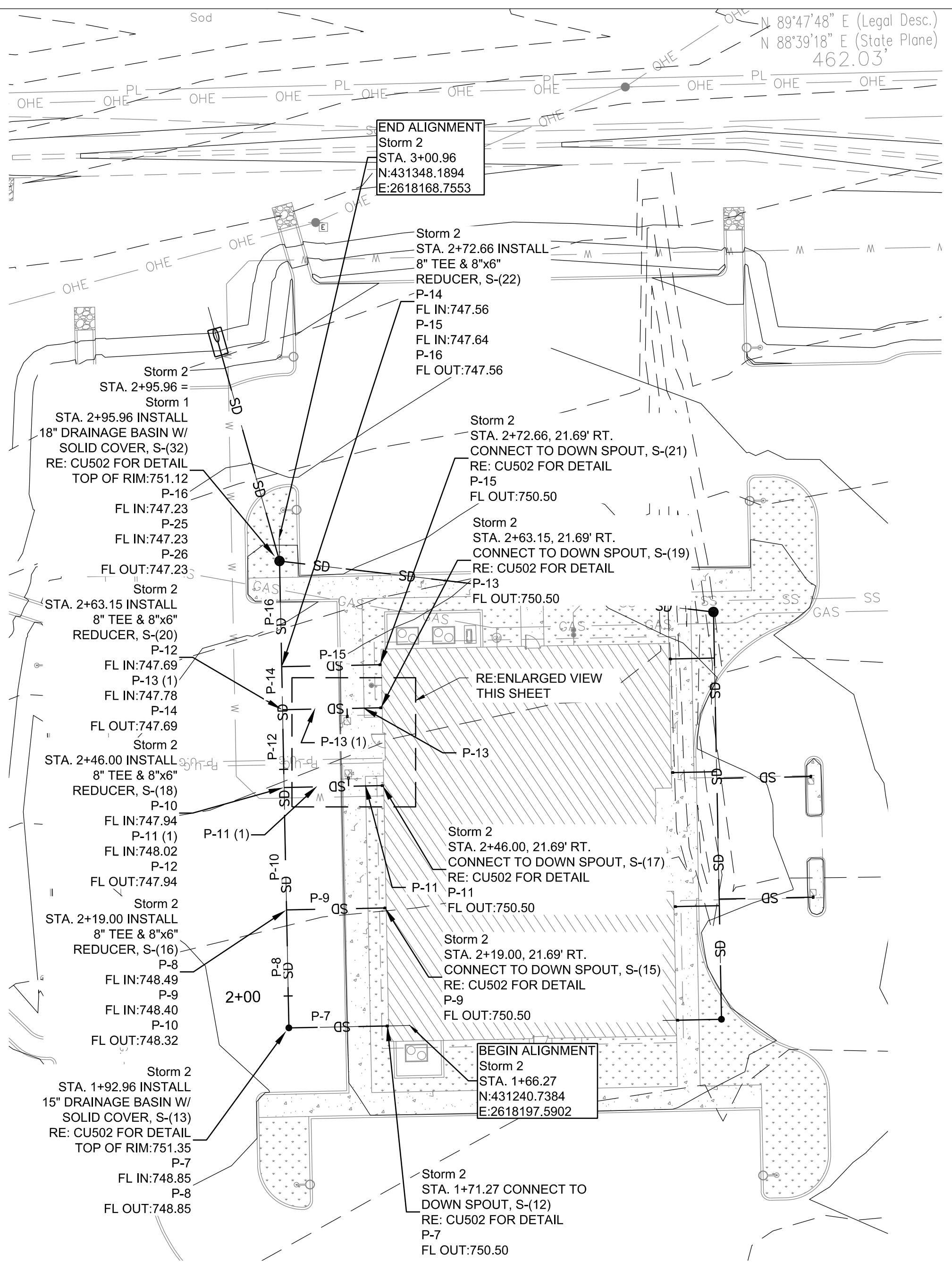
SEWER LINE 1  
 PLAN & PROFILE





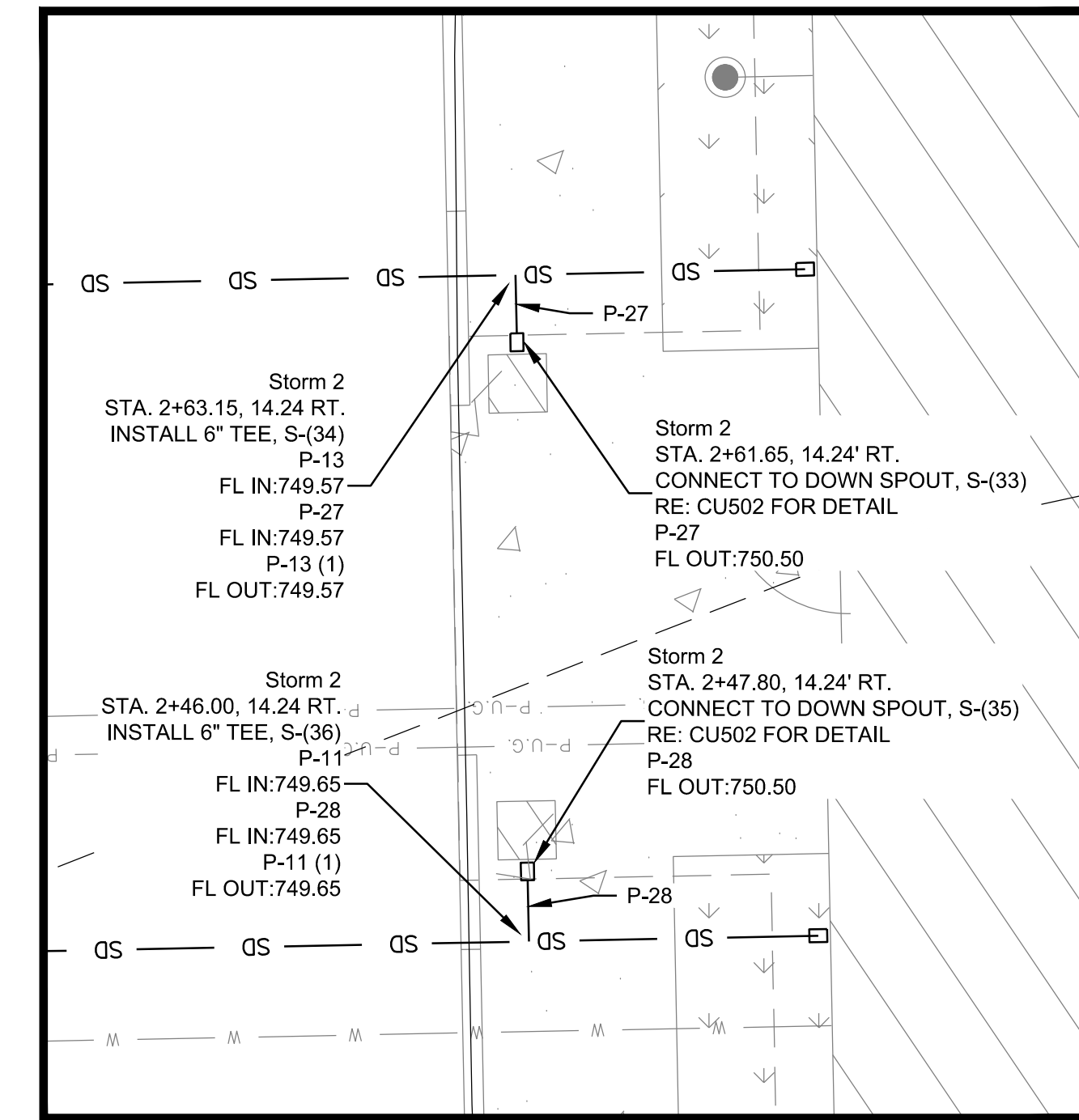
STORM LINE 1 PLAN  
(STA. 1+00 TO STA. 3+49.18)

Pipe Name	Size	Length	Slope
P-17	6"	9.16'	11.97%
P-18	6"	24.44'	1.24%
P-19	6"	9.81'	16.03%
P-20	8"	1.47'	1.24%
P-20 (1)	8"	1.50'	1.24%
P-20 (2)	8"	26.61'	1.24%
P-21	6"	9.88'	19.81%
P-22	8"	25.06'	1.24%
P-23	6"	9.94'	23.02%
P-24	8"	9.17'	1.24%
P-29	6"	20.83'	9.16%
P-30	6"	20.64'	7.63%

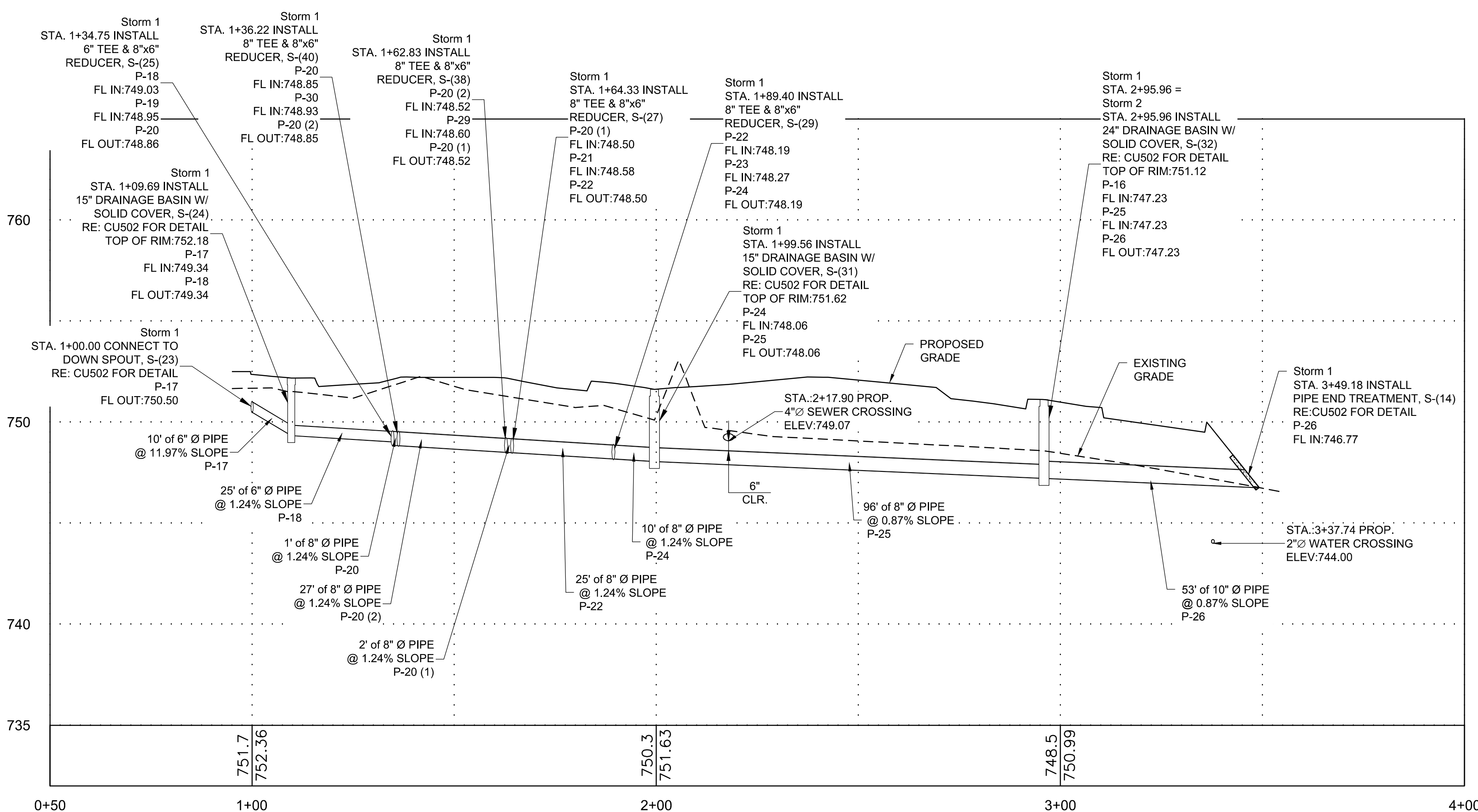


STORM LINE 2 PLAN  
(STA. 1+71.27 TO STA. 2+95.96)

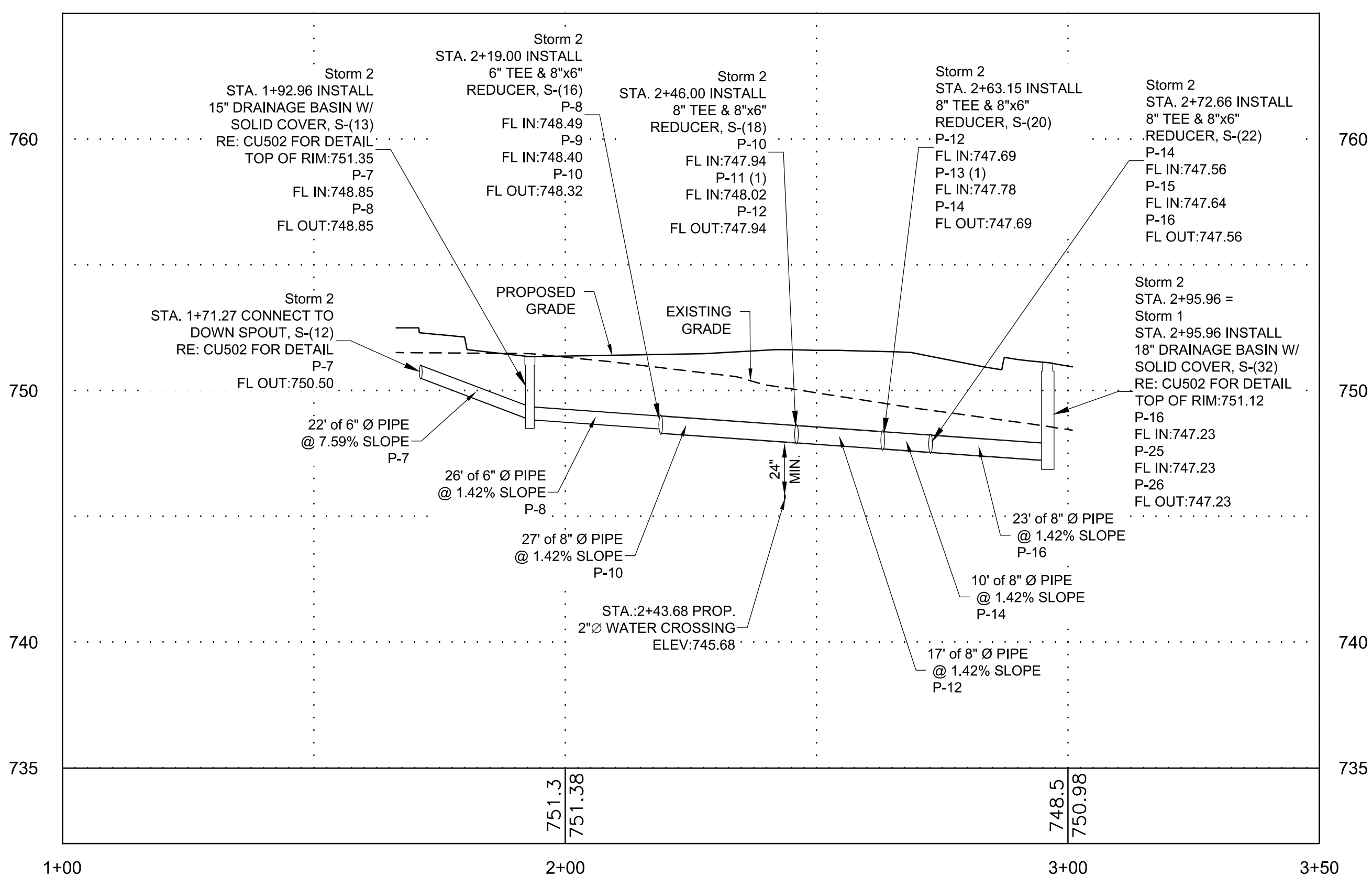
Pipe Name	Size	Length	Slope
P-7	6"	21.14'	7.59%
P-8	6"	25.42'	1.42%
P-9	6"	21.79'	9.67%
P-10	8"	27.00'	1.42%
P-11	6"	7.50'	11.43%
P-11 (1)	6"	14.33'	11.43%
P-12	8"	17.16'	1.42%
P-13	6"	7.51'	12.55%
P-13 (1)	6"	14.35'	12.55%
P-14	8"	9.51'	1.42%
P-15	6"	21.88'	13.17%
P-16	8"	22.31'	1.42%
P-27	6"	1.77'	61.92%
P-28	6"	1.99'	47.14%



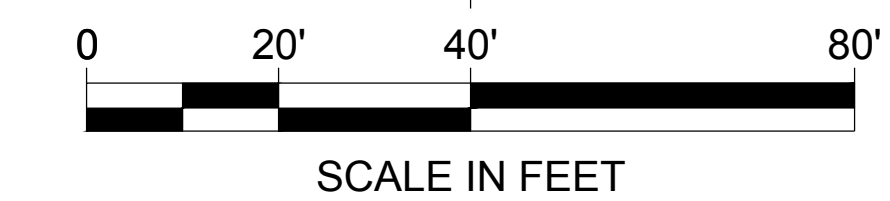
ENLARGED VIEW  
SCALE: 1" = 4'



STORM LINE 1 PROFILE  
(STA. 1+00 TO STA. 3+49.18)



STORM LINE 2 PROFILE  
(STA. 1+71.27 TO STA. 2+95.96)



**James R. Childers Architect, Inc.**  
45 South 4th Street  
Ft. Smith, AR 72301  
479-783-2460  
www.childersarchitect.com

PROFESSIONAL SEAL  
REGISTERED PROFESSIONAL ENGINEER  
H. WAYNE BARKER  
7-31-20  
18513  
Hobbs, Barker  
OKLAHOMA

CONSULTANT LOGO  
**Barker & Associates**  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK. CD. 08589  
EXP. 06/30/2022

CLIENT  
THE CHEROKEE NATION  
EST. 1825

CHEROKEE NATION  
TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE  
CONSTRUCTION DOCUMENTS

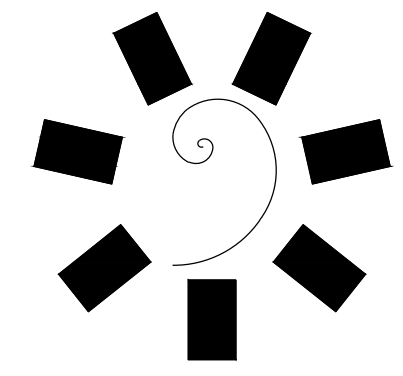
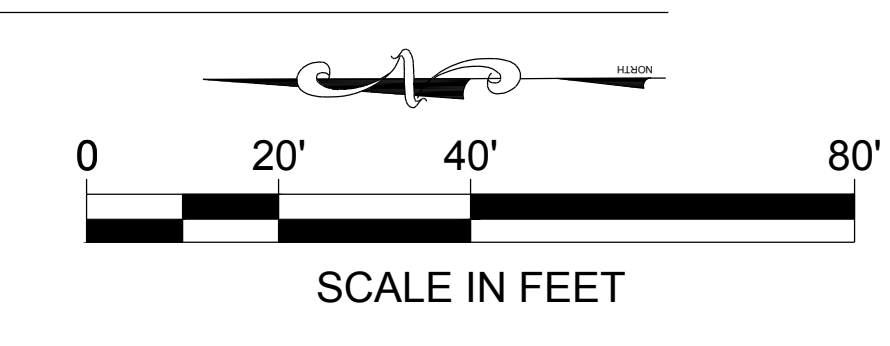
#	DATE	REVISIONS	DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

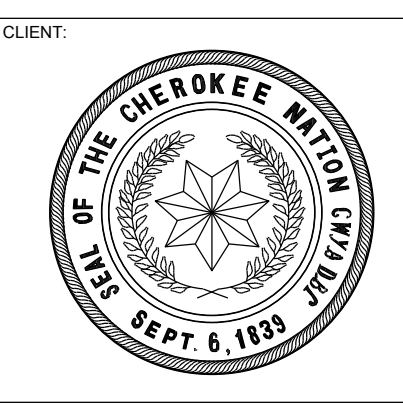
SHEET NUMBER: CU103

STORM LINE 1 & 2  
PLAN & PROFILE





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Architect, Inc.**  
45 South 4th Street  
Ft. Smith, AR 72301  
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**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN

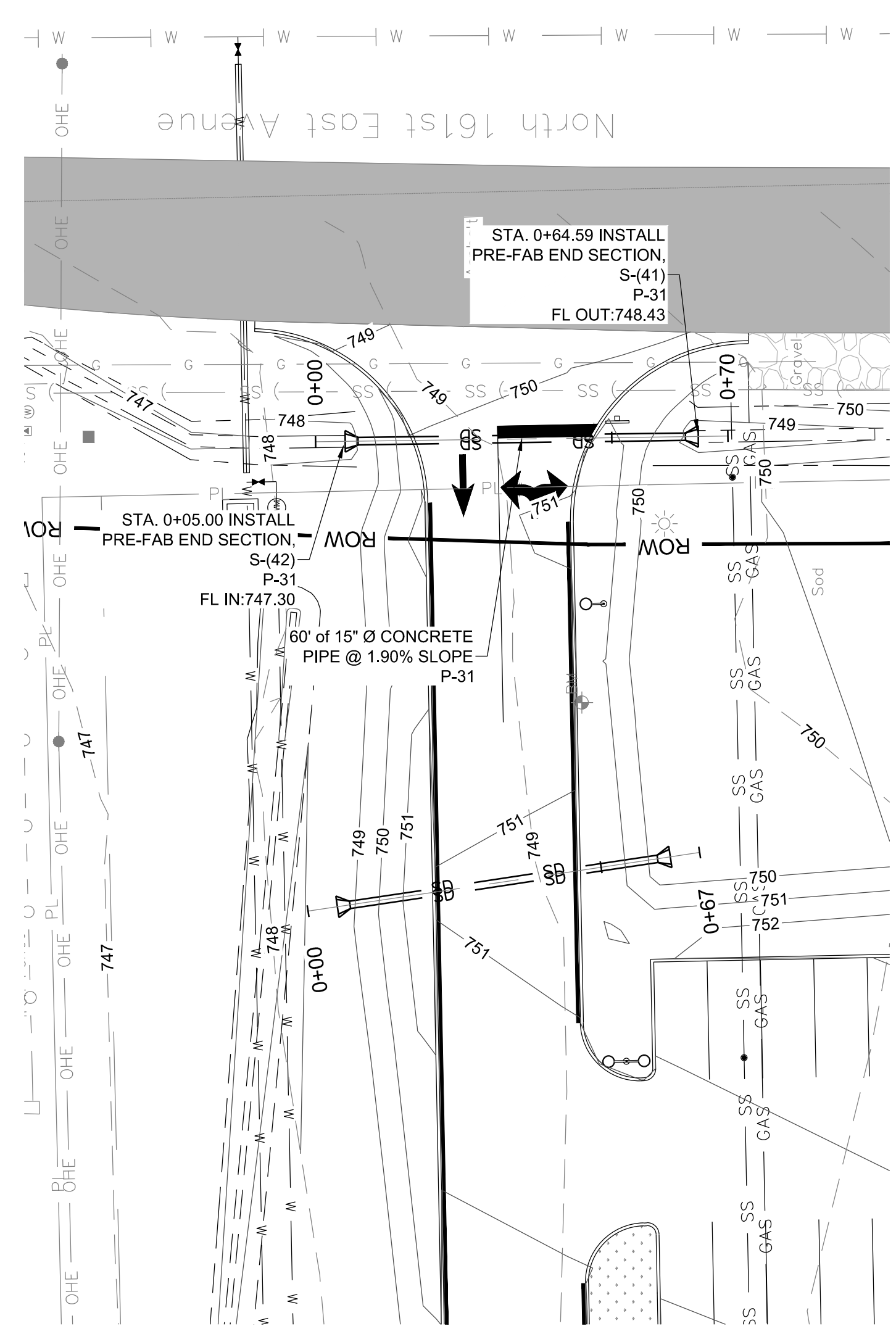
PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

REVISIONS	
#	DESCRIPTION

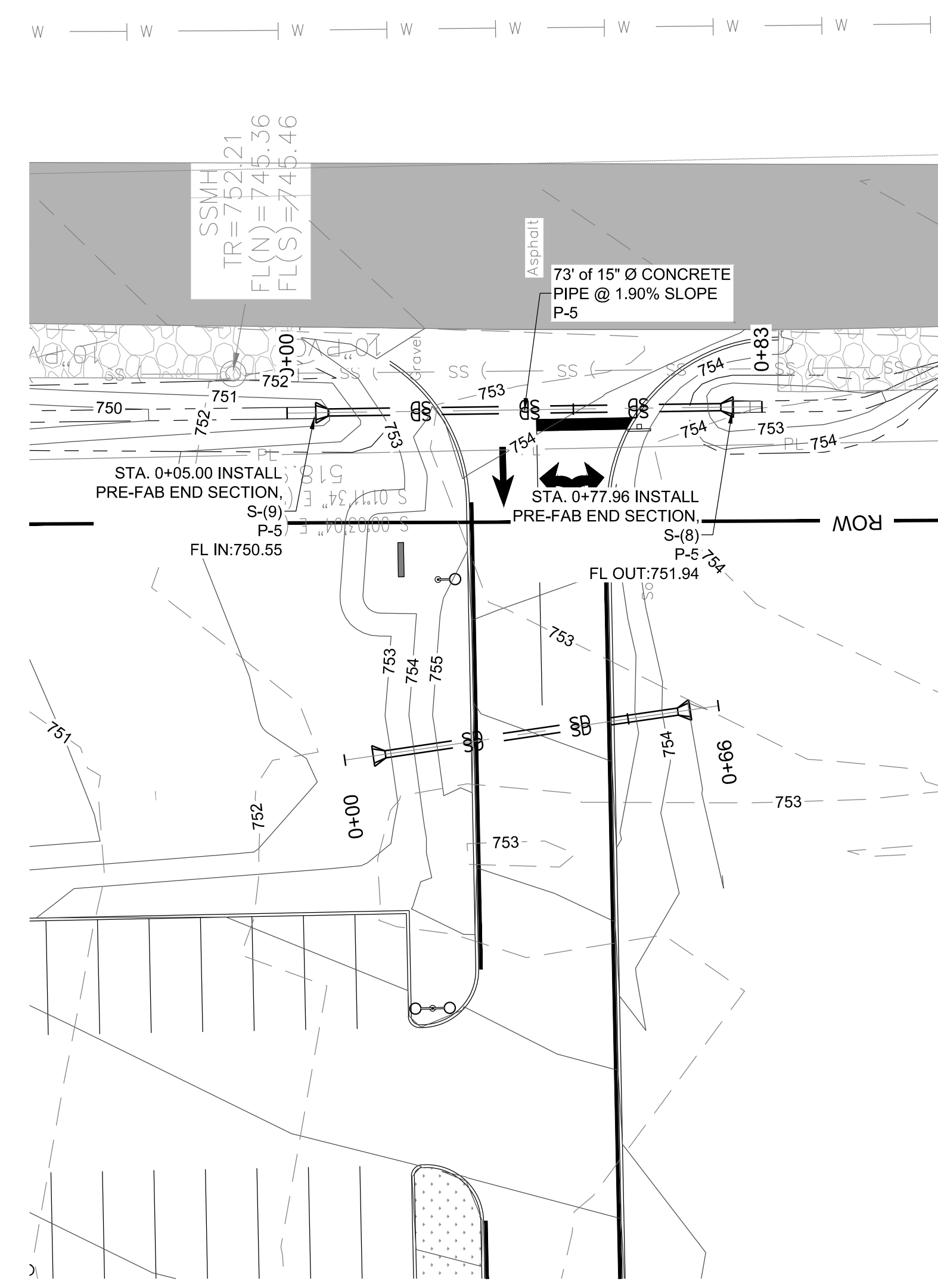
DATE: 07/31/20      JOB NUMBER: 18-01.10

SHEET NUMBER:  
**CU104**

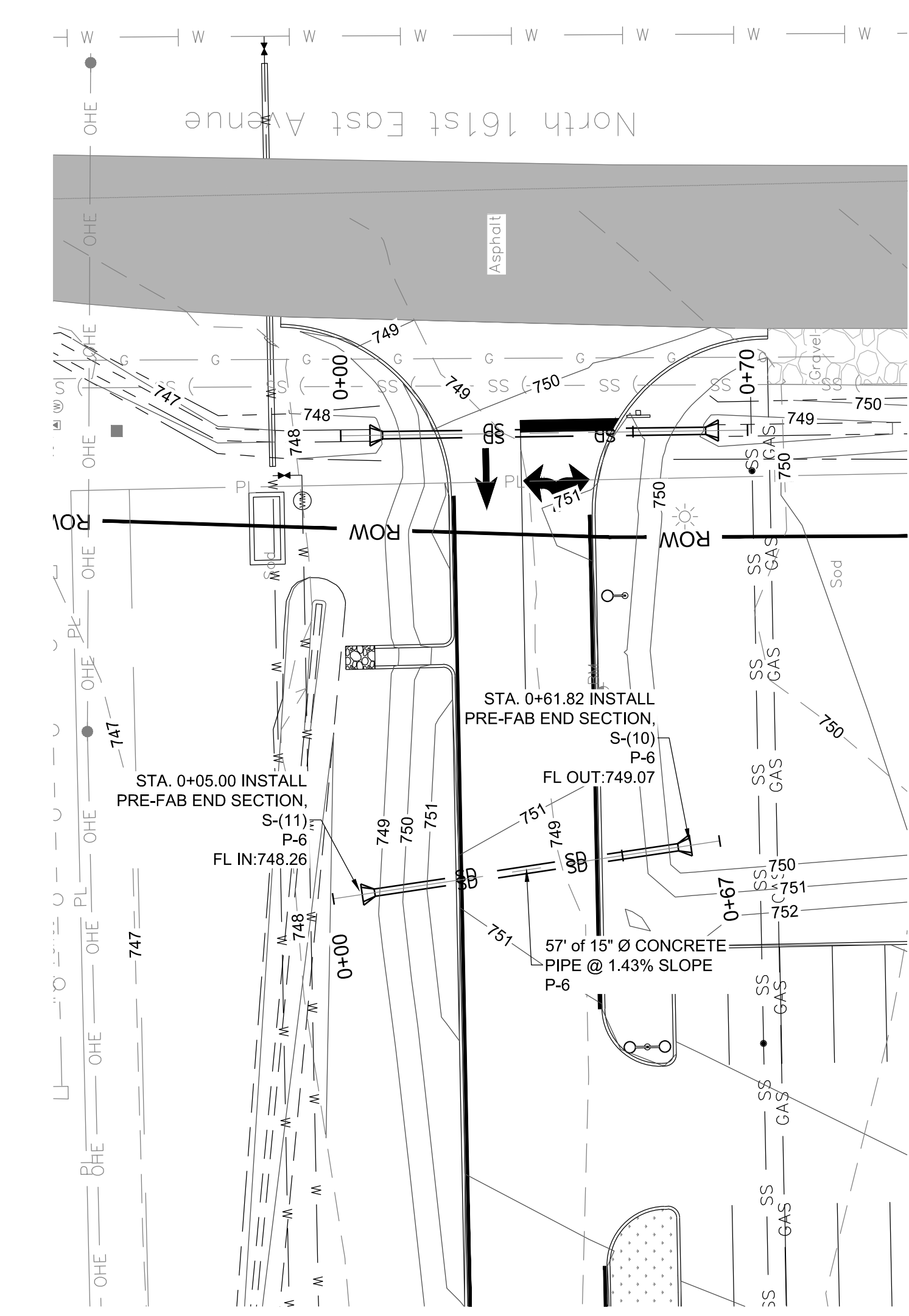
CULVERT 1, 2, 3 & 4  
PLAN & PROFILE



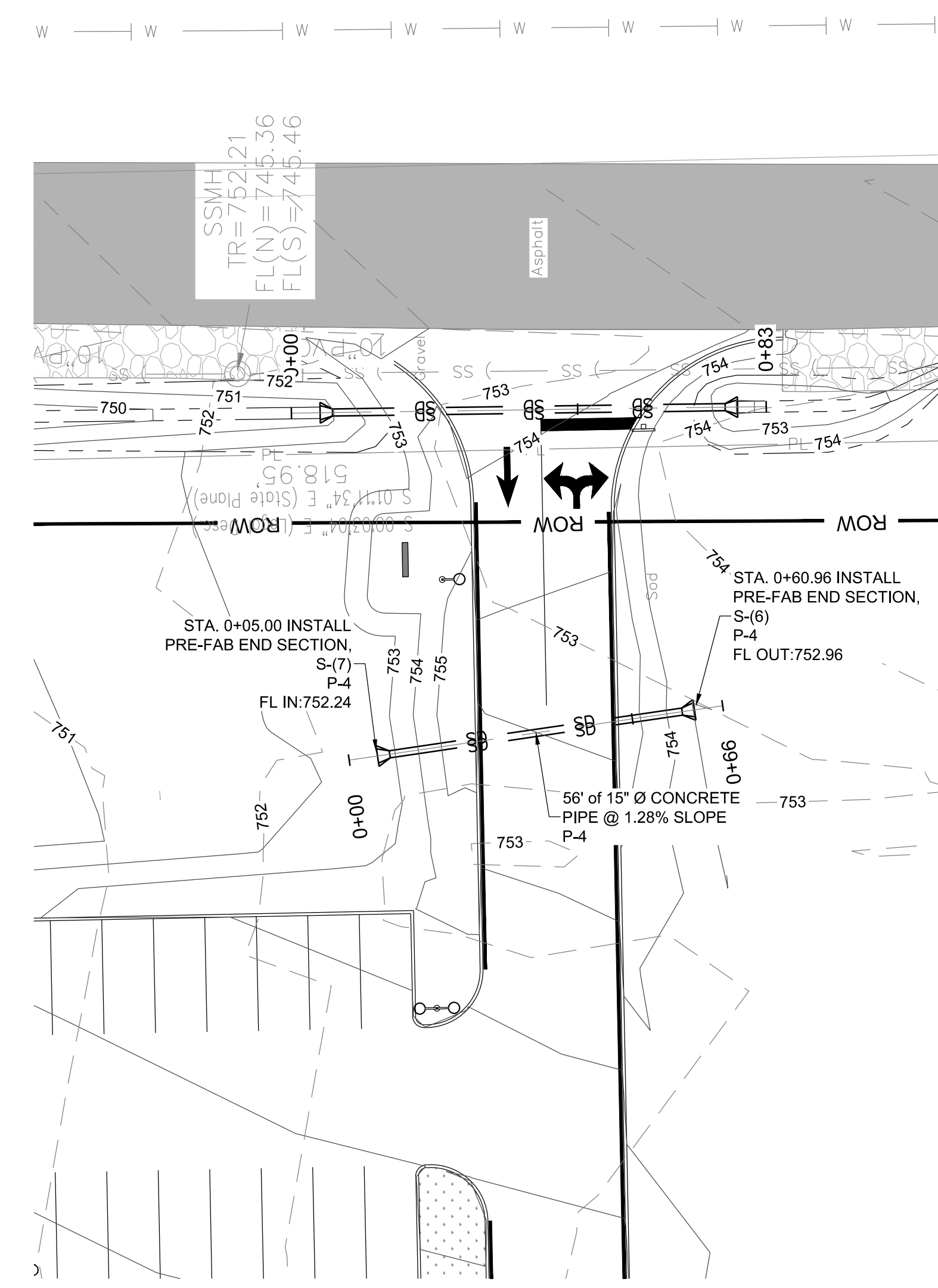
**CULVERT 1 PLAN**  
(STA. 00+05.00 TO STA. 00+64.59)



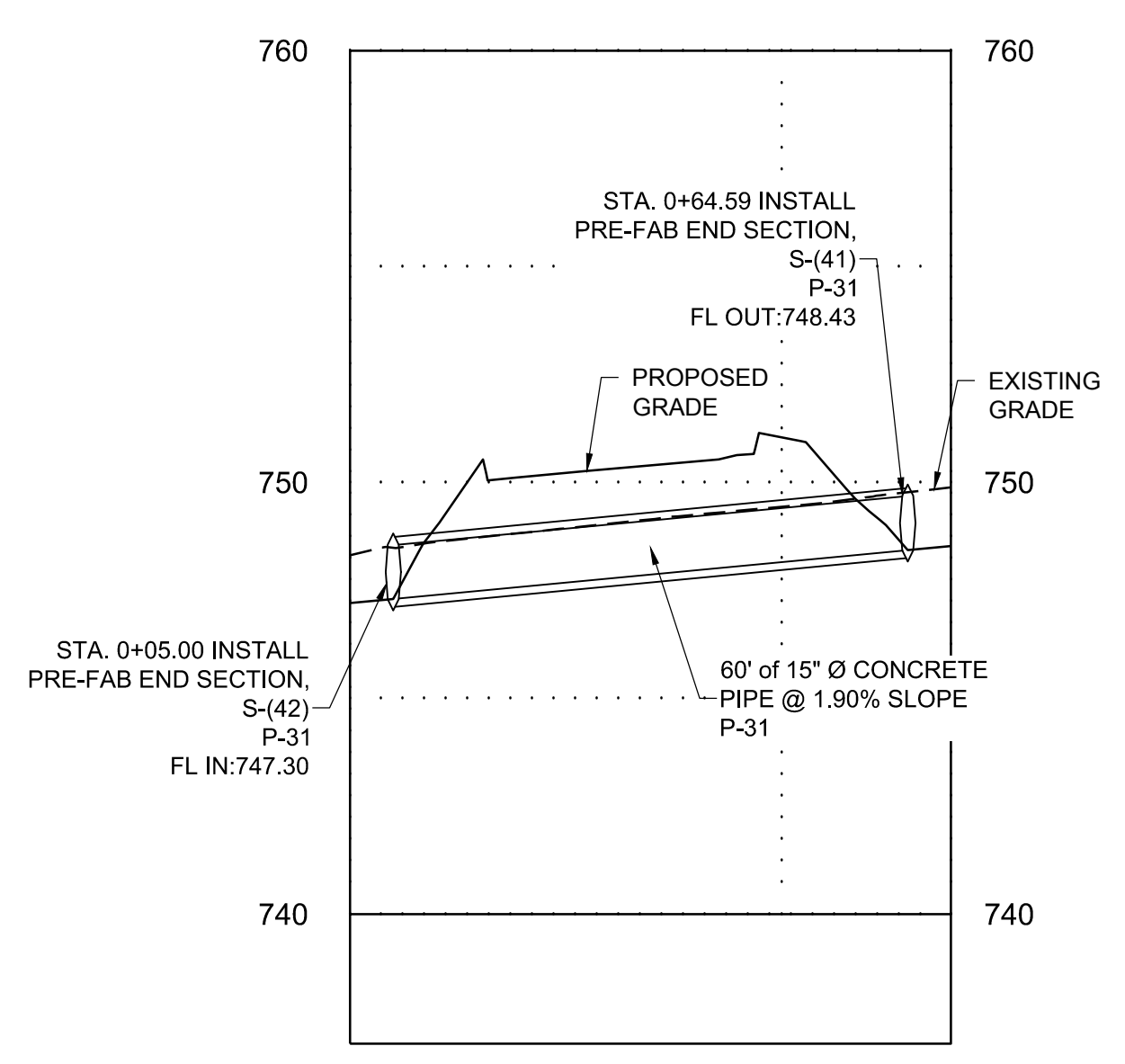
**CULVERT 2 PLAN**  
(STA. 00+05.00 TO STA. 00+77.96)



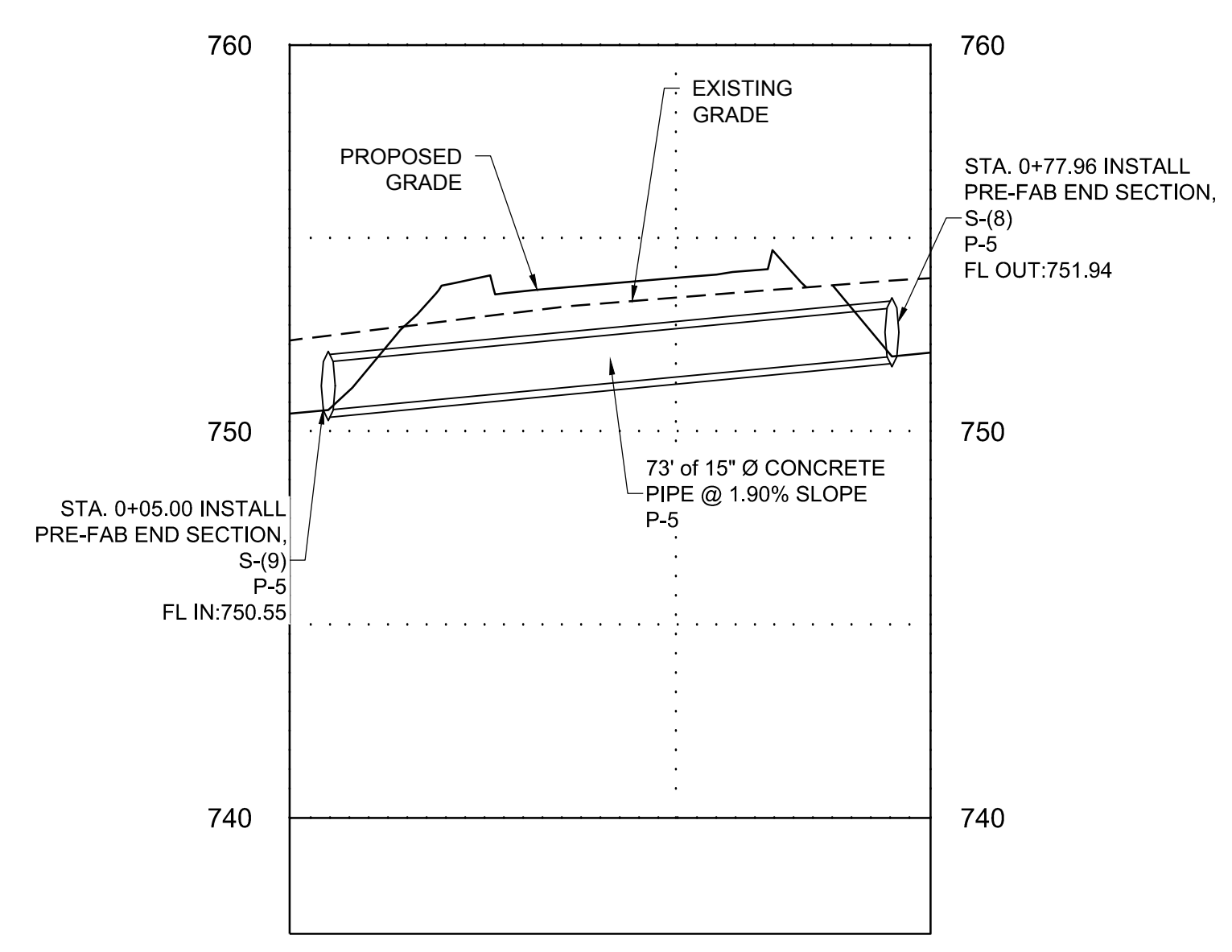
**CULVERT 3 PLAN**  
(STA. 00+05.00 TO STA. 00+61.82)



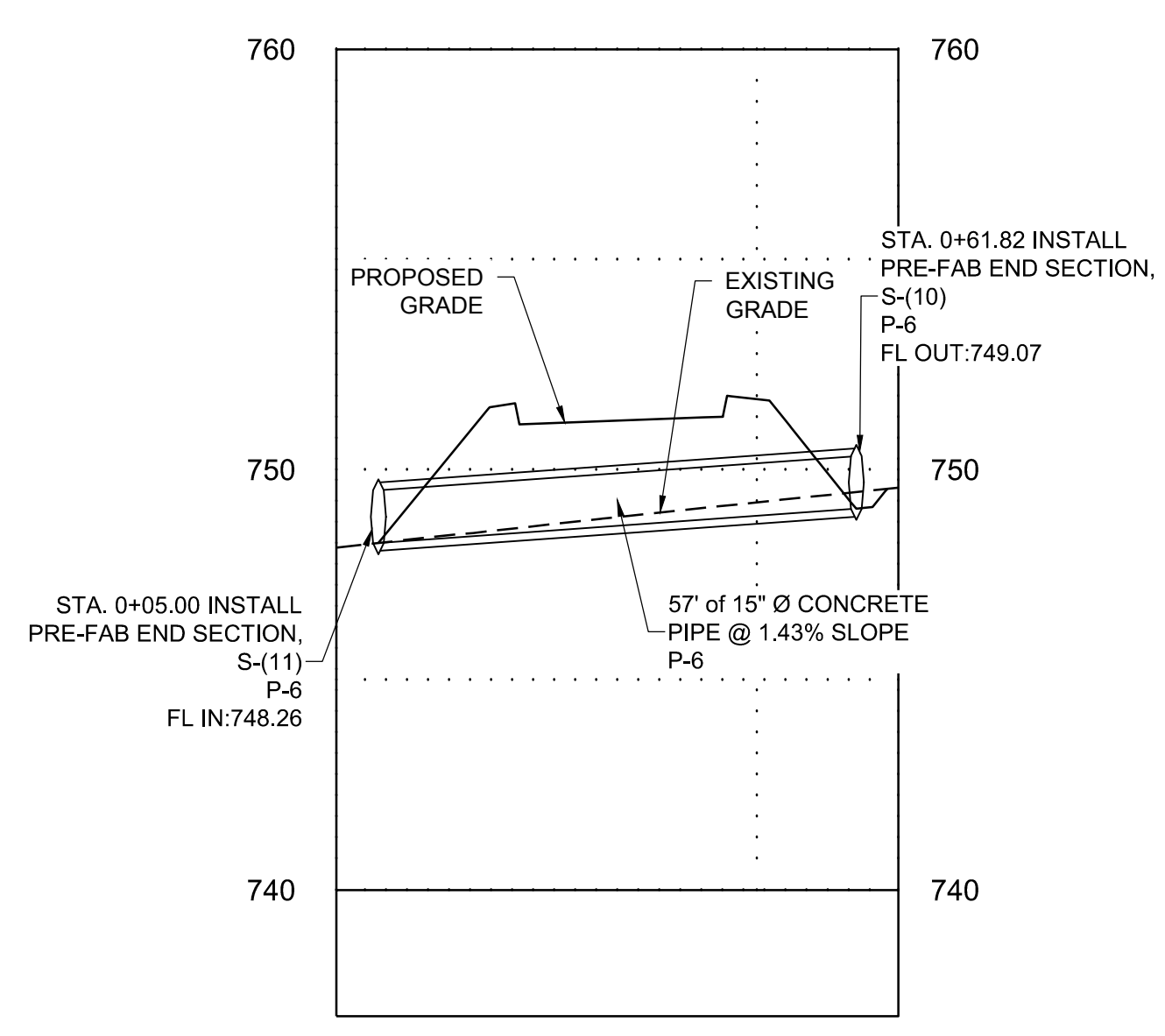
**CULVERT 4 PLAN**  
(STA. 00+05.00 TO STA. 00+60.96)



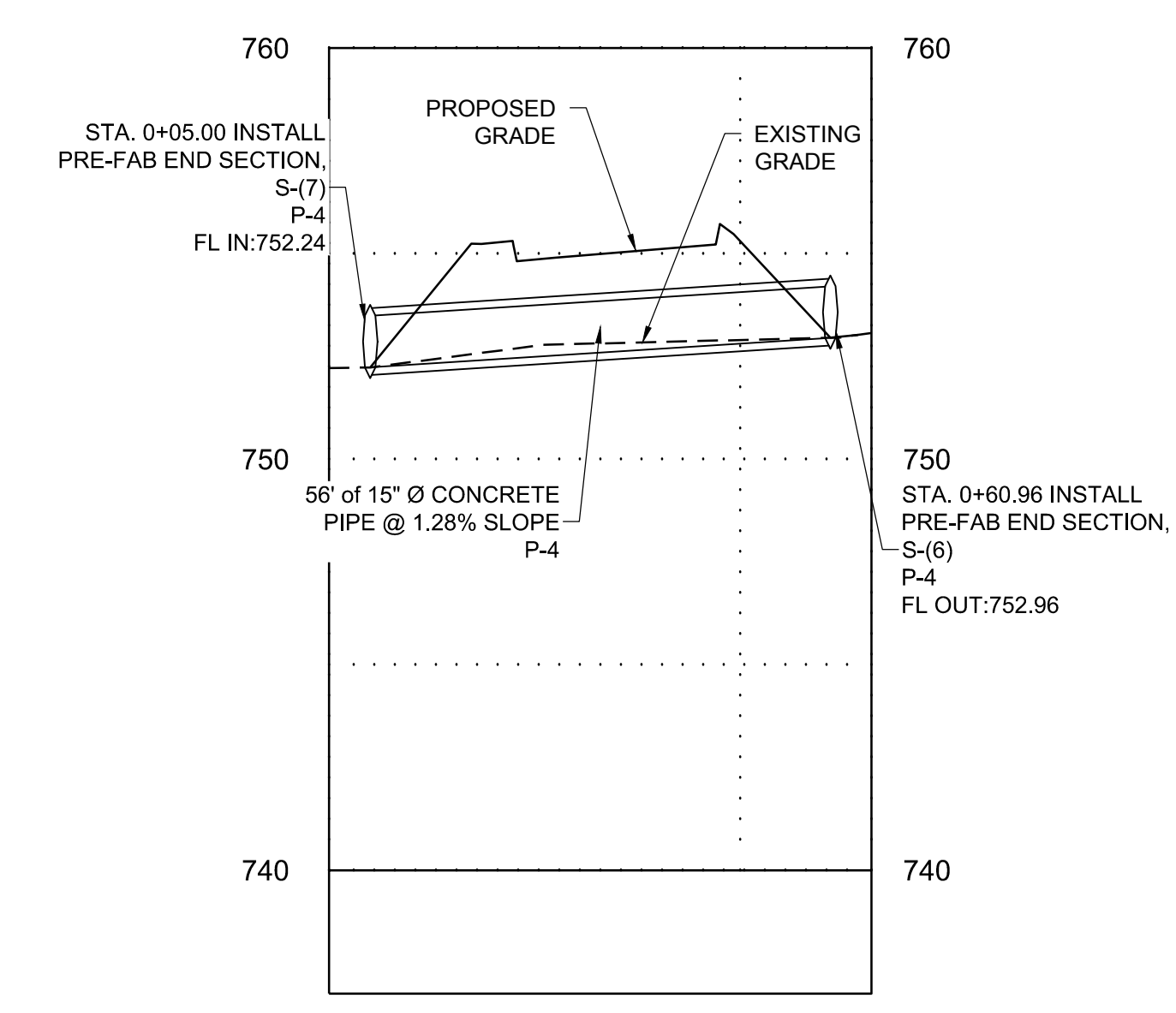
**CULVERT 1 PROFILE**  
(STA. 00+05.00 TO STA. 00+64.59)



**CULVERT 2 PROFILE**  
(STA. 00+05.00 TO STA. 00+77.96)

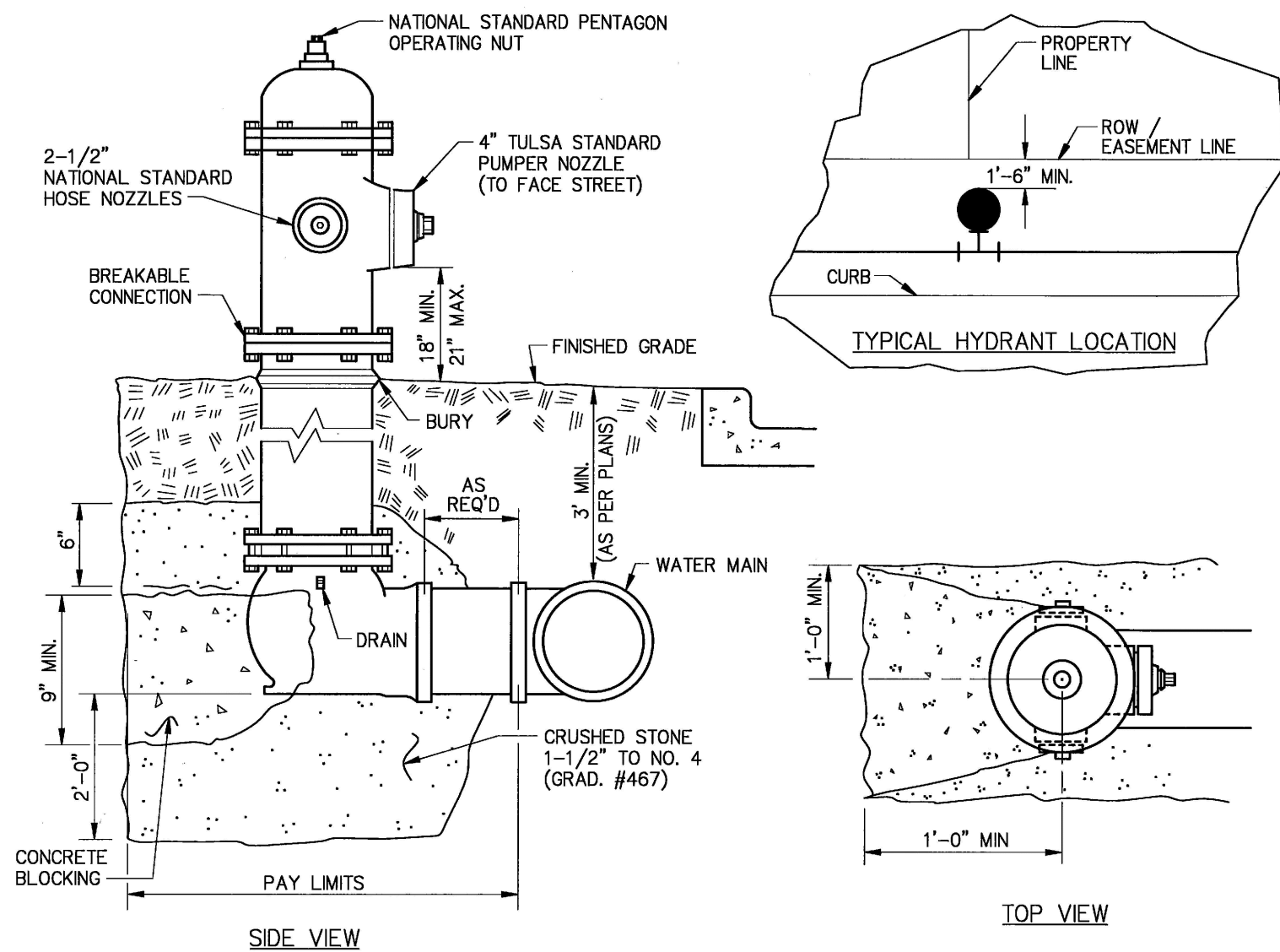


**CULVERT 3 PROFILE**  
(STA. 00+05.00 TO STA. 00+61.82)

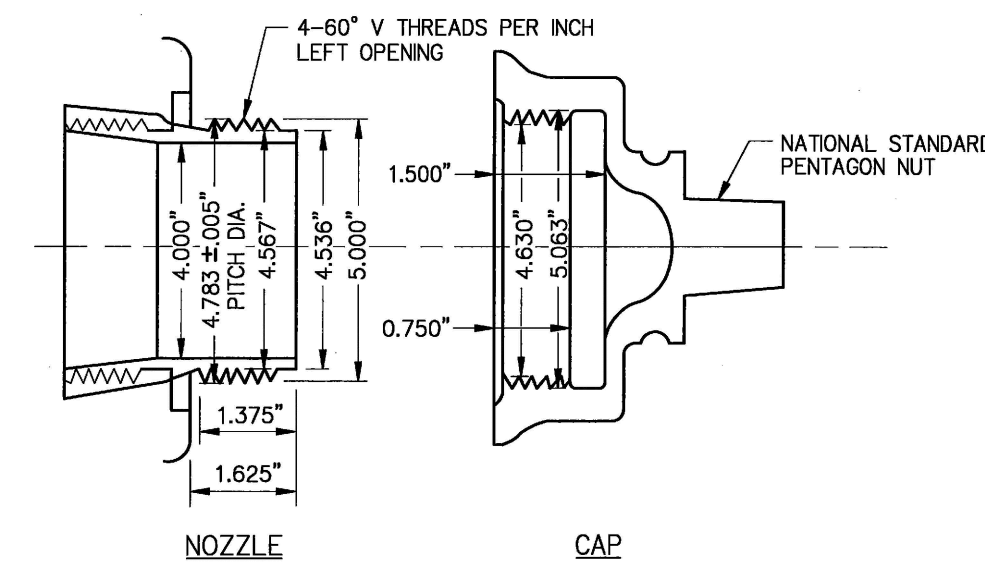


**CULVERT 4 PROFILE**  
(STA. 00+05.00 TO STA. 00+60.96)





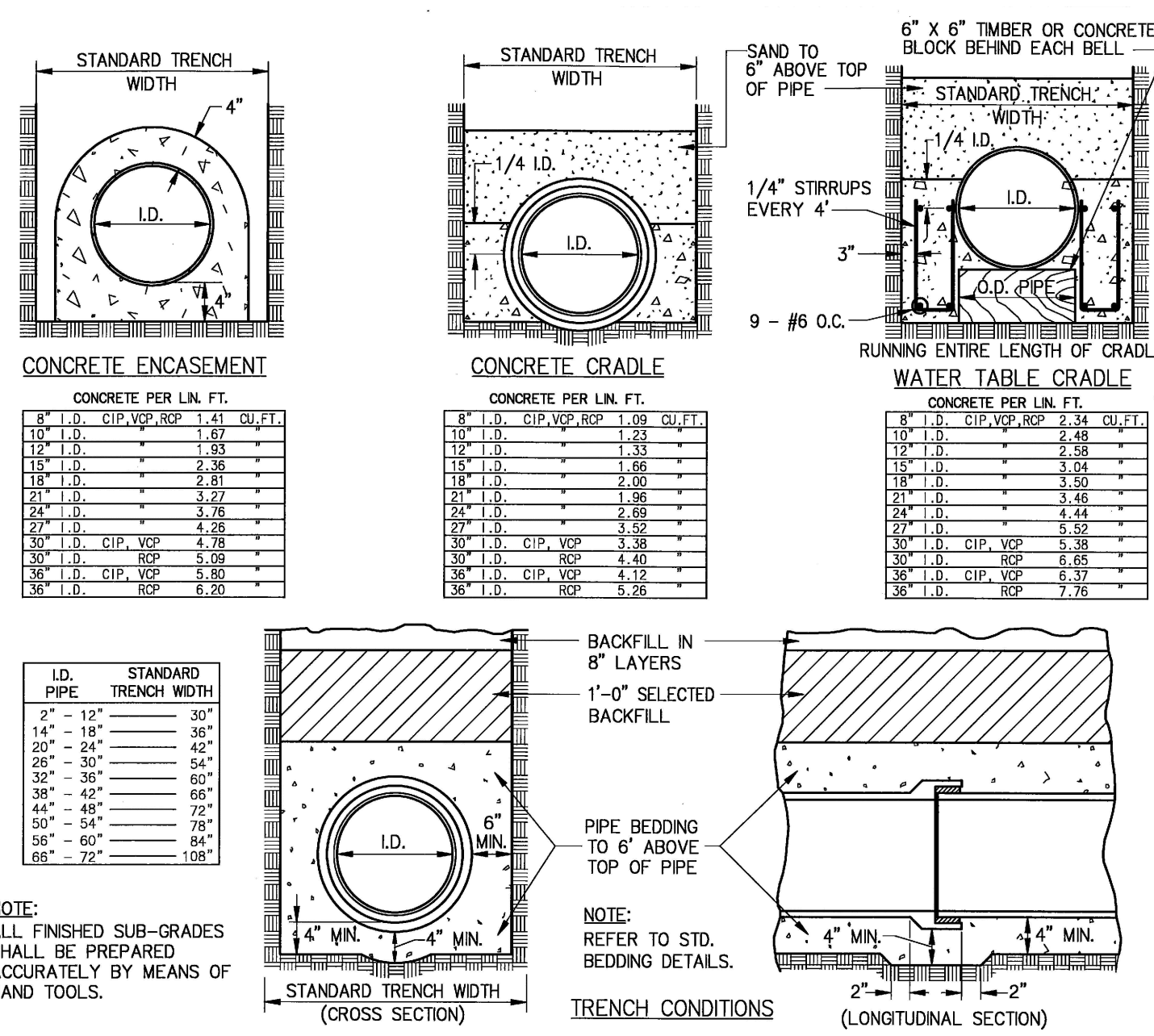
TYPICAL FIRE HYDRANT INSTALLATION



TULSA STANDARD THREADS - PUMPER NOZZLE

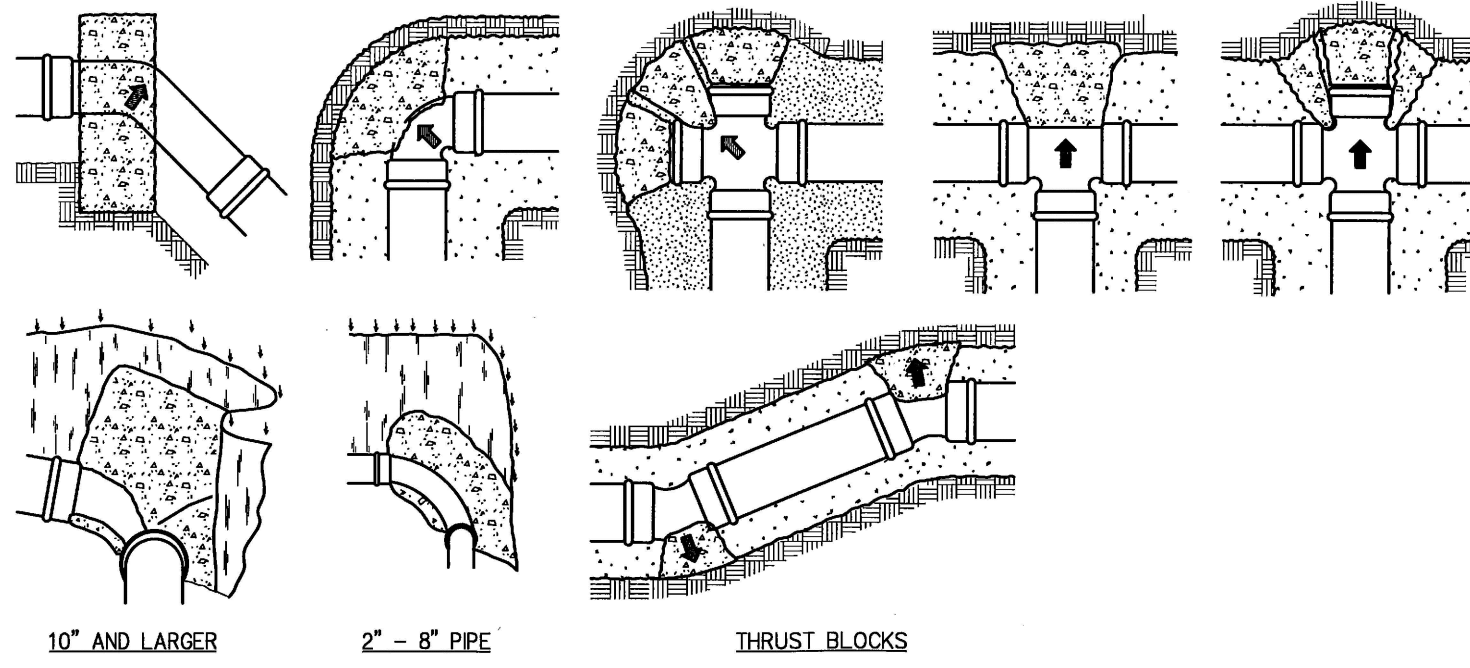
STANDARD DETAIL  
FIRE HYDRANT  
NOT TO SCALE

NOTE: HYDRANT DRAIN MUST BE LEFT CLEAN AFTER POURING CONCRETE BLOCKING. RESTRAINING GLANDS MAY BE USED IN LIEU OF CONCRETE BLOCKING.

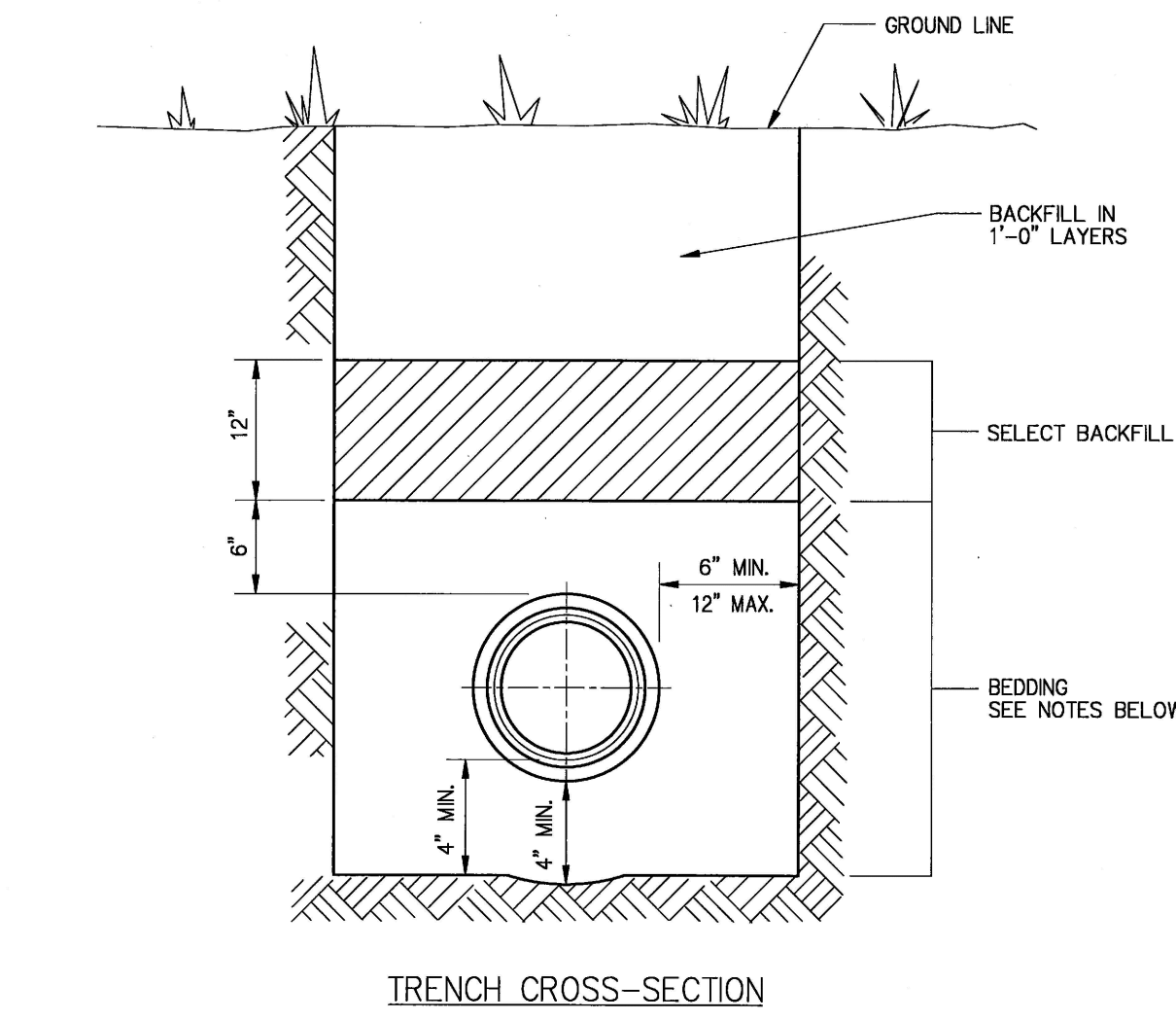


NOTE: ALL FINISHED SUB-GRADES SHALL BE PREPARED ACCURATELY BY MEANS OF HAND TOOLS.

NOTE: REFER TO STD. BEDDING DETAILS.



STANDARD DETAIL  
THRUST BLOCKS AND TRENCH CONDITIONS  
NOT TO SCALE



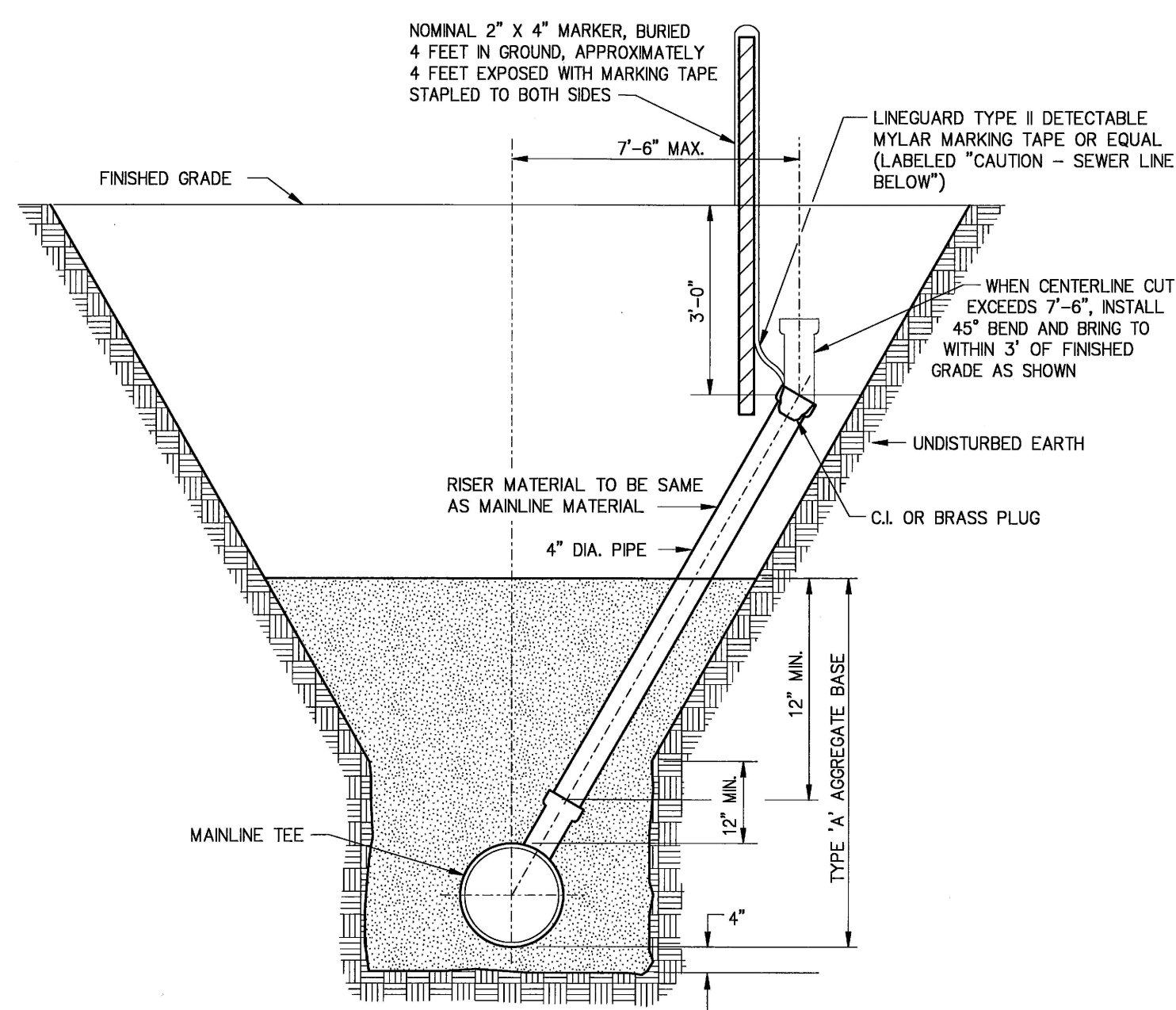
TRENCH CROSS-SECTION

- NOTE:
- BEDDING SHALL BE SAND, PLACED IN THE TRENCH SIMULTANEOUSLY ON BOTH SIDES OF THE PIPE, AND HAND-TAMPED TO ASSURE CONSOLIDATION.
  - FOR PAVED AREAS, SEE STANDARD DETAIL FOR PAVEMENT REMOVAL AND REPLACEMENT.
  - CONTRACTOR SHALL BEAR ALL COSTS OF TESTING.
  - COMPACTION SHALL BE 95% STANDARD PROCTOR DENSITY PER AASHTO T-99 IN 8\"/>

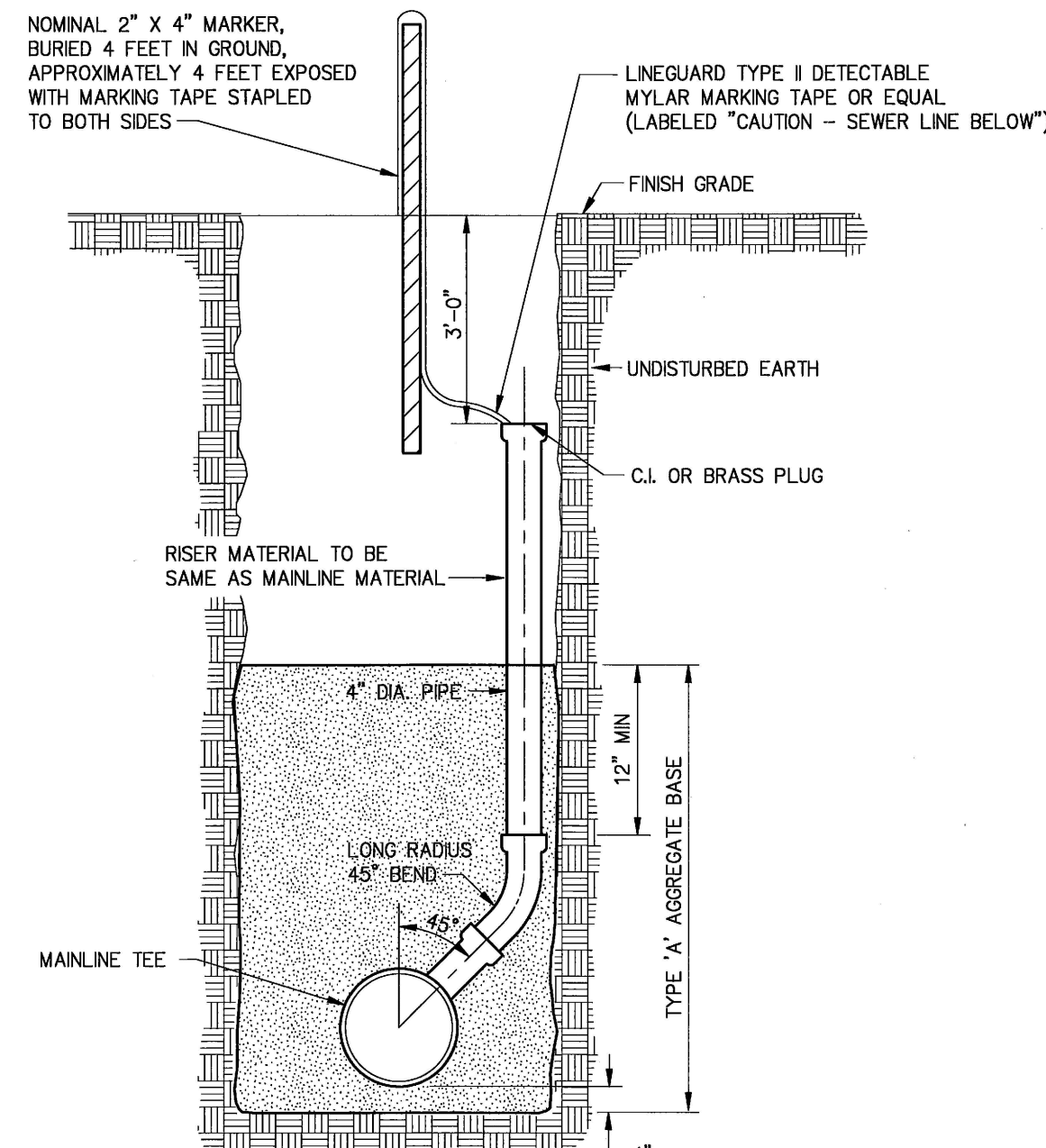
RIGID PIPE:

- DUCTILE IRON - AWWA C151
- PRESTRESSED CONCRETE - AWWA C301
- REINFORCED CONCRETE SANITARY SEWER
- VITRIFIED CLAY SANITARY SEWER

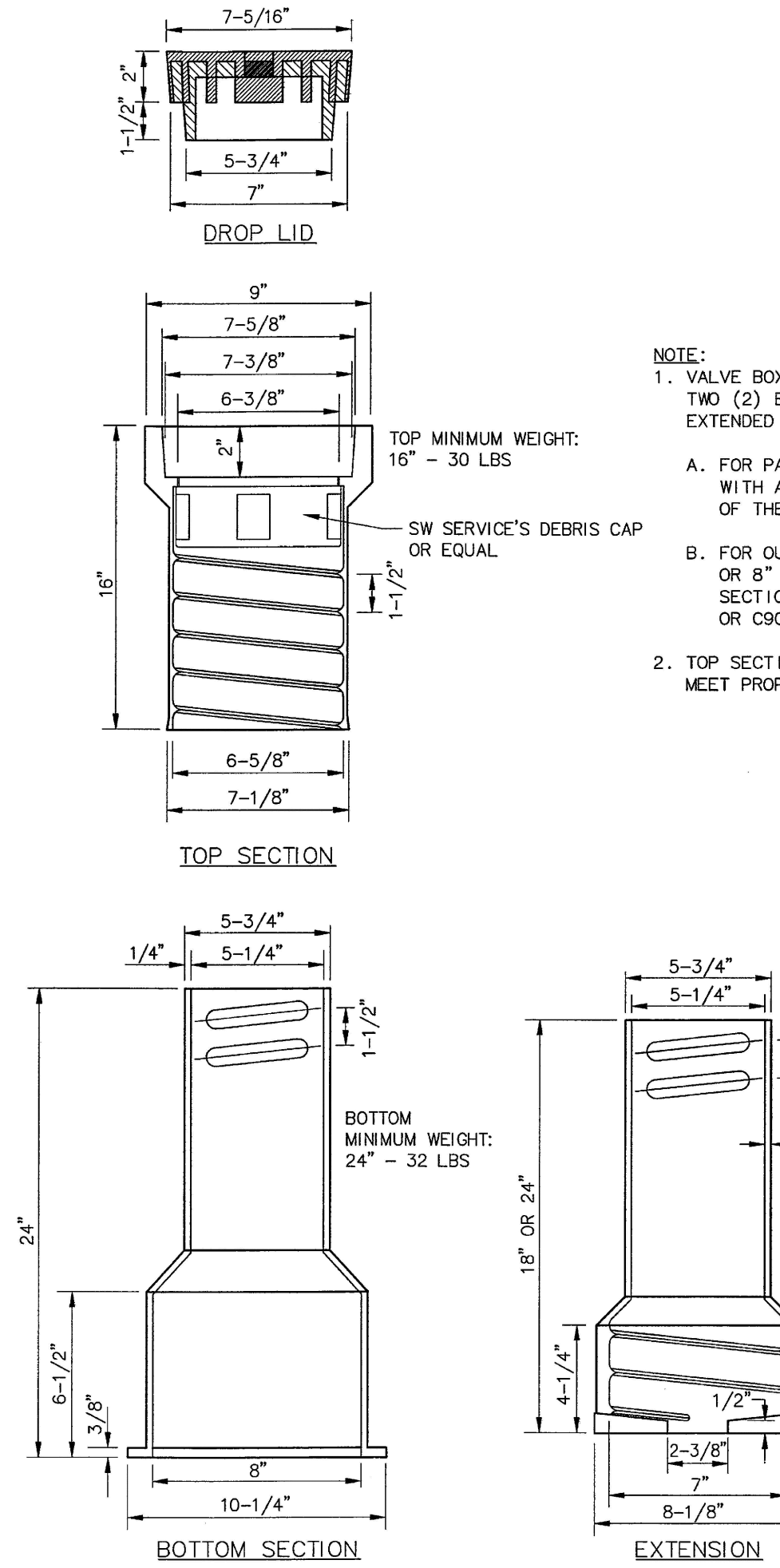
BEDDING DETAIL  
RIGID PIPE  
NOT TO SCALE



TYPICAL  
RISER DETAIL FOR SLOPED TRENCH  
NOT TO SCALE

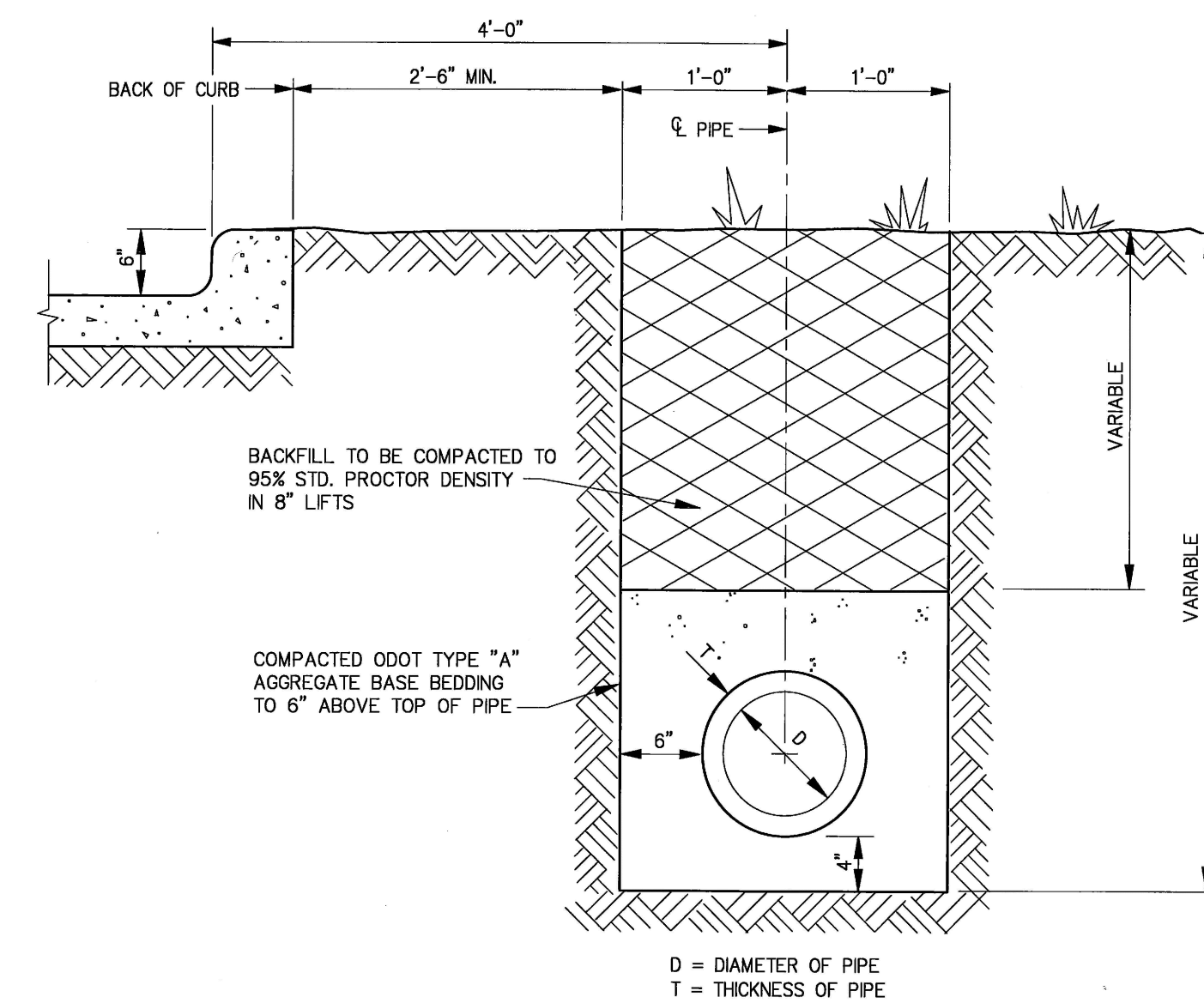


TYPICAL  
RISER DETAIL  
NOT TO SCALE

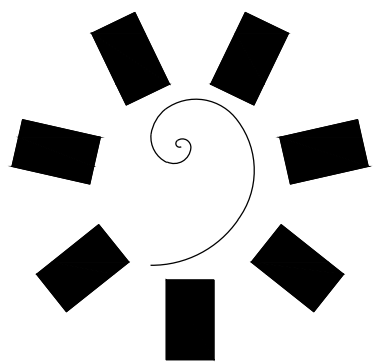


STANDARD  
VALVE BOX DETAIL  
NOT TO SCALE

- NOTE:
- VALVE BOXES REQUIRING MORE THAN TWO (2) EXTENSION SECTIONS SHALL BE EXTENDED USING:
    - FOR PAVEMENT, 8\"/>
  - TOP SECTION SHALL BE ADJUSTED TO MEET PROPOSED FINISH GRADE.



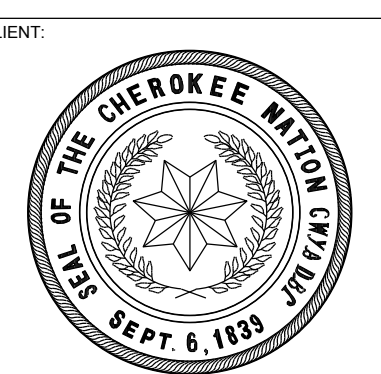
TRENCH DETAIL CONSTRUCTION  
ADJACENT TO ROADWAY  
NOT TO SCALE



James R. Childers  
Architect, Inc.  
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Fort Smith, AR 72501  
479-783-2480  
www.childersarchitect.com



Barker & Associates  
3002 UNIVERSITY BLVD  
DURANT, OK 74701  
580.931.9045  
OK. CO. 35584  
EXP. 06/30/2022



CHEROKEE NATION  
TAG OFFICE  
CATOOSA, OKLAHOMA

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

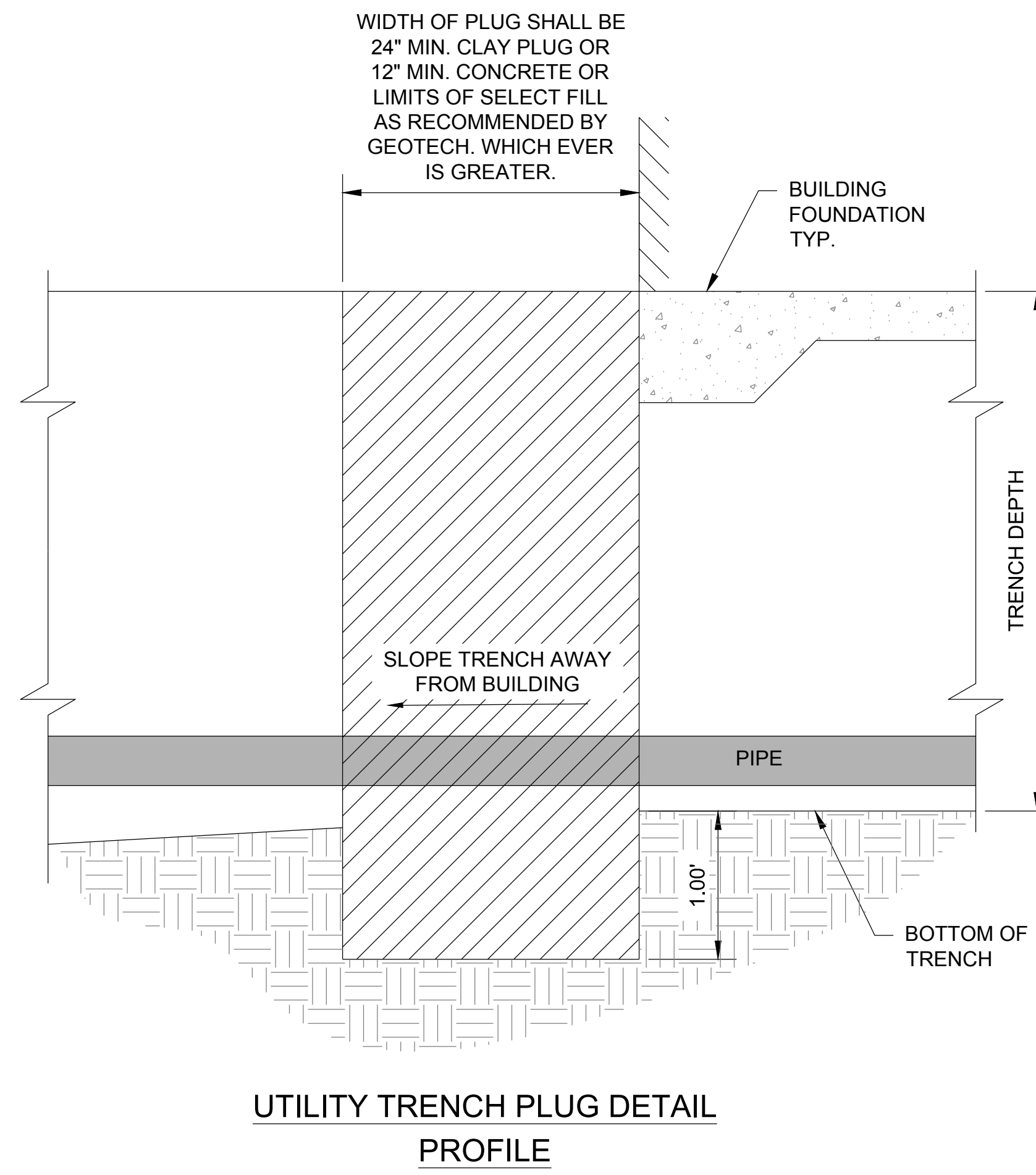
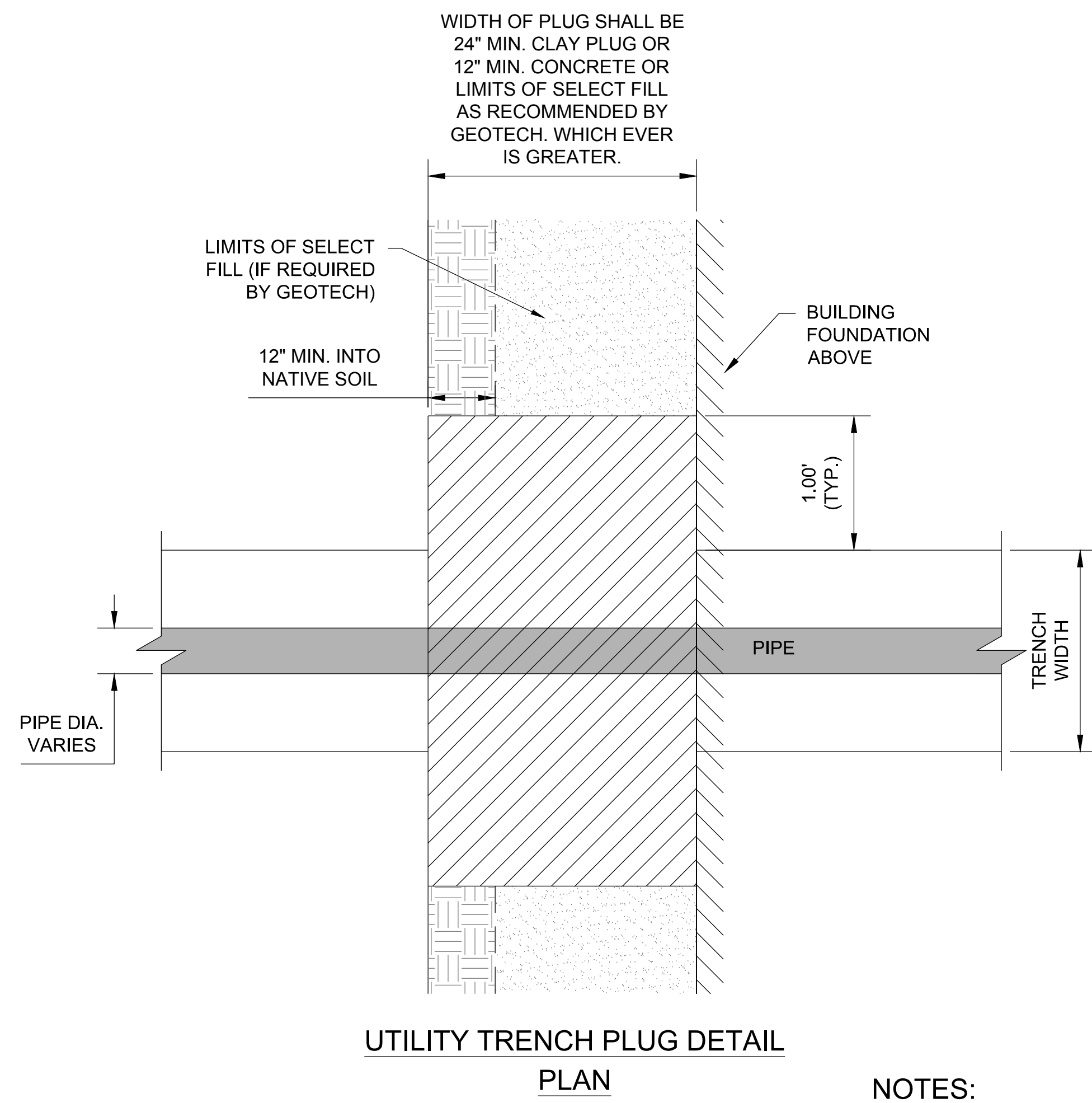
#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

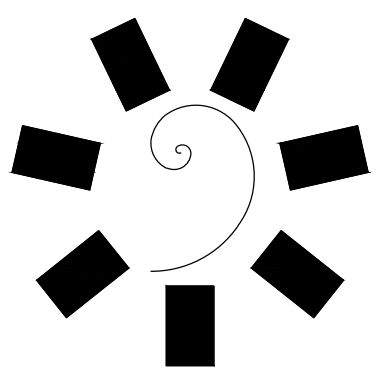
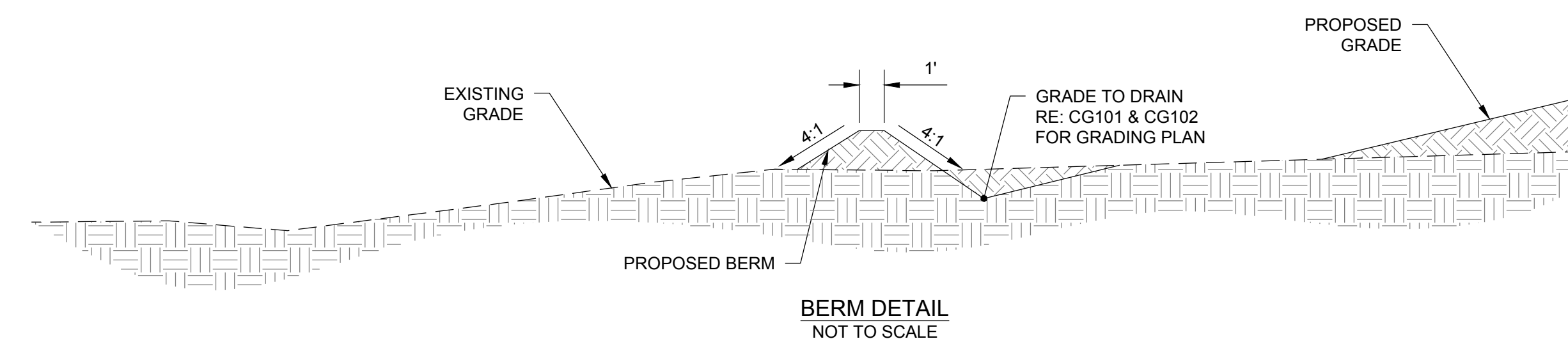
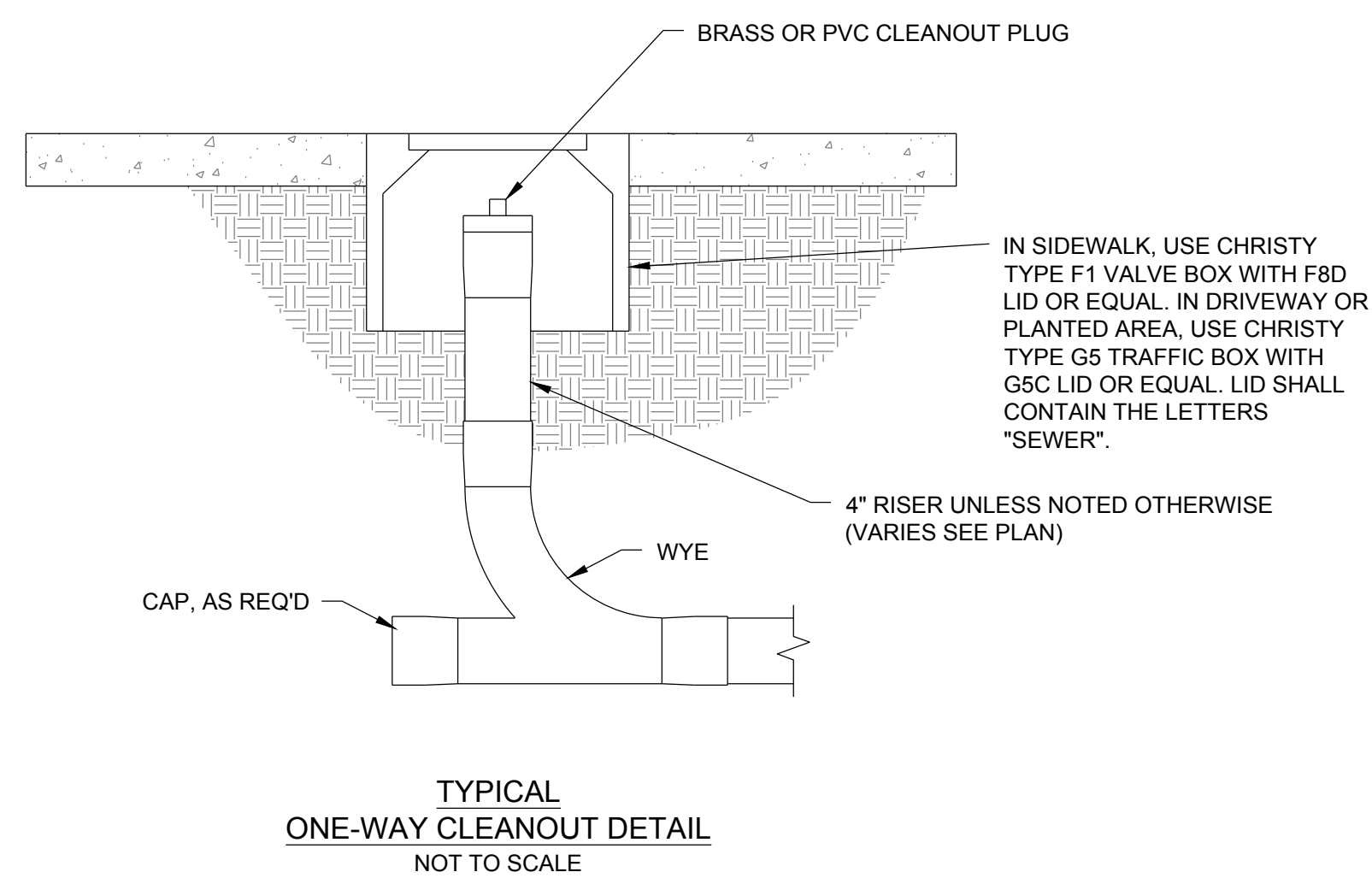
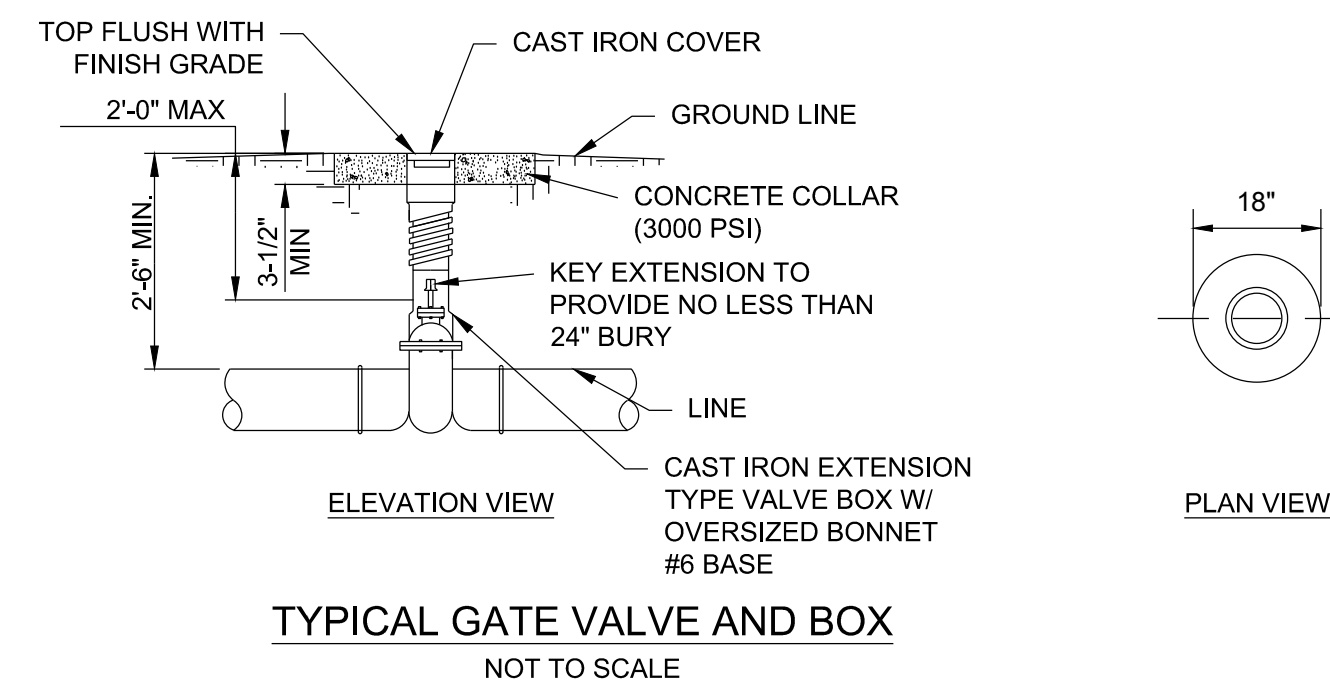
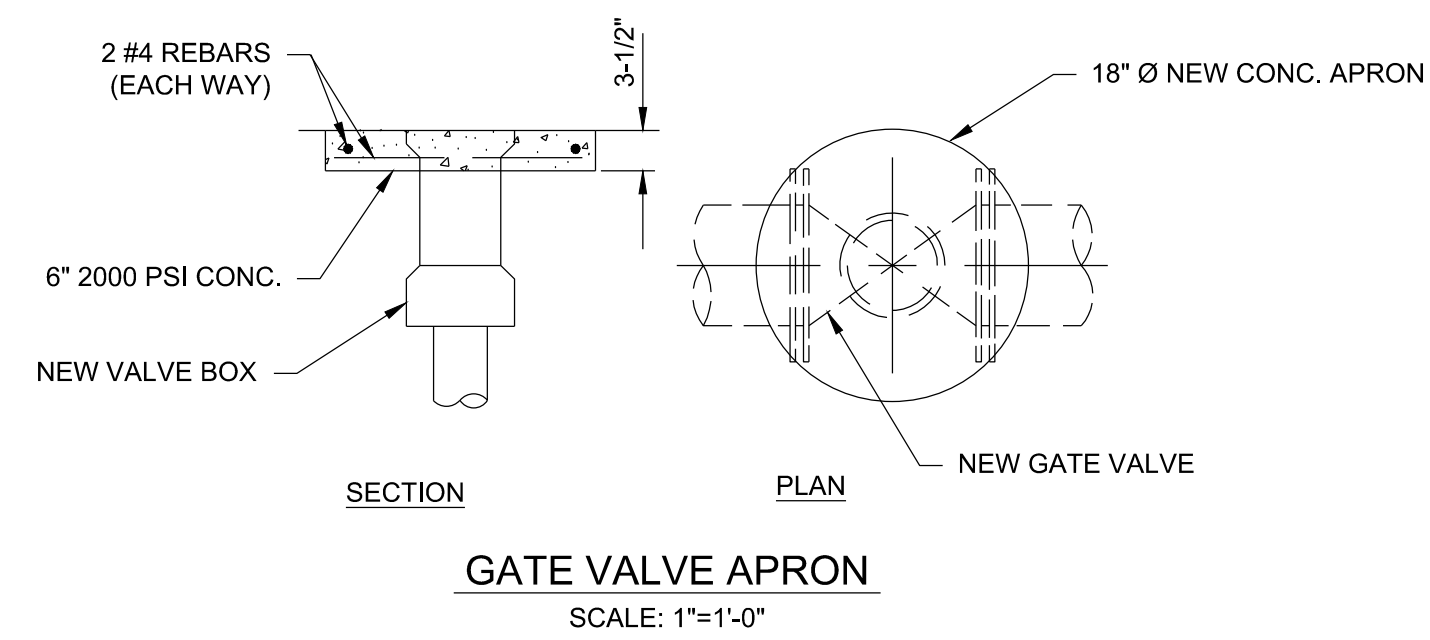
SHEET NUMBER: CU500

TYPICAL UTILITY DETAILS

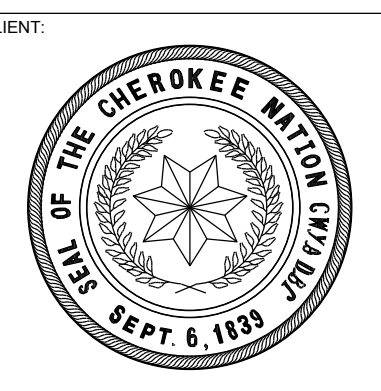




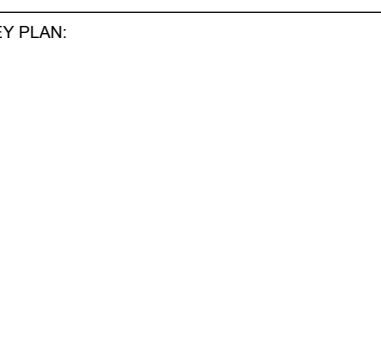
**NOTES:**  
 UTILITY TRENCHES AT BUILDING LINES SHALL BE BACKFILLED WITH A CLAY PLUG. CLAY SHALL BE RELATIVELY IMPERVIOUS. IN LIEU OF PLUG, CONCRETE CUT OFF WALL MAY BE INSTALLED TO BUILDING LINE.



**James R. Childers  
 Architect, Inc.**  
 45 South 4th Street  
 Fort Smith, AR 72901  
 479-783-2480  
 www.childersarchitect.com



**CHEROKEE NATION  
 TAG OFFICE**  
 CATOOSA, OKLAHOMA



PROJECT PHASE:  
**CONSTRUCTION DOCUMENTS**

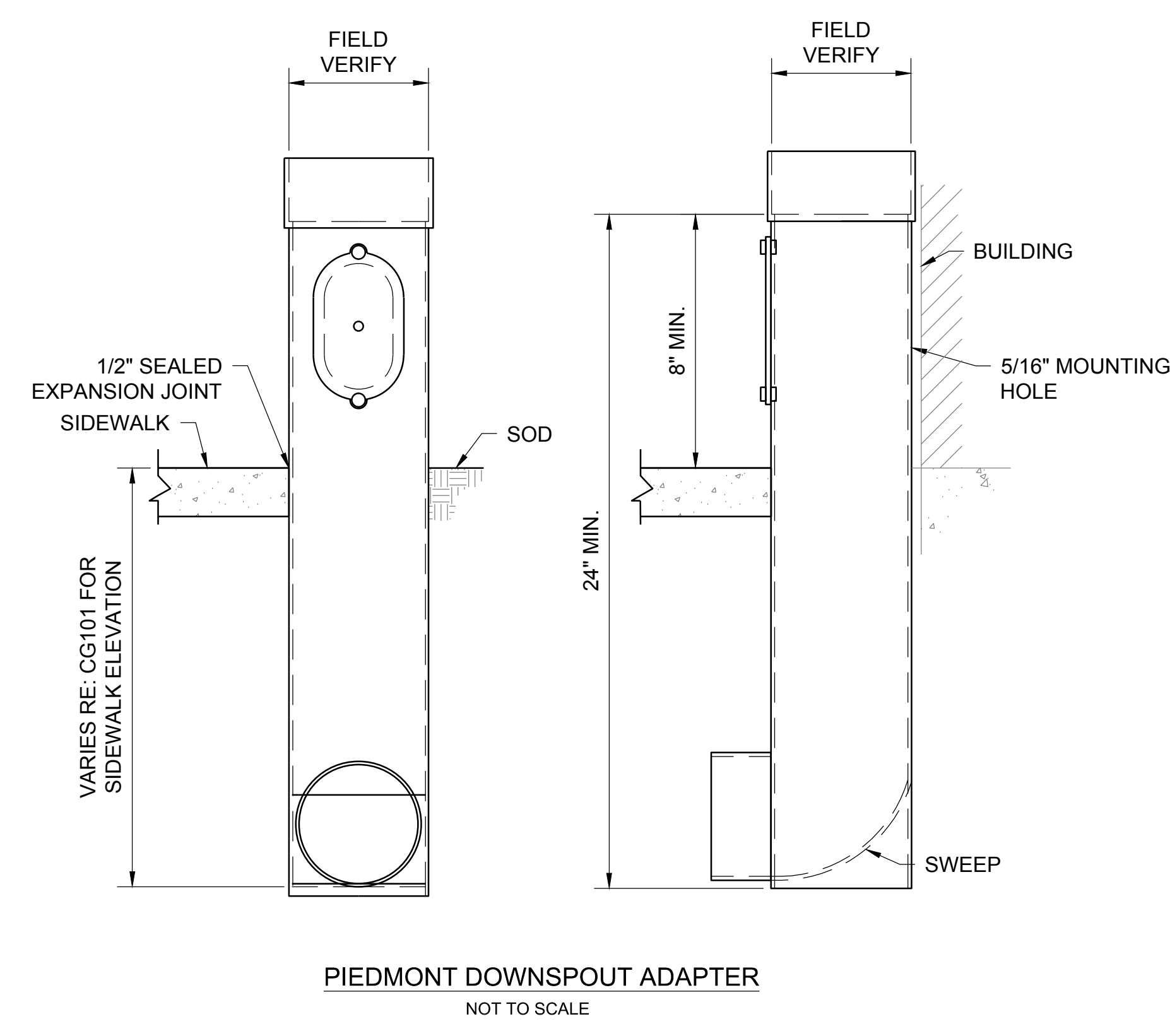
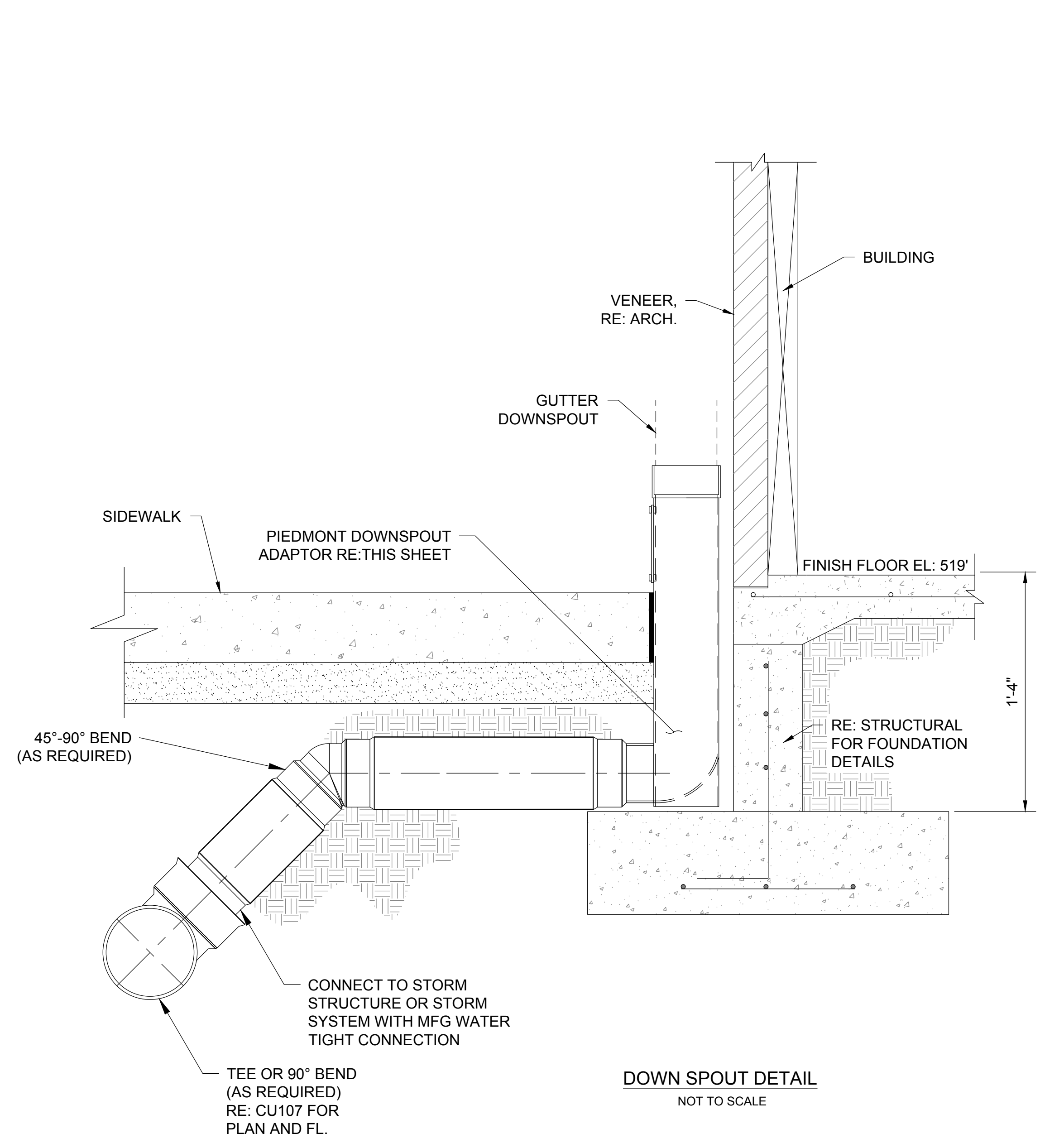
#	DATE	REVISIONS DESCRIPTION

DATE: 07/31/20 JOB NUMBER: 18-01.10

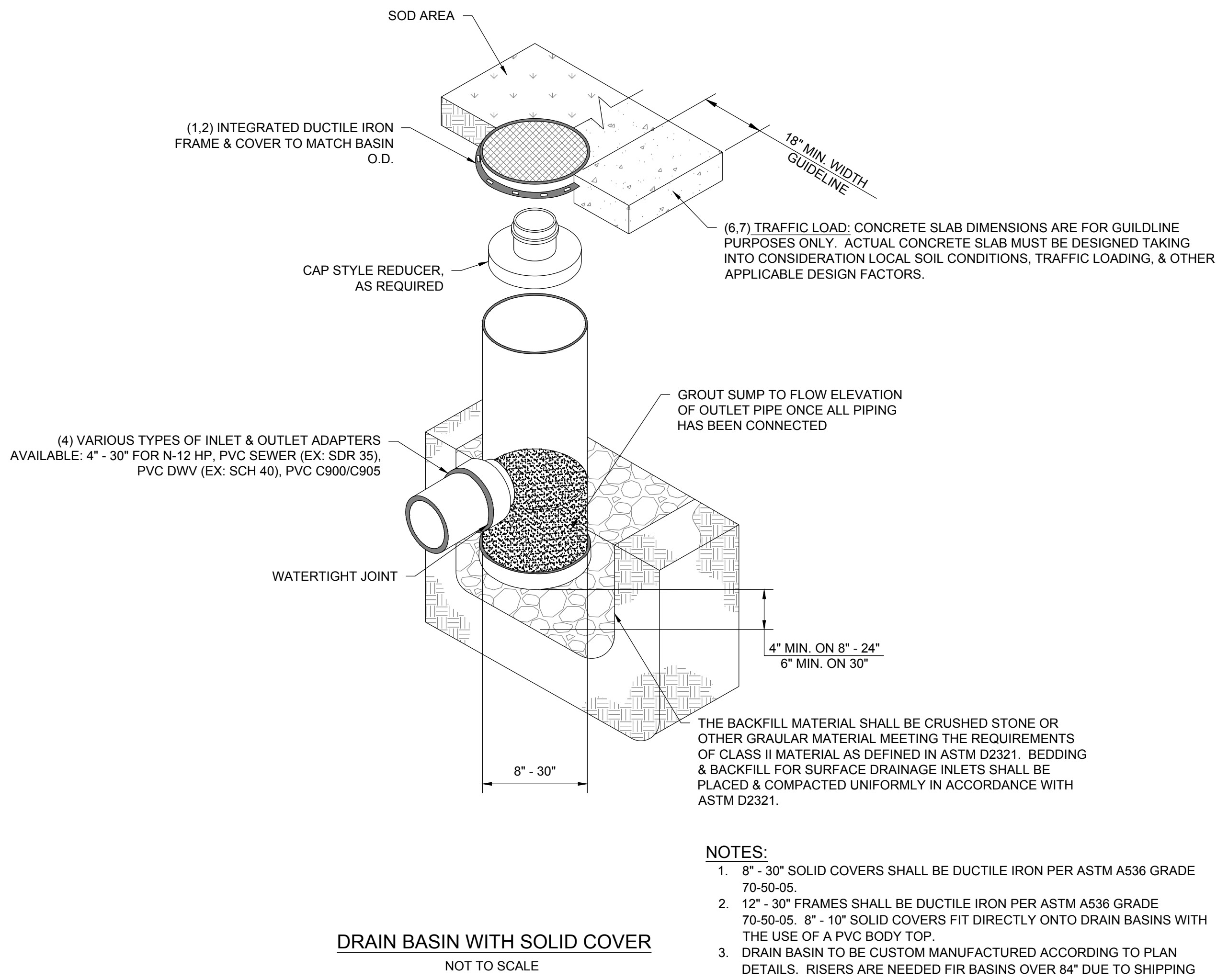
SHEET NUMBER:  
**CU501**

TYPICAL UTILITY DETAILS





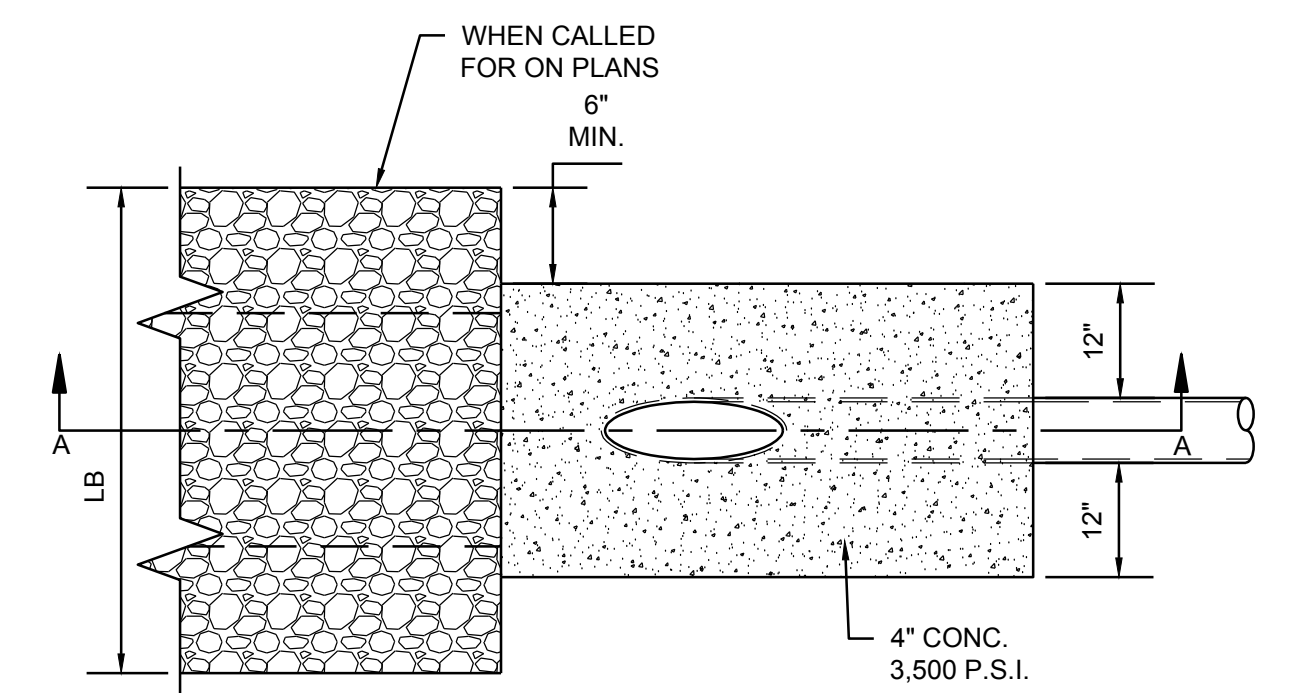
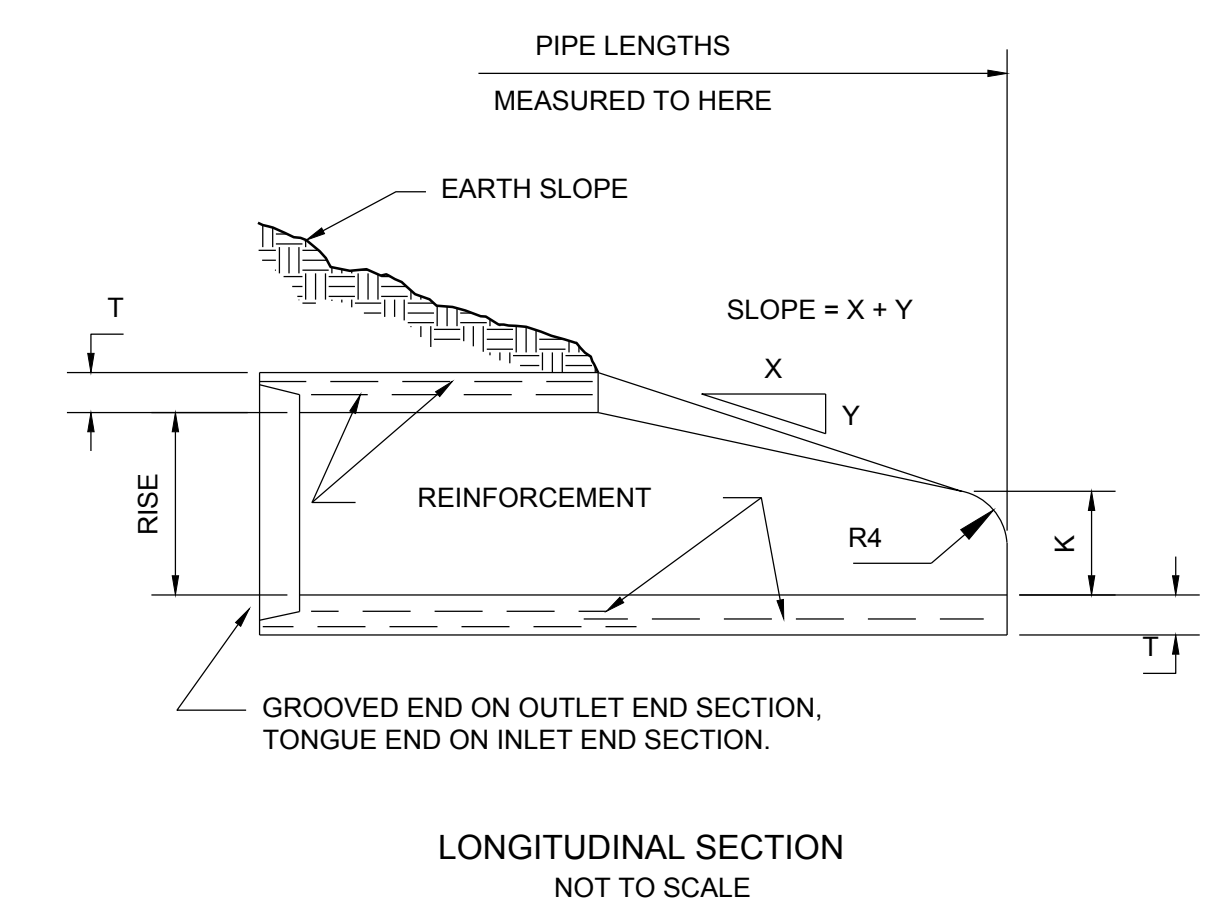
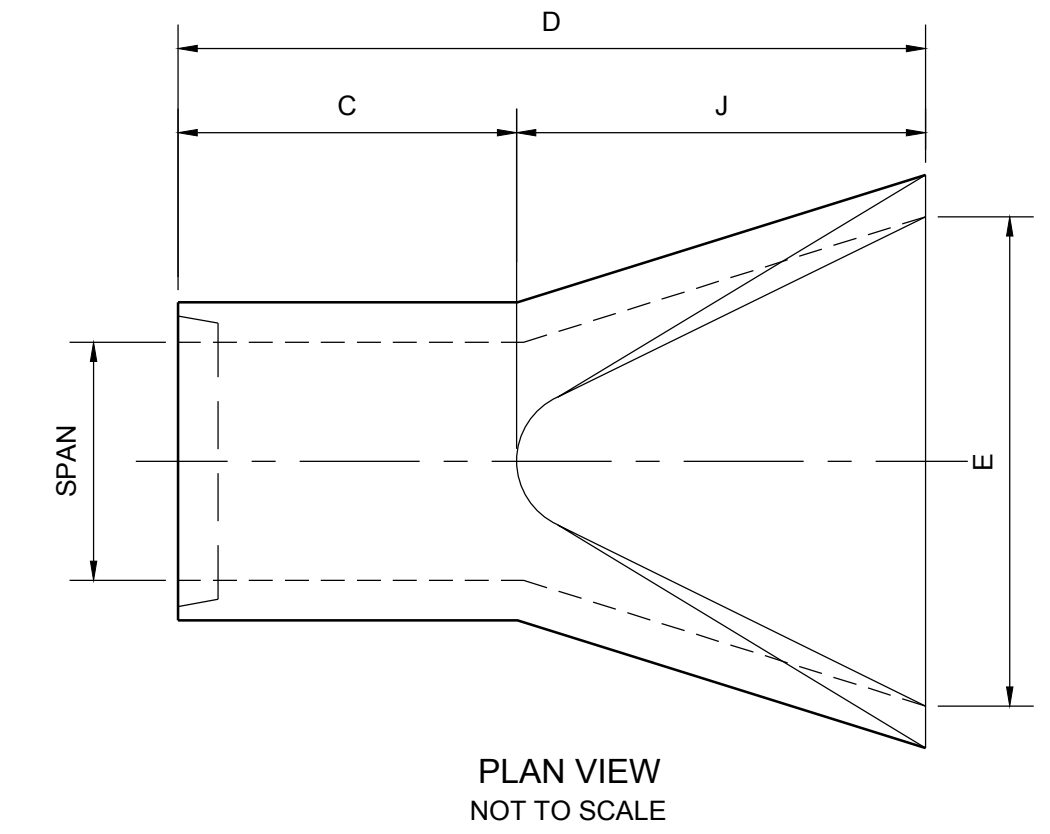
**NOTES:**  
 1. REFER TO ARCH FOR FINISH.  
 2. FIELD VERIFY DOWNSPOUT SHAPE & SIZE.  
 3. OUTLET PIPE SIZE TO FIT STORM PIPE.  
 4. ALL CONNECTIONS, PIPING & FITTINGS TO BE WATERTIGHT.



**NOTES:**  
 1. 8" - 30" SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.  
 2. 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" - 10" SOLID COVERS FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP.  
 3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS.  
 4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR N-12 HP, & PVC SEWER (4" - 24").  
 5. 12" - 30" SOLID COVERS SHALL MEET H-20 LOAD RATING.  
 6. WHERE DRAIN BASINS ARE LOCATED IN REINFORCED GRAVEL AREA, INSTALL GRAVEL DRAIN AT BASIN. REFER TO THIS SHEET FOR DETAIL.

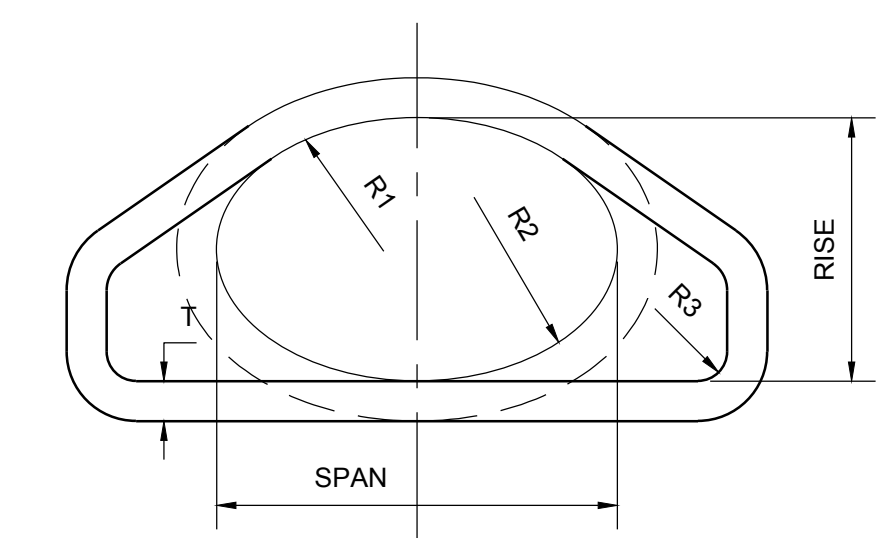
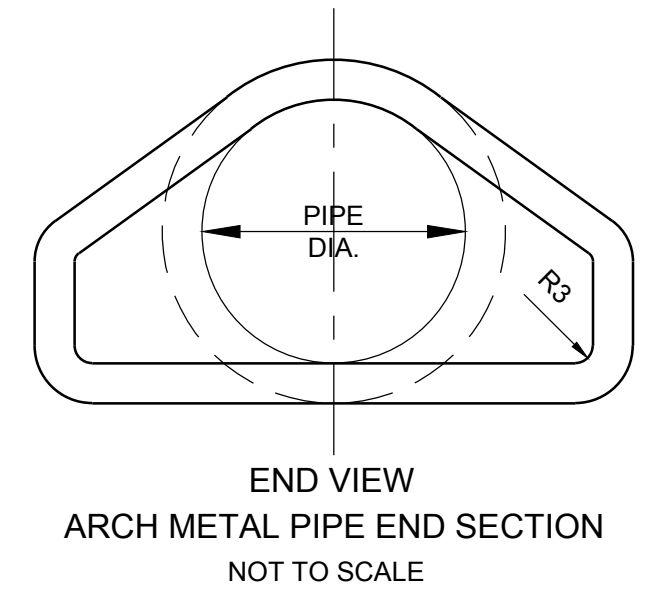
**DIMENSIONS OF PRECAST END SECTION FOR PIPES**

SPAN	K	J	C	D	E	T	R3	R4	R5	SLOPE
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
18	9	27	46	73	36	2 1/2	3	3	6	3 TO 1
24	8 1/2	43 1/2	30	73 1/2	48	3	3	3	7	3 TO 1
30	12	54	19 3/4	73 3/4	60	3 1/2	3	3	8	3 TO 1
36	15	63	34 3/4	73 3/4	72	4	3	3	10 1/2	3 TO 1
42	21	63	35	98	78	4 1/2	3	3	10 1/2	3 TO 1
48	24	72	26	98	84	5	6	6	14	3 TO 1



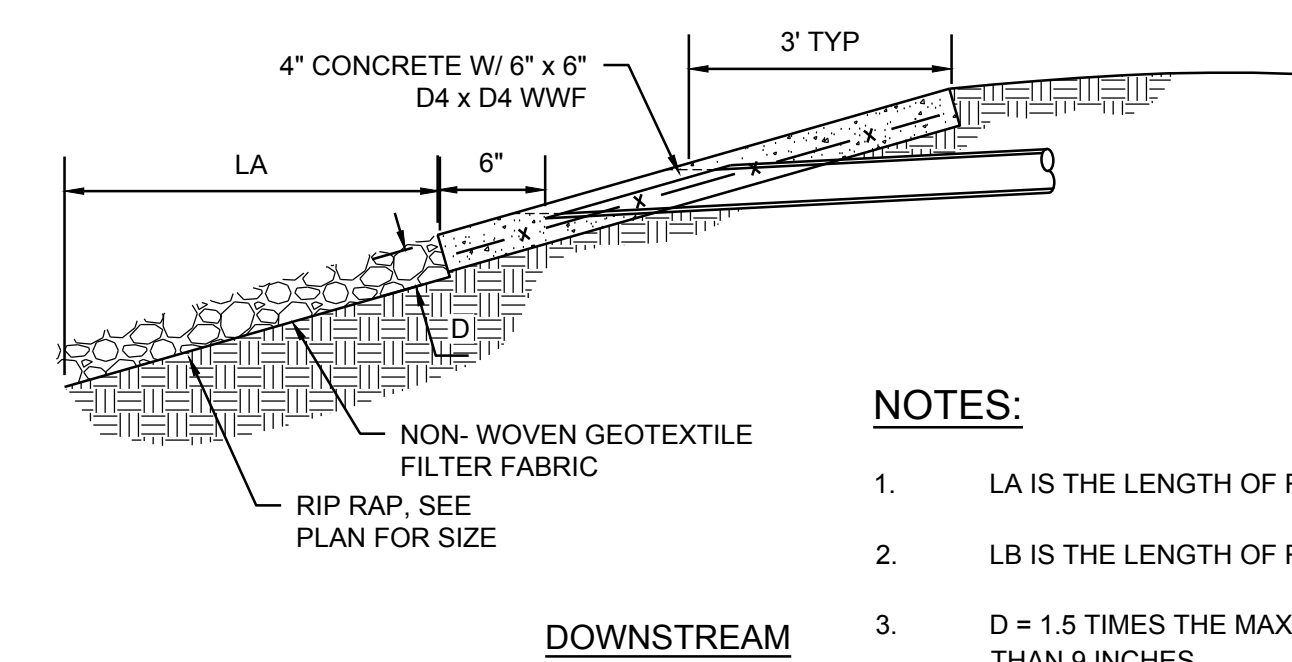
**DIMENSIONS OF PRE-CAST END SECTIONS FOR ELLIPTICAL PIPES**

SPAN	RISE	R1	R2	R3	R4	R5	T	K	J	C	D	E	SLOPE
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
23	14	6	20	3	3		2 3/4	8	27	45	72	36	3 TO 1
30	19	8 1/4	26 1/4	3	3	7	3 1/4	8 1/2	39	33	72	48	3 TO 1
34	22	9 1/4	29 17/32	3	3	8	3 1/2	9	46	26	72	54	3 TO 1
38	24	10 1/4	32 3/4	3	3	9	3 3/4	9 1/2	54	18	72	60	3 TO 1
42	27	11 7/16	36 3/16	3	3	10 1/2	3 3/4	10 3/8	57	15	72	66	3 TO 1
45	29	12 1/4	39 1/4	3	3	12	4 1/2	11 1/4	60	36	96	72	3 TO 1
49	32	13 9/16	42 21/32	3	3	12 1/2	4 3/4	12	60	36	96	75	3 TO 1
53	34	14 3/4	46	6	6	13	5	15 3/4	60	36	96	78	3 TO 1
60	38	16 1/2	51 3/4	6	6	14	5 1/2	21	60	36	96	84	3 TO 1
68	43	18 21/32	58 13/32	6	6	16	6	25 1/2	60	36	96	90	3 TO 1



**GENERAL NOTES FOR METAL END SECTIONS:**

- WHEN PREFABRICATED END SECTIONS ARE OPTIONAL, THEY SHALL BE OF THE SAME MATERIALS AS THAT OF THE PIPE, WHICH THEY ARE INSTALLED.
- FOR MATERIAL OF ALUMINUM ALLOY END SECTION, SEE SUBSECTION 726.65 OF THE CURRENT OKLAHOMA STANDARD SPECIFICATIONS.
- FOR MATERIALS OF GALVANIZED METAL END SECTION, SEE SUBSECTION 726.17 OF THE CURRENT OKLAHOMA STANDARD SPECIFICATIONS.
- CONNECTOR SECTION, CORNER PLATE AND TOE PLATE TO BE OF THE SAME GAGE & MATERIAL AS THE SKIRT AND SHALL BE INCLUDED IN THE BID FOR END SECTION.
- TOE PLATES WILL BE REQUIRED FOR ALL METAL END SECTIONS UNLESS SOLID ROCK IS ENCOUNTERED. HOLES IN TOE PLATE ARE TO BE PUNCHED TO MATCH HOLES IN SKIRT LIP. 3/8" BOLTS TO BE FURNISHED. LENGTH TO TOE PLATES FOR ROUND PIPE SECTION IS W + 10" TO 12" TO 30" DIAMETER PIPE, W + 22" FOR 36" TO 48" DIAMETER PIPE. LENGTH OF TOE PLATES FOR ARCH PIPE END SECTION IS W + 10" FOR A RISE OF 11" TO 27" AND W + 18" FOR A RISE OF 31" TO 44".
- IF TYPE 3 END SECTION IS USED AS OPTIONAL PIPE, THE LENGTH OF PIPE IS TO BE REDUCED BY 12" FOR EACH END SECTION.
- ANY STRUCTURAL EXCAVATION REQUIRED FOR INSTALLATION OF PREFABRICATED END SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.

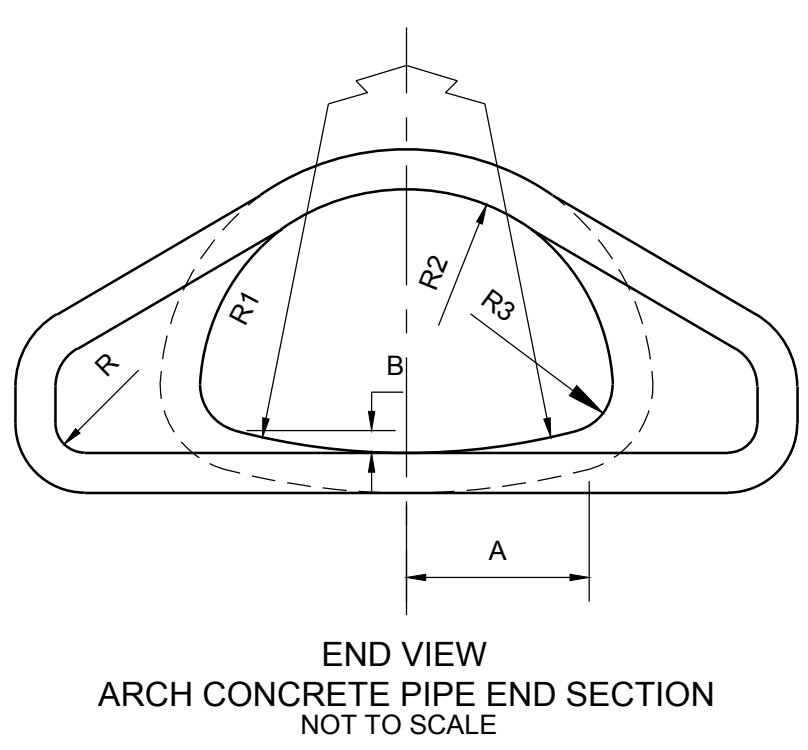


- NOTES:**
- LA IS THE LENGTH OF RIPRAP APRON SEE PLAN.
  - LB IS THE LENGTH OF RIPRAP APRON SEE PLAN.
  - D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 9 INCHES.
  - IN A WELL - DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION EQUAL TO THE TOP OF THE BANK.
  - A FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION. AASHTO M-288-97 CLASS 2.
  - MEDIAN STONE DIAMETER  $D_{50} = 8"$
  - TRIM PIPE TO FIT SLOPE.

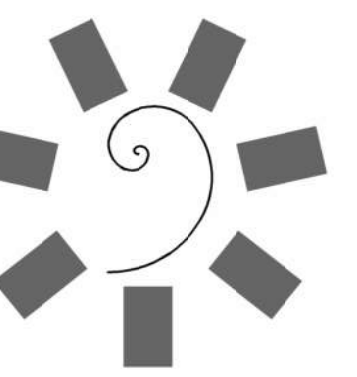
**PIPE END TREATMENT**  
NOT TO SCALE

**DIMENSIONS OF PRE-CAST END SECTION FOR ARCH-PIPES**

SPAN	RISE	A	B	R	R1	R2	R3	R4	R5	T	K	J	C	D	E	SLOPE
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	
28 1/2	18	10 7/8	3 3/4	3	40 11/16	14 3/4	4 5/8	3	7	3 1/2	8 1/2	39	33	72	48	3 TO 1
36 1/4	22 1/2	13 5/8	3 13/16	3	51	18 3/4	6 1/8	3	8	4	9 1/2	50	46	96	60	3 TO 1
43 3/4	26 5/8	17 1/8	4 1/8	6	62	22 1/2	6 1/2	3	10 1/2	4 1/2	11 1/8	60	36	96	72	3 TO 1
51 1/8	31 1/16	20	5 1/16	6	73	26 1/4	7 3/4	3	12 1/2	4 1/2	15 13/16	60	36	96	78	3 TO 1
58 1/2	36	22 3/4	6	6	84	30	8 7/8	3	14	5	21	60	36	96	84	3 TO 1
65	40	25	6 3/4	6	92 1/2	33 1/2	10	6	16	5 1/2	25 1/2	60	36	96	90	3 TO 1
73	45	28 1/2	7 1/2	6	105	37 1/2	11 1/16	6	6	6	31	60	36	96	96	3 TO 1







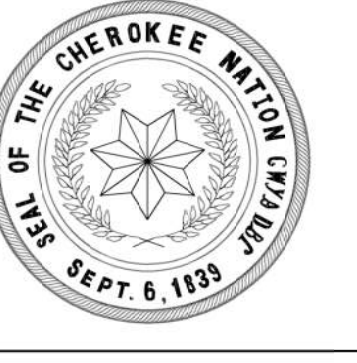
James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.jrchitect.com

PROFESSIONAL SEAL:

CONSULTANT LOGO:  
*wallace*

Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Suite 300  
Tulsa, Oklahoma 74103  
918.584.5858, 918.584.5855

CLIENT:



CHEROKEE NATION  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS:

DATE: 07-31-2020

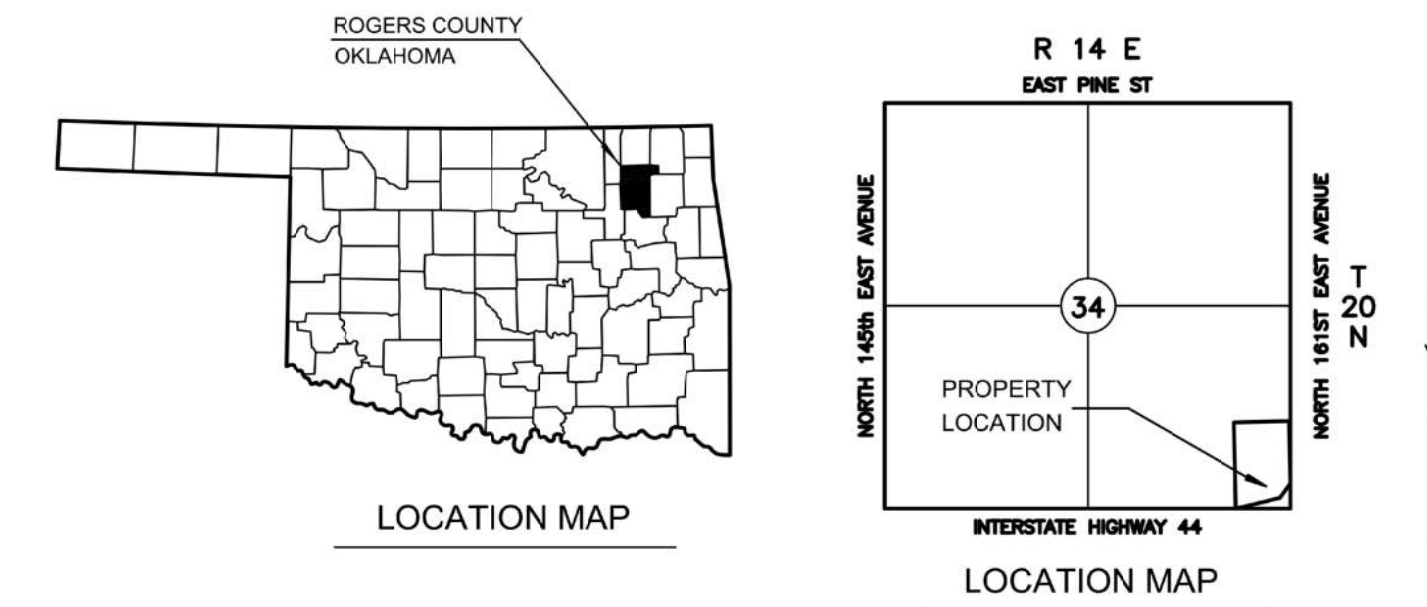
JOB NUMBER: 18-01-10

SHEET NUMBER: GE01

COVER SHEET

# Infrastructure Development Plans for 161st WATER MAIN EXTENSION IDP 058063-2020

400 N. 161st E. Ave Tulsa, OK 74116



## UTILITY CONTACTS

**UTILITY COORDINATION:**  
CITY OF TULSA  
175 E 2ND ST, 4TH FLOOR  
TULSA, OK 74103  
918.596.9649

**GAS:**  
OKLAHOMA NATURAL GAS COMPANY  
ATTN: DONALD KAFER  
918.527.1089

**TELEPHONE:**  
AT&T COMMUNICATION INC.  
ATTN: PAUL DESPAIN  
5305 EAST 71ST STREET  
TULSA, OKLAHOMA 74146  
918.596.6810

**CABLE TELEVISION:**  
COX COMMUNICATIONS  
ATTN: GARY HAMILTON  
11811 E. 51ST STREET S.  
TULSA, OKLAHOMA 74146  
918.286.4666

**ELECTRIC:**  
AEP/PUBLIC SERVICE COMPANY OF OKLAHOMA  
ATTN: CHRIS THOMPSON  
212 EAST SIXTH STREET  
TULSA, OKLAHOMA 74119  
918.599.6517

## LEGEND

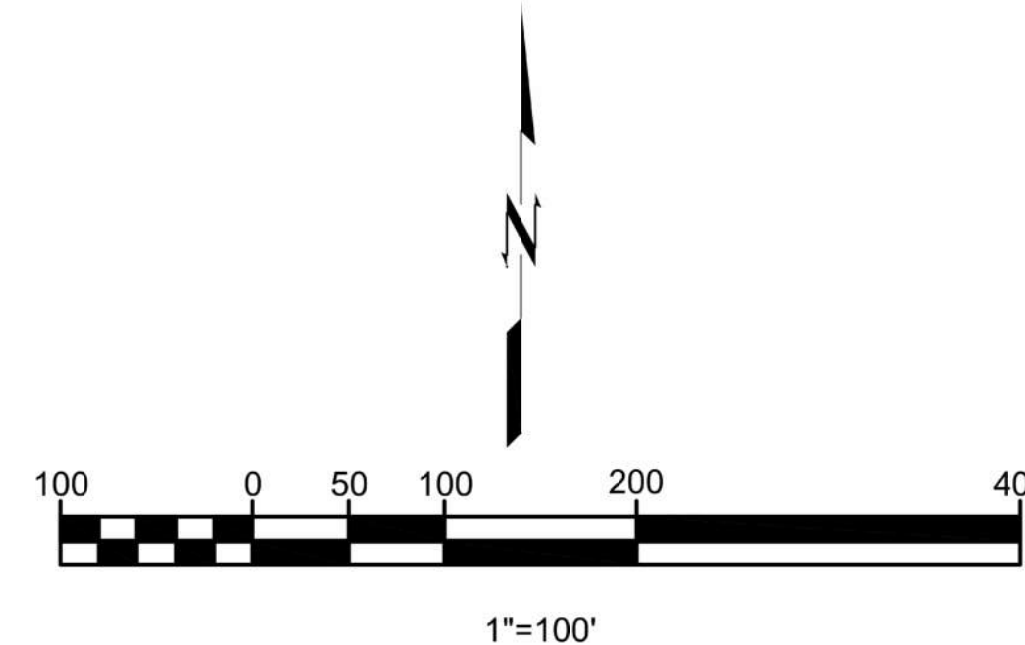
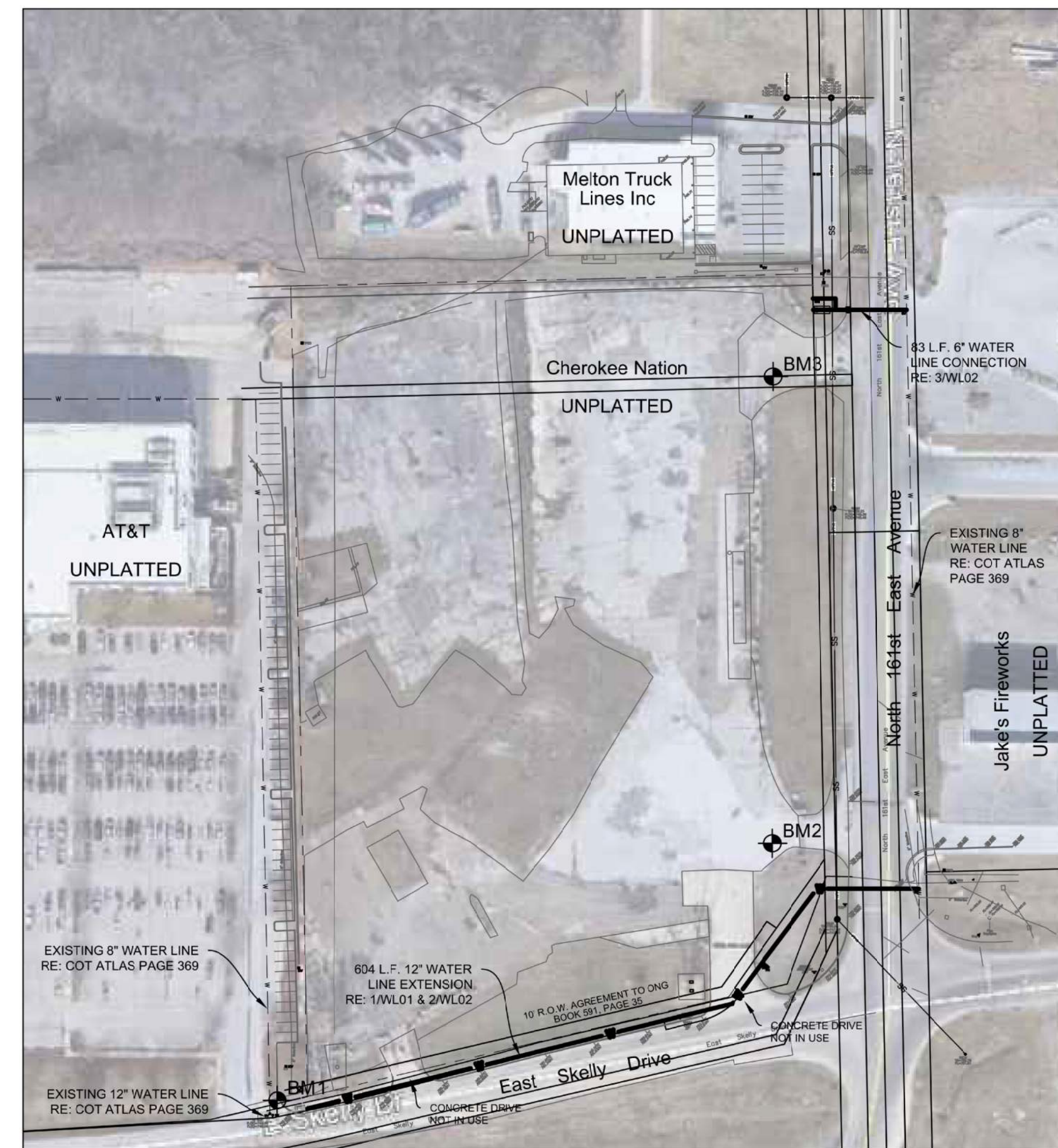
—X—	FENCE
—T—	TELEPHONE OVERHEAD
—W—	POWER LINE OVERHEAD
—G—	GAS LINE
—O—	OIL LINE
—PUG—	POWER UNDERGROUND
—TUG—	TELEPHONE UNDERGROUND
—TVUG—	TV UNDERGROUND
—W—	WATER LINE
—SS—	SANITARY SEWER LINE
—FM—	FORCE MAIN
—S—	STORM SEWER LINE
—	FLOW LINE DITCH
—DD—	DIVERSION DIKE
—SF—	SILT FENCE
---	PROPERTY BOUNDARY
---	DRAINAGE AREA BOUNDARY
PVT	PRIVATE
⊕	PROPOSED MANHOLE
⊕	PROPOSED INLET
⊕	EXISTING MANHOLE
⊕	EXISTING INLET LETTER
D.L.	DRAINAGE LENGTH
TR	TOP OF RIM
FL	FLOW LINE
LF	LINEAR FEET
RCP	REINFORCED CONCRETE PIPE
TYP	TYPICAL
N	NORTHING
E	EASTING
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
SPHD	SPRINKLER HEAD
GTR	GUTTER
CLSM	CONTROLLED LOW STRENGTH MATERIAL
⊕	VALVE
⊕	GATE VALVE
⊕	REDUCER
⊕	DOUBLE CHECK DETECTOR
⊕	TEE
⊕	PLUG VALVE
⊕	11 1/4" ELBOW
⊕	22 1/2" ELBOW
⊕	45" ELBOW
⊕	90" ELBOW
⊕	TAPPING SLEEVE
⊕	FIRE HYDRANT
⊕	WATER METER

## ENGINEER STATEMENT

1. BY MY SIGNATURE ON THESE CONSTRUCTION DOCUMENTS, I HEREBY CERTIFY THAT I AM FAMILIAR WITH THE ADOPTED ORDINANCES AND REGULATIONS OF THE CITY OF TULSA GOVERNING THE WORK IN THE INFRASTRUCTURE DEVELOPMENT PERMIT DESCRIPTION; THAT THESE PLANS HAVE BEEN PREPARED UNDER MY DIRECT SUPERVISION; AND ABOVE AND FOREGOING PLANS COMPLY WITH ALL GOVERNING ORDINANCES AND THE ADOPTED STANDARDS OF THE CITY OF TULSA TO THE BEST OF MY KNOWLEDGE AND BELIEF.  
2. THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.

**OWNER**  
DAVID MOORE  
EXECUTIVE DIRECTOR  
MANAGEMENT RESOURCES  
GROUP  
P.O. BOX 948  
CHEROKEE NATION  
TAHLEQUAH, OK 74465  
918.772.4137

**ENGINEER**  
DANNY BALDWIN  
WALLACE ENGINEERING  
123 N M.L.K. JR BLVD  
TULSA, OKLAHOMA 74103  
918.584.5858



## NOTES

- ALL CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH CURRENT CITY OF TULSA STANDARDS AND SPECIFICATIONS.
- ENTIRE PROJECT IS WITHIN CORPORATE LIMITS OF CITY OF CATOOSA.
- THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.
- REFERENCE ATLAS PAGE #369 FOR CITY OF TULSA UTILITIES.
- CONTRACTOR AND ALL SUBCONTRACTORS DOING WORK IN THE ROW SHALL BE APPROVED BY THE CITY OF TULSA TO DO INFRASTRUCTURE DEVELOPMENT PROCESS WORK. CONTACT BEN JOHNSON AT (918) 596-2514 FOR MORE INFORMATION.
- BEFORE BLOCKING ANY LANE OF TRAFFIC, ANY SIDEWALK OR ANY PARKING METER, OR BEFORE CUTTING ANY STREET, SIDEWALK, OR ALLEY YOU MUST FIRST APPLY FOR AND BE GRANTED A RIGHT OF WAY CONSTRUCTION PERMIT. PERMIT APPLICATIONS CAN BE PICKED UP ON THE 4TH FLOOR OF CITY HALL (175 E 2ND ST TULSA, OK). APPLICATION PACKETS CAN BE SUBMITTED TO THE STREETS AND STORMWATER DEPARTMENT ON THE 4TH FLOOR OF CITY HALL OR THEY CAN BE ELECTRONICALLY SUBMITTED AT ROWPERMITS@CITYOFTULSA.ORG. CONTACT JERRY DAILEY AT (918)596-9630 OR JDAILEY@CITYOFTULSA.ORG WITH ANY QUESTIONS.
- TRAFFIC ACCESS ON ALL STREETS SHALL BE MAINTAINED AT ALL TIMES. CONTRACTOR MUST MAINTAIN PROPER CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL CONTRACTORS PERFORMING IDP OR RIGHT OF WAY WORK MUST BE AN APPROVED IDP CONTRACTOR WITH THE CITY AND MUST HAVE A CONTRACT WITH CITY OF TULSA AND BE BONDED FOR THEIR PORTION OF THE IDP WORK. THE PRIME CONTRACTOR MUST ALSO APPLY SEPARATELY FOR IDP PERMIT.

## SURVEY DATA TABLE

EXISTING TOPOGRAPHY IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY BENNETT SURVEYING, INC. DATED 11/12/19

BENCHMARK #1	BENCHMARK #2	BENCHMARK #3
PK NAIL IN ASPH. ELEV=748.44 N=430723.573 E=2618054.347	PK NAIL IN ASPH. ELEV=756.00 N=430951.409 E=2618492.942	65-D NAIL ELEV=749.30 N=431365.190 E=2618493.529

DESCRIPTION:	DESCRIPTION:	DESCRIPTION:
CURB RETURN OF S. SKELLY DR & AT&T DWY	DWY TO N 161ST E AVE IN SE CORNER OF LOT	DWY TO N 161ST E AVE IN NE CORNER OF LOT

HORIZONTAL DATUM FOR THIS SURVEY IS BASED ON OKLAHOMA STATE PLANE NAD83 VERTICAL DATUM FOR THIS SURVEY IS BASED ON NAVD 1988

## LEGAL DESCRIPTION

A TRACT OF LAND THAT IS PART OF THE SE4 SE4 OF SECTION 34, TOWNSHIP 20 NORTH, RANGE 14 E, I.B.&M., ROGERS COUNTY, OKLAHOMA ACCORDING TO THE UNITED STATES GOVERNMENT SURVEY THEREOF, LYING NORTH OF AND ADJACENT TO INTERSTATE HIGHWAY 44 AND WEST OF AND ADJACENT TO NORTH 161ST EAST AVENUE. SAID TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID SE4 SE4 OF SECTION 34; THENCE NORTH 00°03'28" WEST ALONG THE WESTERLY LINE OF THE SE4 SE4 FOR A DISTANCE OF 144.20 FEET TO A POINT ON THE NORTHERLY RIGHT OF WAY LINE OF INTERSTATE HIGHWAY 44; THENCE NORTH 89°54'49" EAST ALONG SAID RIGHT OF WAY LINE FOR 464.25 FEET; THENCE NORTH 87°39'29" EAST ALONG SAID RIGHT OF WAY LINE FOR 257.03 FEET; THENCE NORTH 77°48'18" EAST ALONG SAID RIGHT OF WAY LINE FOR 89.26 FEET TO THE POINT OF BEGINNING OF SAID TRACT OF LAND; THENCE NORTH 00°03'04" WEST FOR 718.88 FEET TO A POINT 430.00 FEET SOUTHERLY OF AS MEASURED PERPENDICULARLY TO THE NORTHERLY LINE OF THE SE4 SE4; THENCE NORTH 89°47'48" EAST AND PARALLEL WITH SAID NORTHERLY LINE FOR 462.03 FEET TO A POINT ON THE PRESENT WESTERLY RIGHT OF WAY LINE OF NORTH 161ST EAST AVENUE; THENCE SOUTH 00°03'04" EAST ALONG SAID WESTERLY RIGHT OF WAY LINE FOR 518.95 FEET TO A POINT ON THE PRESENT NORTHERLY RIGHT OF WAY LINE OF INTERSTATE HIGHWAY 44; THENCE ALONG SAID NORTHERLY RIGHT OF WAY LINE AS FOLLOWS: SOUTH 35°59'17" WEST 148.88 FEET; THENCE SOUTH 77°48'18" WEST FOR 383.01 FEET TO THE POINT OF BEGINNING OF SAID TRACT OF LAND, LESS AND EXCEPT MINERALS CONTAINING 7.00 ACRES MORE OR LESS.

## CITY OF TULSA STANDARDS

304	BEDDING DETAIL - RIGID PIPE
307	BORING DETAIL
309	STANDARD DETAIL FIRE HYDRANT
313	STANDARD DETAIL VALVE BOX
730	STANDARD ASPHALT PAVEMENT CUT AND REPAIR
731	STANDARD CONCRETE PAVEMENT CUT AND REPAIR

CITY OF TULSA  
ATLAS PG 369

## LIST OF SHEETS

GE01	COVER SHEET
GE02	GENERAL NOTES
WL01	WATER LINE PLAN AND PROFILE 1
WL02	WATER LINE PLAN AND PROFILE 2

## IDP DESCRIPTION

- 12" WATER LINE EXTENSION
- 6" WATER LINE CONNECTION
- FIRE HYDRANT

## FLOODPLAIN INDEX BOX

FEMA PANEL 0350J  
NO COT REGULATORY FLOODPLAIN  
(OUTSIDE TULSA CITY LIMITS)

EASEMENT BY SEPARATE INSTRUMENT  
NO EASEMENT BY SEPARATE INSTRUMENT

**BEFORE YOU DIG**  
CALL OKIE

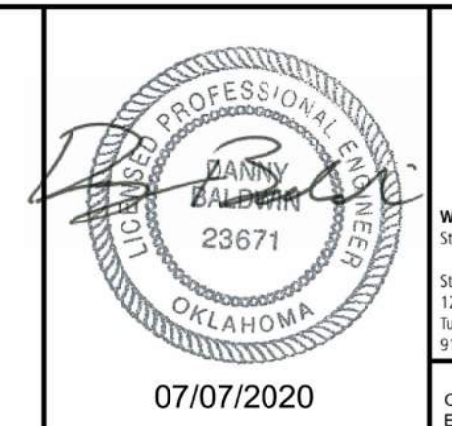
**CAUTION**  
NOTICE TO CONTRACTOR  
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES

REV	DESCRIPTION	DATE
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

APPROVED - FOR IDP USE ONLY  
Date: 2020.07.14  
07:54:40-0500'

MICHAEL LING, PE  
INFRASTRUCTURE DEVELOPMENT MANAGER  
CITY OF TULSA  
DATE

ALL CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH CURRENT CITY OF TULSA STANDARDS AND SPECIFICATIONS.

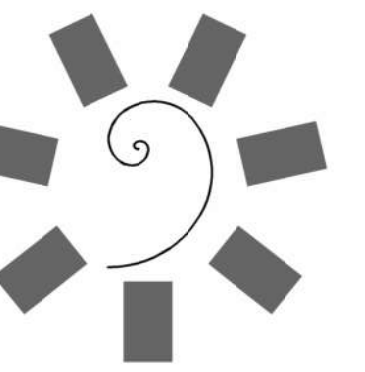


*wallace*  
Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Suite 300  
Tulsa, Oklahoma 74103  
918.584.5858, 918.584.5855  
OKLAHOMA CA #1460  
EXP. DATE: 6/30/21

161ST AND SKELLY DR.  
**12" WATER MAIN EXTENSION**  
COVER SHEET  
PROJECT NO 2040045  
DATE 7/6/2020  
SHEET # GE01

7/6/2020 4:57:50 PM I:\Chalson\proj\161st Water Main Extension\DWG\2\_Production\01\GE01\_Cover Sheet.dwg





James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.jrchitect.com

PROFESSIONAL SEAL:

CONSULTANT LOGO:



Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Suite 200  
Tulsa, Oklahoma 74103  
918-584-5854, 918-584-5855

CLIENT:



CHEROKEE NATION  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

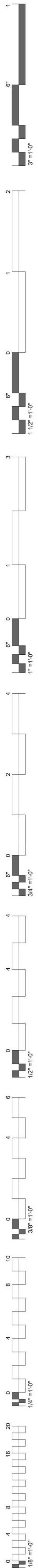
REVISIONS:

DATE: 07-31-2020

JOB NUMBER: 18-01.10

SHEET NUMBER: GE02

GENERAL NOTES



**CITY OF TULSA WATERLINE NOTES:**

- ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CITY OF TULSA, OKLAHOMA STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY WORK ORDERS AND PERMITS FROM THE CITY OF TULSA, INCLUDING PROVISIONS OF BONDS AND INSURANCE AS REQUIRED.
- AFTER CONSTRUCTION IS COMPLETE, ALL DISTURBED AREAS SHALL BE RESEEDED ACCORDING TO CITY OF TULSA, OKLAHOMA SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR SEEDING AREAS UNTIL GROWTH IS ESTABLISHED.
- ALL FITTINGS AND VALVES SHALL BE POLYWRAPPED DUCTILE IRON OR CAST IRON.
- THE CITY OF TULSA SHALL BE NOTIFIED 24 HOURS PRIOR TO TESTING OF ANY CHLORINATION.
- TESTING, CHLORINATING AND FLUSHING NOTES PERFORMED IN ACCORDANCE WITH GENERAL SPECIFICATIONS, SECTION 109.3.
- TESTING AND CHLORINATION TO BE PERFORMED BY CITY OF TULSA.
- THE CENTER OF THE LOWEST OUTLET OF A FIRE HYDRANT SHALL NOT BE LESS THAN 18 INCHES ABOVE THE SURROUNDING GROUND.
- STONES FOUND IN THE TRENCH SHALL BE REMOVED FOR A DEPTH OF 6 INCHES BELOW THE BOTTOM OF THE PIPE.
- THERE WILL BE NO FIRE, IRRIGATION OR DOMESTIC SERVICE CONNECTIONS MADE ON THIS WATER MAIN LINE PRIOR TO BEING TESTED, CHLORINATED AND RELEASED BY THE WATER CONSTRUCTION INSPECTION SUPERVISOR. ALL SERVICE CONNECTION PERMIT FEES MUST BE PAID AND A PERMIT ISSUED FROM THE PERMIT SERVICE CENTER BEFORE THESE TYPE OF CONNECTIONS CAN BE MADE.
- ALL SALVAGED WATERLINE PARTS AND FITTINGS SHALL BE RETURNED TO CITY OF TULSA PUBLIC WORKS WEST YARD AT 23RD AND JACKSON.
- RESTRAINED JOINTS SHALL BE PROVIDED ON 4" & LARGER WATERLINES AT ALL BENDS, TEES AND FIRE HYDRANTS.
- NO WATER SERVICE CONNECTIONS WILL BE ALLOWED UNDER IDP SCOPE OF WORK.
- CITY CREWS ONLY ARE ALLOWED TO OPERATE VALVES.
- WATER LINE TRENCH DETAIL FOR DUCTILE IRON PIPE: RE: COT STD 304.
- VALVE BOX DETAIL RE: COT STD 313.
- THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.

THE CONTRACTOR SHALL KEEP ON SITE A CURRENT SET OF THE APPROVED CONSTRUCTION WORKING DRAWINGS AT ALL TIMES. THE CONTRACTOR SHALL MARK (IN RED INK) ALL APPROVED CHANGES INCURRED FOLLOWING CITY OF TULSA APPROVAL OF THE INITIAL DRAWINGS. THESE CHANGES MAY BE INITIATED FROM FIELD CONDITIONS OR CHANGES MADE BY THE DESIGN ENGINEER. EXCEPT FOR MINOR FIELD ADJUSTMENTS, ALL CHANGES SHALL BE REVIEWED AND AGREED TO BY THE DESIGN ENGINEER PRIOR TO FINAL APPROVAL OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE WORKING DRAWINGS TO THE ENGINEER OF RECORD (DESIGN ENGINEER) AFTER FINAL INSPECTION OF PROJECT TO SERVE AS A BASIS FOR DEVELOPMENT OF FINAL AS-BUILT RECORD DRAWINGS.

<b>BENCHMARK</b> P-K NAIL IN ASPH. ELEVATION(NAVD88)=748.44 NORTHING=430723.573 EASTING=2618054.347	<b>BENCHMARK</b> P-K NAIL IN ASPH. ELEVATION(NAVD88)=756.00 NORTHING=430951.409 EASTING=2618492.942	<b>BENCHMARK</b> 60-D NAIL ELEVATION(NAVD88)=749.30 NORTHING=431365.190 EASTING=2618493.529
---	---	---

**GENERAL:**

CONDUCT SITE CLEARING OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. STREETS AND ROADWAYS SHALL BE THOROUGHLY CLEANED AND/OR SWEEPED ON A DAILY BASIS OR MORE FREQUENTLY AS REQUIRED BY THE GOVERNING AUTHORITY. RESTORE DAMAGED IMPROVEMENTS TO ORIGINAL CONDITION AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.

THE CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES.

ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS.

UNLESS SPECIFIED OTHERWISE, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CITY OF TULSA STANDARDS, OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS AND OKLAHOMA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND/OR THE APPROPRIATE LOCAL AUTHORITIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, PERMIT FEES, LICENSES, LICENSE FEES, AND TAP FEES, ETC.

ALL ELEVATIONS IN PAVED AREAS ARE TOP OF FINISHED PAVEMENT UNLESS OTHERWISE NOTED.

RELOCATION OF ANY UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM ENGINEER BEFORE ANY UTILITY RELOCATION.

NO DIMENSION MAY BE SCALED. REFER UNCLEAR ITEMS TO THE ENGINEER FOR INTERPRETATION.

**OKIE:**

ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING OF THE INTENT TO EXCAVATE NO LESS THAN 72 HOURS PRIOR TO SUCH EXCAVATION (EXCLUSIVE OF SATURDAYS, SUNDAYS AND HOLIDAYS) AND CALL "OKIE" AT 1-800-522-6543.

EXISTING UTILITY LOCATIONS SHOWN SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. LOCATIONS OF UNDERGROUND UTILITIES ON THESE DRAWINGS ARE APPROXIMATE ONLY AND BASED ON ACTUAL FIELD LOCATIONS OF VISIBLE STRUCTURES AND PLAN COMPUTATIONS.

**SITE WORK AND GRADING:**

ALL FEATURES OF THIS PROJECT INCLUDING, BUT NOT LIMITED TO, SIDEWALKS AND CURB RAMPS SHALL COMPLY WITH THE AMERICAN DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES, AND THE INTERIM FINAL RULES FOR PUBLIC RIGHT-OF-WAY, PUBLISHED IN THE FEDERAL REGISTER, SEPTEMBER 2010. WHERE SPATIAL LIMITATIONS OR EXISTING FEATURES WITHIN THE LIMITS OF THE PROJECT PREVENT FULL COMPLIANCE WITH THIS ACT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF SUCH FEATURES. THE CONTRACTOR SHALL NOT PROCEED WITH ANY ASPECT OF THE WORK WHICH IS NOT IN FULL COMPLIANCE WITH THE ADA WITHOUT PRIOR, WRITTEN PERMISSION FROM THE ENGINEER. ANY WORK WHICH IS NOT PERFORMED WITHIN THE GUIDELINES OF THE ADA, FOR WHICH THE CONTRACTOR DOES NOT HAVE WRITTEN APPROVAL, SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

CROSS SLOPES FOR SIDEWALKS SHALL NOT EXCEED 1:50  
RAMP SLOPES SHALL NOT EXCEED 1:12  
GRADES EXCEEDING 5% WILL BE TREATED AS A RAMP SLOPE

FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.

**SURVEY:**

EXISTING TOPOGRAPHY IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY BENNETT SURVEYING, INC. DATED 11/12/19

**EROSION CONTROL NOTES:**

ALL EROSION CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CITY OF TULSA STANDARDS AND SPECIFICATIONS.

**TEMPORARY EROSION CONTROL:**

ALL DISTURBED EARTH SURFACES WHICH ARE NOT PAVED OR BUILDING PADS SHALL BE LANDSCAPED OR REVEGETATED WITH A TEMPORARY COVER, DEPENDING ON THE PLANTING SEASON, AS OUTLINED BELOW.

PLANT TYPE	PER ACRE	PER 1000 SQ. FT.	PLANTING DATE	DEPTH OF SEEDING
ANNUAL RYEGRASS	40 LBS.	0.9 LBS.	09/05-11/30	½ INCH
ELBON RYE	2 BU.	3.0 LBS.	08/15-11/30	2 INCH
WHEAT	2 BU.	3.0 LBS.	08/15-11/30	2 INCH
OATS	3 BU.	2.5 LBS.	08/15-11/30	2 INCH
SORGHUMS	60 LBS.	1.4 LBS.	03/01-09/15	2 INCH
SUDAN GRASS	60 LBS.	1.4 LBS.	04/01-09/15	2 INCH

PRIOR TO SEEDING, NEEDED EROSION CONTROL PRACTICES SHALL BE INSTALLED.

THE SUBGRADE SHALL BE LOOSENED EVENLY TO A DEPTH OF 2 TO 3 INCHES AND 10-20-10 FERTILIZER (10 LBS. PER 1000 SQ. FT. OR 450 LBS. PER ACRE) SHALL BE MIXED WITH THE LOOSENED SOIL BY DISKING OR OTHER SUITABLE MEANS.

SOIL SHALL BE TESTED AND LIME TREATED IF REQUIRED BY TESTING FIRM.

SEEDS MAY BE DRILLED OR BROADCAST UNIFORMLY.

SEEDING IMPLEMENTS SHOULD BE USED AT RIGHT ANGLES TO THE SLOPE TO MINIMIZE EROSION.

MULCH SHALL BE USED ON ALL SLOPES GREATER THAN 5 PERCENT OR AS NEEDED.

THE AREA SHALL BE WATERED DAILY OR AS OFTEN AS NECESSARY TO MAINTAIN ADEQUATE SOIL MOISTURE UNTIL THE PLANTS EXCEED 1 INCH IN HEIGHT.

**PERMANENT EROSION CONTROL PRACTICES:**

BERMUDA GRASS SOLID SLAB SOD SHALL BE USED ON THIS PROJECT IN ALL DISTURBED AREAS.

LAWN AREAS SHALL BE FERTILIZED ACCORDING TO TIME OF INSTALLATION

MAY 1 - AUGUST 31: APPLY 16-8-8 FERTILIZER AT A RATE OF SIX (6) POUNDS PER 1000 SQ FT TO LAWN AREAS

SEPTEMBER 1 - APRIL 30: APPLY 10-20-10 FERTILIZER AT A RATE OF TEN (10) POUNDS PER 1000 SQ FT TO LAWN AREAS

SOIL SHALL BE LOOSENED EVENLY TO A DEPTH OF 2 TO 3 INCHES AND FERTILIZER SHALL BE MIXED WITH THE LOOSENED SURFACE SOIL BY DISKING OR OTHER SUITABLE MEANS.

SOIL SHALL BE TESTED FOR pH AND SHALL BE TREATED WITH LIME AS REQUIRED.

THE AREA SHALL BE WATERED DAILY OR AS OFTEN AS NECESSARY TO MAINTAIN ADEQUATE SOIL MOISTURE UNTIL FINAL ACCEPTANCE OR ONE MONTH.

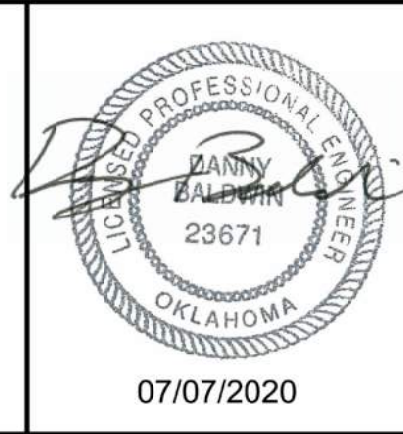
SODDED AREAS SHALL BE PREPARED AND PLACED IN ACCORDANCE WITH CITY OF TULSA SPECIFICATIONS. STAKE SOD ON SLOPES GREATER THAN 4:1.

I:\Chickasenon\projects\2040045\_161st Water Main Extension\DWG2\_Production\02GE02\_General Notes.dwg 3/27/2020 2:05:12 PM

**BEFORE YOU DIG**  
CALL OKIE

**CAUTION**  
NOTICE TO CONTRACTOR  
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THE LOCATION AND ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES

REV	DESCRIPTION	DATE



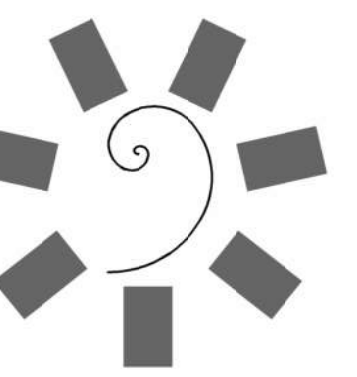
wallace  
Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Suite 200  
Tulsa, Oklahoma 74103  
918-584-5854, 918-584-5855  
OKLAHOMA CA #1480  
EXP. DATE: 6/30/21

161ST AND SKELLY DR.  
**12" WATER MAIN EXTENSION**

PROJECT NO 2040045 DATE 3/27/2020

GENERAL NOTES SHEET # GE02





James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.jrchitect.com

PROFESSIONAL SEAL:

CONSULTANT LOGO:



Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Box 1  
Tulsa, Oklahoma 74103  
918.584.5054, 918.584.5855

CLIENT:



CHEROKEE NATION  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

CONSTRUCTION DOCUMENTS

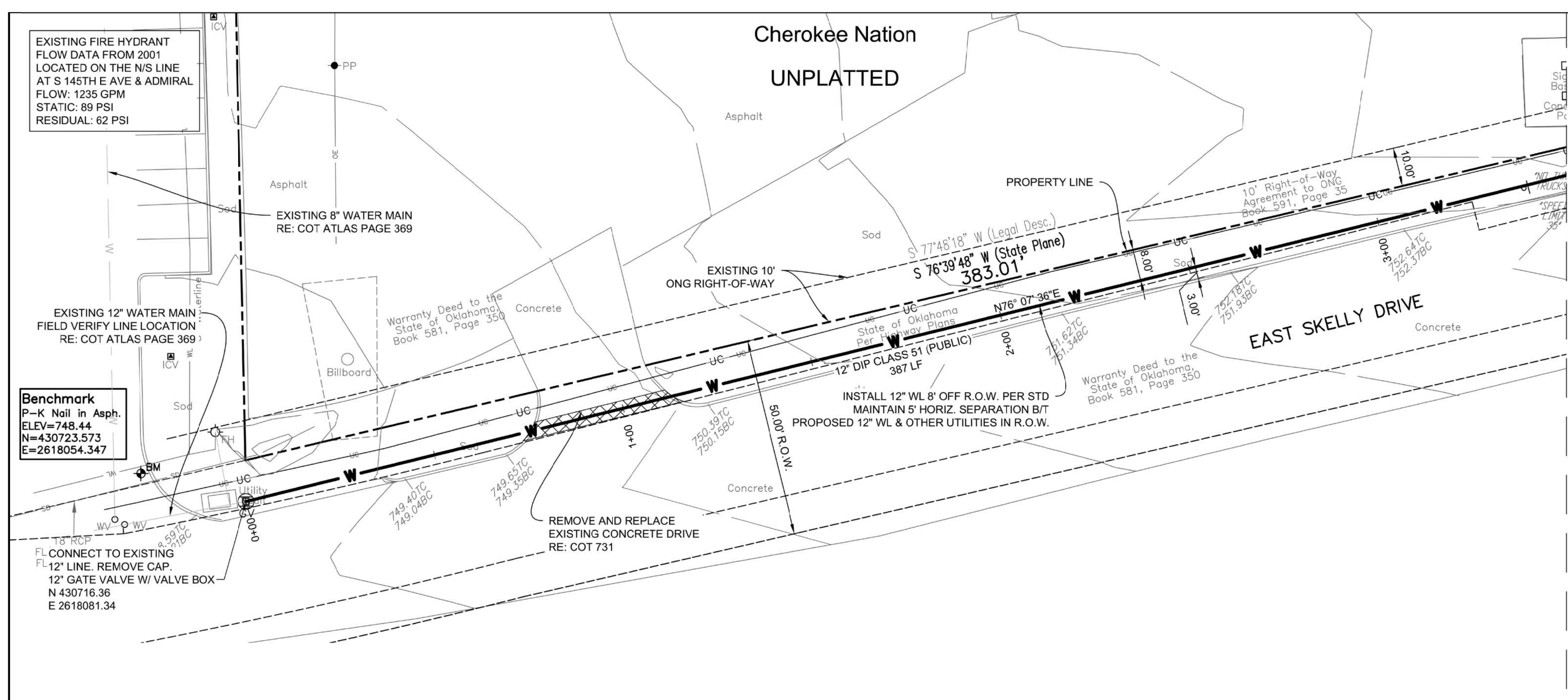
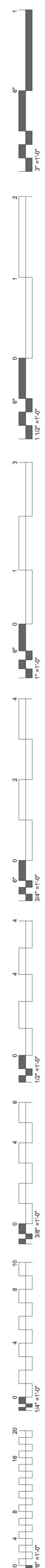
REVISIONS:

NO.	DATE	DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01-10

SHEET NUMBER: WL01

WATER LINE PLAN AND PROFILE

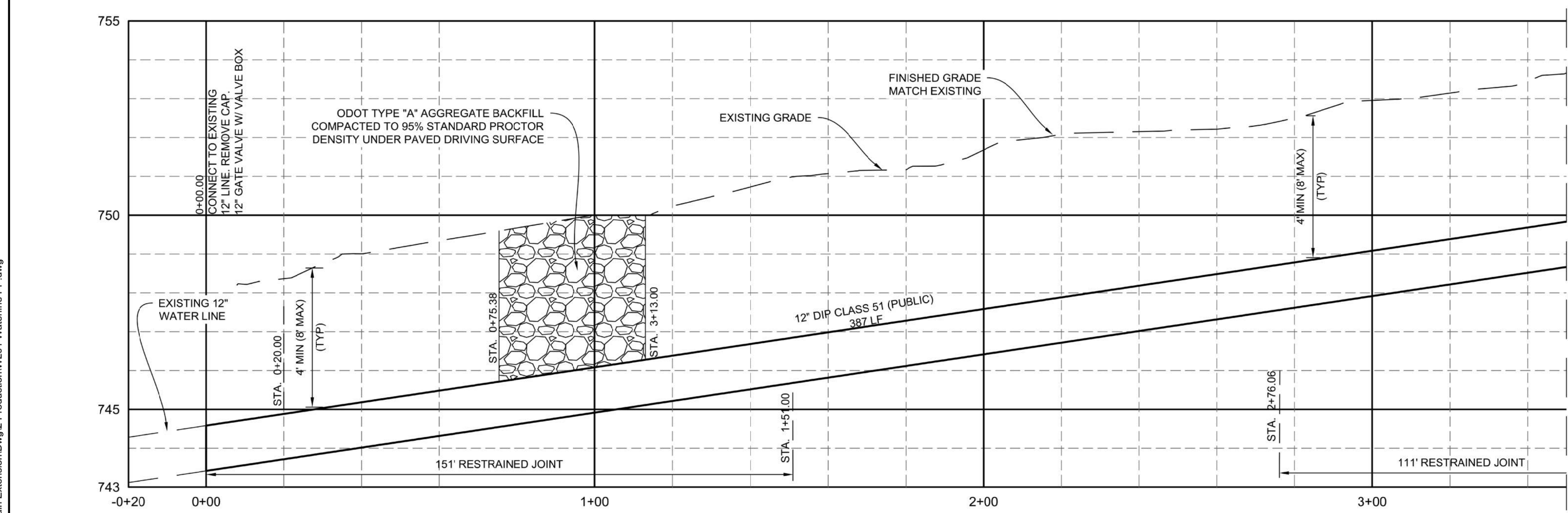
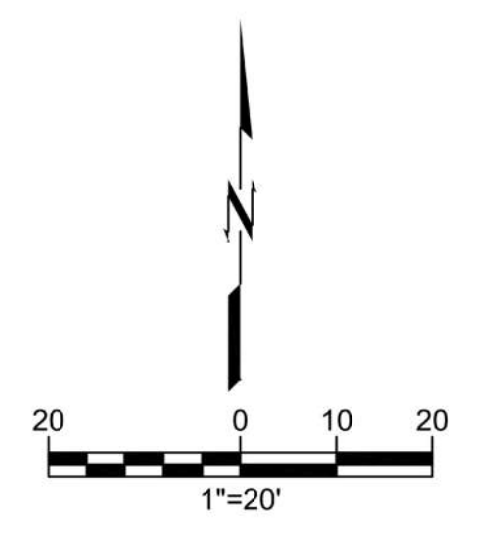


FURNISHED BY CONTRACTOR - INSTALLED BY CONTRACTOR

IDP WATER LINE QUANTITY TABLE:

604 LF	12" DIP C151 WATER LINE
89 LF	6" DIP C151 WATER LINE
30 LF	2" DIP C151 WATER LINE
1 EA	12" X 12" X 6" TEE
1 EA	8" X 8" X 8" TEE
1 EA	8" X 8" X 6" TAPPING SLEEVE
1 EA	6" X 6" X 2" TEE
2 EA	12" 45° BEND
1 EA	2" DOMESTIC WATER METER
1 EA	6" NEPTUNE PROSPECTUS III FIRE FLOW METER W/STRAINER (FS)
1 EA	6" TO 2" REDUCER
1 EA	12" GATE VALVE W/ VALVE BOX
1 EA	8" GATE VALVE W/ VALVE BOX
1 EA	6" GATE VALVE W/ VALVE BOX
2 EA	8" SOLID SLEEVE
1 EA	FIRE HYDRANT
79 LF	24" STEEL CASING
59 LF	18" STEEL CASING
353 LF	PAVEMENT CLEARING AND RESTORATION

\*WATER SERVICE METERS NOT PART OF IDP SCOPE OF WORK. SEPARATE PERMITS ARE REQUIRED.



1 WATER LINE PROFILE (PUBLIC)

SCALE: HORIZ 1" = 20' VERT 1" = 2'

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9:45:16 AM 7/7/2020



**CAUTION**  
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REV	DESCRIPTION	DATE

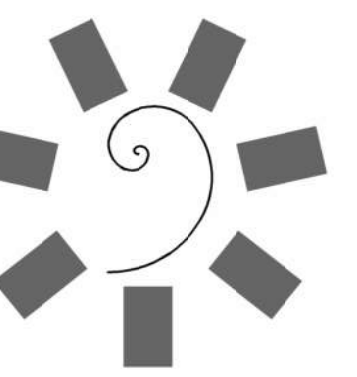
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Date: 2020.07.14  
07:55:06-05'00'  
MICHAEL LING, PE  
INFRASTRUCTURE DEVELOPMENT MANAGER  
CITY OF TULSA  
DATE



wallace  
Wallace Engineering  
Structural Consultants, Inc.  
Structural and Civil Consultants  
122 N. Main Street, Box 1  
Tulsa, Oklahoma 74103  
918.584.5054, 918.584.5855  
OKLAHOMA, CA #1480  
EXP DATE 6/30/21

161ST AND SKELLY DR.  
**12" WATER MAIN EXTENSION**  
PROJECT NO 2040045 DATE 7/7/2020  
WATER LINE PLAN AND PROFILE SHEET # WL01

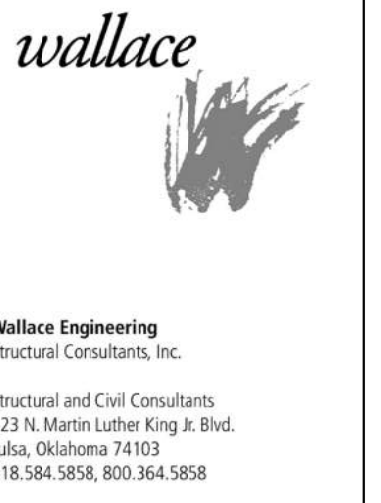




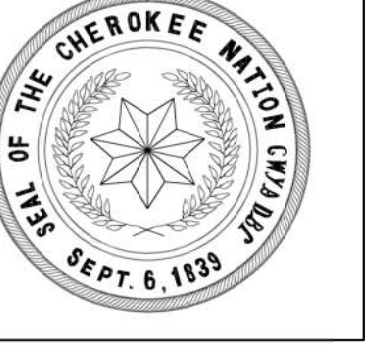
James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.jrchildersarchitect.com

PROFESSIONAL SEAL

CONSULTANT LOGO



CLIENT



CHEROKEE NATION  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN

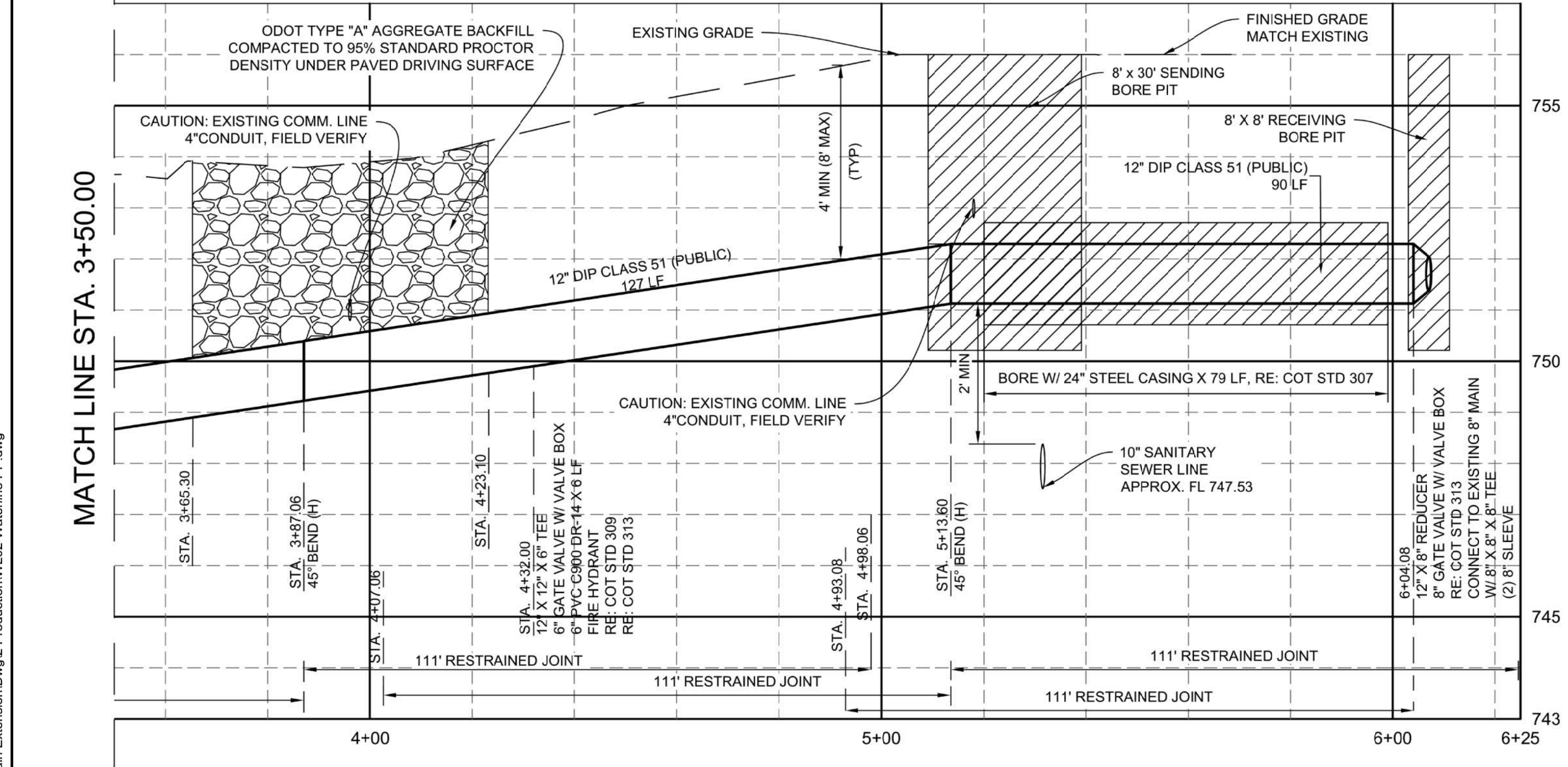
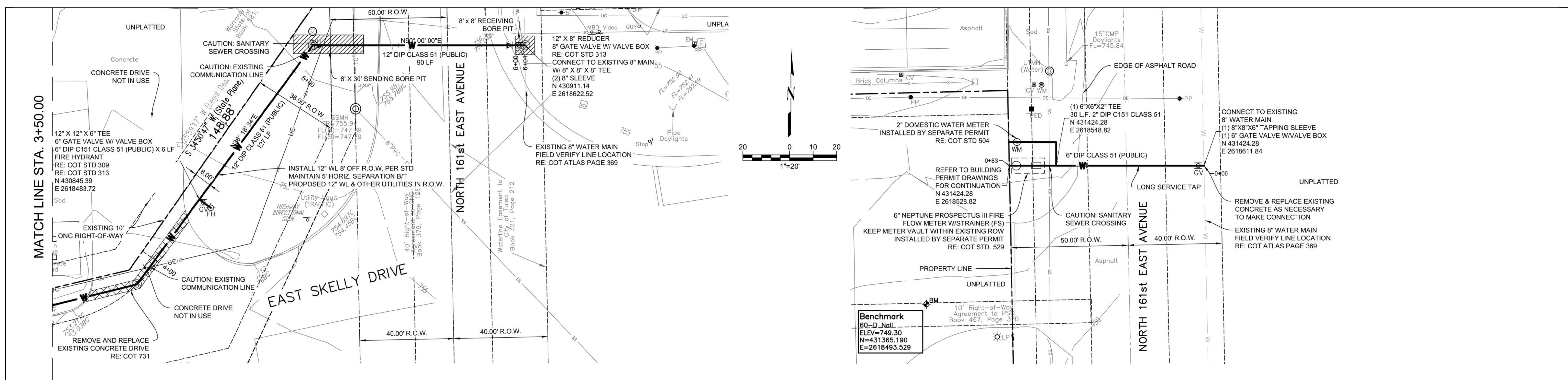


PROJECT PHASE

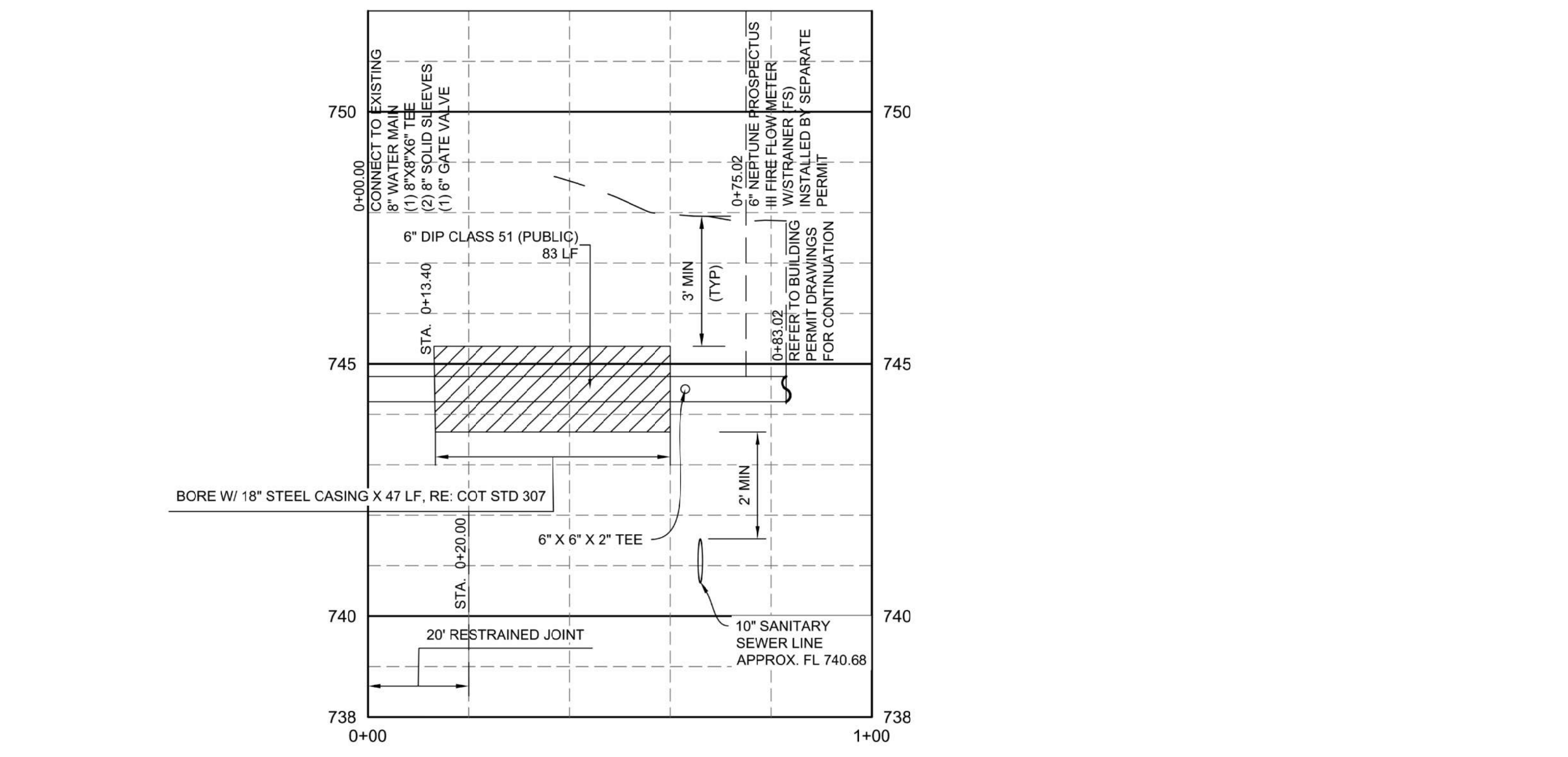
CONSTRUCTION DOCUMENTS

DATE:	JOB NUMBER:
07-31-2020	18-01-10
SHEET NUMBER:	
WL02	

WATER LINE PLAN AND PROFILE



2 WATER LINE PROFILE (PUBLIC)  
SCALE: HORIZ 1" = 20' VERT 1" = 2'



3 WATER LINE PROFILE (PUBLIC)  
SCALE: HORIZ 1" = 20' VERT 1" = 2'

**BEFORE YOU DIG**  
**CALL OKIE**

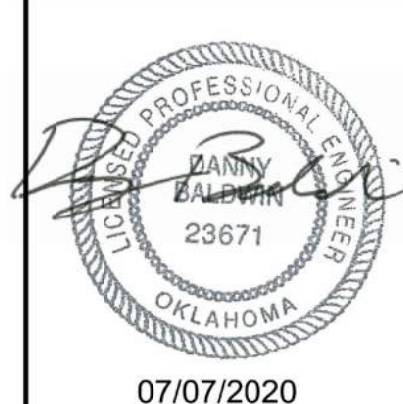
CAUTION  
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REV	DESCRIPTION	DATE

APPROVED - FOR IDP USE ONLY  
Date: 2020.07.14  
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MICHAEL LING, PE  
INFRASTRUCTURE DEVELOPMENT MANAGER  
CITY OF TULSA  
DATE

ALL CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH CURRENT CITY OF TULSA STANDARDS AND SPECIFICATIONS.



wallace  
Wallace Engineering  
Structural and Civil Consultants  
122 N. Main Street, Suite 300  
Tulsa, Oklahoma 74103  
918.584.5628  
OKLAHOMA C.A. #1460  
EXP. DATE 6/30/21

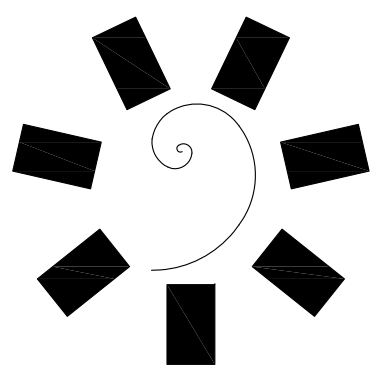
161ST AND SKELLY DR.  
**12" WATER MAIN EXTENSION**

PROJECT NO 2040045 DATE 7/7/2020

WATER LINE PLAN AND PROFILE SHEET # WL02

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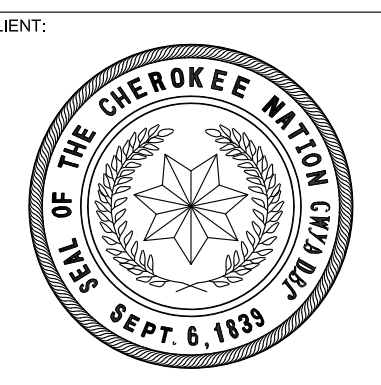




**James R. Childers  
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45 South 4th Street  
Fort Smith, AR 72601  
479-783-2480  
www.jchildersarchitect.com



CONSULTANT LOGO:  
**R.L. SHEARS COMPANY, P.C.**  
Landscape Architects  
1115 S. GARDNER AVENUE, SUITE 100  
FORT SMITH, AR 72601  
479-783-2480  
www.rlshears.com



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

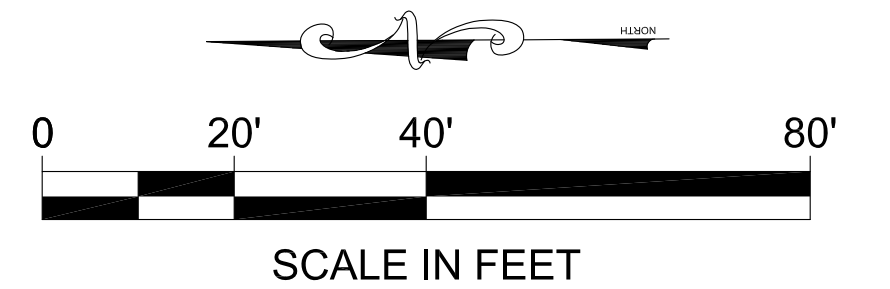
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DATE: 07/31/2020 JOB NUMBER: 18-01.10

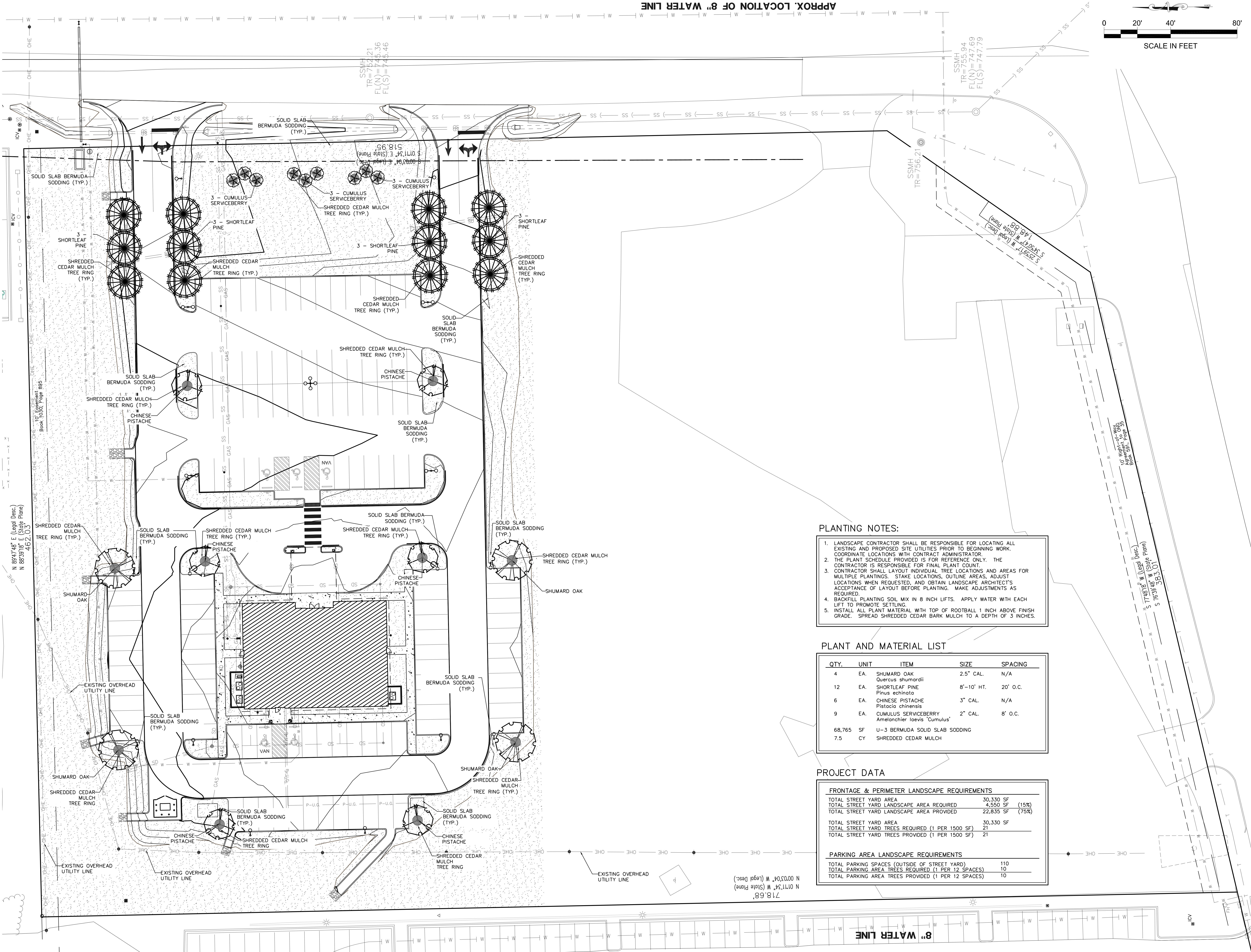
SHEET NUMBER:

LS001

LANDSCAPE PLAN



APPROX. LOCATION OF 8" WATER LINE



- PLANTING NOTES:**
1. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING AND PROPOSED SITE UTILITIES PRIOR TO BEGINNING WORK. COORDINATE LOCATIONS WITH CONTRACT ADMINISTRATOR.
  2. THE PLANT SCHEDULE PROVIDED IS FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FINAL PLANT COUNT.
  3. CONTRACTOR SHALL LAYOUT INDIVIDUAL TREE LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS. STAKE LOCATIONS, OUTLINE AREAS, ADJUST LOCATIONS WHEN REQUESTED, AND OBTAIN LANDSCAPE ARCHITECT'S ACCEPTANCE OF LAYOUT BEFORE PLANTING. MAKE ADJUSTMENTS AS REQUIRED.
  4. BACKFILL PLANTING SOIL MIX IN 8 INCH LIFTS. APPLY WATER WITH EACH LIFT TO PROMOTE SETTLING.
  5. INSTALL ALL PLANT MATERIAL WITH TOP OF ROOTBALL 1 INCH ABOVE FINISH GRADE. SPREAD SHREDDED CEDAR BARK MULCH TO A DEPTH OF 3 INCHES.

**PLANT AND MATERIAL LIST**

QTY.	UNIT	ITEM	SIZE	SPACING
4	EA.	SHUMARD OAK <i>Quercus shumardii</i>	2.5" CAL.	N/A
12	EA.	SHORTLEAF PINE <i>Pinus echinata</i>	8'-10' HT.	20' O.C.
6	EA.	CHINESE PISTACHE <i>Pistacia chinensis</i>	3" CAL.	N/A
9	EA.	CUMULUS SERVICEBERRY <i>Amelanchier laevis 'Cumulus'</i>	2" CAL.	8' O.C.
68,765	SF	U-3 BERMUDA SOLID SLAB SODDING		
7.5	CY	SHREDDED CEDAR MULCH		

**PROJECT DATA**

FRONTAGE & PERIMETER LANDSCAPE REQUIREMENTS	
TOTAL STREET YARD AREA	30,330 SF
TOTAL STREET YARD LANDSCAPE AREA REQUIRED	4,550 SF (15%)
TOTAL STREET YARD LANDSCAPE AREA PROVIDED	22,835 SF (75%)
TOTAL STREET YARD AREA	30,330 SF
TOTAL STREET YARD TREES REQUIRED (1 PER 1500 SF)	21
TOTAL STREET YARD TREES PROVIDED (1 PER 1500 SF)	21

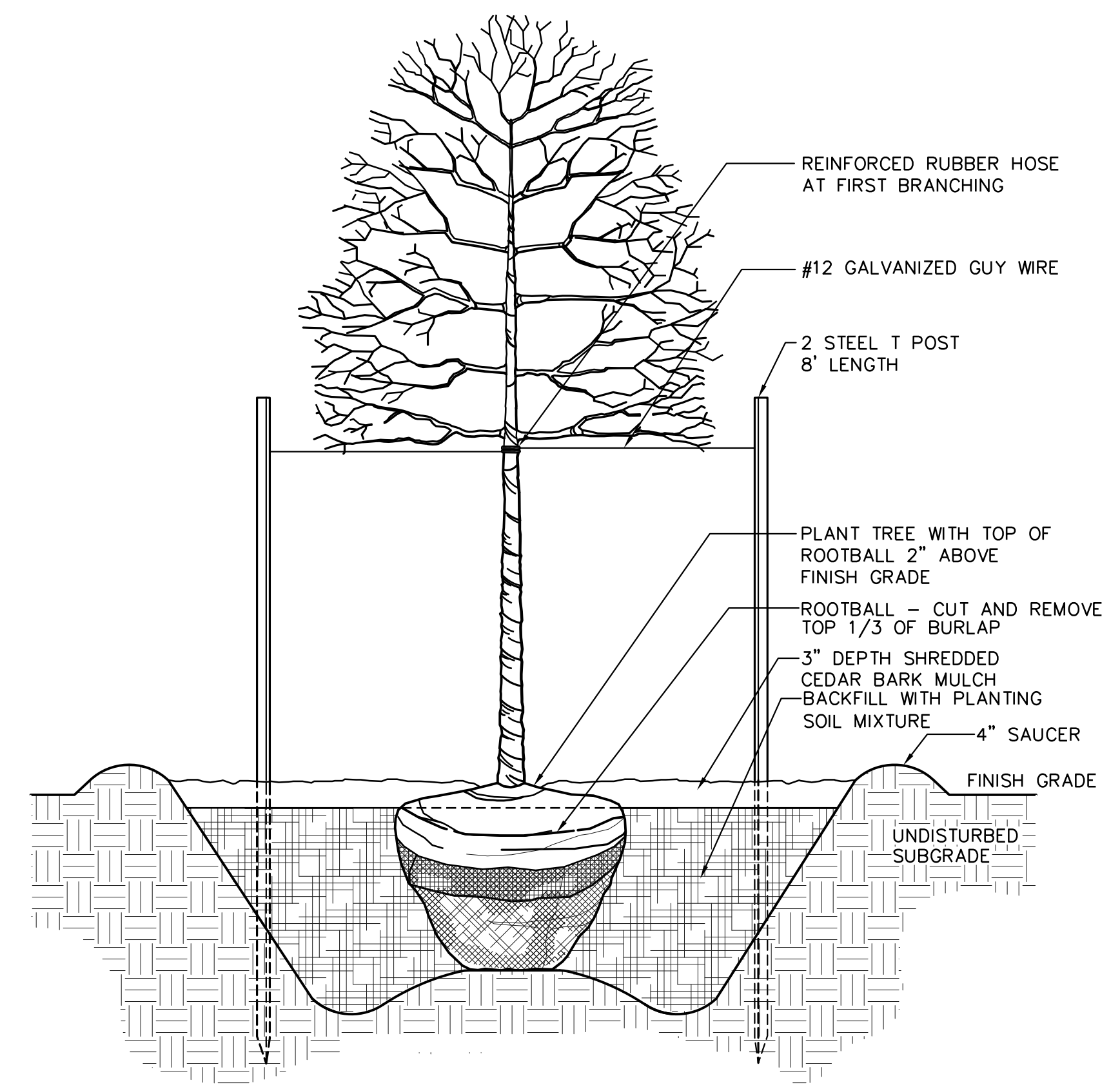
PARKING AREA LANDSCAPE REQUIREMENTS	
TOTAL PARKING SPACES (OUTSIDE OF STREET YARD)	110
TOTAL PARKING AREA TREES REQUIRED (1 PER 12 SPACES)	10
TOTAL PARKING AREA TREES PROVIDED (1 PER 12 SPACES)	10

N 88°17'48" E (Legal Desc.)  
N 88°39'18" E (State Plane)  
462.03

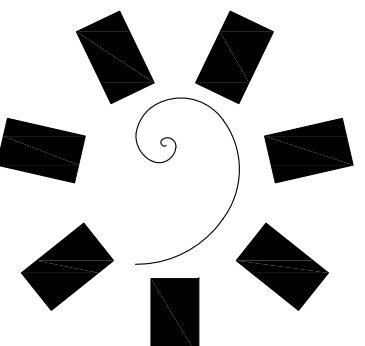
718.68'  
N 01°11'34" W (State Plane)  
N 00°03'04" W (Legal Desc.)

8" WATER LINE





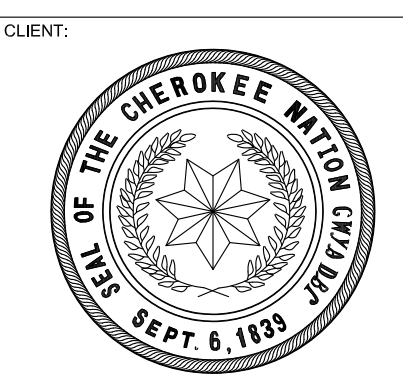
**A** SECTION: TREE INSTALLATION  
NOT TO SCALE



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45 South 4th Street  
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www.jrchidlersarchitect.com



CONSULTANT LOGO:  
**R.L. SHEARS COMPANY, P.C.**  
Landscape Architects  
1115 S. BROADWAY, SUITE 200  
FORT SMITH, AR 72801  
TEL: 479-783-2480 FAX: 479-783-2481  
TX # 113561 EXP. 06/30/2021



**CHEROKEE NATION  
TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:  
**CONSTRUCTION  
DOCUMENTS**

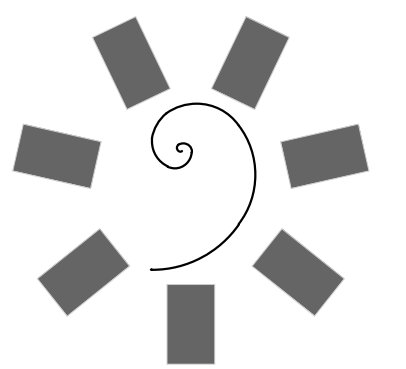
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#	DESCRIPTION

DATE: 07/31/2020      JOB NUMBER: 18-01.10

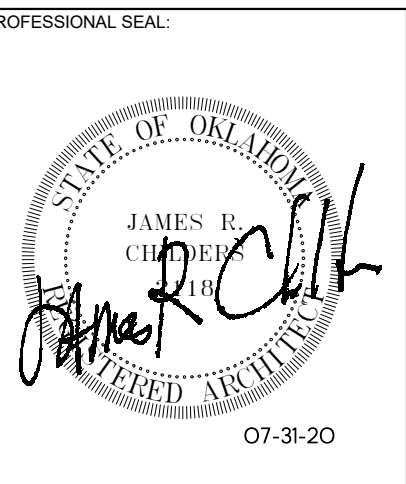
SHEET NUMBER:  
**LS002**

**TREE PLANTING  
DETAIL**

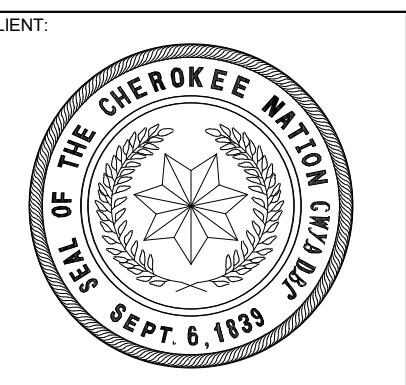




James R. Childers Architect, Inc. 45 South 4th Street Fort Smith, AR 72901 479-783-2460 www.childersarchitect.com



CONSULTANT LOGO



CHEROKEE NATION TAG OFFICE CATAOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE: CONSTRUCTION DOCUMENTS

Table with 2 columns: #, DATE, REVISIONS, DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER: LS1.00

CODE ANALYSIS/ LIFE SAFETY PLAN

ICC / ANSIA117.1 - 2009

Table with 2 columns: ACCESSIBLE FACILITIES, COMPONENTS, DESCRIPTIONS

PROJECT INFORMATION

PROJECT NAME: CHEROKEE NATION TAG OFFICE PROJECT LOCATION: CATAOOSA, OKLAHOMA

BUILDING AREA

FIRST FLOOR NEW CONSTRUCTION: 5,298 SQUARE FEET TOTAL: 5,298 SQUARE FEET

GOVERNING CODES

(INCLUDING ALL MODIFICATIONS ADOPTED BY THE OUBCC) CATAOOSA ZONING CODE 2015 INTERNATIONAL BUILDING CODE (IBC) 2015 INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2015 INTERNATIONAL FIRE CODE (IFC) 2015 INTERNATIONAL FUEL GAS CODE (IFGC) 2015 INTERNATIONAL MECHANICAL CODE (IMC) 2015 INTERNATIONAL PLUMBING CODE (IPC) 2014 NATIONAL ELECTRICAL CODE (NEC) 2009 ICC/ANSI A117.1

2015 INTERNATIONAL BUILDING CODE (IBC) - CONTINUED

Table with 3 columns: COMPONENTS, DESCRIPTIONS, CODE REFERENCES

CODE ANALYSIS

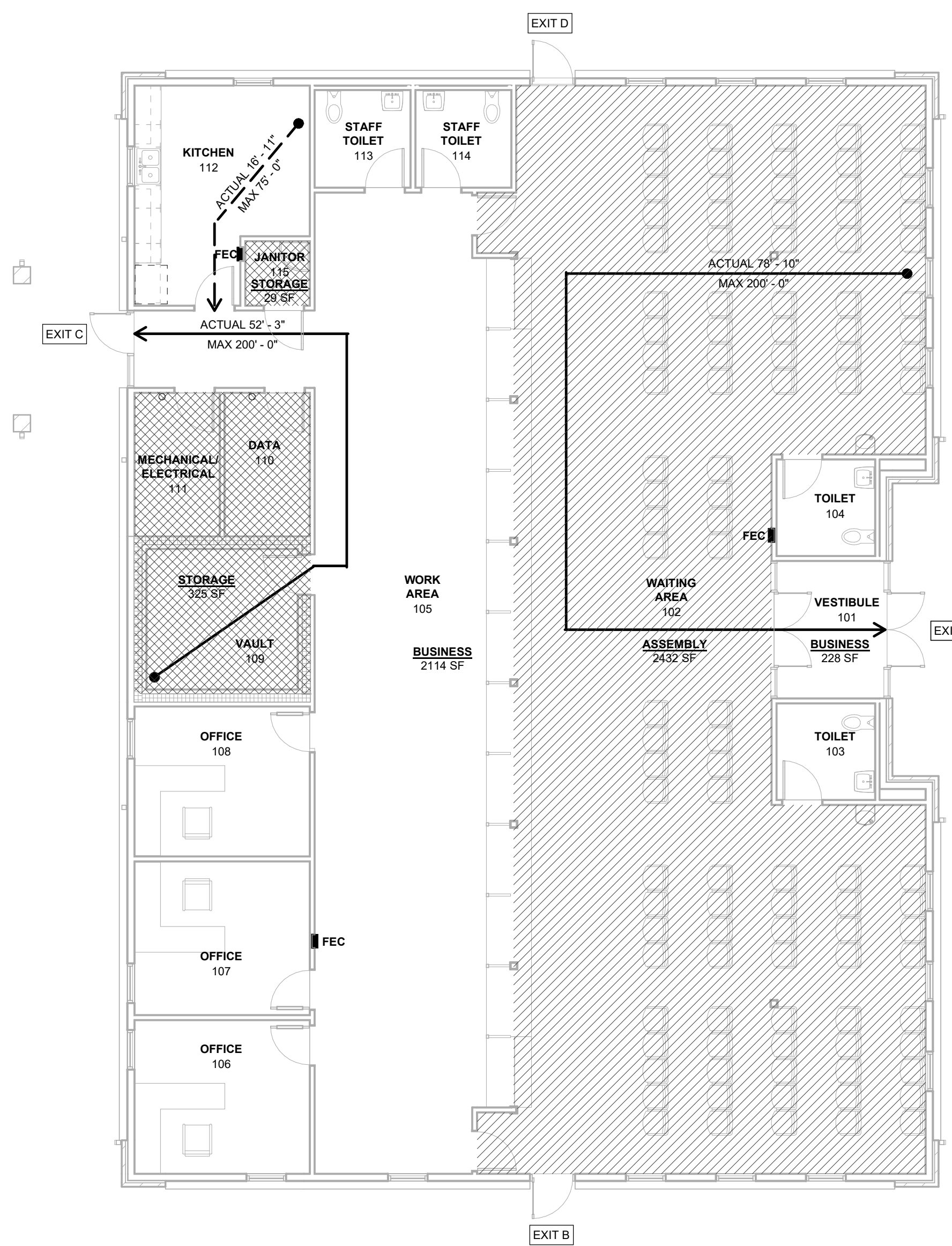
2015 INTERNATIONAL BUILDING CODE (IBC)

Table with 3 columns: COMPONENTS, DESCRIPTIONS, CODE REFERENCES

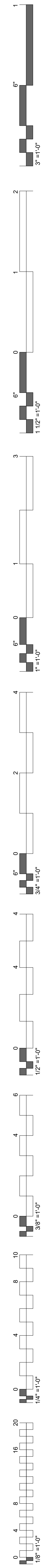
Table: OCCUPANT LOAD with columns: PRIMARY USE, AREA, OL FACTOR, OCCUPANT LOAD

Table: EXIT SUMMARY with columns: EXIT TYPE, EXIT, EXIT FACTOR, WIDTH PROVIDED, WIDTH REQUIRED, CAPACITY IN PERSONS

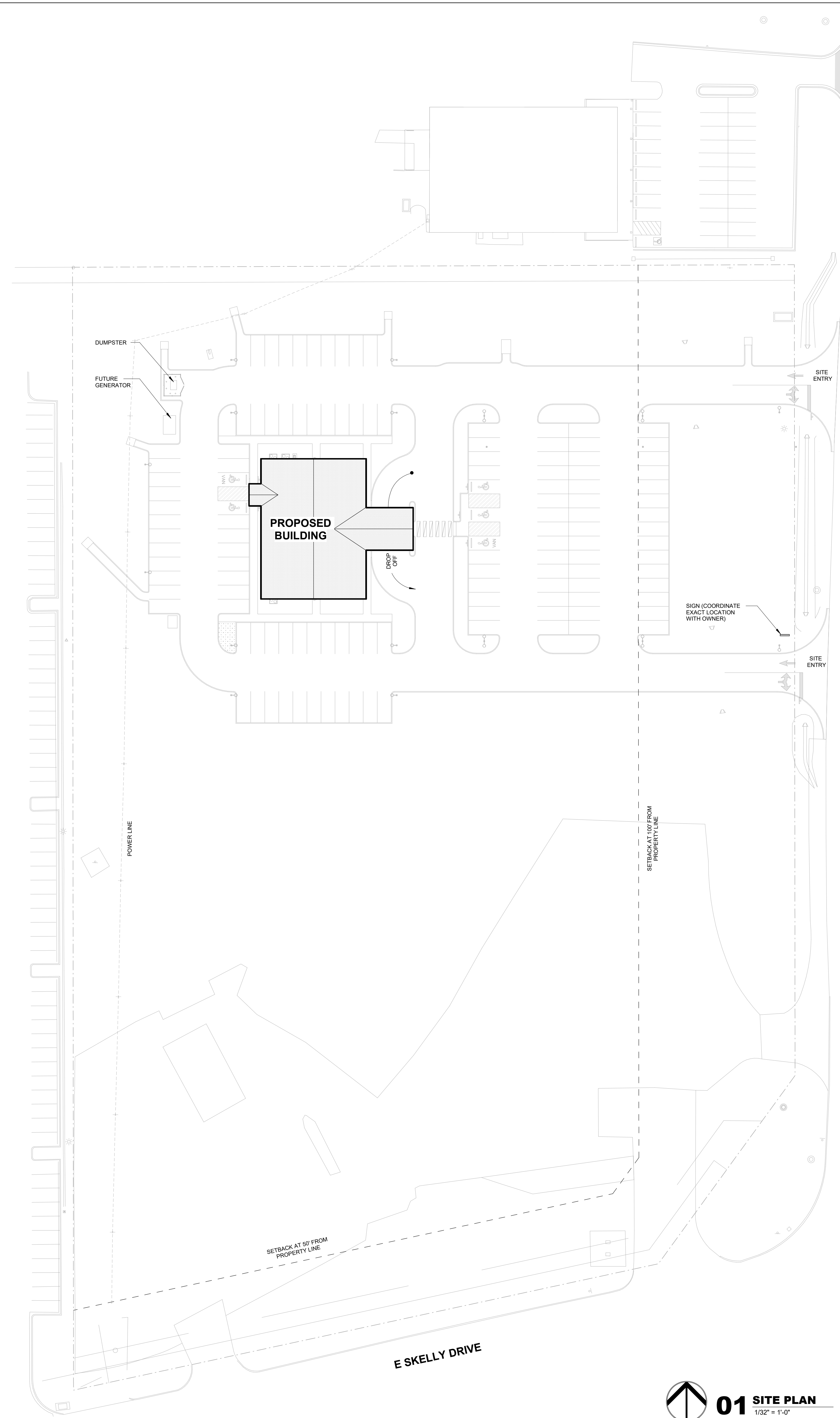
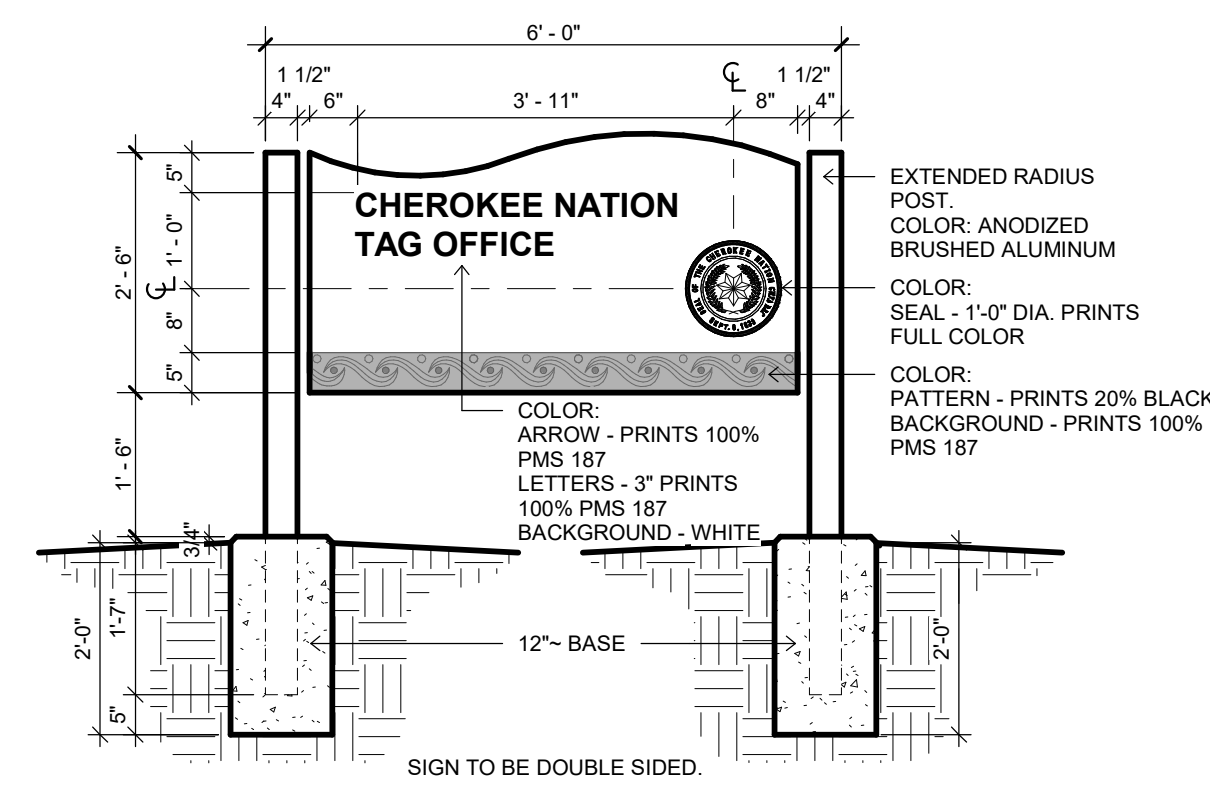
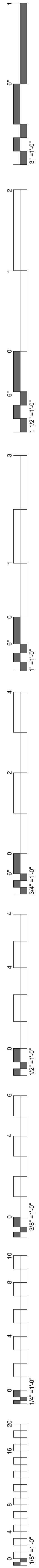
Table: LIFE SAFETY LEGEND with columns: USE, USE AND AREA, ASSEMBLY, BUSINESS, STORAGE



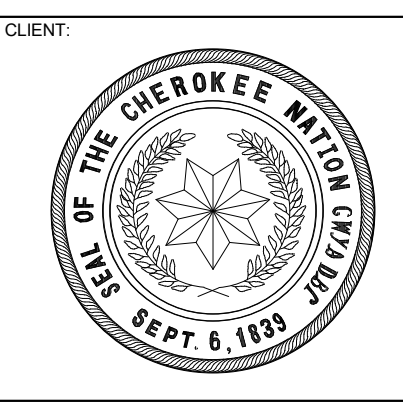
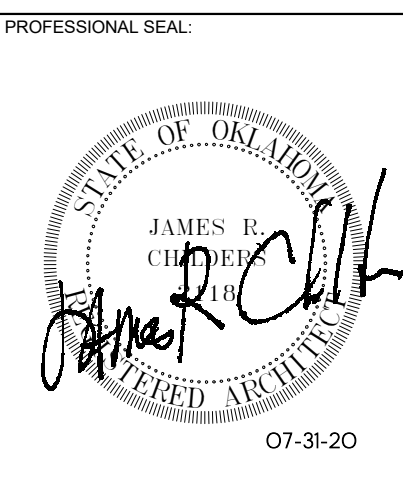
01 LIFE SAFETY PLAN 1/8" = 1'-0"



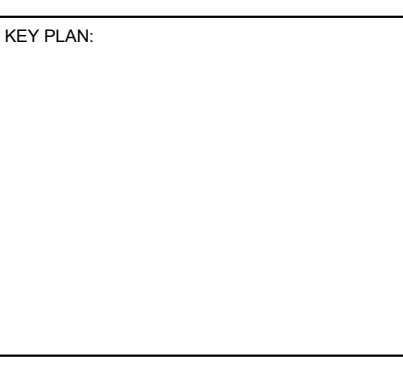




**01 SITE PLAN**  
1/32" = 1'-0"



**CHEROKEE NATION TAG OFFICE**  
CHEROKEE NATION TAG OFFICE  
CATOOSA, OKLAHOMA



PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

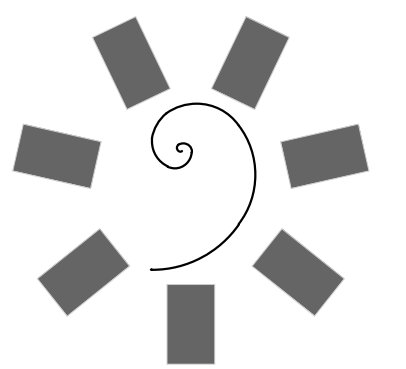
#	DATE	REVISIONS	DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

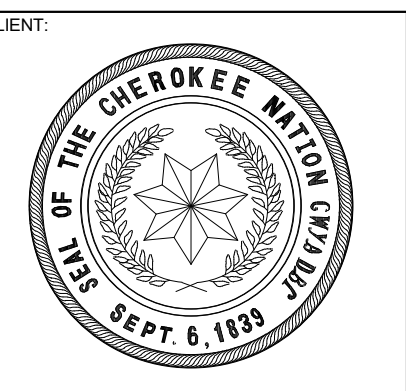
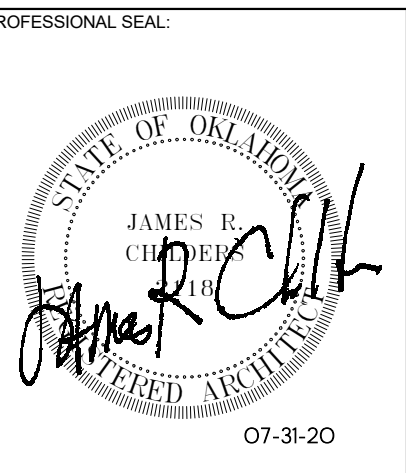
SHEET NUMBER:  
AS.00

ARCHITECTURAL SITE PLAN





James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72601  
479-783-2460  
www.childersarchitect.com



CHEROKEE NATION  
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CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

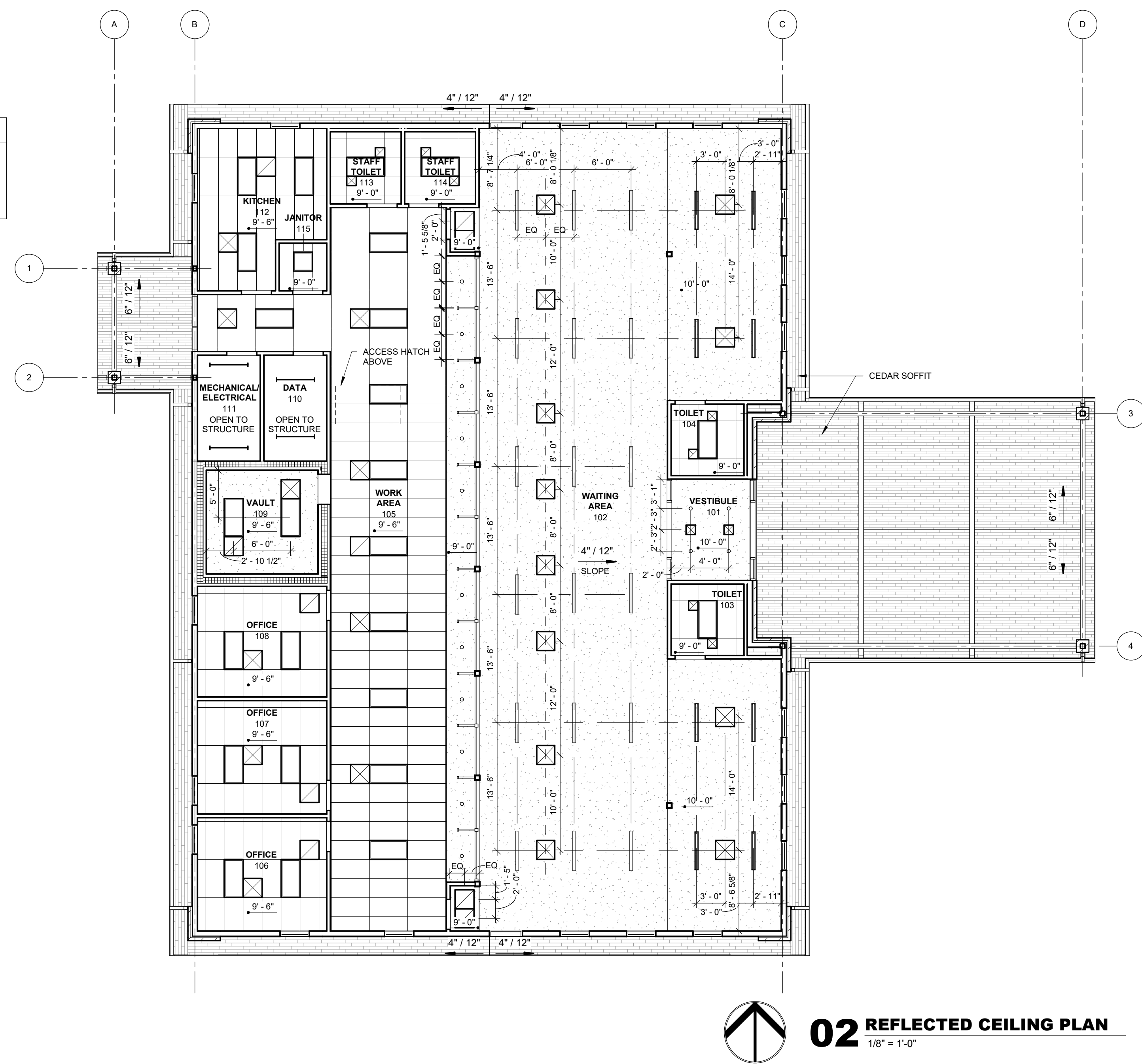
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DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER:

A1.00

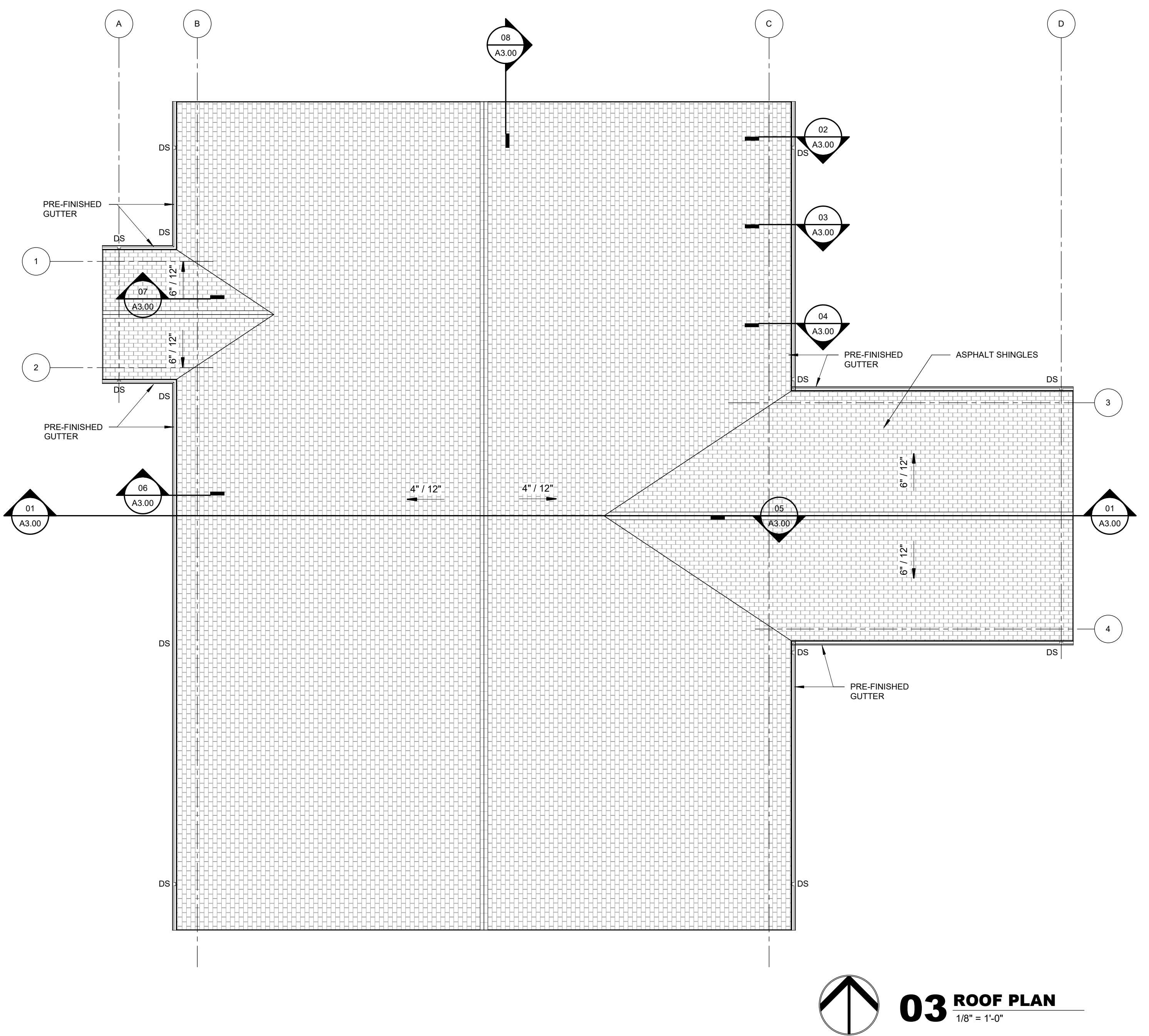
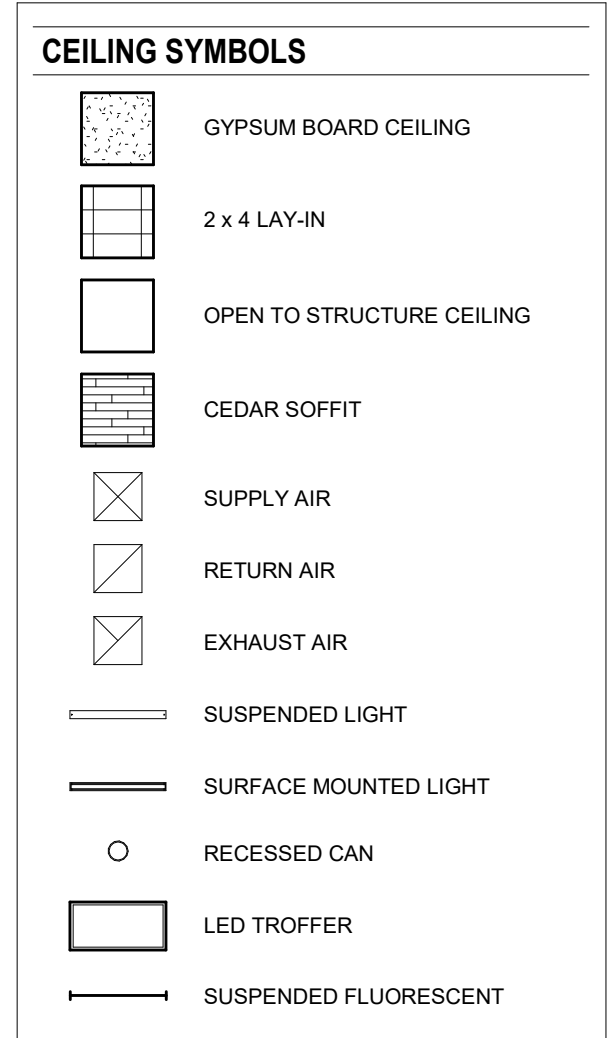
FLOOR PLANS



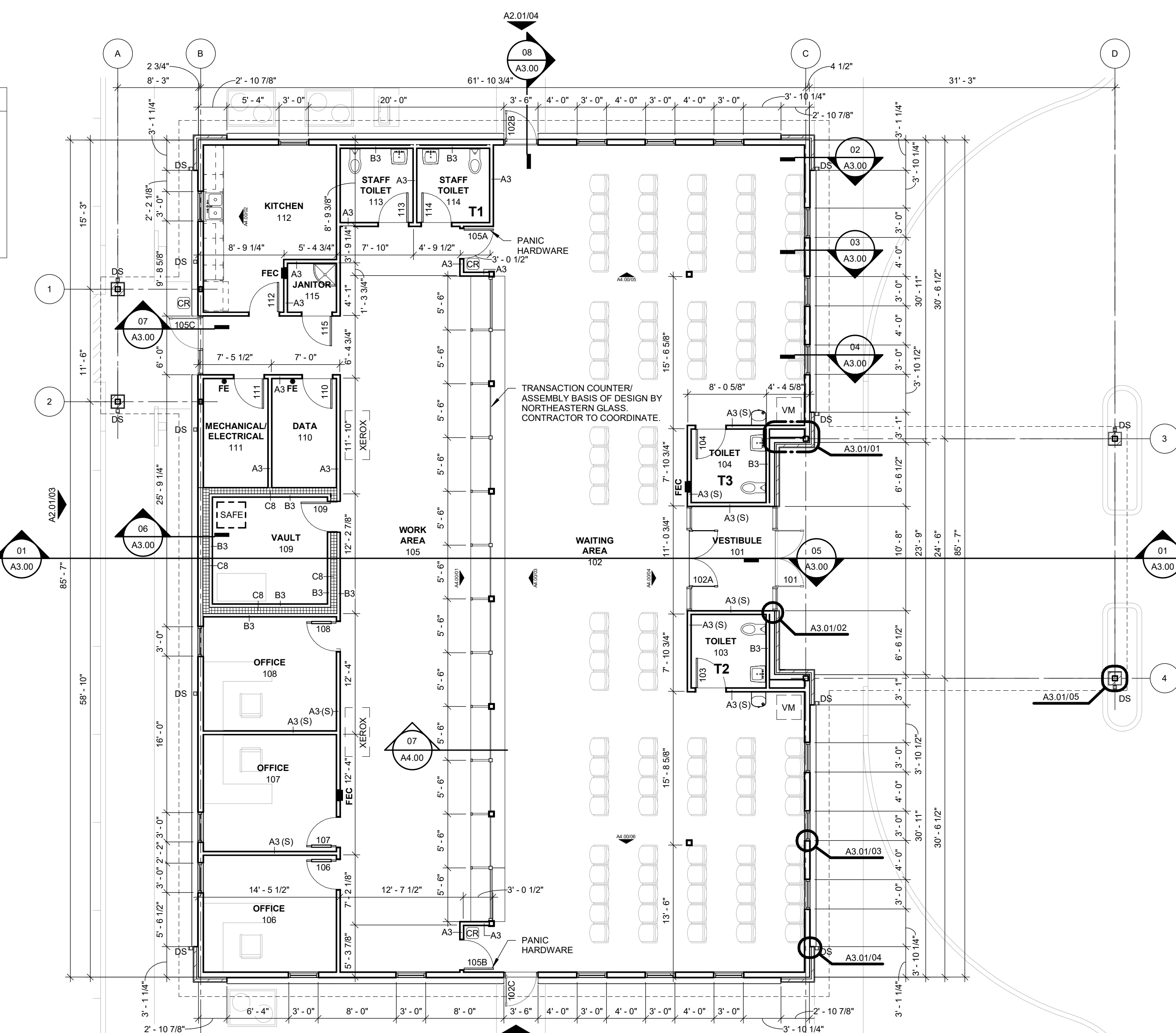
**02 REFLECTED CEILING PLAN**  
1/8" = 1'-0"

**GENERAL NOTES - REFLECTED CEILING PLAN**

1. IN THE CASE OF MINOR DISCREPANCIES BETWEEN MEP AND ARCHITECTURAL DOCUMENTS IN THE LOCATION OF CEILING MOUNTED COMPONENTS, THE ARCHITECTURAL REFLECTED CEILING PLAN SHALL GOVERN. IN THE CASE OF MAJOR DISCREPANCIES, THE ARCHITECT SHALL BE NOTIFIED AS SOON AS THE DISCREPANCY IS DISCOVERED PRIOR TO PROCEEDING WITH THE WORK.



**03 ROOF PLAN**  
1/8" = 1'-0"



**01 FLOOR PLAN**  
1/8" = 1'-0"

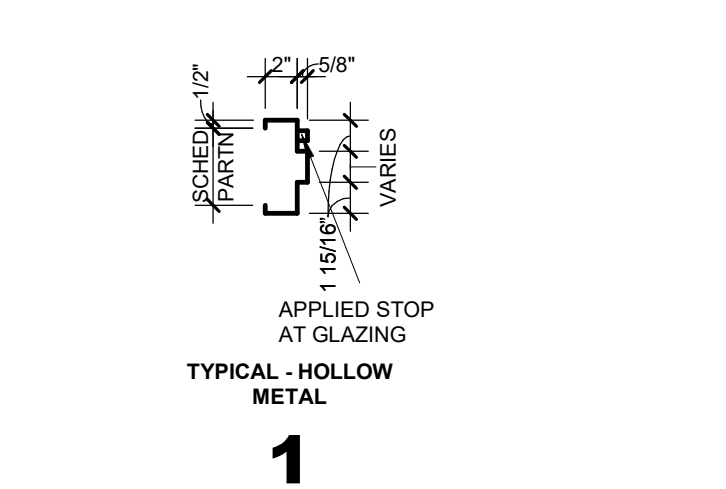
**GENERAL NOTES - FLOOR PLAN**

1. ALL EXTERIOR DIMENSIONS ARE TO EXTERIOR FACE OF STUD, UNLESS NOTED OTHERWISE.
2. ALL INTERIOR DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE.
3. REFER TO SHEET A1.01 FOR DOOR SCHEDULE.
4. REFER TO SHEET A2.01 FOR EXTERIOR ELEVATIONS.
5. REFER TO SHEET A4.00 FOR INTERIOR ELEVATIONS.
6. REFER TO SHEET A4.10 FOR TOILET & ACCESSORY INFORMATION.
7. REFER TO SHEET A4.10 FOR PARTITION TYPES AND FRAMING DETAILS.
8. REFER TO SHEET A4.11 FOR MILLWORK DETAILS AND INFORMATION.
9. CONTRACTOR TO VERIFY ALL EQUIPMENT SIZES WITH OWNER.

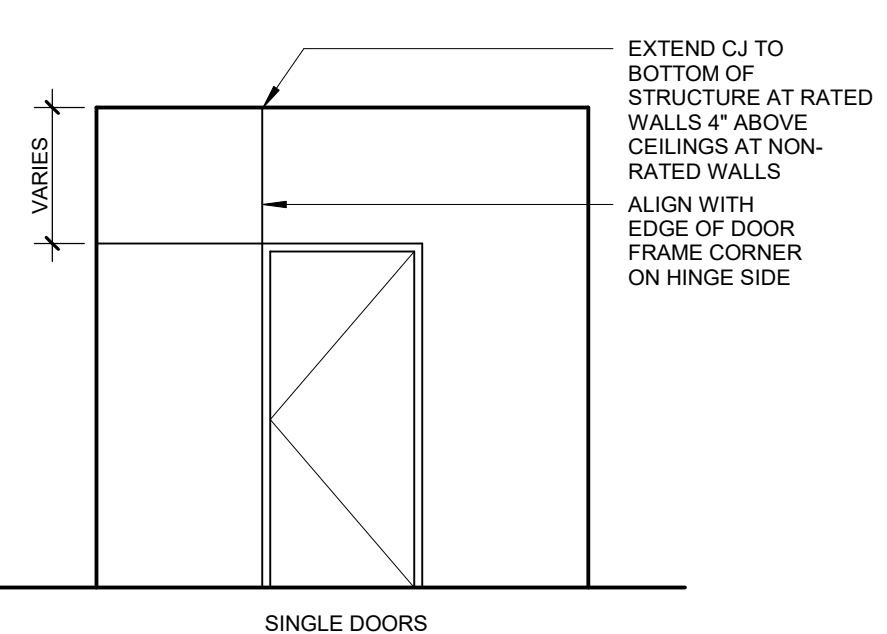
**DOOR SCHEDULE**

DOOR REVISION	DOOR NUMBER	WIDTH	HEIGHT	DOOR TYPE	FRAME TYPE	MATERIALS AND FINISHES		VISION PANEL & COVER TYPE	CONTROLS	COMMENTS
						DOOR MATERIAL	FRAME MATERIAL			
LEVEL 01	101	5'-10"	8'-0"	C2	1	AL/GL	AL	-	-	C714A
	102A	5'-10"	8'-0"	C2	1	AL/GL	AL	-	-	800AV
	102B	3'-2"	6'-9"	C1	1	AL/GL	AL	-	-	715A
	102C	3'-2"	6'-11"	C1	1	AL/GL	AL	-	-	715A
	103	3'-0"	7'-0"	A1	1	WD	HM	-	-	341
	104	3'-0"	7'-0"	A1	1	WD	HM	-	-	341
	105A	3'-0"	7'-0"	A1	1	WD	HM	-	CR	C711A
	105B	3'-0"	7'-0"	A1	1	WD	HM	-	CR	C711A
	105C	3'-2"	6'-11"	C1	1	AL	AL	-	-	C715A
	106	3'-0"	7'-0"	A1	1	WD/GL	HM	3	-	103
	107	3'-0"	7'-0"	A1	1	WD/GL	HM	3	-	103
	108	3'-0"	7'-0"	A1	1	WD/GL	HM	3	-	103
	109	3'-0"	7'-0"	A1	1	WD	HM	-	-	201
	110	3'-0"	7'-0"	A1	1	WD	HM	-	-	201
	111	3'-0"	7'-0"	A1	1	WD	HM	-	-	201
	112	3'-0"	7'-0"	A1	1	WD	HM	-	-	503
	113	3'-0"	7'-0"	A1	1	WD	HM	-	-	341
	114	3'-0"	7'-0"	A1	1	WD	HM	-	-	341
	115	3'-0"	7'-0"	A1	1	WD	HM	-	-	201C

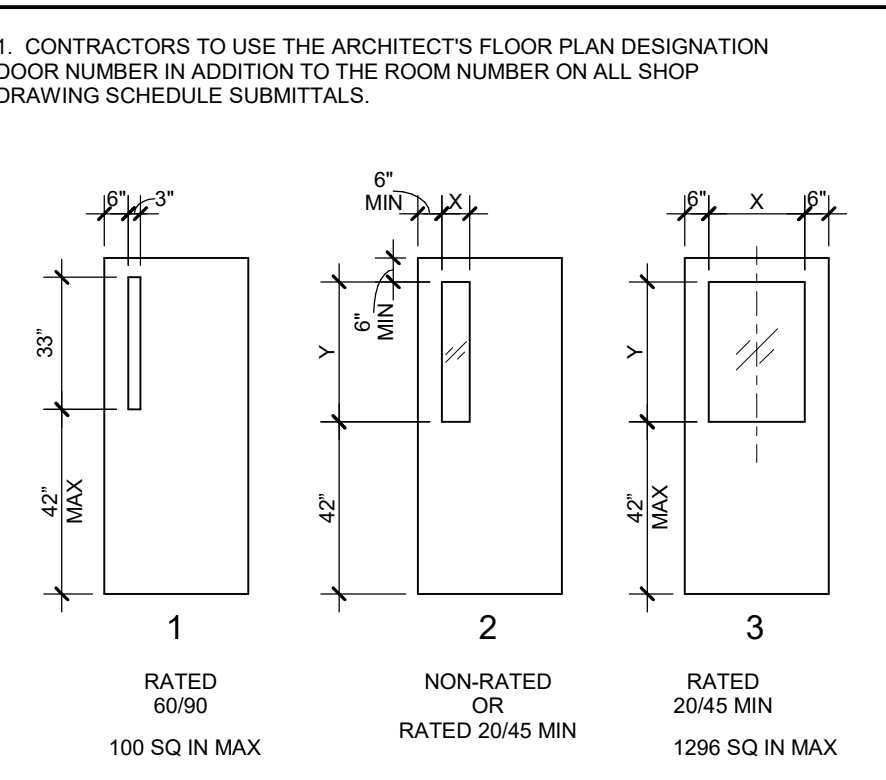
**DOOR FRAME TYPES** SCALE: 1" = 1'-0"



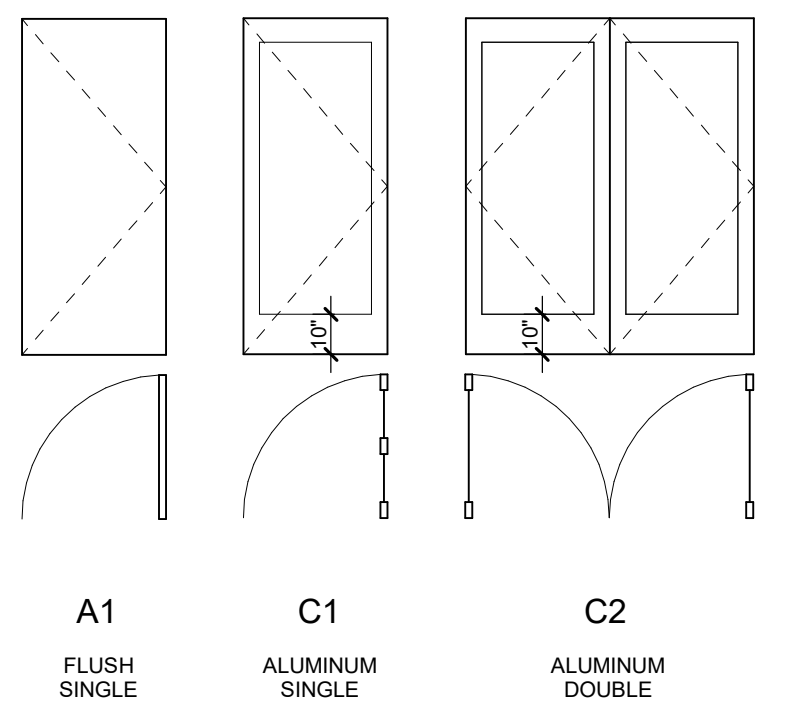
**CONTROL JOINT AT DOOR FRAMES** SCALE: 1/4" = 1'-0"



**VISION PANELS** SCALE: 1/4" = 1'-0"

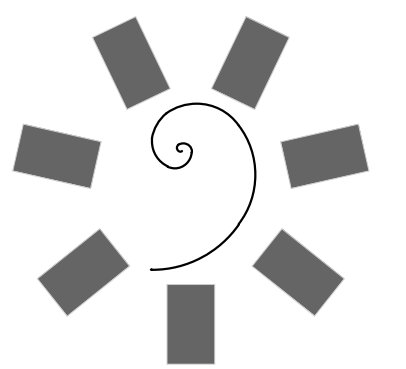


**DOOR TYPES** SCALE: 1/4" = 1'-0"

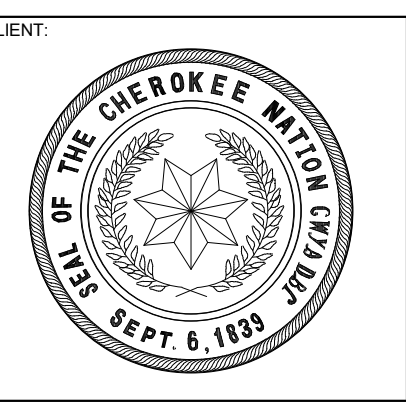
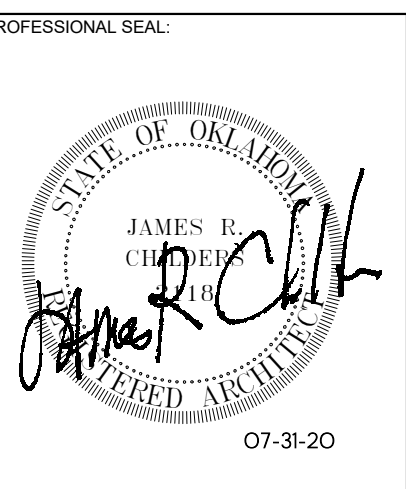


1. CONTRACTORS TO USE THE ARCHITECT'S FLOOR PLAN DESIGNATION DOOR NUMBER IN ADDITION TO THE ROOM NUMBER ON ALL SHOP DRAWING SCHEDULE SUBMITTALS.





James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



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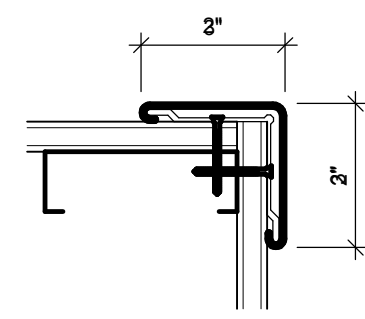
KEY PLAN			
PROJECT PHASE			
CONSTRUCTION DOCUMENTS			
REVISIONS			
#	DATE	REVISIONS	DESCRIPTION

DATE: 07-31-2020	JOB NUMBER: 18-01.10
SHEET NUMBER: A1.01	
FINISH PLAN AND INFORMATION	

## WALL & CORNER GUARD SCHEDULE

SCALE: 3/8" = 1'-0"

NOTE: MOUNTING HEIGHT & OVERALL LENGTH OF ALL CORNER GUARDS & END GUARDS TO MATCH EXISTING



EG = HEIGHT TO MATCH EXISTING

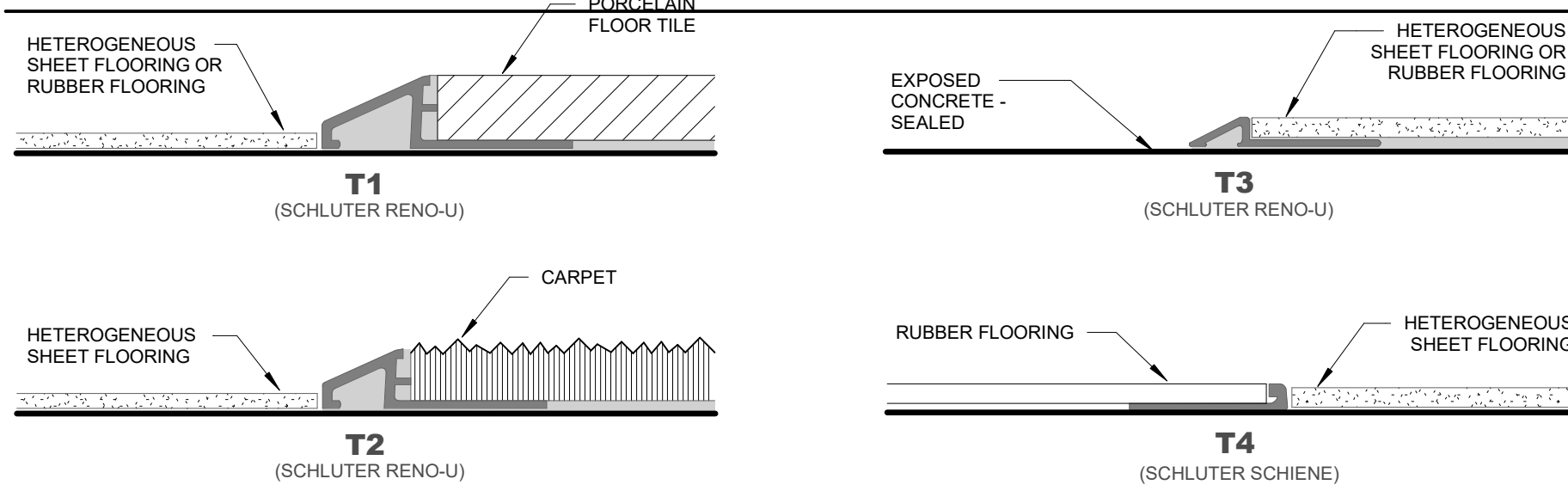
END GUARD

EG

SURFACE MOUNTED - NOT FIRE RATED

SCALE: NTS

## TRANSITIONS



## INTERIOR FINISH SCHEDULE

### FLOORS

**CARPET**  
CPT: MANUFACTURER: SHAW CONTRACT GROUP  
PRODUCT TYPE: CARPET  
COLLECTION: SMART THINKING  
COLOR: LADY IN GRAY  
STYLE NUMBER: E9725  
SIZE: 12' ROLL

**PORCELAIN FLOOR TILE**  
PTF: MANUFACTURER: DAL TILE  
COLLECTION: CONCRETE MASONRY  
COLOR: SCULPTURE GREY P035  
SIZE: 16" X 32"  
THICKNESS: 0.39"  
FINISH: MATTE  
INSTALLATION: STRAIGHT BOND  
GROUT: G-1 (3/16" GROUT JOINT)

**HETEROGENEOUS SHEET FLOORING**  
HSF-1: MANUFACTURER: TERNOFLOR  
COLLECTION: FOREST PLANK-HPD  
COLOR: AMBER 88076PLK  
FINISH: TBD  
SIZE: 4' X 36"  
THICKNESS: 0.098"  
INSTALLATION: FULL SPREAD

HSF-2: MANUFACTURER: TERNOFLOR  
COLLECTION: FOREST PLANK-HPD  
COLOR: BRANDY 88058PLK  
FINISH: TBD  
SIZE: 4' X 36"  
THICKNESS: 0.098"  
INSTALLATION: FULL SPREAD

**ENTRY MAT**  
EM: MANUFACTURER: SHAW CONTRACT  
COLLECTION: WELCOME TILE II  
PRODUCT TYPE: CARPET TILE  
STYLE NUMBER: ST031  
COLOR: EBONY  
THICKNESS: .157"  
SIZE: 24" X 24"  
INSTALLATION: MONOLITHIC

**RUBBER BASE**  
RB: MANUFACTURER: ROPPE  
STYLE: PINNACLE  
COLOR: SMOKE  
SIZE: 4"

**PORCELAIN TILE WALL**  
PTW: MANUFACTURER: DAL TILE  
COLLECTION: CONCRETE MASONRY  
COLOR: SCULPTURE GREY P035  
SIZE: 16" X 32"  
THICKNESS: 0.39"  
FINISH: MATTE  
INSTALLATION: STRAIGHT BOND  
GROUT: G-1 (3/16" GROUT JOINT)

### WALLS

**ACCENT TILE**  
AT: MANUFACTURER: CROSSVILLE  
COLLECTION: GROOVE GLASS  
COLOR: CONGO  
SIZE: 2" X 2" MOSAIC  
THICKNESS: 6"  
FINISH: GLASS/NATURAL STONE  
GROUT: G-2

**PLASTIC LAMINATE**  
PL-1: MANUFACTURER: WILSONART  
COLLECTION: HIGH PRESSURE LAMINATE  
COLOR: WHITE BARN  
PRODUCT NUMBER: 7817K-12  
FINISH: SOFT GRAIN FINISH  
INSTALLATION: VERTICAL GRAIN INSTALLATION  
EDGE-BANDING: TBD

**GROUT**  
G-1: MANUFACTURER: MAPEI  
COLOR: WARM GRAY B3  
TYPE: KERACOLOR SANDED  
G-2: MANUFACTURER: MAPEI  
COLOR: WHITE  
TYPE: TYPE 1 ADHESIVE

**PAINT**  
P-1: MANUFACTURER: SHERWIN WILLIAMS  
COLOR: PURE WHITE SW 7005  
SHEEN: SATIN  
TYPE: LATEX  
P-2: MANUFACTURER: SHERWIN WILLIAMS  
COLOR: PEWTER GREEN SW6208  
SHEEN: SATIN  
TYPE: LATEX  
P-3: MANUFACTURER: SHERWIN WILLIAMS  
COLOR: PEARL GRAY SW0052  
SHEEN: SATIN  
TYPE: LATEX

**WALL PROTECTION**  
**CORNER GUARD**  
CG: MANUFACTURER: KOROGARD  
PRODUCT: CORNER GUARD  
SERIES: G100  
COLOR: PEWTER  
INSTALLATION: SURFACE MOUNTED

### DOORS

**INTERIOR HOLLOW METAL FRAME**  
HM: MANUFACTURER: SEE SPECIFICATIONS  
COLOR: MEDIUM BRONZE  
WD: MANUFACTURER: MASONITE ARCHITECTURAL  
COLLECTION: ASPROSIGNATURE SERIES  
COLOR: TBD  
SPECIES: TBD  
CUT: PLAIN SLICED  
INSTALLATION: TYP. VERTICAL GRAIN DIRECTION

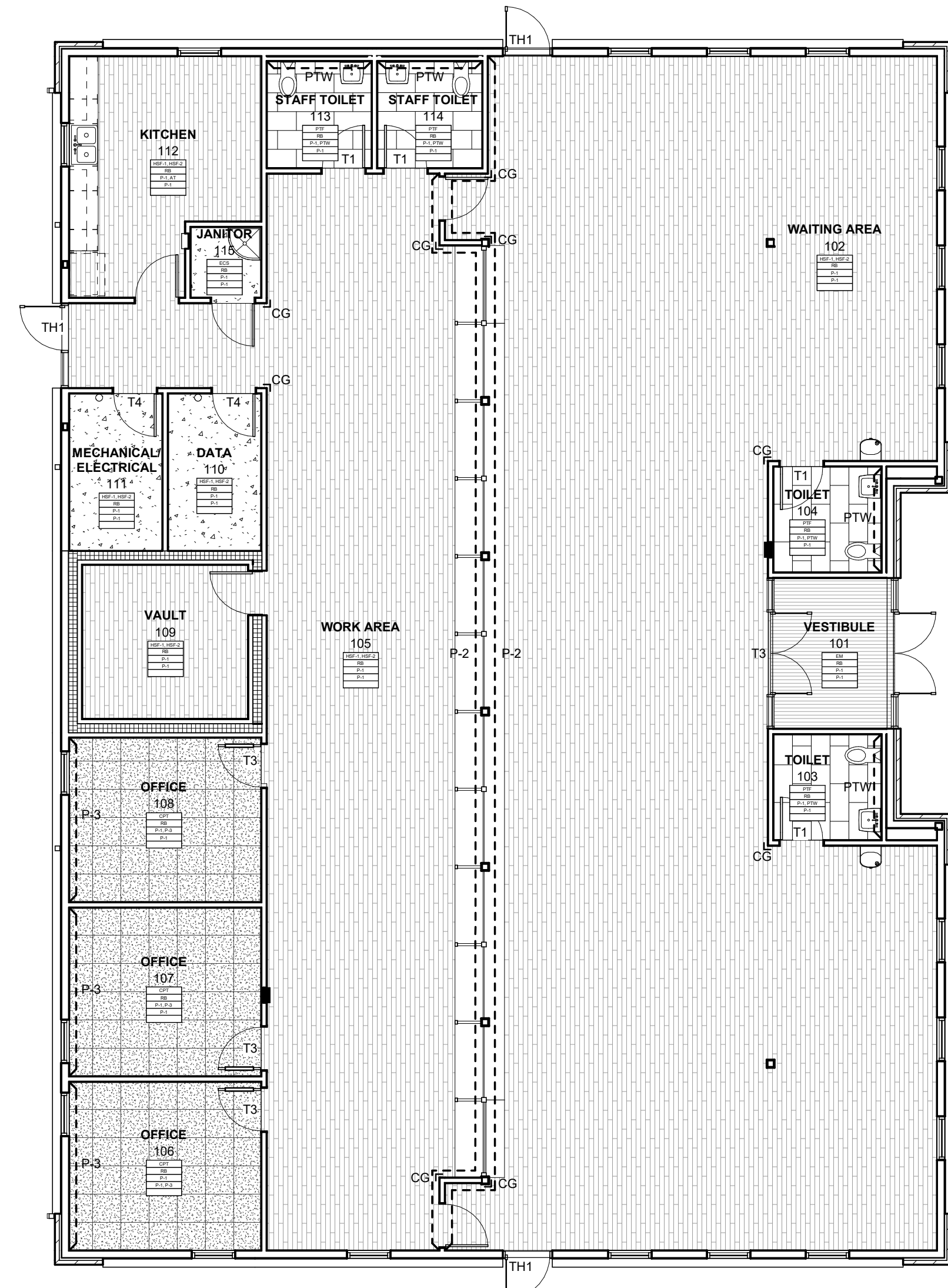
**THRESHOLDS**  
TH: PRODUCT: METAL THRESHOLD  
NOTE: SEE SPECIFICATIONS

**TRANSITIONS**  
T1: MANUFACTURER: SCHLUTER  
PRODUCT: RENOLU  
PRODUCT NUMBER: AEU 35  
MATERIAL: SATIN ANODIZED ALUMINUM  
CONDITION: TO BE USED BETWEEN PTF & HSF  
NOTE: SIZE TO BE VERIFIED IN FIELD  
T2: MANUFACTURER: SCHLUTER  
PRODUCT: RENOLU  
PRODUCT NUMBER: AEU 80  
MATERIAL: SATIN ANODIZED ALUMINUM  
CONDITION: TO BE USED BETWEEN PTF & CPT  
NOTE: SIZE TO BE VERIFIED IN FIELD  
T3: MANUFACTURER: SCHLUTER  
PRODUCT: RENOLU  
PRODUCT NUMBER: AEU 35  
MATERIAL: SATIN ANODIZED ALUMINUM  
CONDITION: TO BE USED BETWEEN ECS & HSF  
NOTE: SIZE TO BE VERIFIED IN FIELD

FINISH TAG LEGEND	
ROOM NAME	ROOM
ROOM #	-60
FLOOR TYPE	(-GTX)
BASE TYPE	RBX
TYP WALL	FSC
CEILING	ACT
REMARK	1

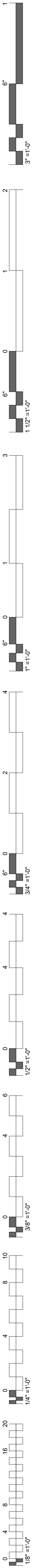
REFER TO INTERIOR FINISH LEGEND FOR DEFINITION OF MATERIAL DESIGNATIONS

- GENERAL NOTES - FINISH PLAN**
- ALL EXTERIOR DIMENSIONS ARE TO EXTERIOR FACE OF STUD, UNLESS NOTED OTHERWISE.
  - ALL INTERIOR DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE.
  - REFER TO SHEET A2.01 FOR EXTERIOR ELEVATIONS.
  - REFER TO SHEET A4.00 FOR INTERIOR ELEVATIONS.
  - REFER TO SHEET A4.10 FOR TOILET INFORMATION.
  - REFER TO SHEET A4.11 FOR MILLWORK DETAILS AND INFORMATION.



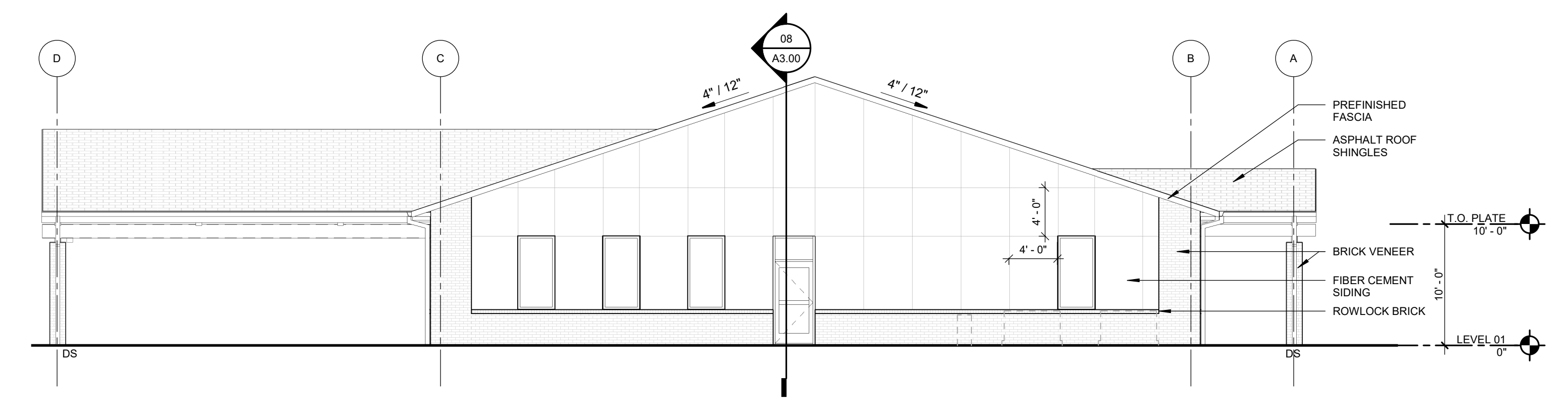
**01 FINISH PLAN**  
1/8" = 1'-0"



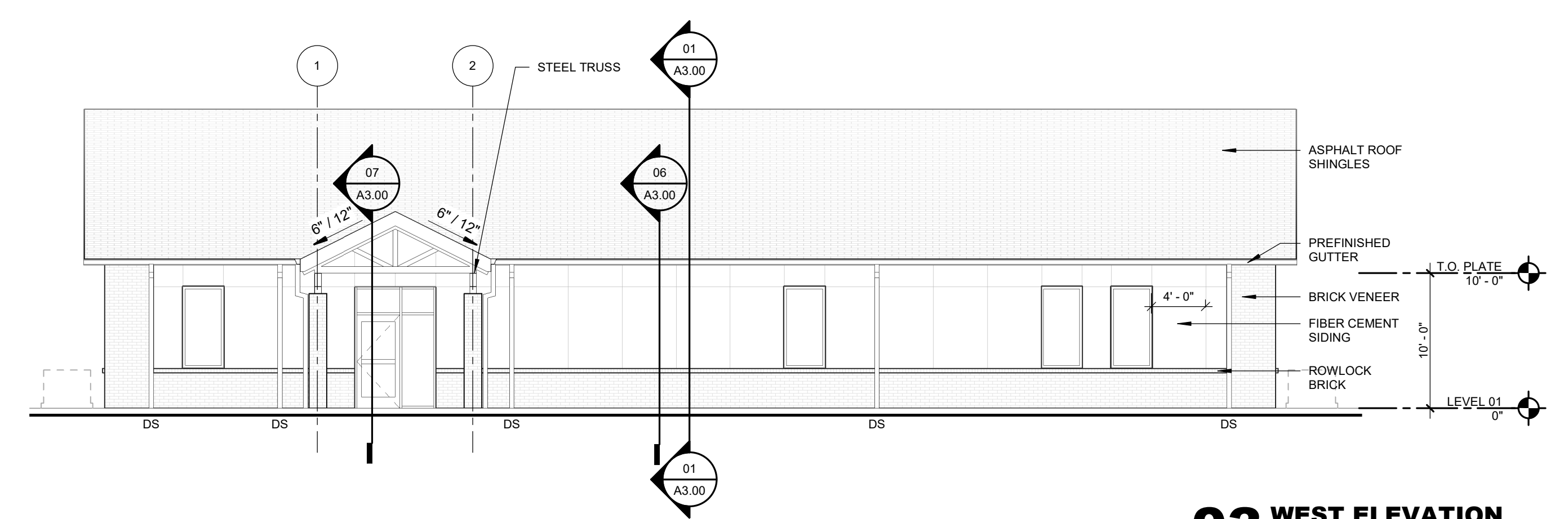


**EXTERIOR FINISH SCHEDULE**

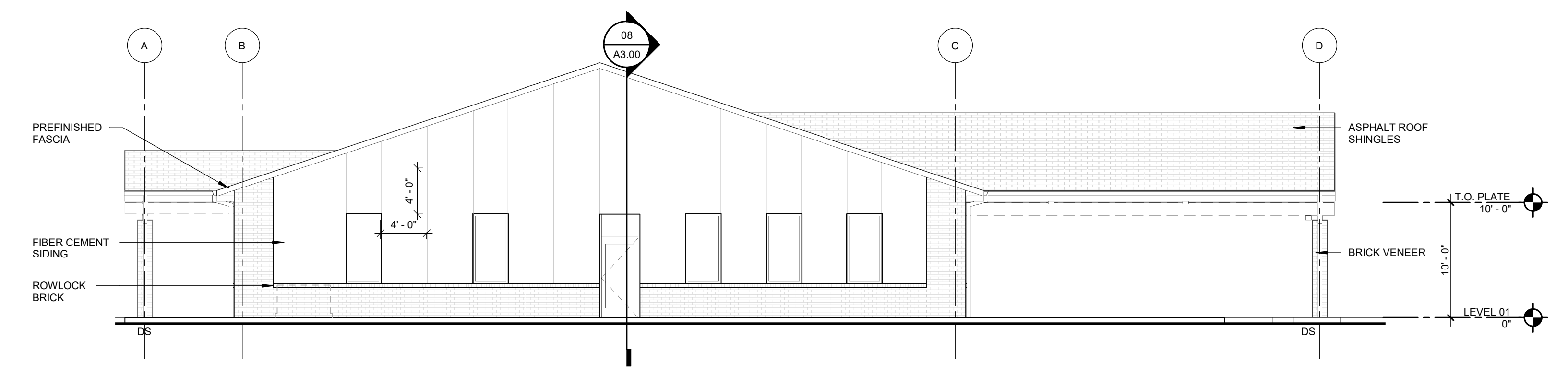
<b>FIBER CEMENT SIDING</b> MANUFACTURER: JAMES HARDIE TYPE: HARDIPANEL VERTICAL SIDING COLOR: PORTICO WHITE FINISH: SMOOTH	<b>PRE-FINISHED FASCIA, GUTTERS, AND DOWNSPOUTS</b> FINISH TO MATCH EXPOSED STEEL TRUSSES
<b>STOREFRONT SYSTEM</b> MANUFACTURER: KAWNEER COLOR: MEDIUM BRONZE FINISH: ANODIZED	<b>WOOD</b> TONGUE AND GROOVE WOOD SOFFIT TYPE: WESTERN RED CEDAR LUMBER GRADE: A CLEAR SIZE: 1" X 6" NOMINAL (3/4" X 5 1/2" ACTUAL) COLOR: SEMI-TRANSPARENT SATIN W/ CLEAR PROTECTIVE UV FINISH
<b>BRICK VENEER</b> MANUFACTURER: ACME BRICK BLEND: WINDSOR PARK TEXTURE: VELLUR	<b>ASPHALT SHINGLES</b> MANUFACTURER: ATLAS TYPE: GLASSMASTER COLOR: TAN MIST
<b>EXPOSED STEEL FINISH</b> MANUFACTURER: SHERWIN WILLIAMS COLOR: CARABE SW 9990 SHEEN: FLAT	<b>GLASS</b> MANUFACTURER: VITRO ARCHITECTURAL GLASS PRODUCT: SOLARBAN 60 COLOR: ATLANTICA + CLEAR



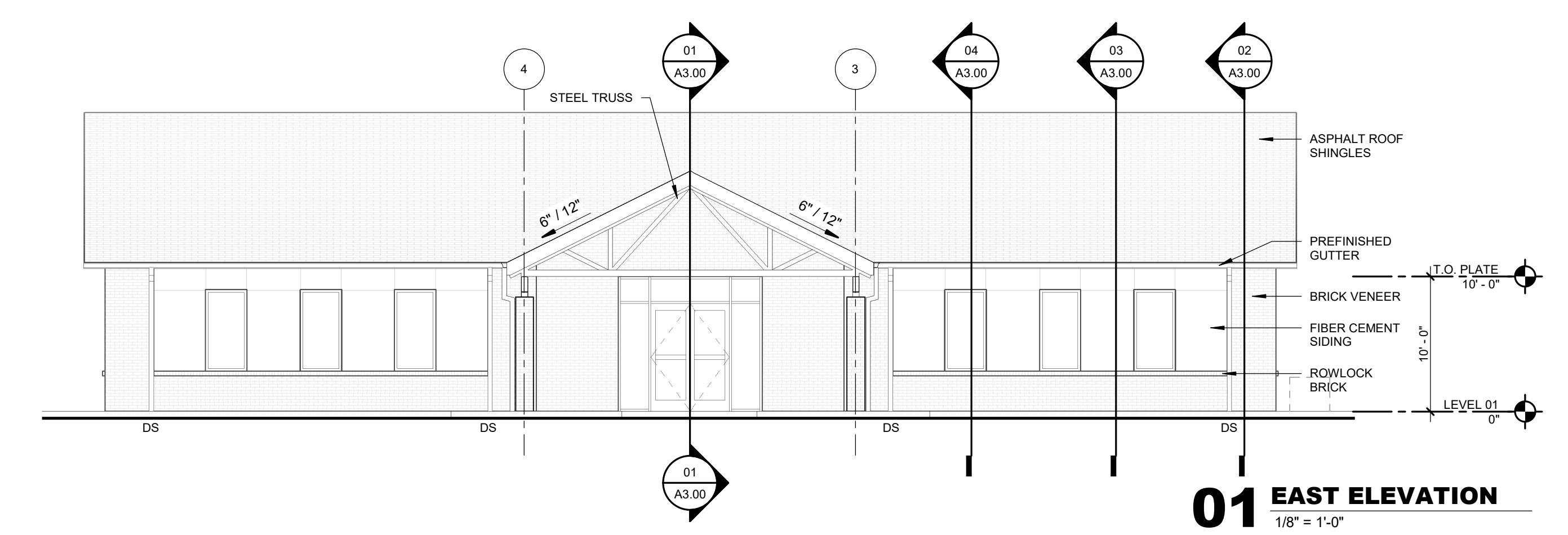
**04 NORTH ELEVATION**  
1/8" = 1'-0"



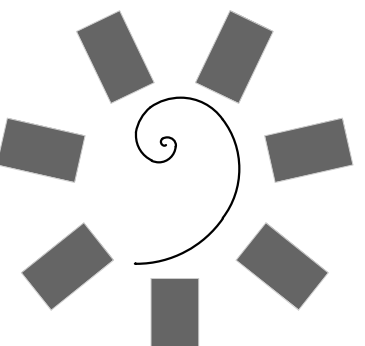
**03 WEST ELEVATION**  
1/8" = 1'-0"



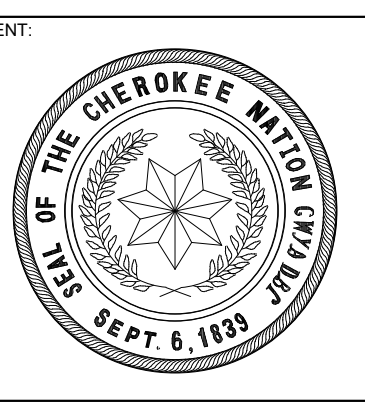
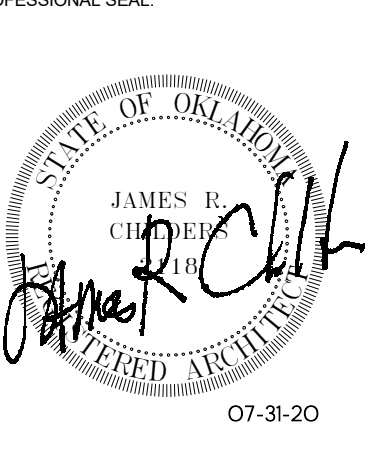
**02 SOUTH ELEVATION**  
1/8" = 1'-0"



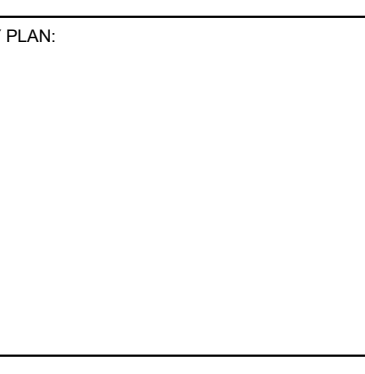
**01 EAST ELEVATION**  
1/8" = 1'-0"



**James R. Childers**  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2460  
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**CHEROKEE NATION TAG OFFICE**  
 CATOOSA, OKLAHOMA



PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

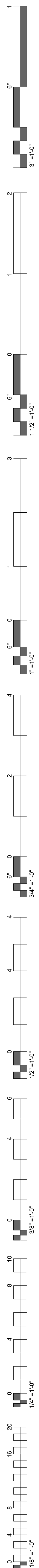
SHEET NUMBER: A2.01

EXTERIOR ELEVATIONS

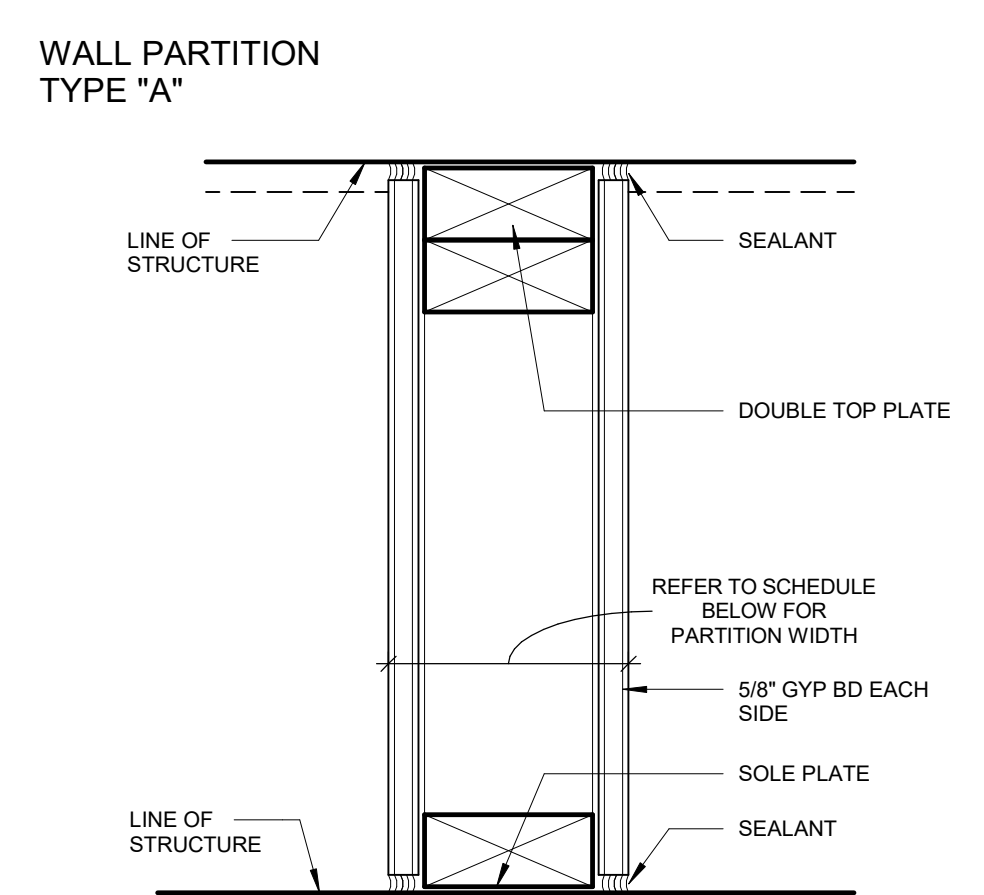




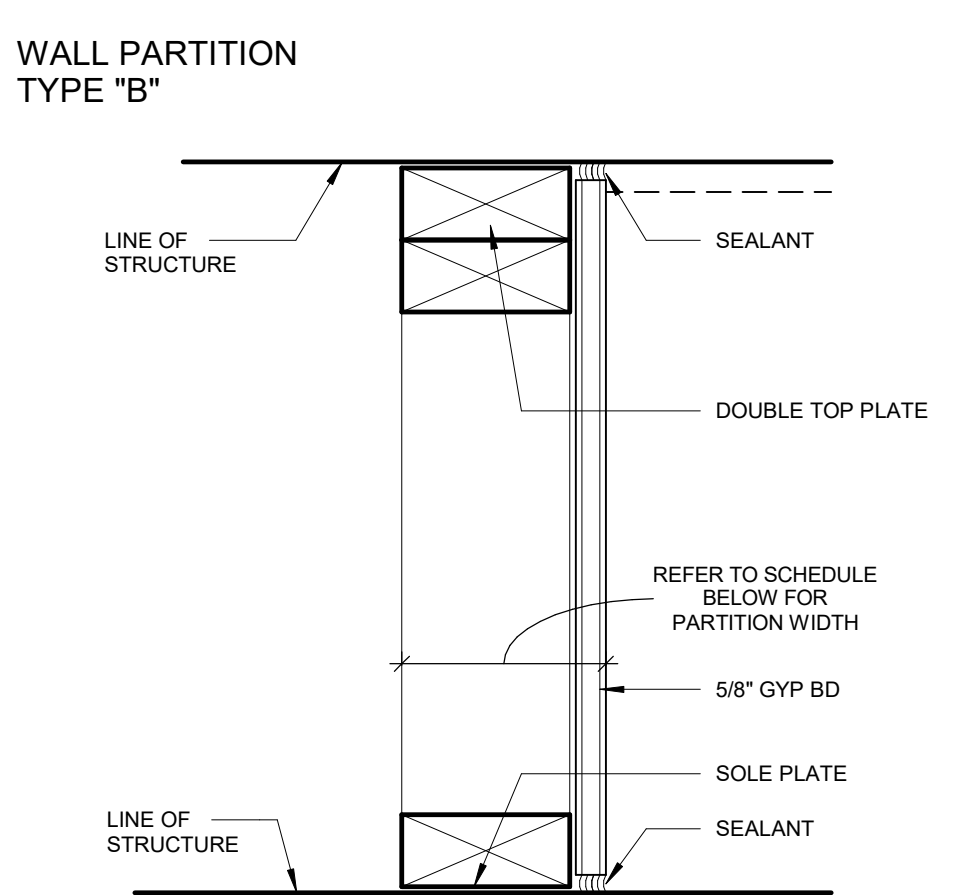




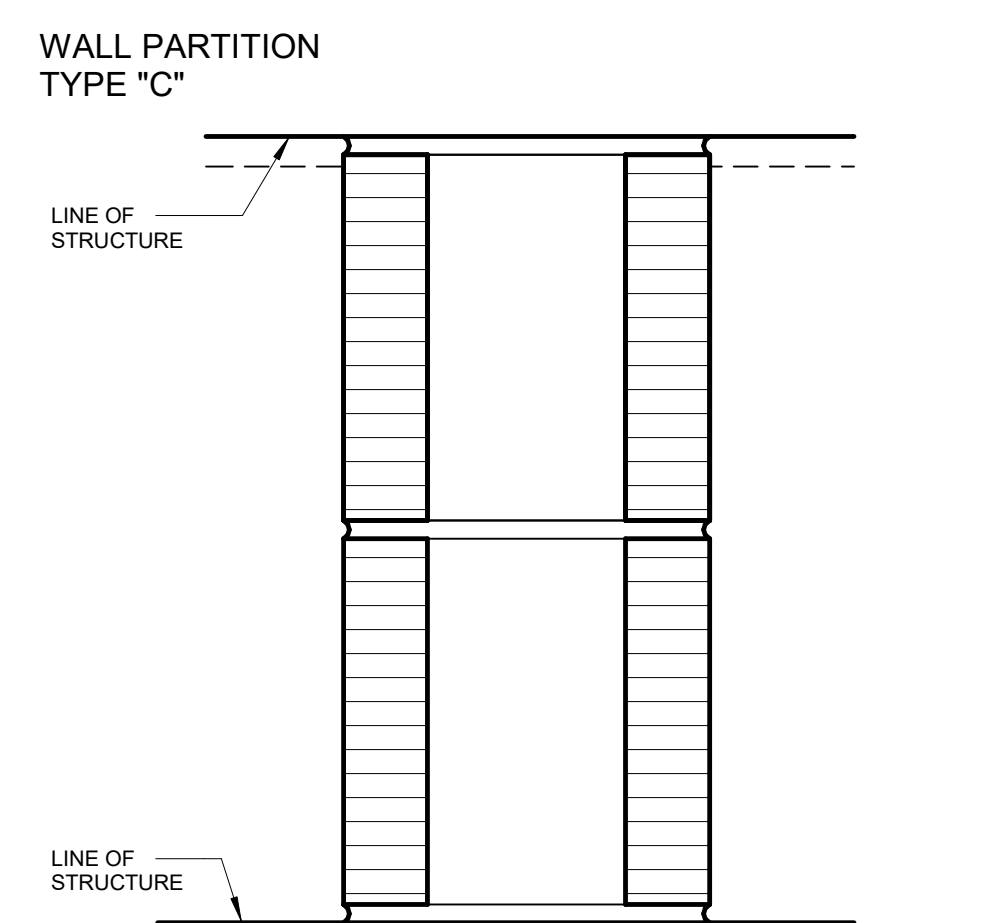
**PARTITION TYPES**



FLOOR PLAN DESIGNATION	STUD SIZE	PART WIDTH	FIRE RATING	UL LISTING	SOUND TRANS CLASS	REMARKS
A3	3 1/2"	4 3/4"	NON-RATED	N/A	-34 48 W/P SAB	



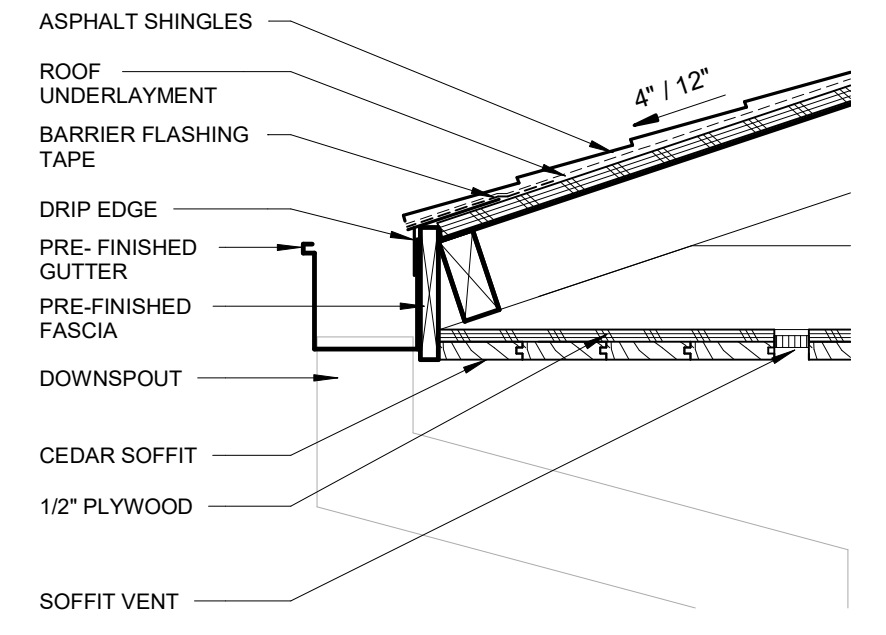
FLOOR PLAN DESIGNATION	STUD SIZE	PART WIDTH	FIRE RATING	UL LISTING	SOUND TRANS CLASS	REMARKS
B3	3 1/2"	4 1/4"	NON-RATED	N/A		



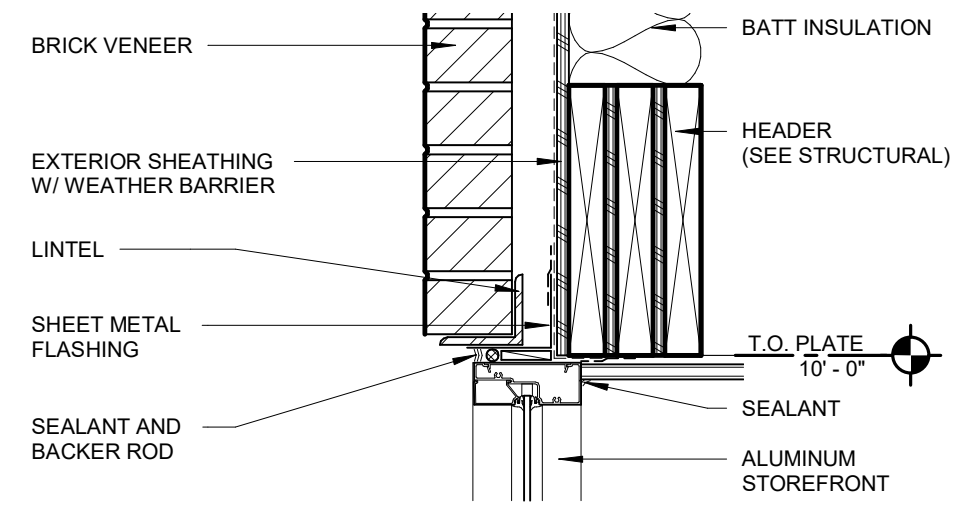
FLOOR PLAN DESIGNATION	CMJ SIZE	PART WIDTH	FIRE RATING	UL LISTING	SOUND TRANS CLASS	REMARKS
C3	7 5/8"	7 5/8"	NON-RATED	N/A	48	

- NOTES**
- PARTITIONS ARE DISTINGUISHED ON FLOOR PLANS BY SYMBOL DESIGNATION, GRAPHIC DESIGNATION OR A COMBINATION OF BOTH DESIGNATIONS.
  - THERE ARE TWO TYPES OF SYMBOL DESIGNATIONS, ONE FOR PARTITIONS NOT REQUIRING SOUND ATTENUATION AND ANOTHER FOR PARTITIONS WHICH REQUIRE SOUND ATTENUATION. REFER TO PARTITION MATRICES FOR SOUND ATTENUATION BLANKET (SAB) MINIMUM THICKNESS FOR STC INDICATED.
  - "LINE OF STRUCTURE" INDICATED FOR EACH PARTITION IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS OR GEOMETRY.
  - FOR PARTITIONS INDICATED TO RECEIVE SOUND ATTENUATION BLANKETS (SAB), EXTEND SAB TO FULL HEIGHT OF PARTITION UNLESS OTHERWISE INDICATED. FLOOR TRACK TO BE SET IN A CONT BED OF SEALANT.

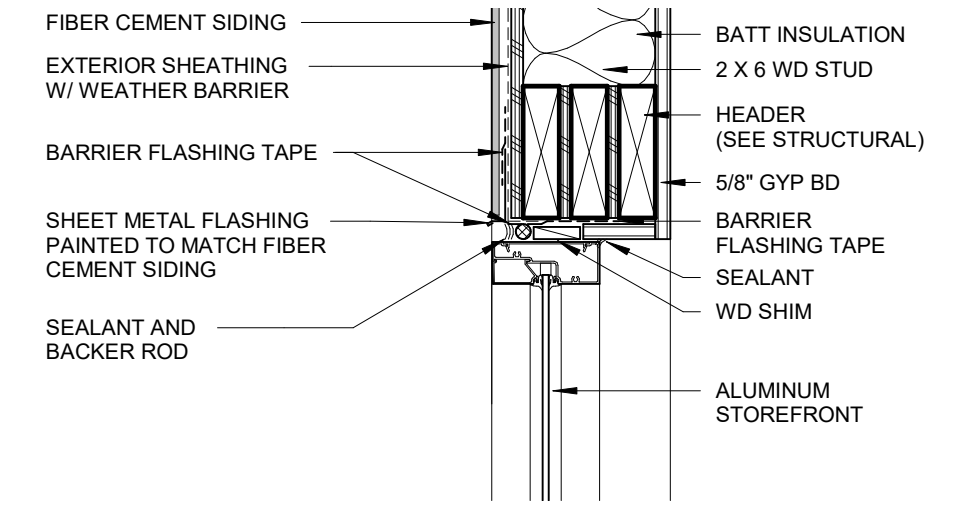
BARRIERS:	DESIGNATION	EXAMPLE	COMMENTS
SOUND:	(S)	A3(S)	



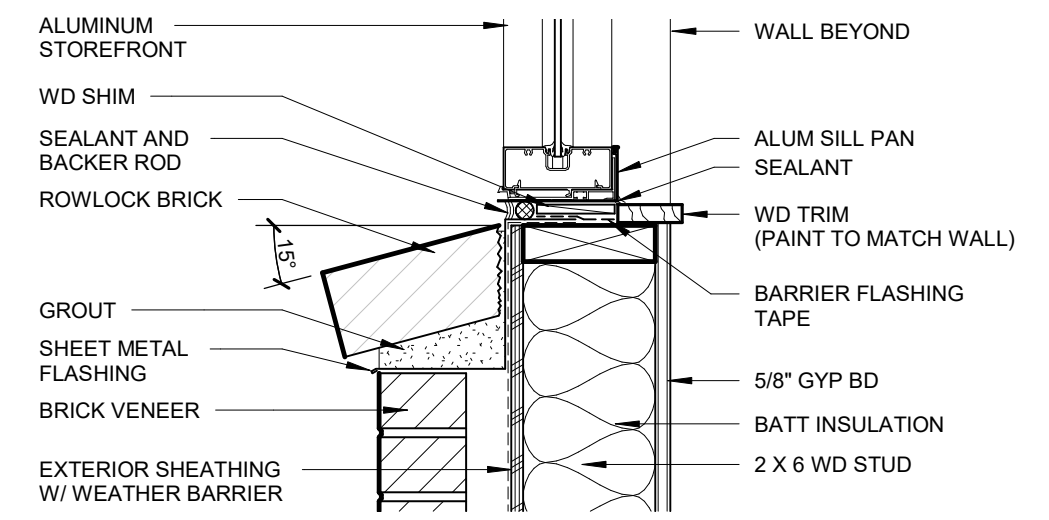
**12 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



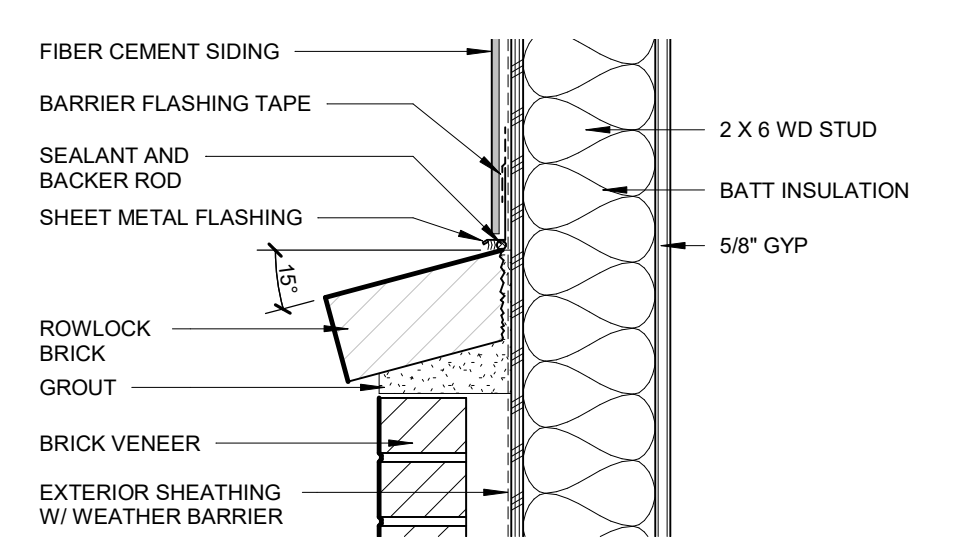
**11 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



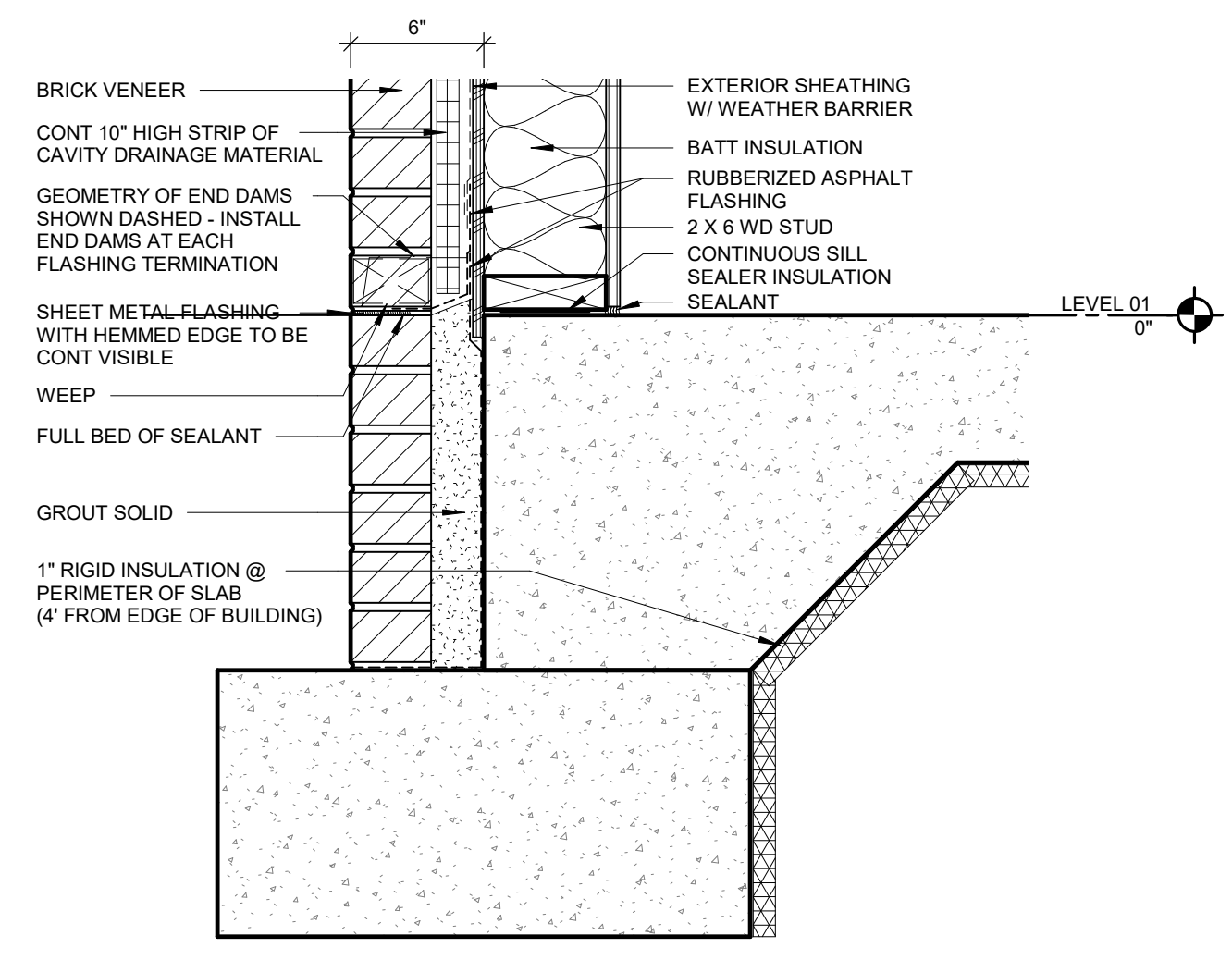
**10 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



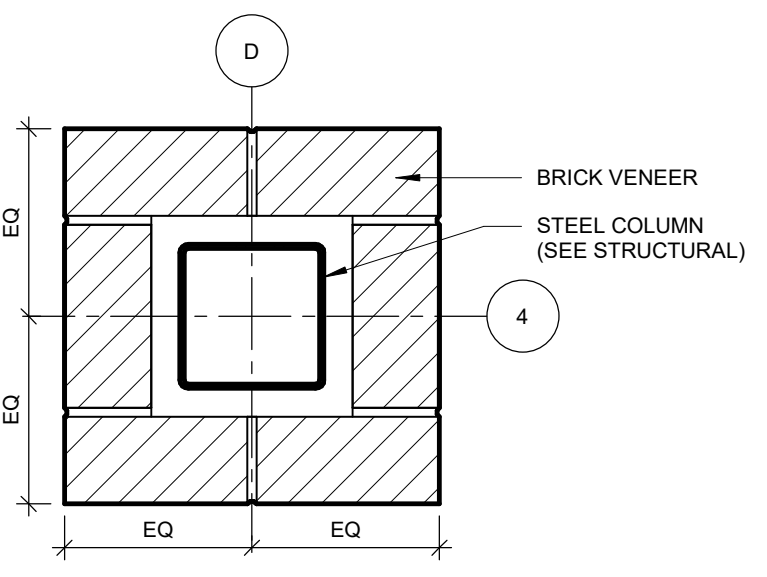
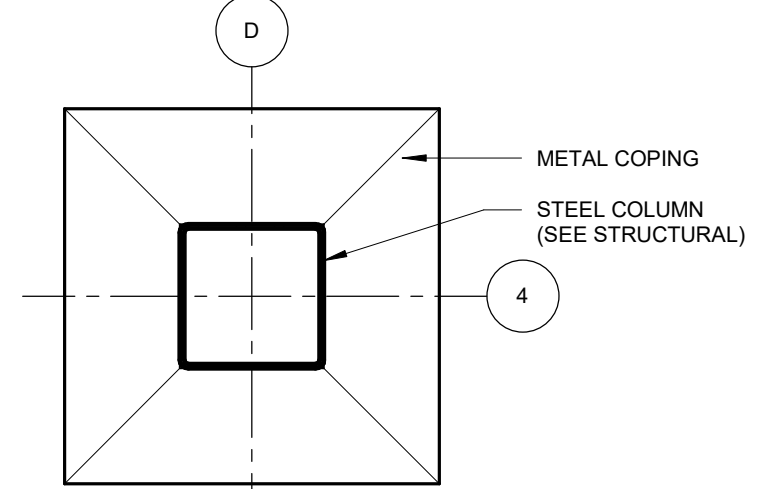
**09 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



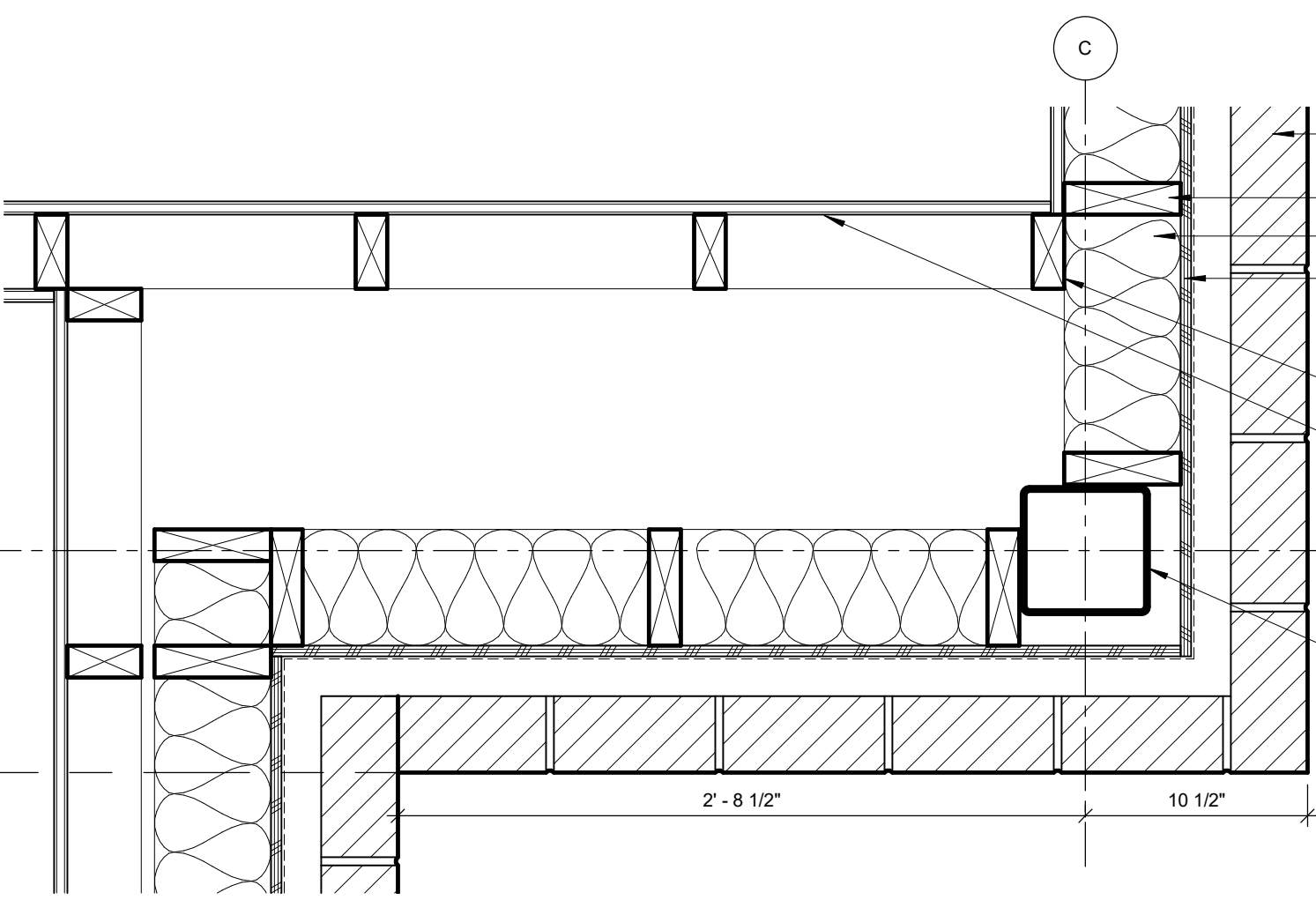
**08 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



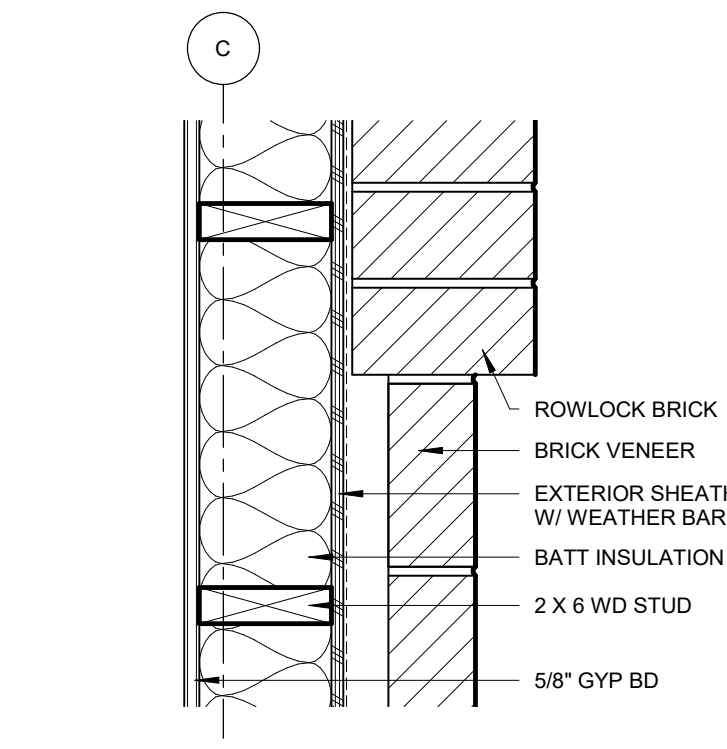
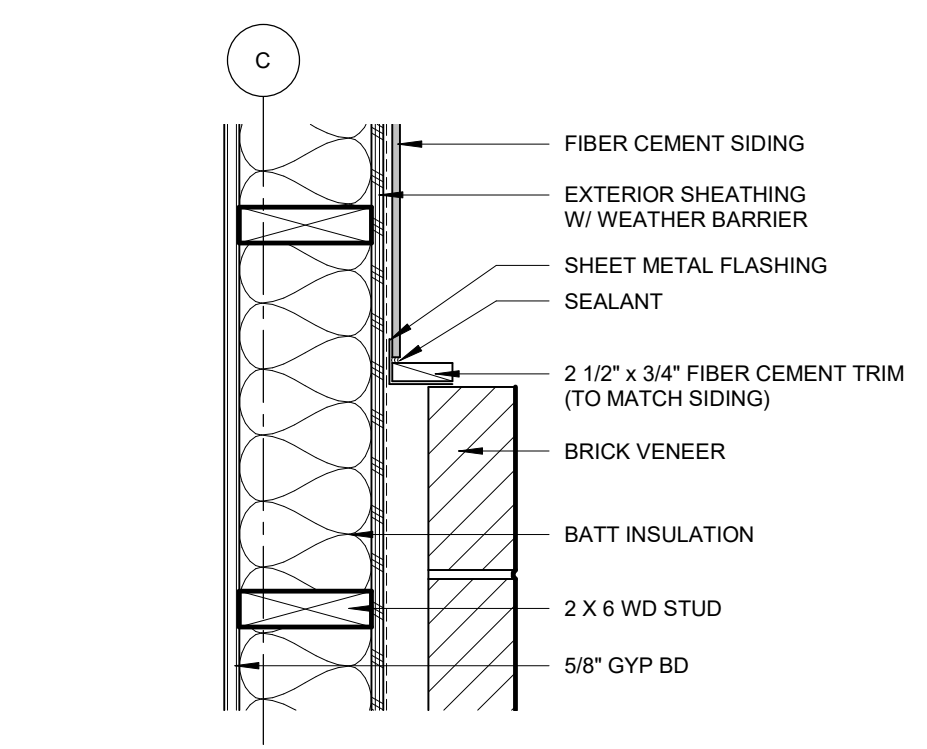
**07 WALL SECTION DETAIL**  
1 1/2" = 1'-0"



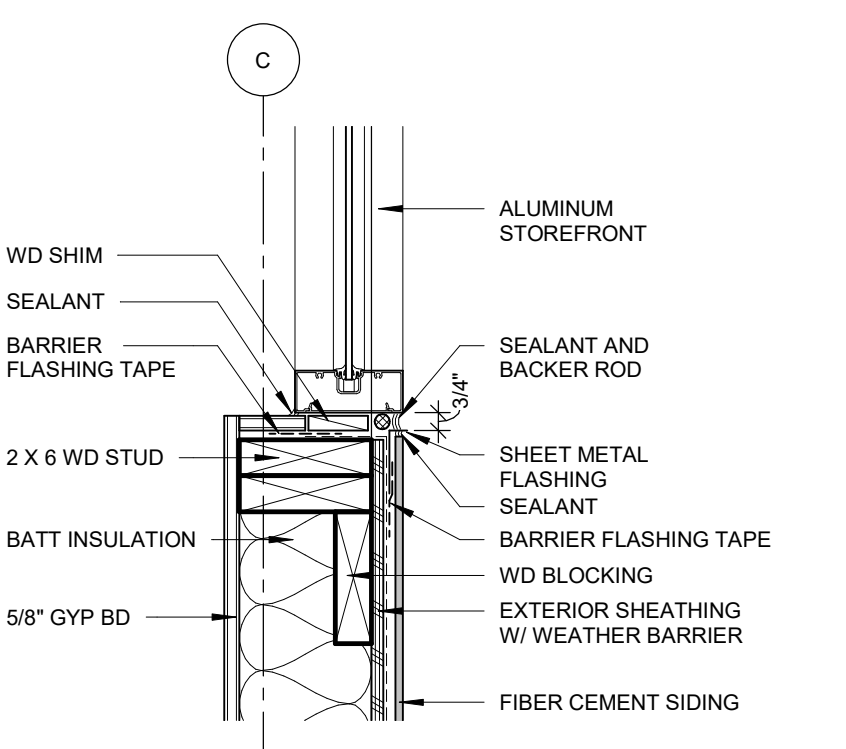
**05 EXTERIOR PLAN DETAIL**  
1 1/2" = 1'-0"



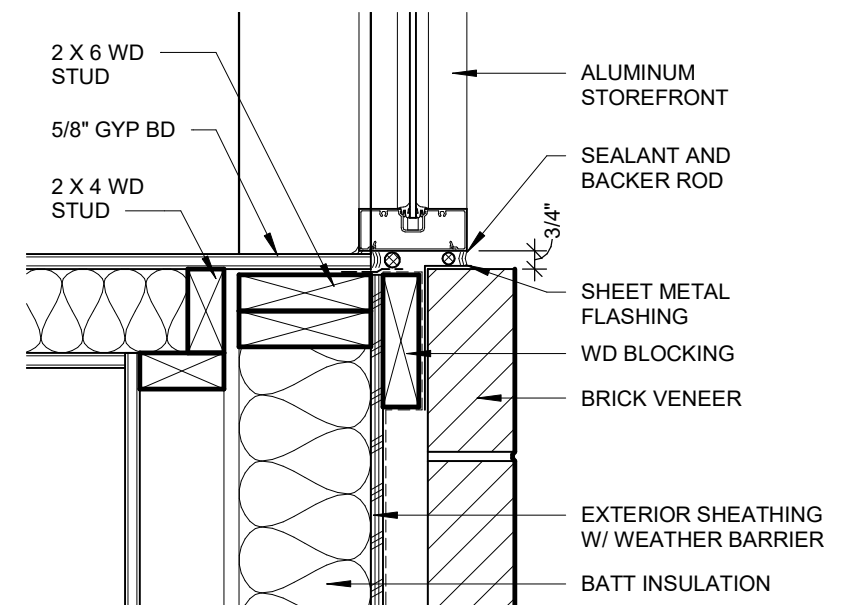
**01 EXTERIOR PLAN DETAIL**  
1 1/2" = 1'-0"



**04 EXTERIOR PLAN DETAIL**  
1 1/2" = 1'-0"

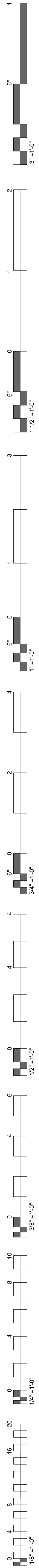


**03 EXTERIOR PLAN DETAIL**  
1 1/2" = 1'-0"

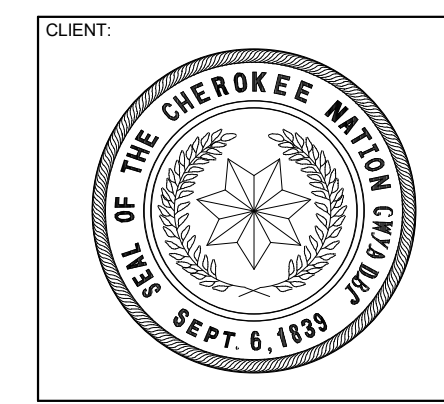
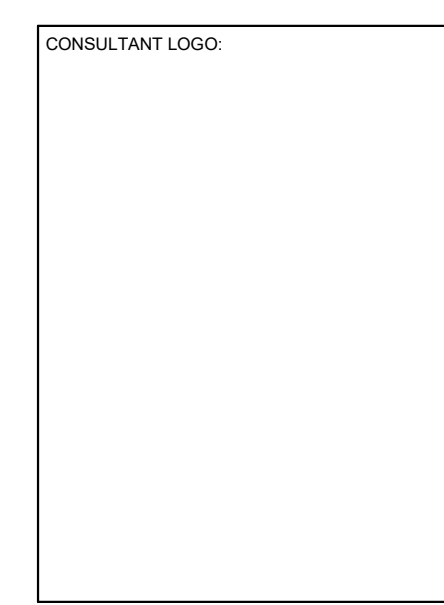
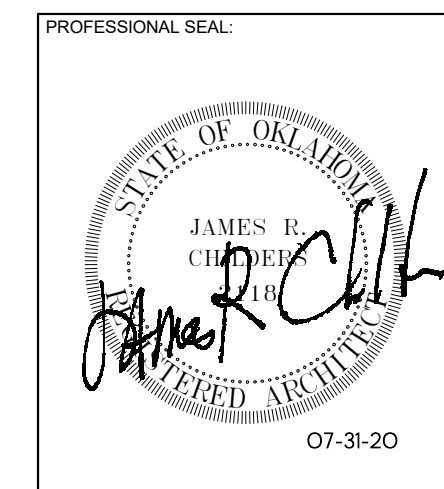
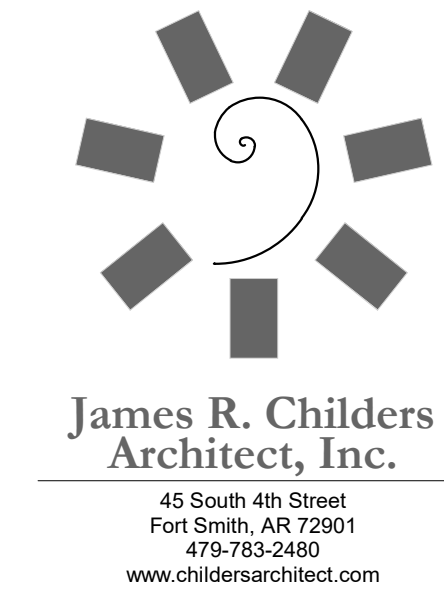


**02 EXTERIOR PLAN DETAIL**  
1 1/2" = 1'-0"

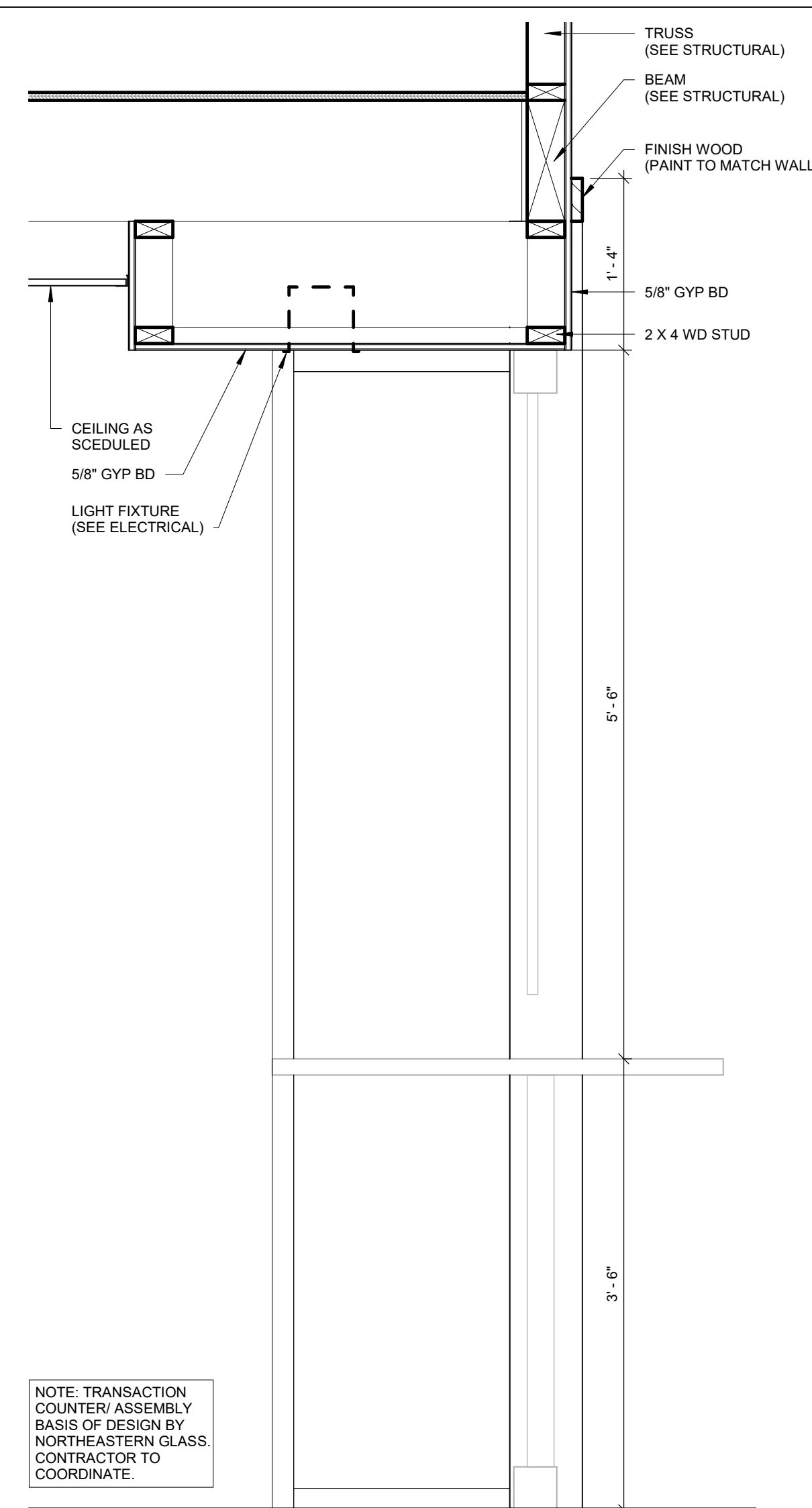




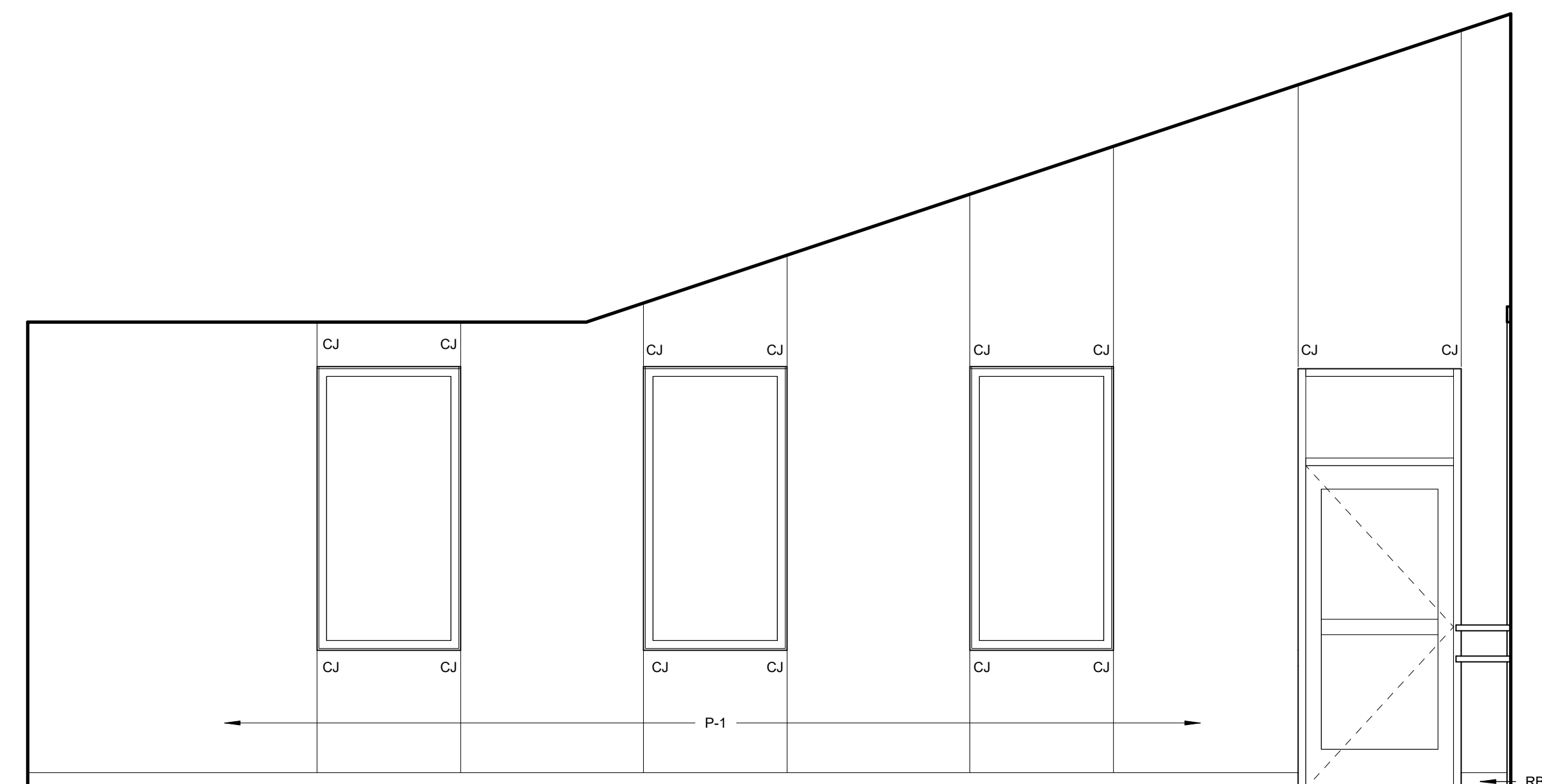
GENERAL NOTE: INTERIOR ELEVATIONS  
1. REFER TO SHEET A1.01 FOR FINISH INFORMATION



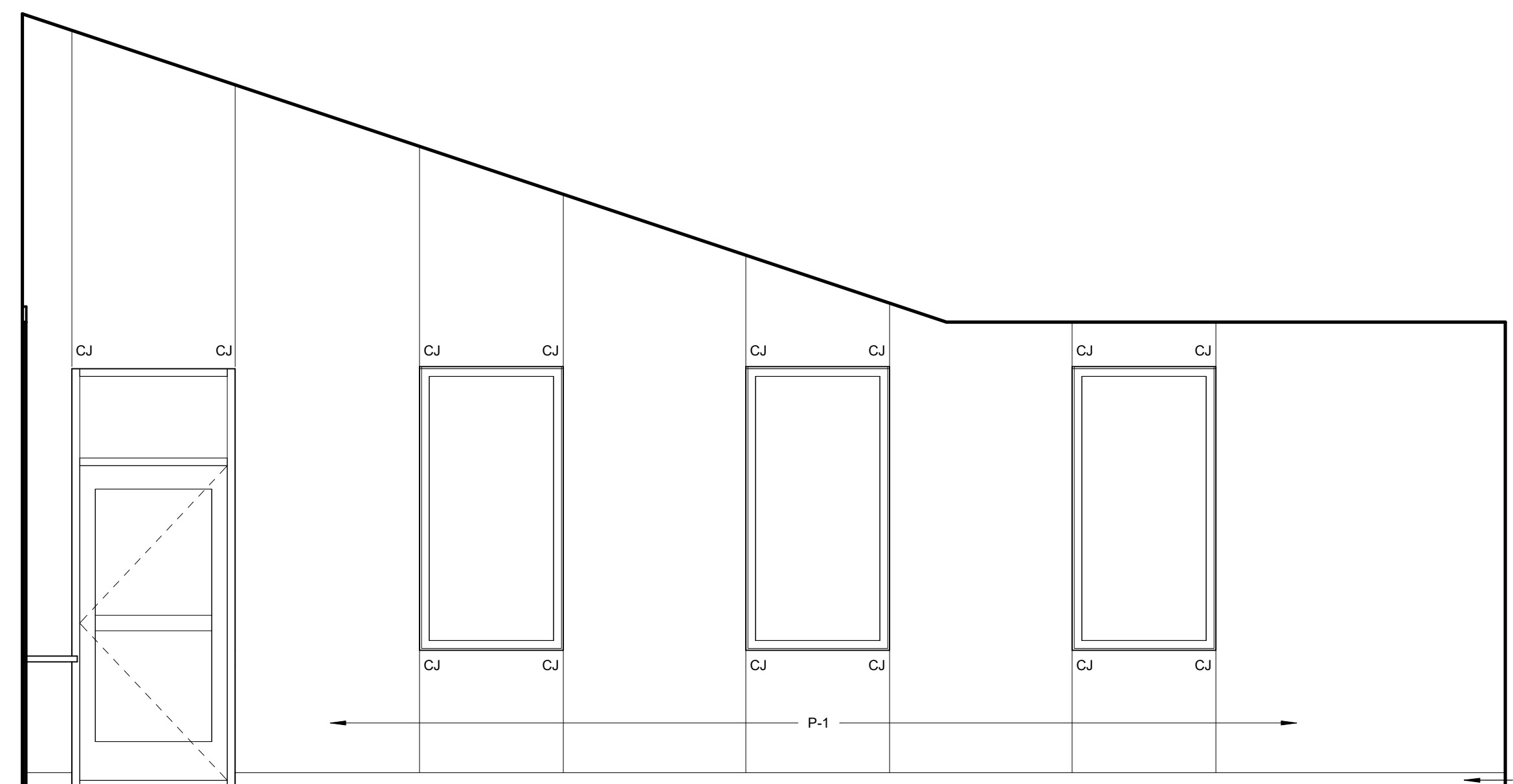
CHEROKEE NATION  
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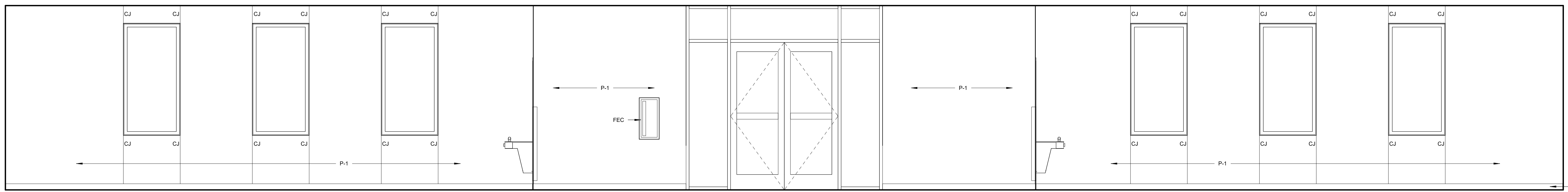
**07 SECTION AT TRANSACTION COUNTERS**  
1" = 1'-0"



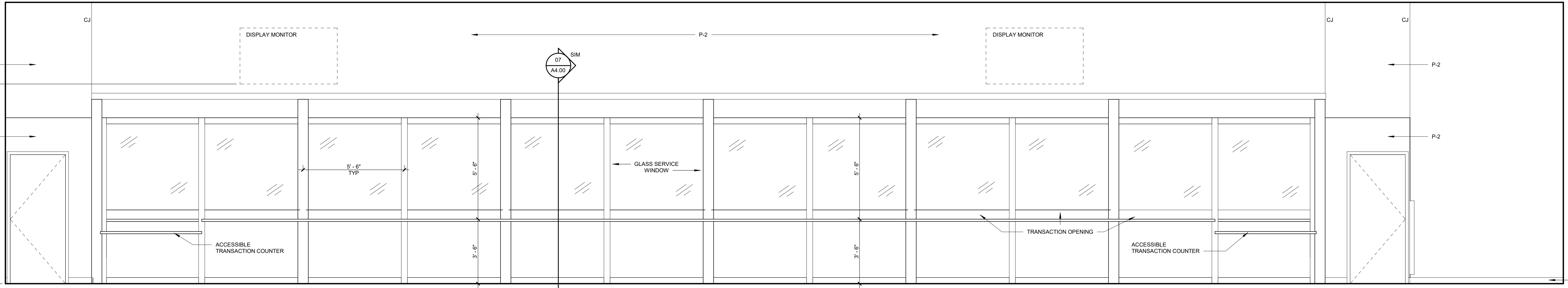
**06 WAITING AREA - SOUTH**  
3/8" = 1'-0"



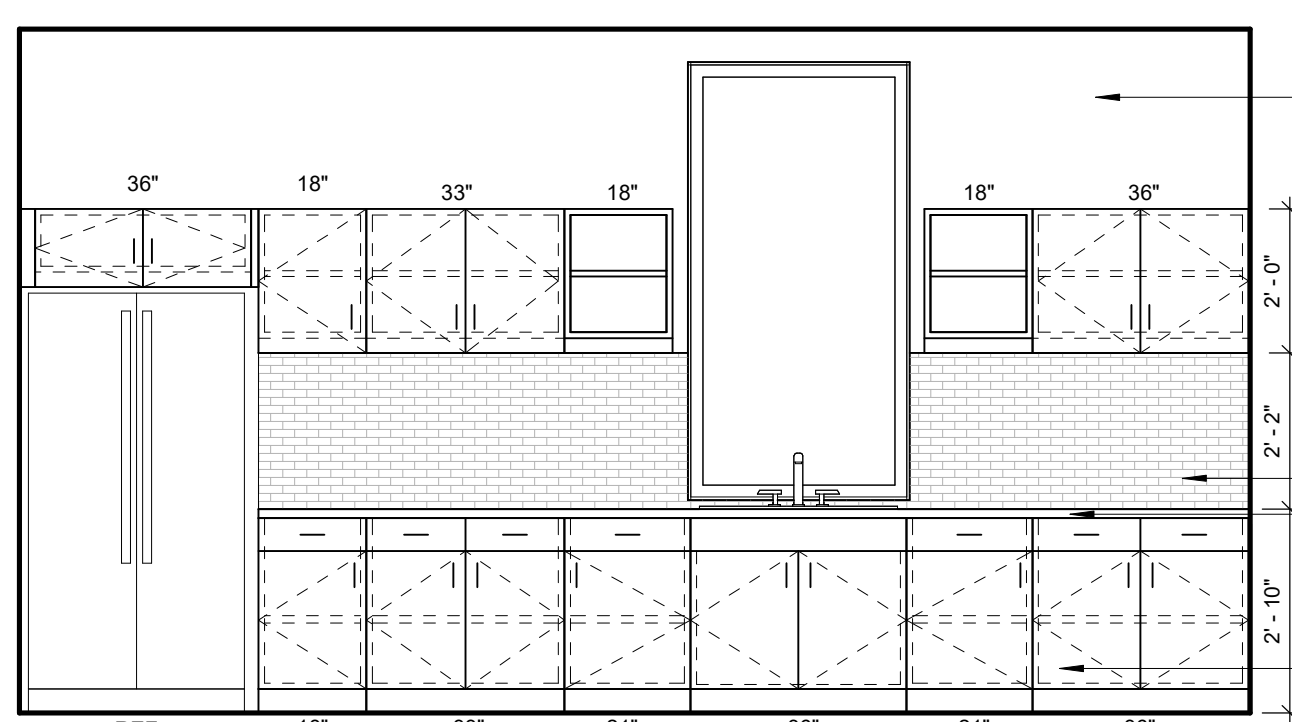
**05 WAITING AREA - NORTH**  
3/8" = 1'-0"



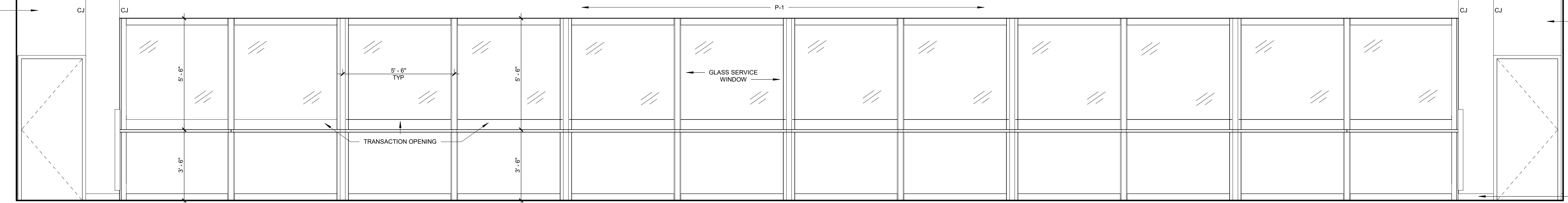
**04 WAITING AREA - EAST**  
3/8" = 1'-0"



**03 SERVICE COUNTER**  
3/8" = 1'-0"



**02 KITCHEN - WEST**  
3/8" = 1'-0"  
NOTE: CONTRACTOR TO VERIFY ALL EQUIPMENT SIZES WITH OWNER



**01 WORK AREA - EAST**  
3/8" = 1'-0"

KEY PLAN:

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

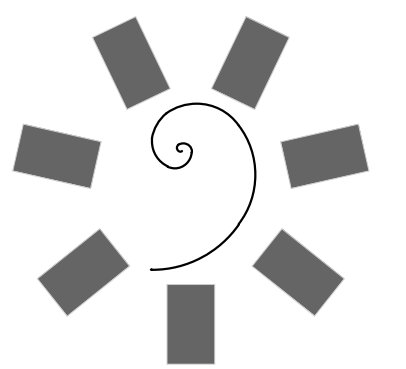
#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020  
JOB NUMBER: 18-01.10

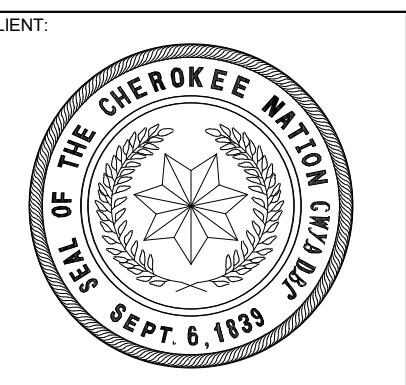
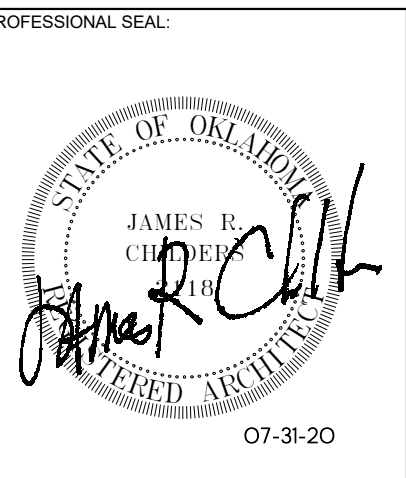
SHEET NUMBER:  
**A4.00**

INTERIOR ELEVATIONS





James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



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KEY PLAN

PROJECT PHASE  
CONSTRUCTION DOCUMENTS

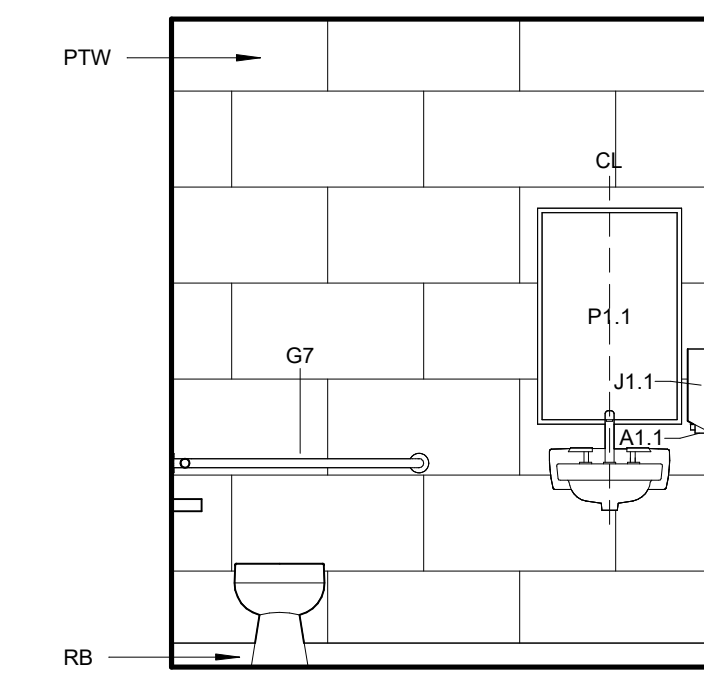
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DATE: 07-31-2020 JOB NUMBER: 18-01.10

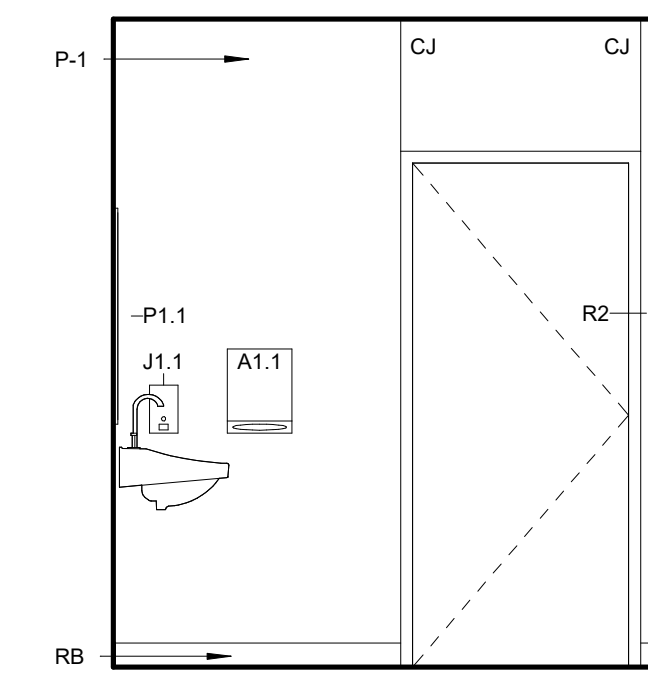
SHEET NUMBER: A4.10

TOILET INFORMATION

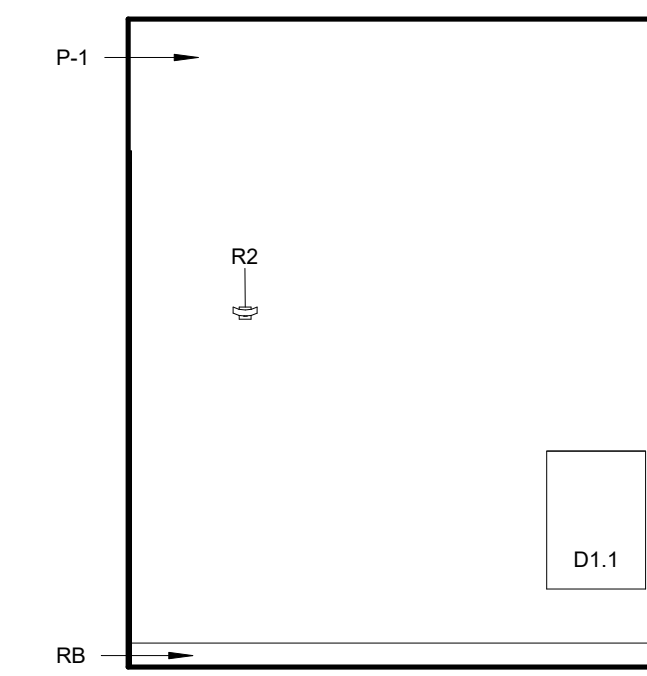
TOILET ACCESSORY MOUNTING DIAGRAM								
TOILET ACCESSORY ITEM	<b>ITEM [A] - PAPER TOWEL DISPENSER</b> 	<b>ITEM [B] - TOILET TISSUE DISPENSER</b> 	<b>ITEM [D] - WASTE RECEPTACLE</b> 	<b>ITEM [E] - SANITARY NAPKIN DISPOSAL</b> 				
FINISH FLOOR								
TYPES:	[1] SURFACE - MANUAL [2] SURFACE - AUTOMATIC [3] RECESSED - MANUAL	[1] SURFACE - SINGLE ROLL [2] SURFACE - DOUBLE ROLL [3] SURFACE - MULTI-ROLL [4] PARTITION-MOUNTED	[5] RECESSED - SINGLE ROLL [6] RECESSED - MULTI-ROLL	[1] SURFACE [2] RECESSED [3] SEMI-RECESSED [4] UNDER-COUNTER				
DRAWING DESIGNATION	A1.1 - SURFACE - MANUAL (C) - (C) A1.2 - SURFACE - MANUAL (O) - (C) A1.3 - SURFACE - MANUAL (O) - (V) A2.1 - SURFACE - AUTOMATIC (C) - (C) A2.2 - SURFACE - AUTOMATIC (O) - (C) A2.3 - SURFACE - AUTOMATIC (O) - (V) A3.1 - RECESSED - MANUAL (C) - (C) A3.2 - RECESSED - MANUAL (O) - (C) A3.3 - RECESSED - MANUAL (O) - (V)	B1.1 - SURFACE - SINGLE ROLL (C) - (C) B1.2 - SURFACE - SINGLE ROLL (O) - (C) B1.3 - SURFACE - SINGLE ROLL (O) - (V) B2.1 - SURFACE - DOUBLE ROLL (C) - (C) B2.2 - SURFACE - DOUBLE ROLL (O) - (C) B2.3 - SURFACE - DOUBLE ROLL (O) - (V) B3.1 - SURFACE - MULTI-ROLL (C) - (C) B3.2 - SURFACE - MULTI-ROLL (O) - (C) B3.3 - SURFACE - MULTI-ROLL (O) - (V) B4.1 - PARTITION-MOUNTED (C) - (C) B4.2 - PARTITION-MOUNTED (O) - (C) B4.3 - PARTITION-MOUNTED (O) - (V)	D1.1 - SURFACE (C) - (C) D1.2 - SURFACE (O) - (C) D1.3 - SURFACE (O) - (V) D2.1 - RECESSED (C) - (C) D2.2 - RECESSED (O) - (C) D2.3 - RECESSED (O) - (V) D3.1 - SEMI-RECESSED (C) - (C) D3.2 - SEMI-RECESSED (O) - (C) D3.3 - SEMI-RECESSED (O) - (V) D4.1 - UNDER-COUNTER (C) - (C) D4.2 - UNDER-COUNTER (O) - (C) D4.3 - UNDER-COUNTER (O) - (V)	E1.1 - SURFACE (C) - (C) E1.2 - SURFACE (O) - (C) E1.3 - SURFACE (O) - (V) E2.1 - RECESSED (C) - (C) E2.2 - RECESSED (O) - (C) E2.3 - RECESSED (O) - (V) E3.1 - PARTITION-MOUNTED (C) - (C) E3.2 - PARTITION-MOUNTED (O) - (C) E3.3 - PARTITION-MOUNTED (O) - (V)				
TOILET ACCESSORY ITEM	<b>ITEM [C] - GRAB BARS</b> 	<b>ITEM [J] - SOAP DISPENSER</b> 	<b>ITEM [M] - CHANGING STATION</b> 	<b>ITEM [P] - MIRROR</b> 	<b>ITEM [R] - ROBE HOOK</b> 			
FINISH FLOOR								
TYPES:	[1] HORIZONTAL - 18 INCHES [2] HORIZONTAL - 24 INCHES [3] HORIZONTAL - 30 INCHES [4] HORIZONTAL - 36 INCHES	[5] HORIZONTAL - 42 INCHES [6] VERTICAL - 18 INCHES [7] L-SHAPED, HORIZONTAL - 42"x54" [8] L-SHAPED, HORIZONTAL - 16"x30"	[1] SURFACE - MANUAL [2] SURFACE - AUTOMATIC [3] RECESSED - MANUAL	[4] COUNTER - MANUAL [5] COUNTER - AUTOMATIC	[1] SURFACE - HDPE [2] SURFACE - STAINLESS STEEL [3] RECESSED - HDPE [4] RECESSED - STAINLESS STEEL	[1] STAINLESS STEEL FRAME (S.S.F.) [2] S.S.F. W/ SHELF [3] TILT S.S.F.	[4] SELF-ILLUMINATED [5] DECORATIVE [1] 24 x 36 INCHES [2] 24 x 72 INCHES [3] ___ x ___ INCHES (OTHER)	[1] SINGLE [2] DOUBLE
DRAWING DESIGNATION	G1 - HORIZONTAL - 18 INCHES G2 - HORIZONTAL - 24 INCHES G3 - HORIZONTAL - 30 INCHES G4 - HORIZONTAL - 36 INCHES G5 - HORIZONTAL - 42 INCHES G6 - VERTICAL - 18 INCHES G7 - L-SHAPED, HORIZONTAL - 42"x54" G8 - L-SHAPED, HORIZONTAL - 16"x30"	J1.1 - SURFACE - MANUAL (C) - (C) J1.2 - SURFACE - MANUAL (O) - (C) J1.3 - SURFACE - MANUAL (O) - (V) J2.1 - SURFACE - AUTOMATIC (C) - (C) J2.2 - SURFACE - AUTOMATIC (O) - (C) J2.3 - SURFACE - AUTOMATIC (O) - (V) J3.1 - RECESSED - MANUAL (C) - (C) J3.2 - RECESSED - MANUAL (O) - (C) J3.3 - RECESSED - MANUAL (O) - (V)	M1 - SURFACE - HDPE M2 - SURFACE - STAINLESS STEEL M3 - RECESSED - HDPE M4 - RECESSED - STAINLESS STEEL	P1.1 - STAINLESS STEEL FRAME P1.2 - STAINLESS STEEL FRAME P2.1 - STAINLESS STEEL FRAME W/ SHELF P3.1 - TILT STAINLESS STEEL FRAME	R1 - SINGLE R2 - DOUBLE			



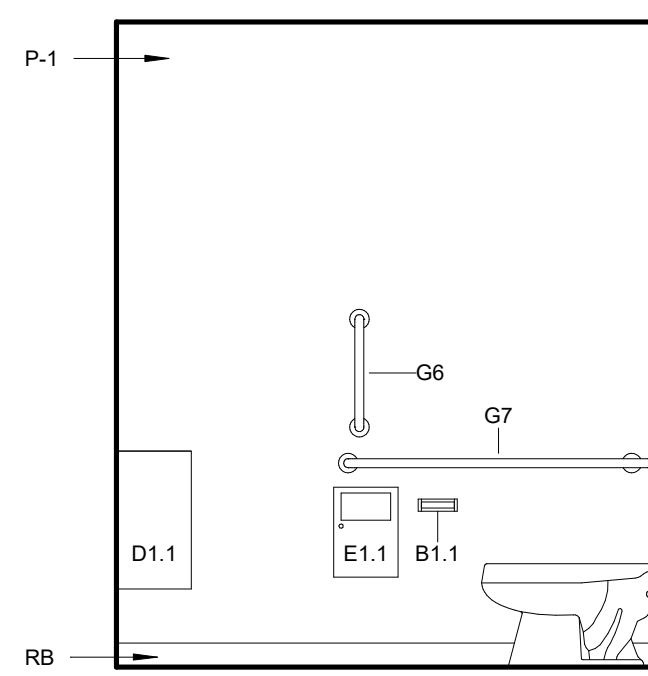
11 TOILET ELEVATION  
3/8" = 1'-0"



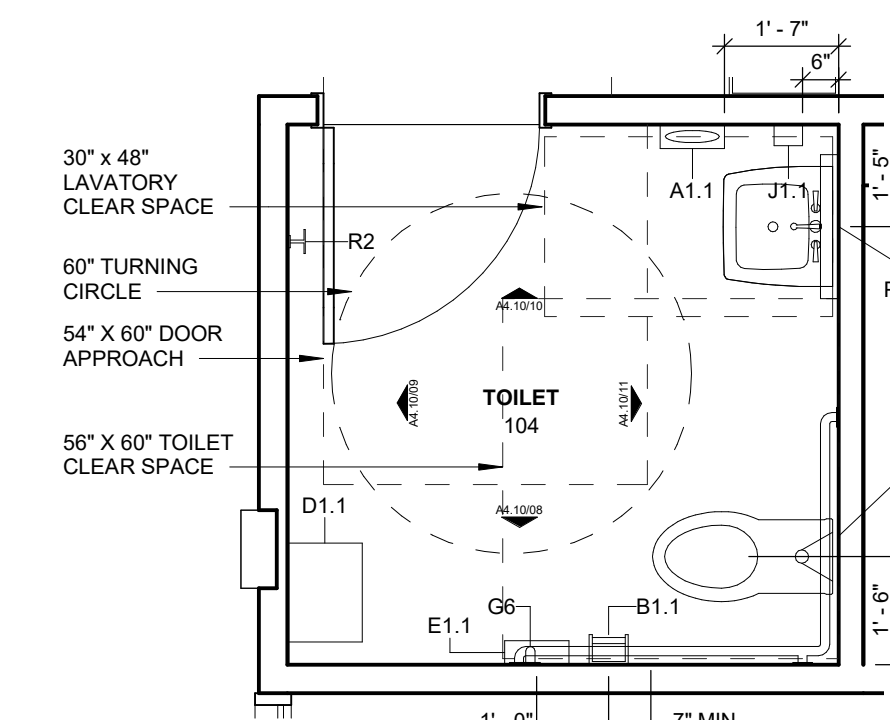
10 TOILET ELEVATION  
3/8" = 1'-0"



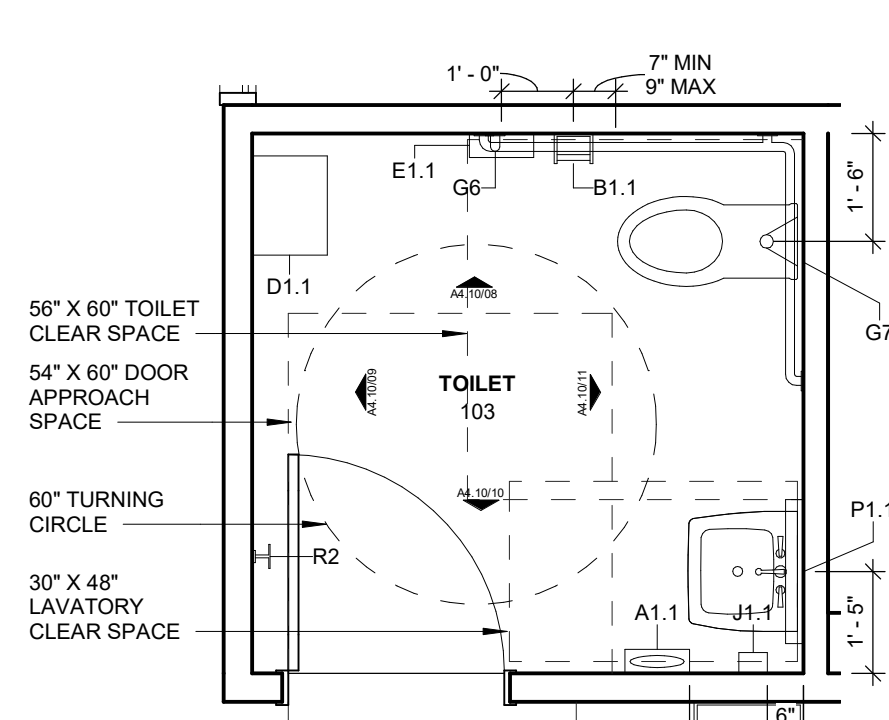
09 TOILET ELEVATION  
3/8" = 1'-0"



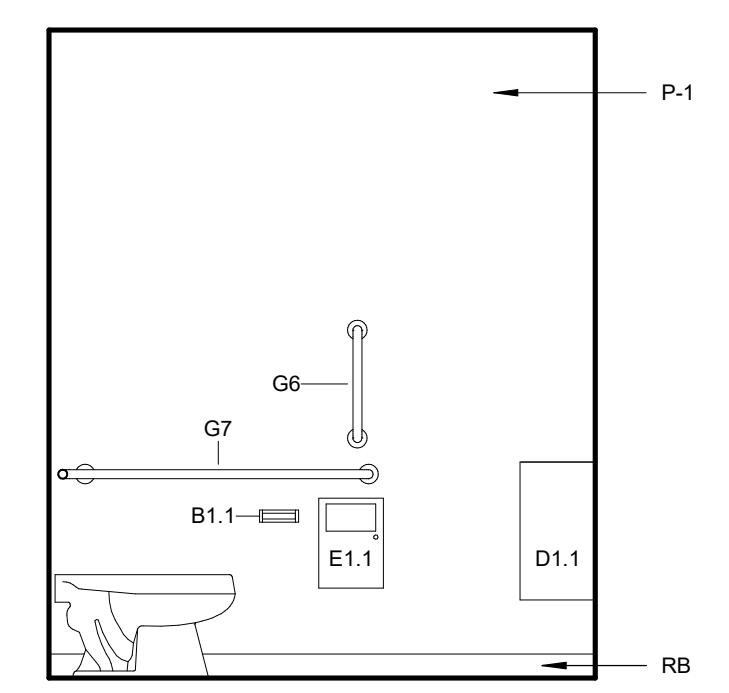
08 TOILET ELEVATION  
3/8" = 1'-0"



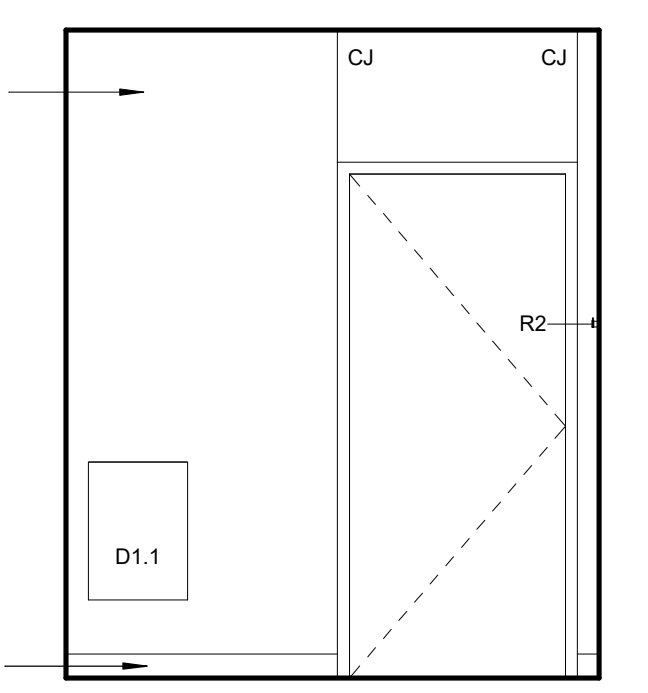
07 T3  
3/8" = 1'-0"



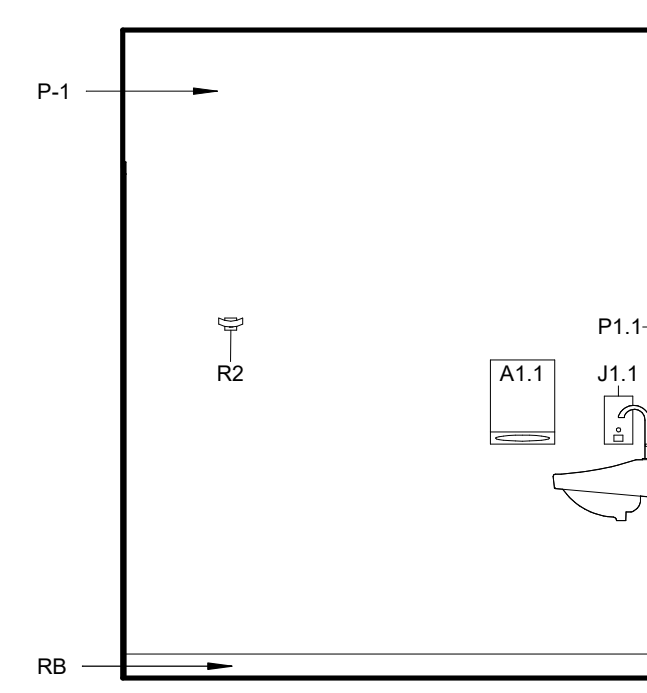
06 T2  
3/8" = 1'-0"



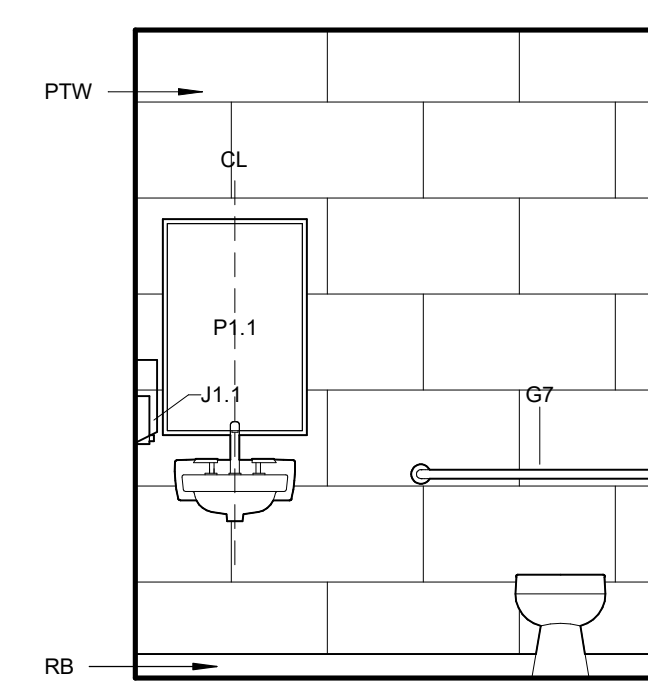
05 TOILET ELEVATION  
3/8" = 1'-0"



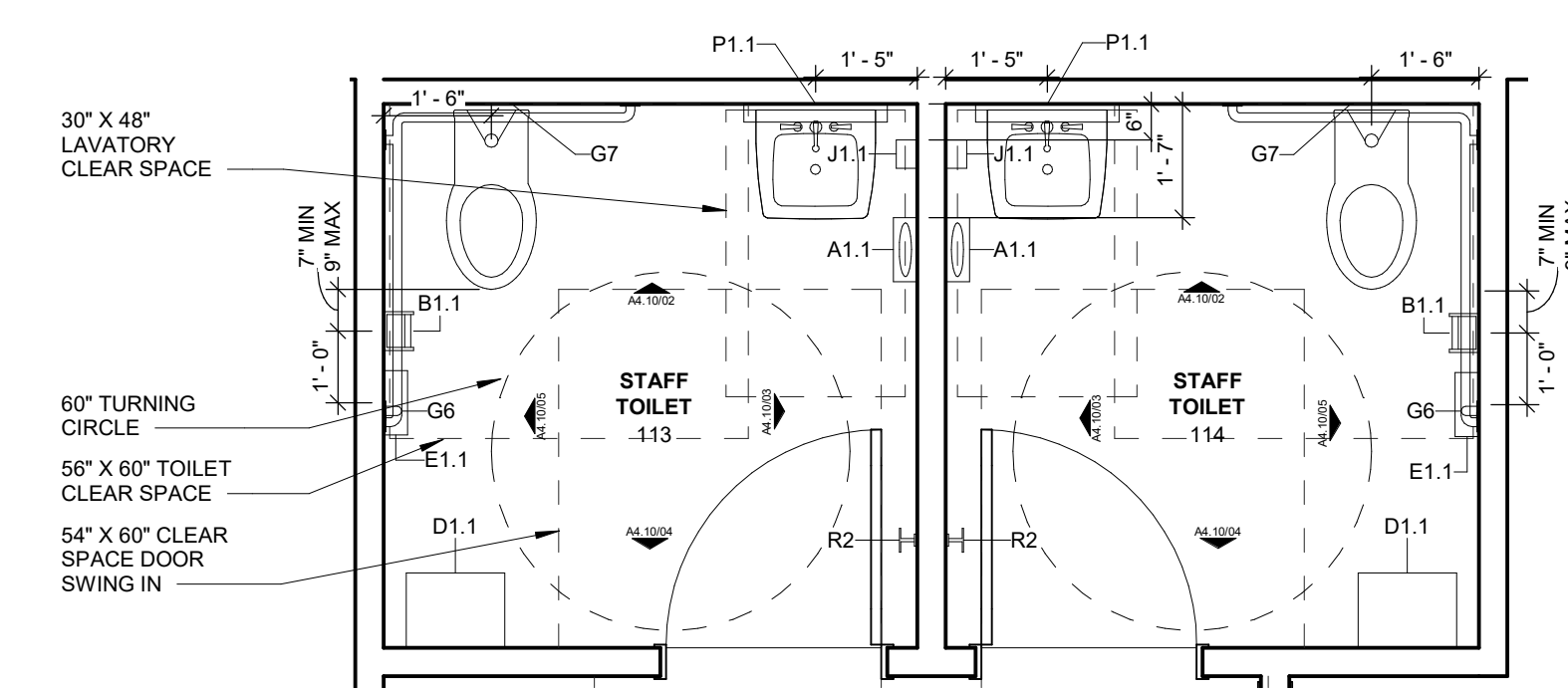
04 TOILET ELEVATION  
3/8" = 1'-0"



03 TOILET ELEVATION  
3/8" = 1'-0"



02 TOILET ELEVATION  
3/8" = 1'-0"



01 T1  
3/8" = 1'-0"









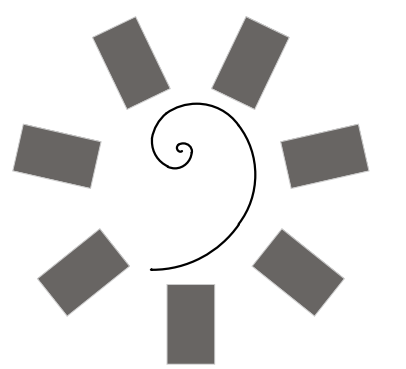








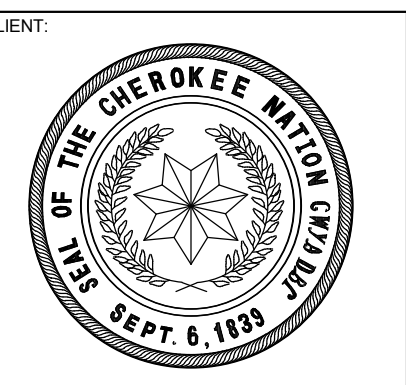




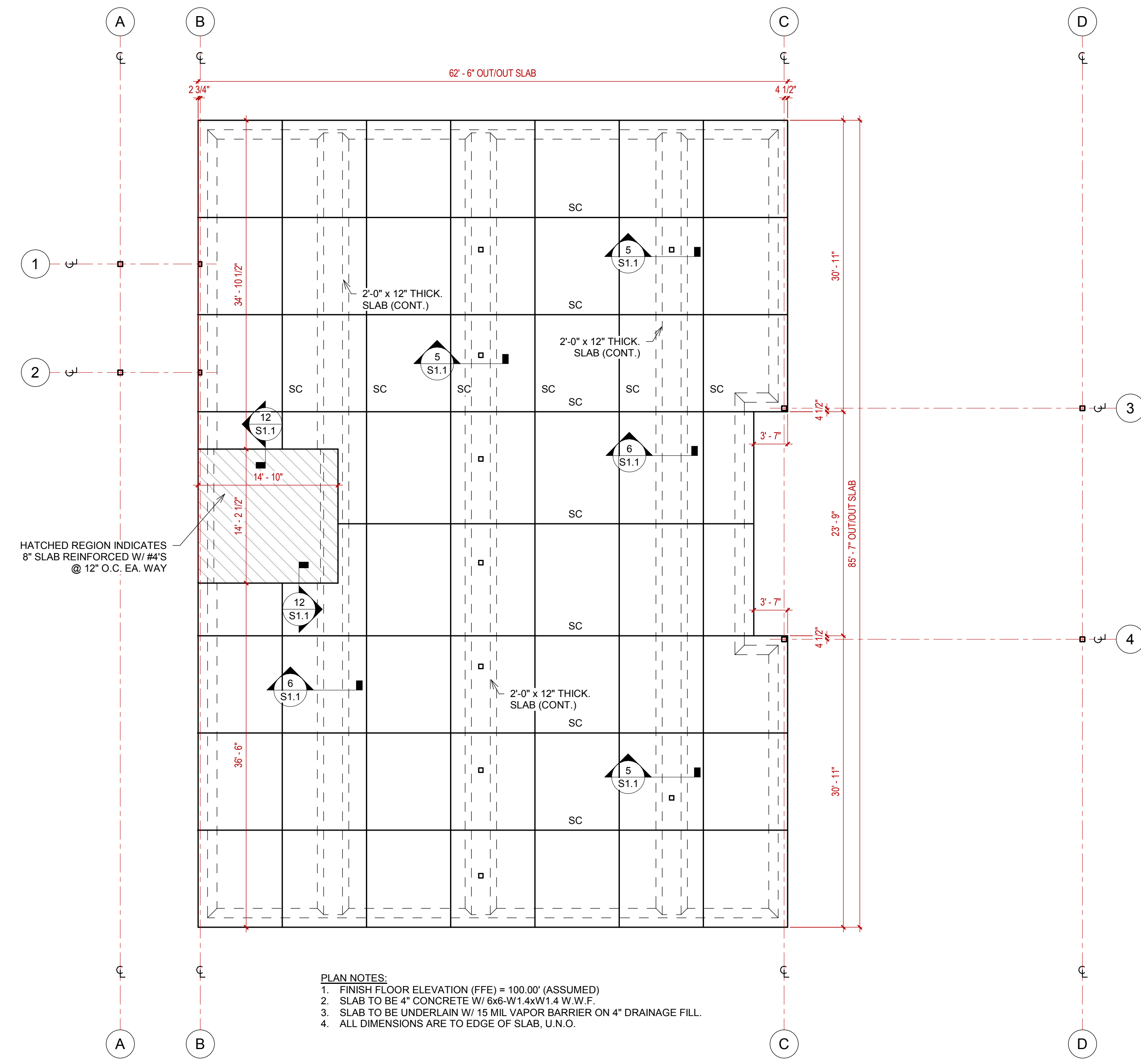
James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



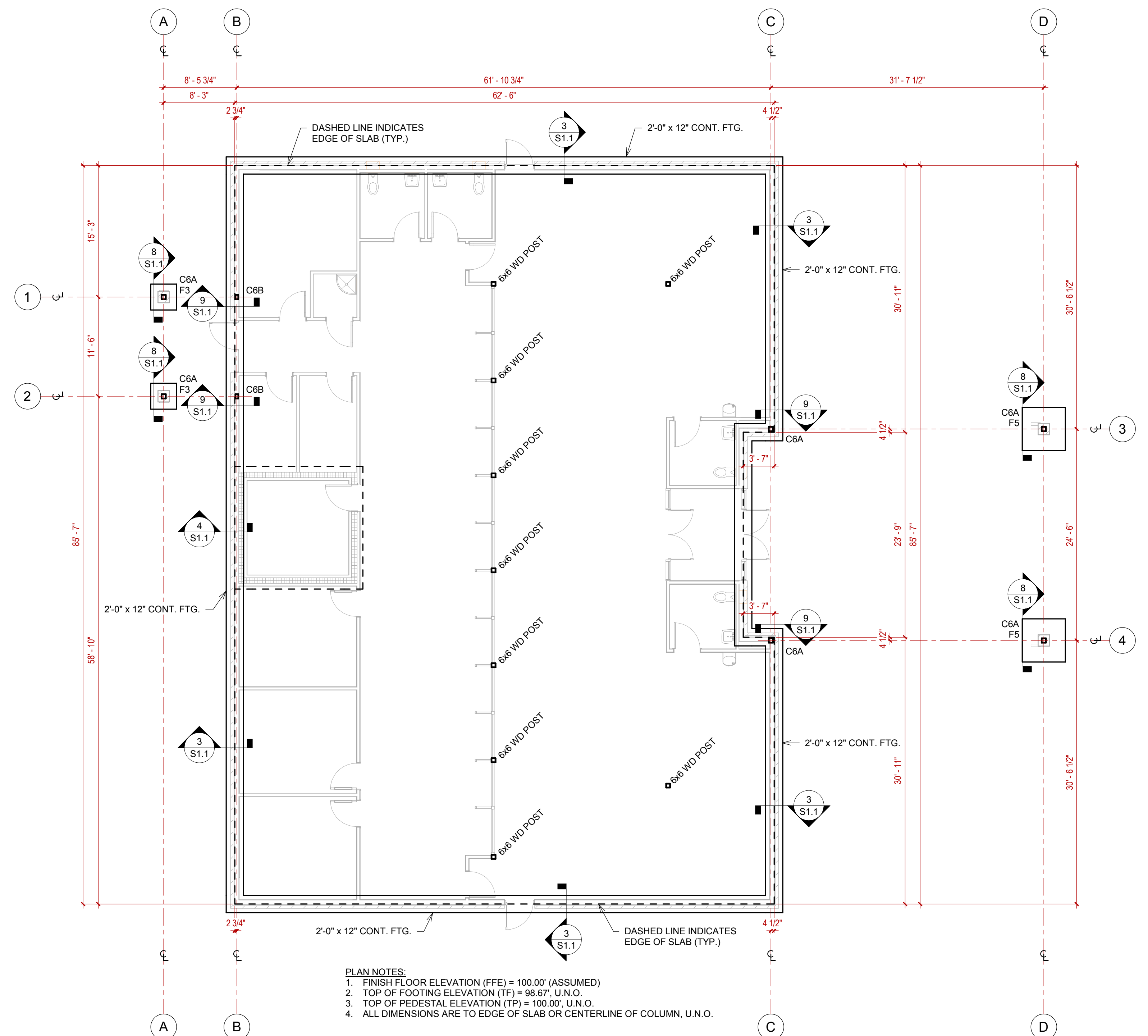
CONSULTANT LOGO  
Myers-Beatty  
Engineering, PLLC  
OK CA 4899  
4411 Fayetteville Road, Suite B  
Fayetteville, AR 72703  
PH: (479) 474-4414



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- PLAN NOTES:**
1. FINISH FLOOR ELEVATION (FFE) = 100.00' (ASSUMED)
  2. SLAB TO BE 4" CONCRETE W/ 6#6-W1.4XW1.4 W.W.F.
  3. SLAB TO BE UNDERLAIN W/ 15 MIL VAPOR BARRIER ON 4" DRAINAGE FILL.
  4. ALL DIMENSIONS ARE TO EDGE OF SLAB, U.N.O.



- PLAN NOTES:**
1. FINISH FLOOR ELEVATION (FFE) = 100.00' (ASSUMED)
  2. TOP OF FOOTING ELEVATION (TF) = 98.67' U.N.O.
  3. TOP OF PEDESTAL ELEVATION (TP) = 100.00' U.N.O.
  4. ALL DIMENSIONS ARE TO EDGE OF SLAB OR CENTERLINE OF COLUMN, U.N.O.

**STRUCTURAL STEEL COLUMN SCHEDULE**

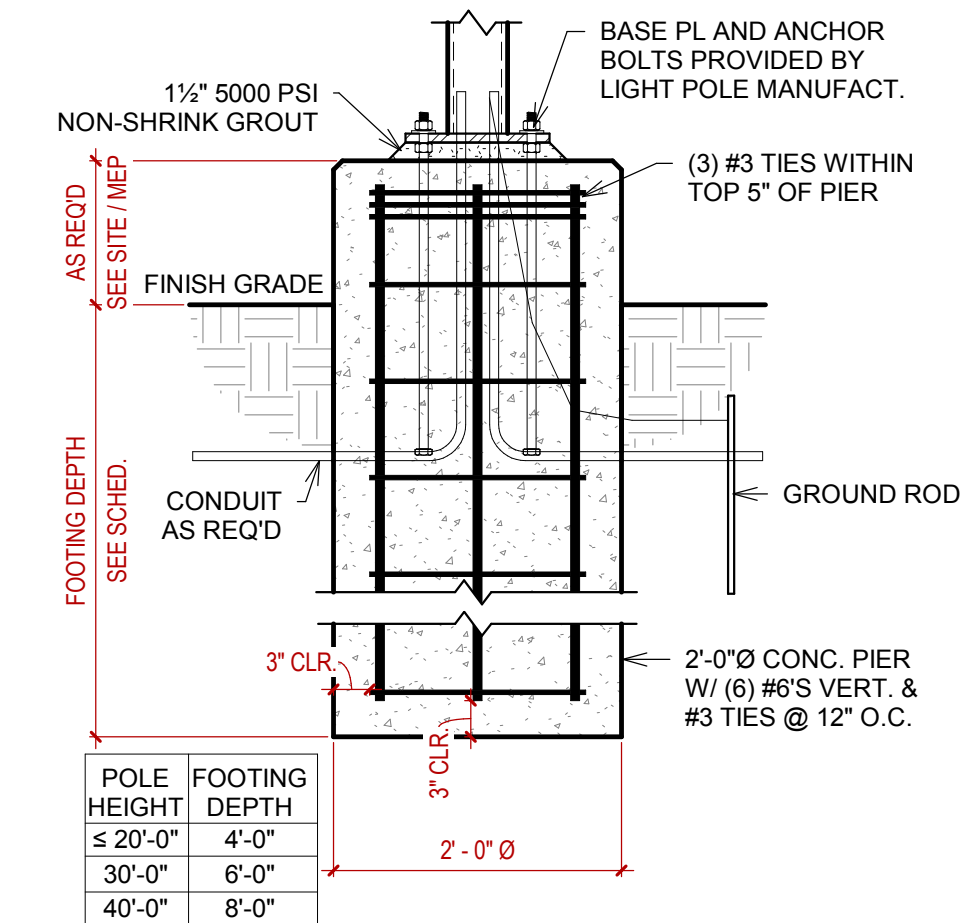
COL MARK	SIZE
C6A	HSS6X6X3/16
C6B	HSS6X4X3/16

**SPREAD FOOTING SCHEDULE**

FTG MARK	LENGTH	WIDTH	THICKNESS	REINFORCEMENT
F3	3'-0"	3'-0"	1'-0"	(4) #5'S EACH WAY
F5	5'-0"	5'-0"	1'-0"	(6) #5'S EACH WAY

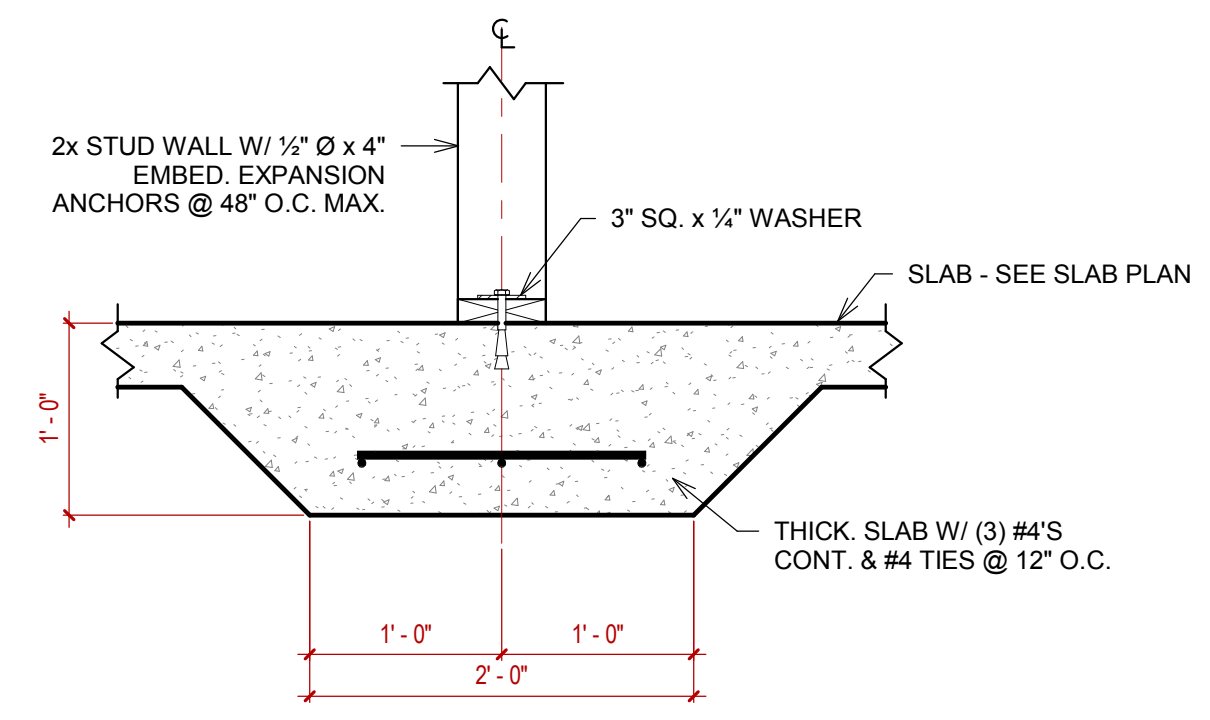
2 SLAB PLAN  
1/8" = 1'-0"

1 FOUNDATION PLAN  
1/8" = 1'-0"

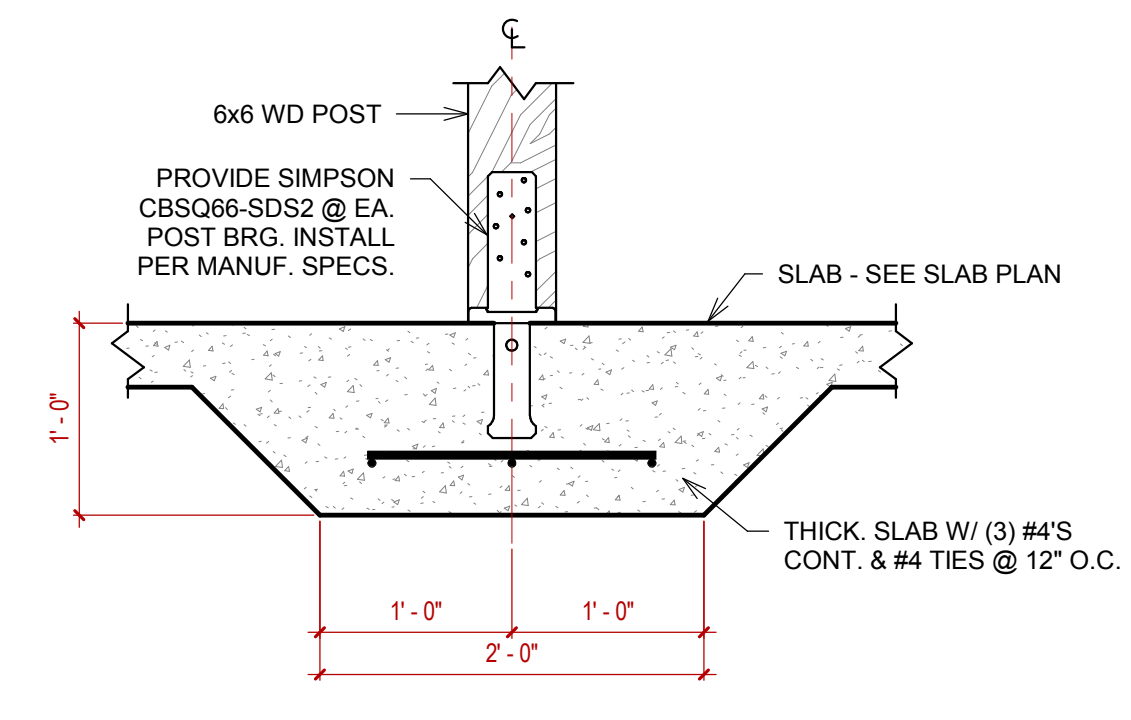


- CONCRETE MATERIAL:**
1. ALL CONCRETE SHALL BE NORMAL WEIGHT (DENSITY=145 PCF) AND SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.
  2. CONCRETE SHALL NOT HAVE A W/C RATIO GREATER THAN 0.45.
  3. CONCRETE SHALL BE 4-8% AIR ENTRAINED.
  4. THE SLUMP OF ALL CONCRETE SHALL NOT EXCEED 4".
  5. THE COARSE AGGREGATE SIZE SHALL BE #57 OR LARGER.

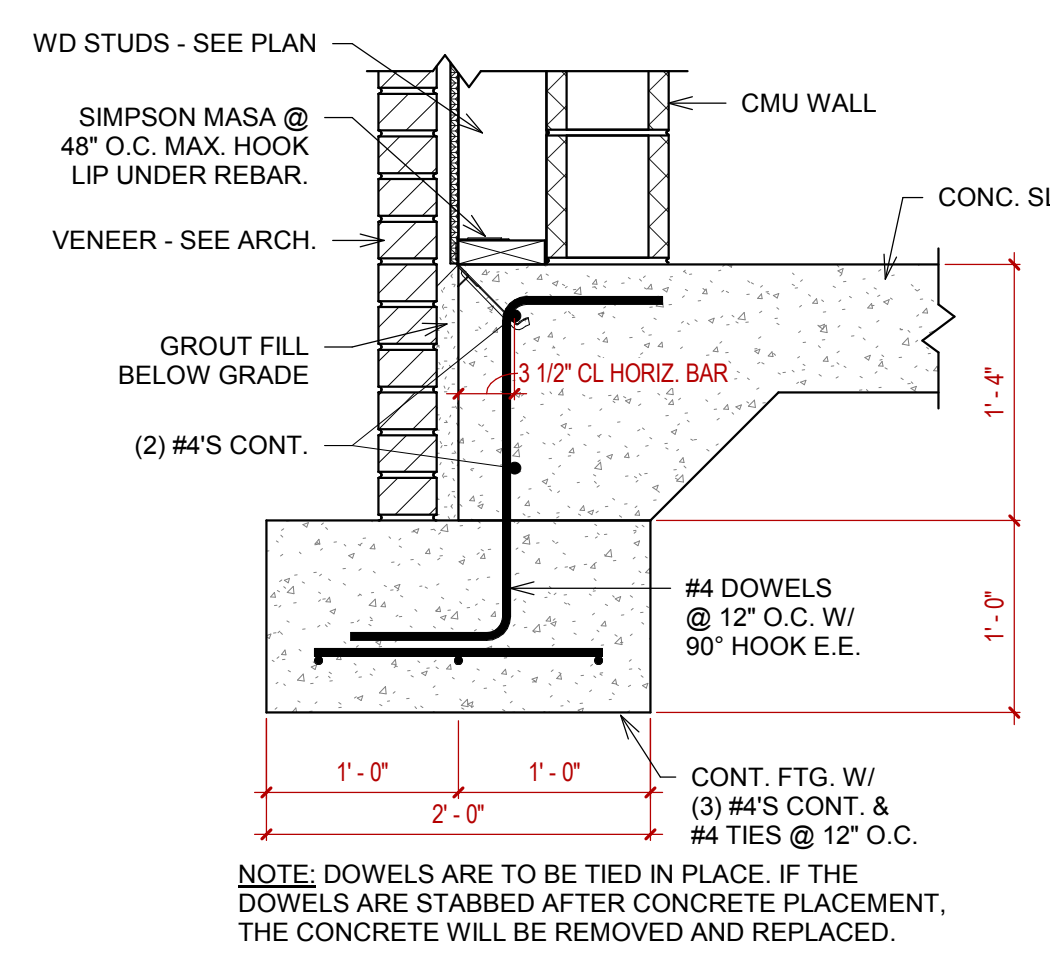
7 LIGHT POLE FOUNDATION  
3/4" = 1'-0"



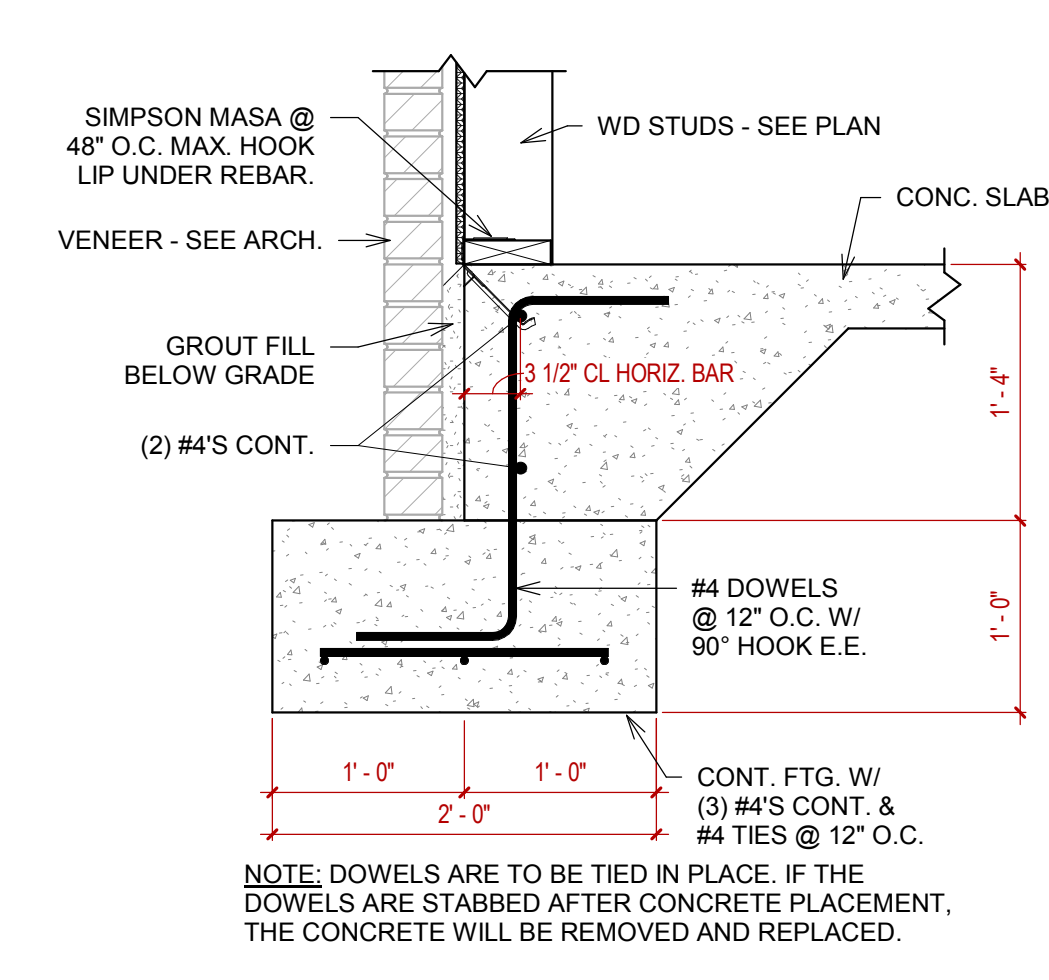
6 TYP. WALL BASE  
1" = 1'-0"



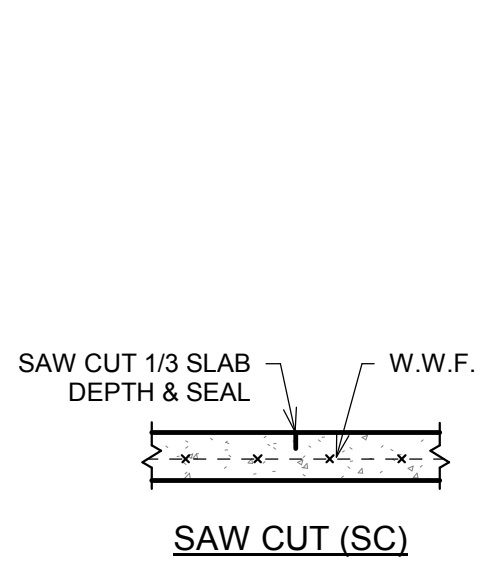
5 TYP. POST BASE  
1" = 1'-0"



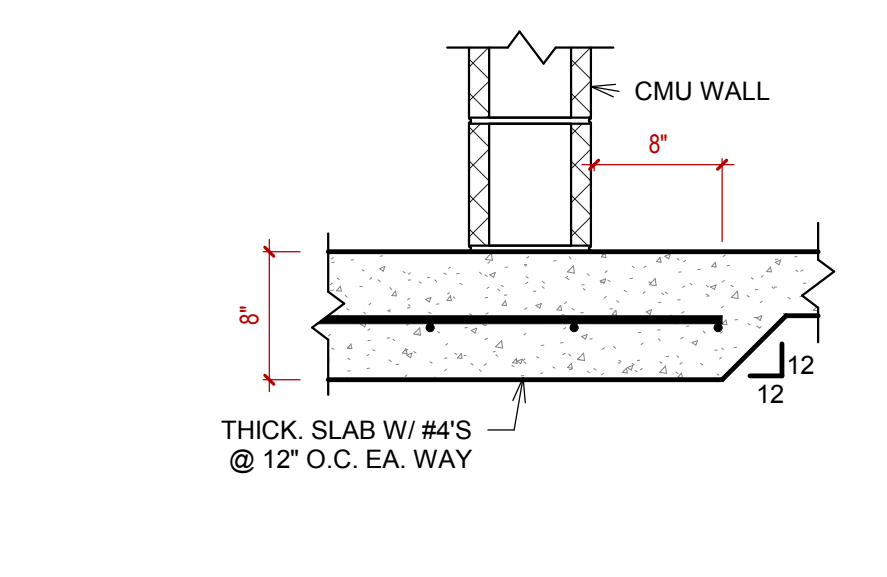
4 CONT. FTG. W/ WD STUDS  
1" = 1'-0"



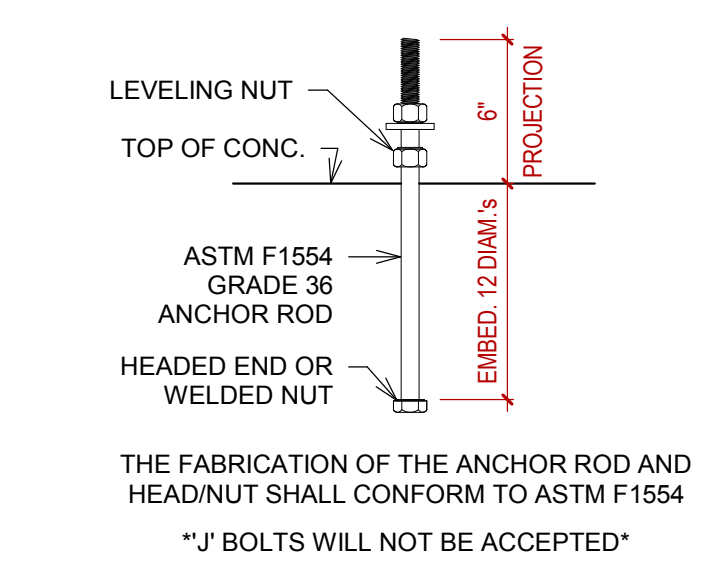
3 CONT. FTG. W/ WD STUDS  
1" = 1'-0"



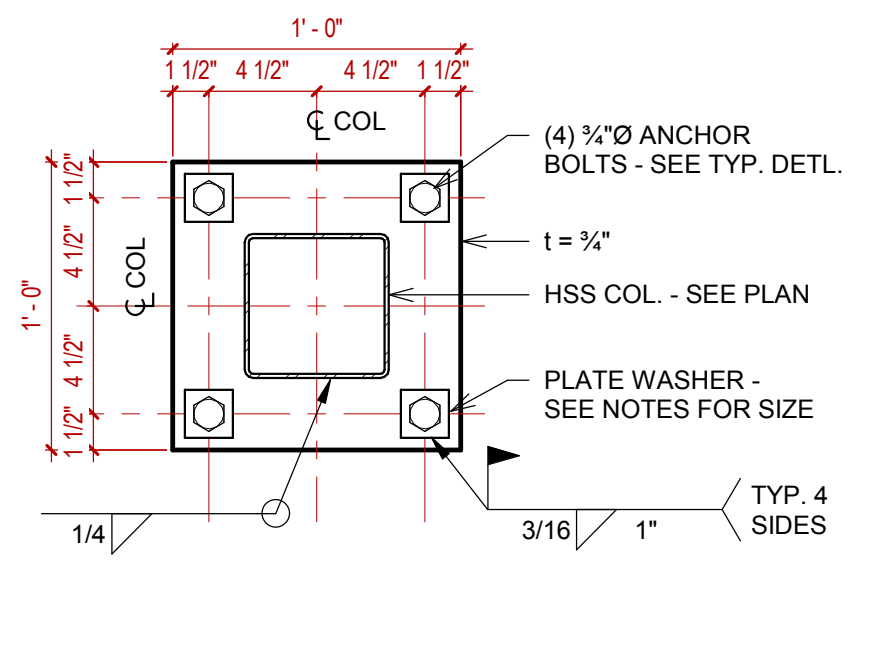
13 SLAB JOINT DETAILS  
3/4" = 1'-0"



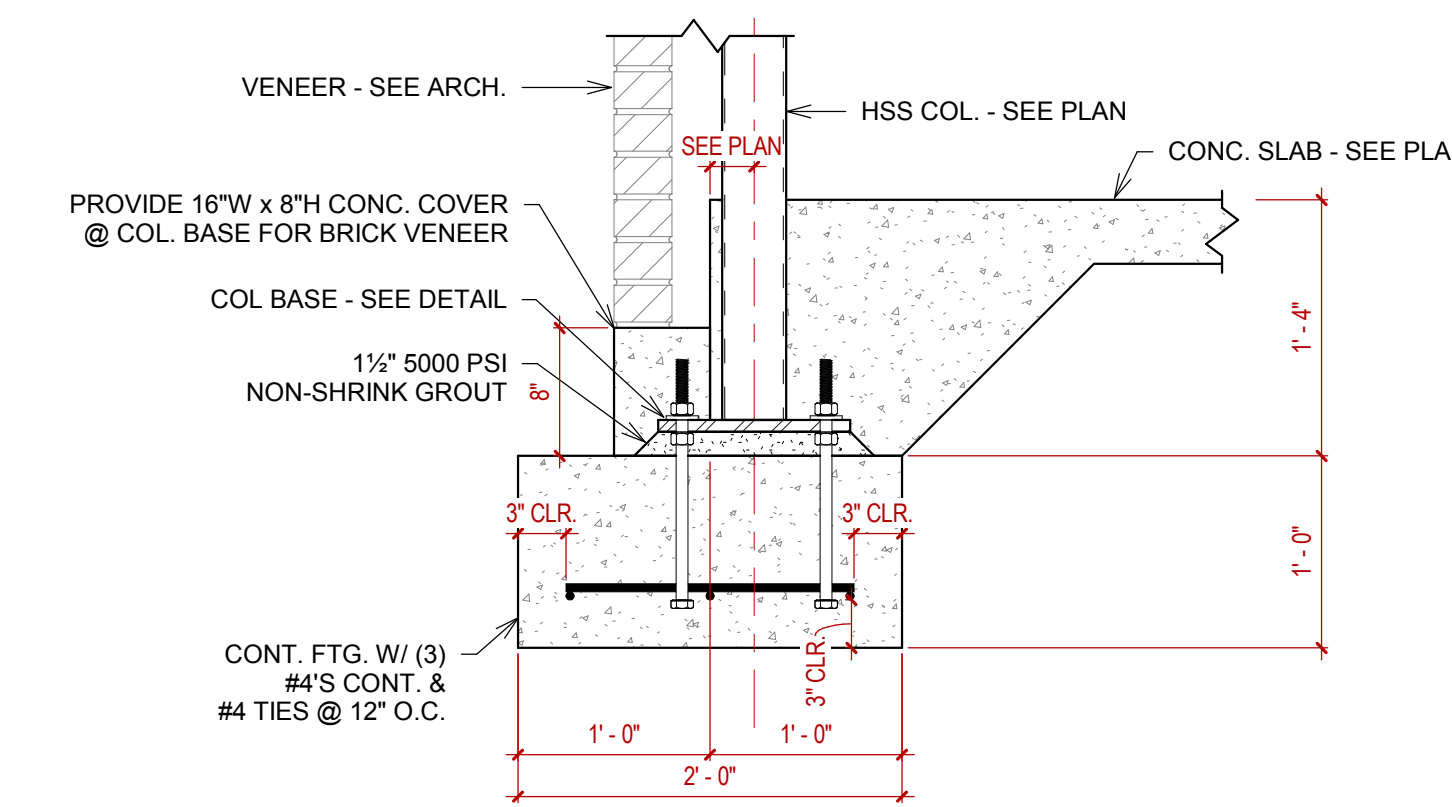
12 THICK SLAB @ CMU WALL  
1" = 1'-0"



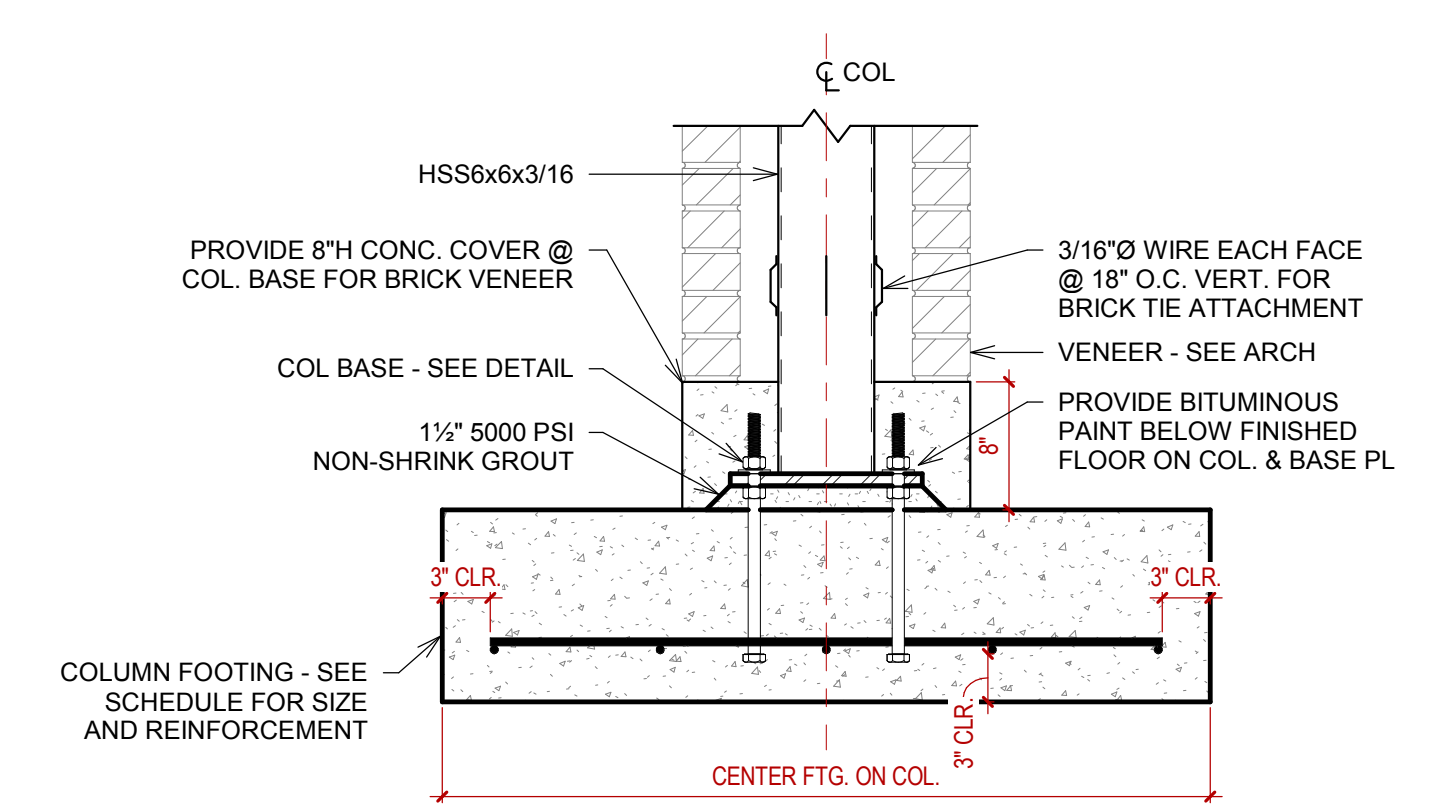
11 TYP. ANCHOR BOLT  
1 1/2" = 1'-0"



10 HSS COL. BASE PLATE  
1 1/2" = 1'-0"



9 TYP. CONT. FTG. @ HSS COL. BRG.  
1" = 1'-0"



8 TYP. COLUMN FTG.  
1" = 1'-0"

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

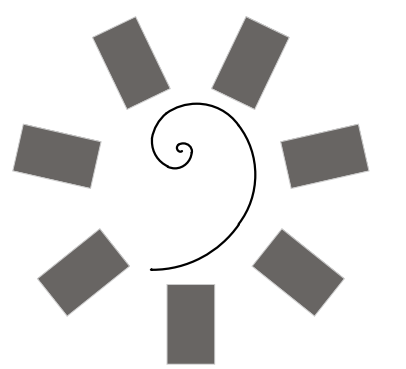
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DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER: S1.1

FOUNDATION AND SLAB PLAN

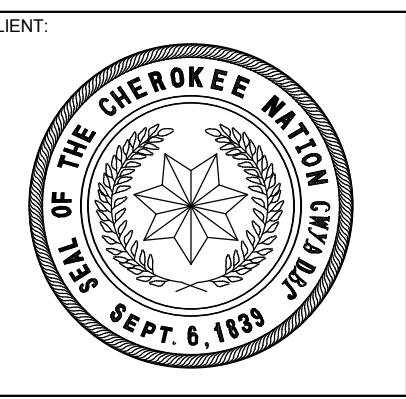




James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2460  
www.childersarchitect.com



CONSULTANT LOGO  
Myers-Beatty  
Engineering, PLLC  
OK CA 4899  
4411 Fayetteville Road, Suite B  
Fort Smith, AR 72901  
PH: (479) 474-4414



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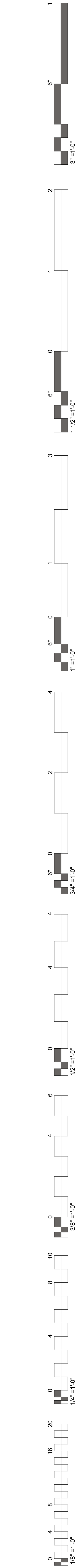
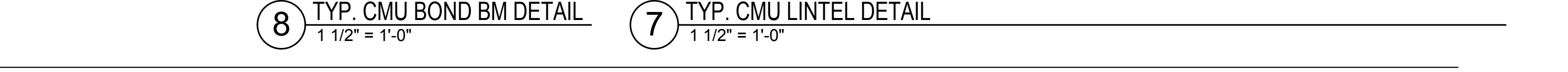
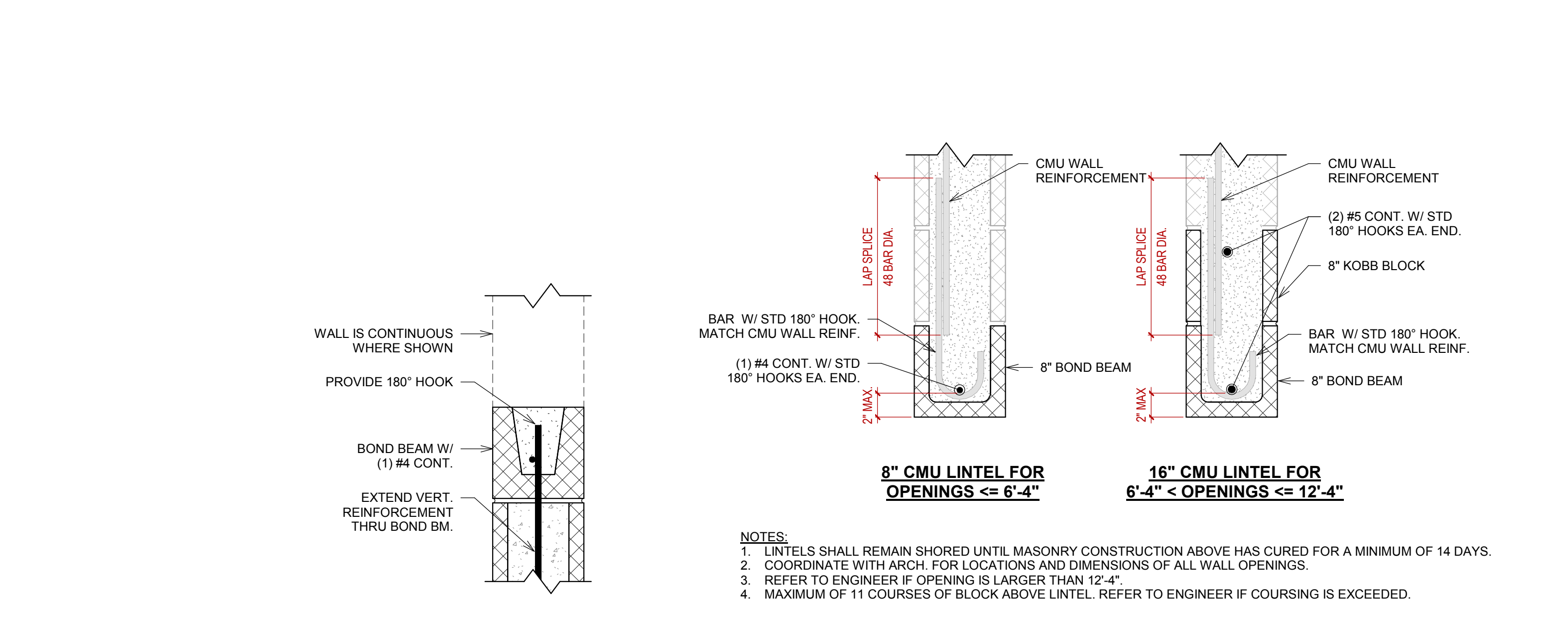
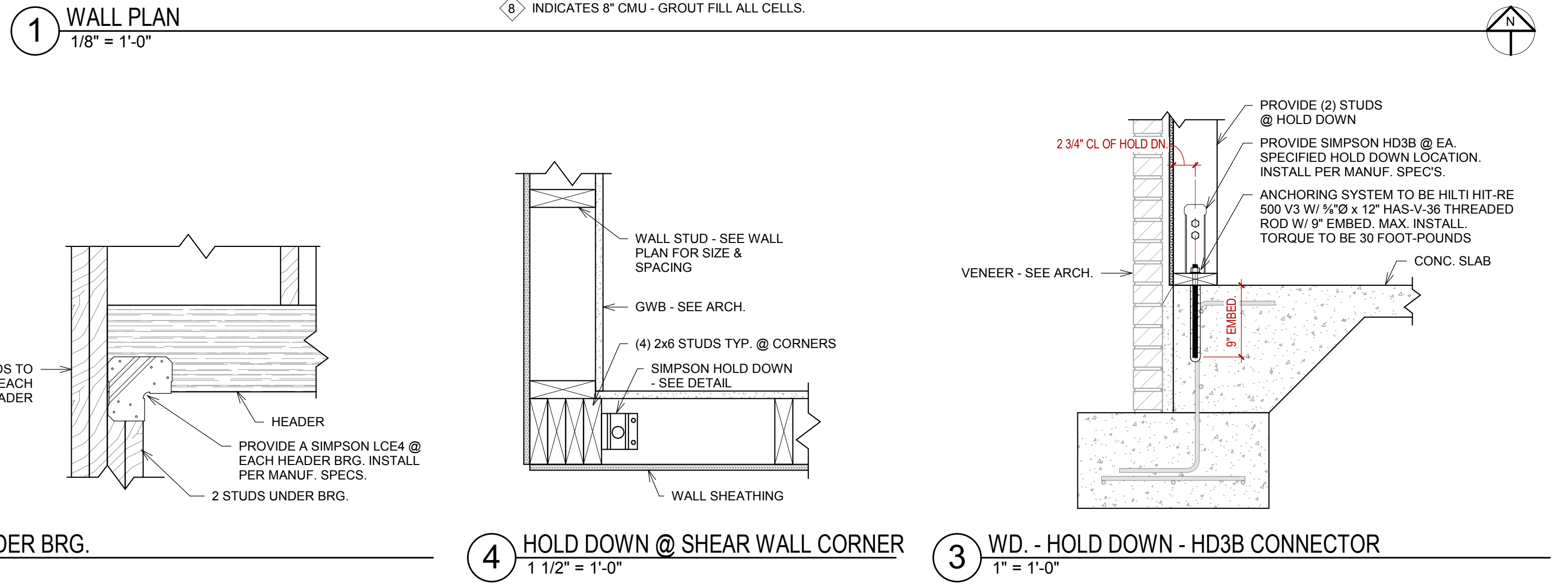
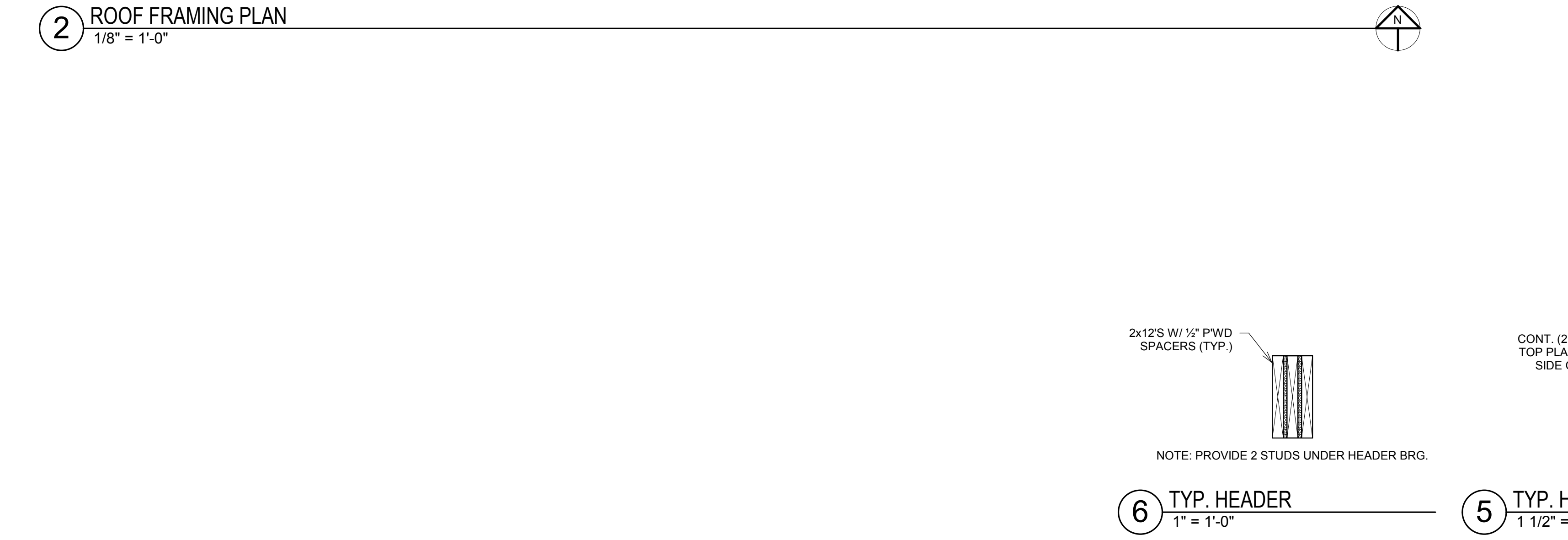
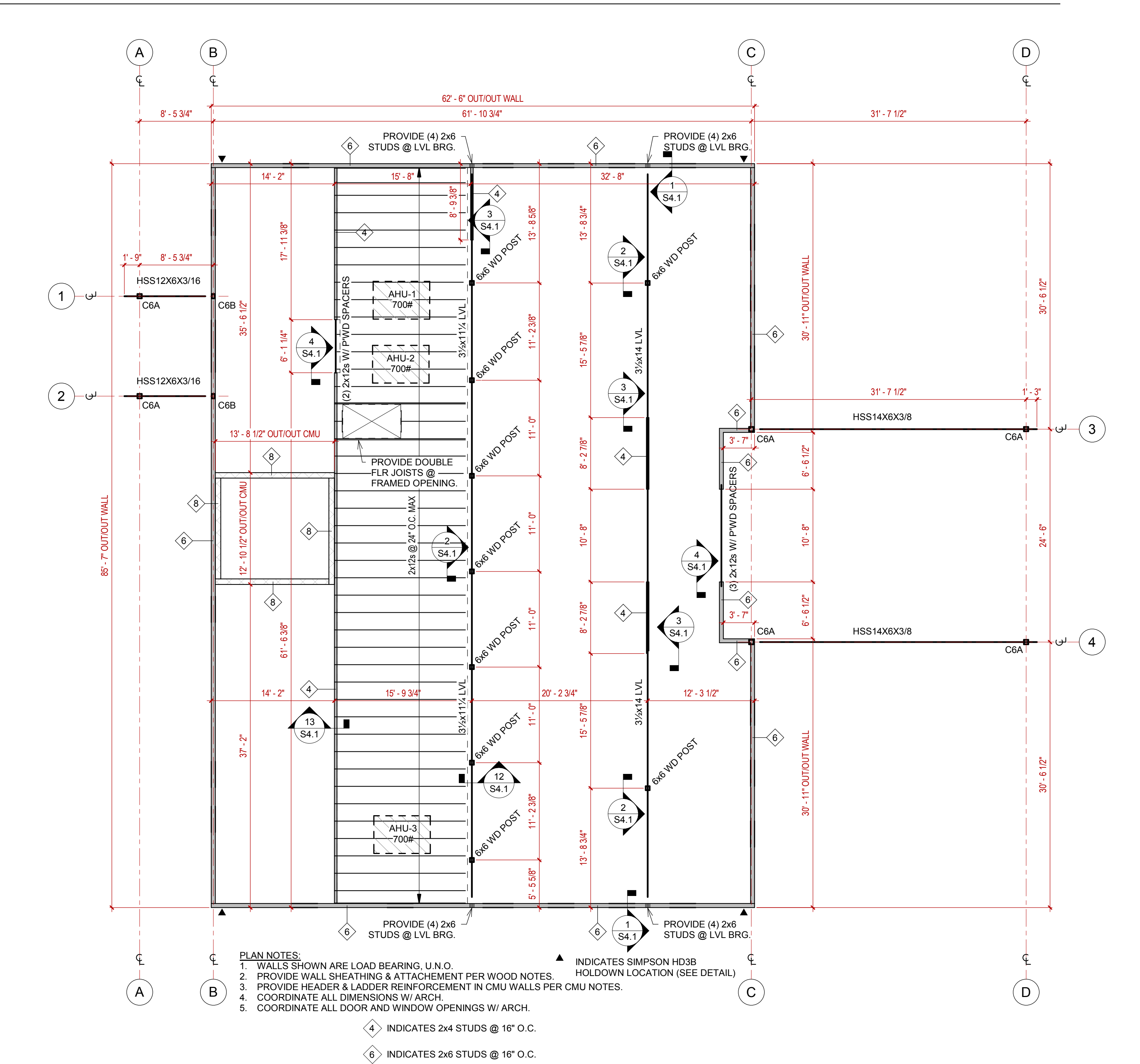
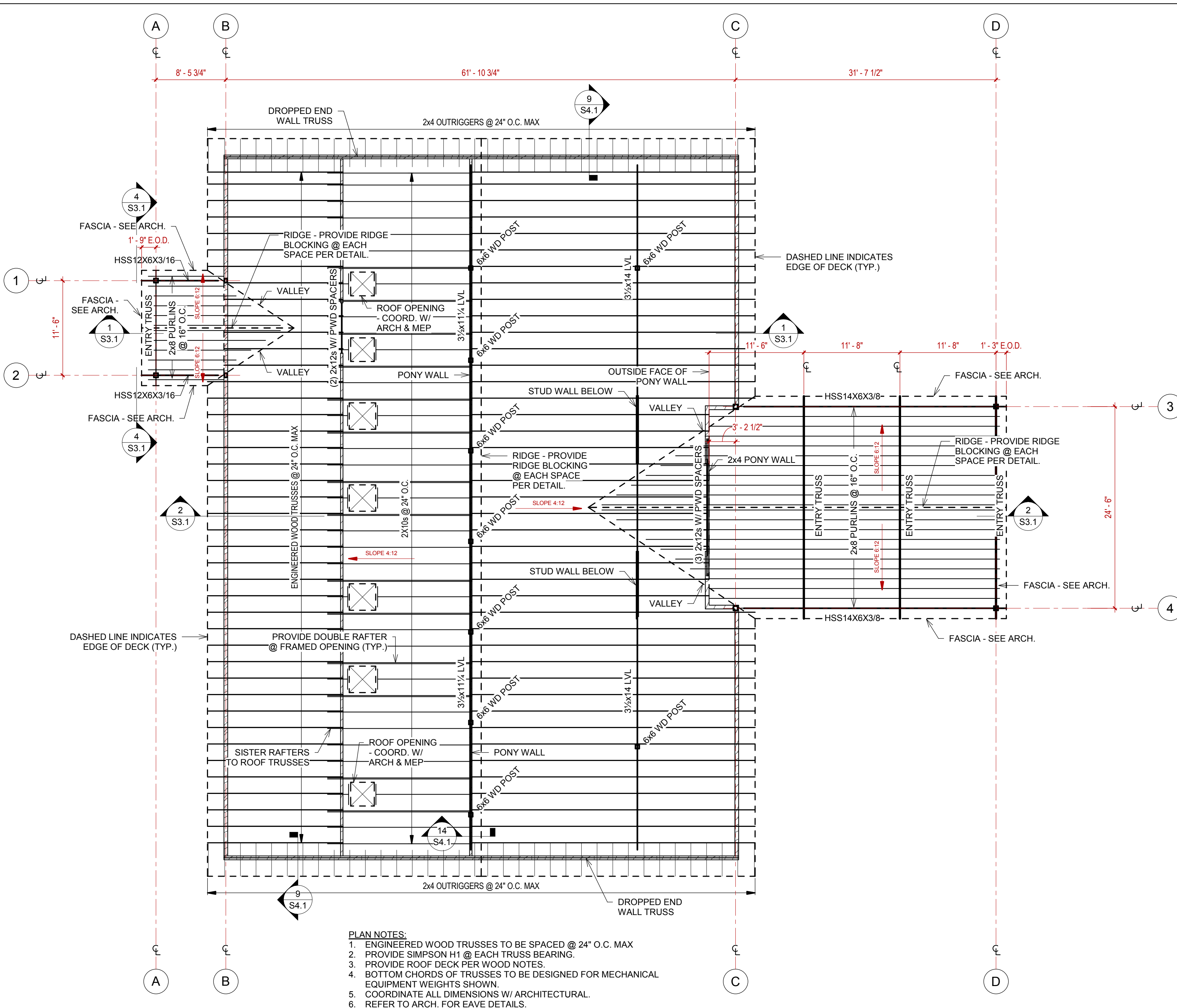
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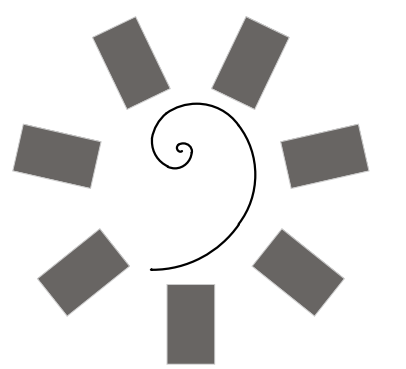
DATE: 07-31-2020  
JOB NUMBER: 18-01.10

SHEET NUMBER: S2.1

WALL AND ROOF FRAMING PLAN



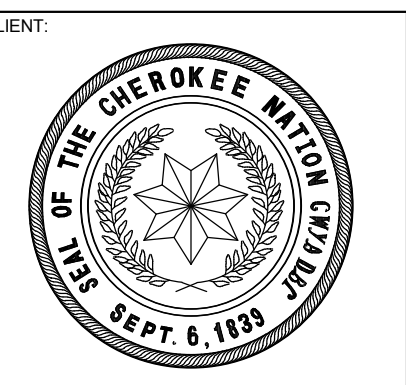




James R. Childers  
Architect, Inc.  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



CONSULTANT LOGO  
Myers-Beatty  
Engineering, PLLC  
OK CA 4899  
4411 Fayetteville Road, Suite B  
Fort Smith, AR 72903  
Tel: (479) 474-4412



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**CHEROKEE NATION TAG OFFICE**  
CATOOSA, OKLAHOMA

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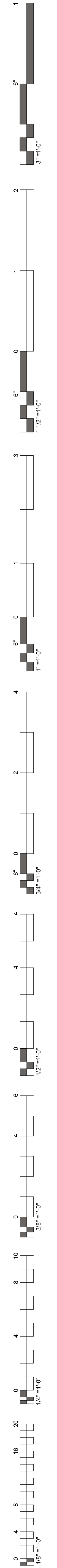
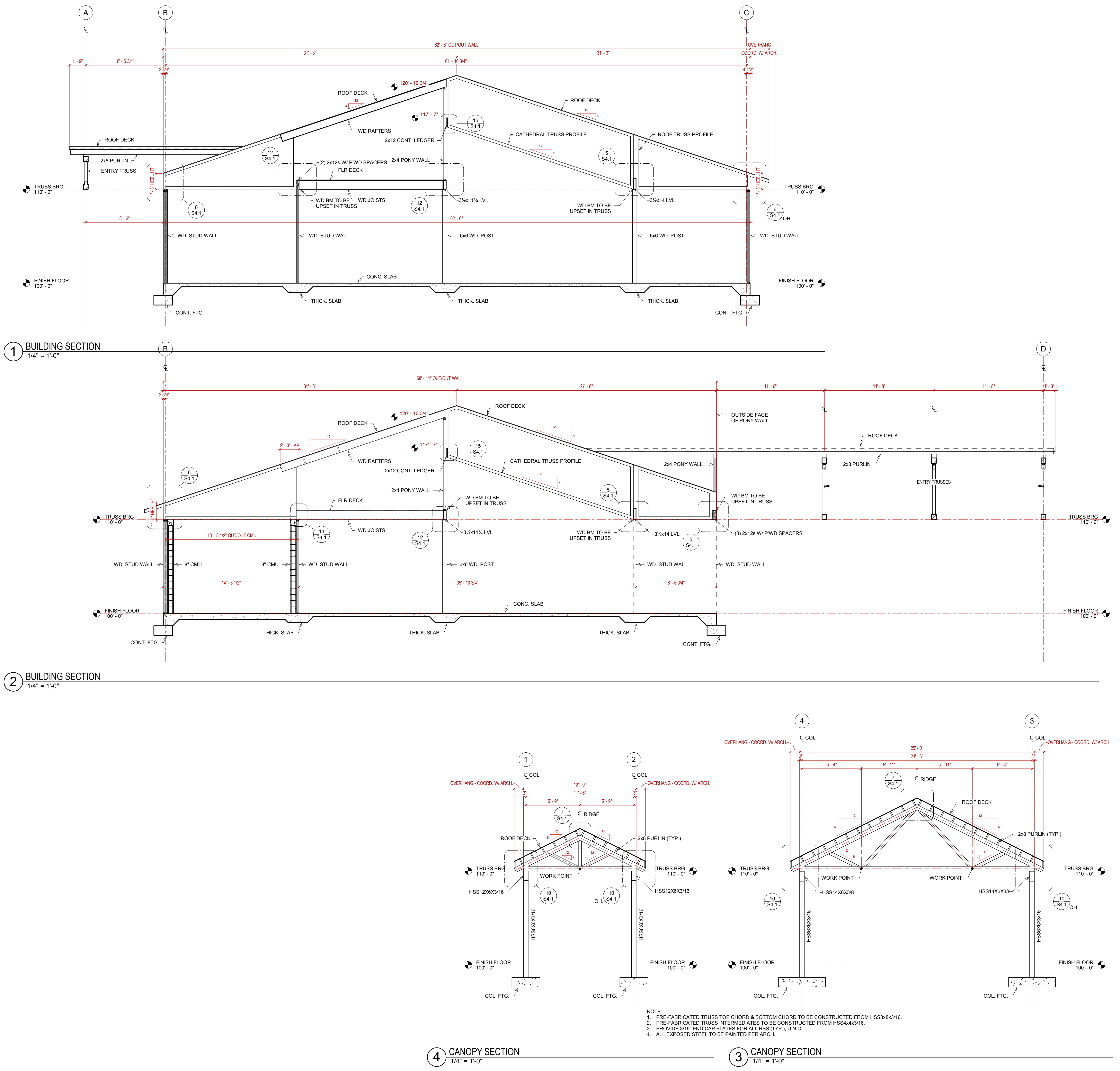
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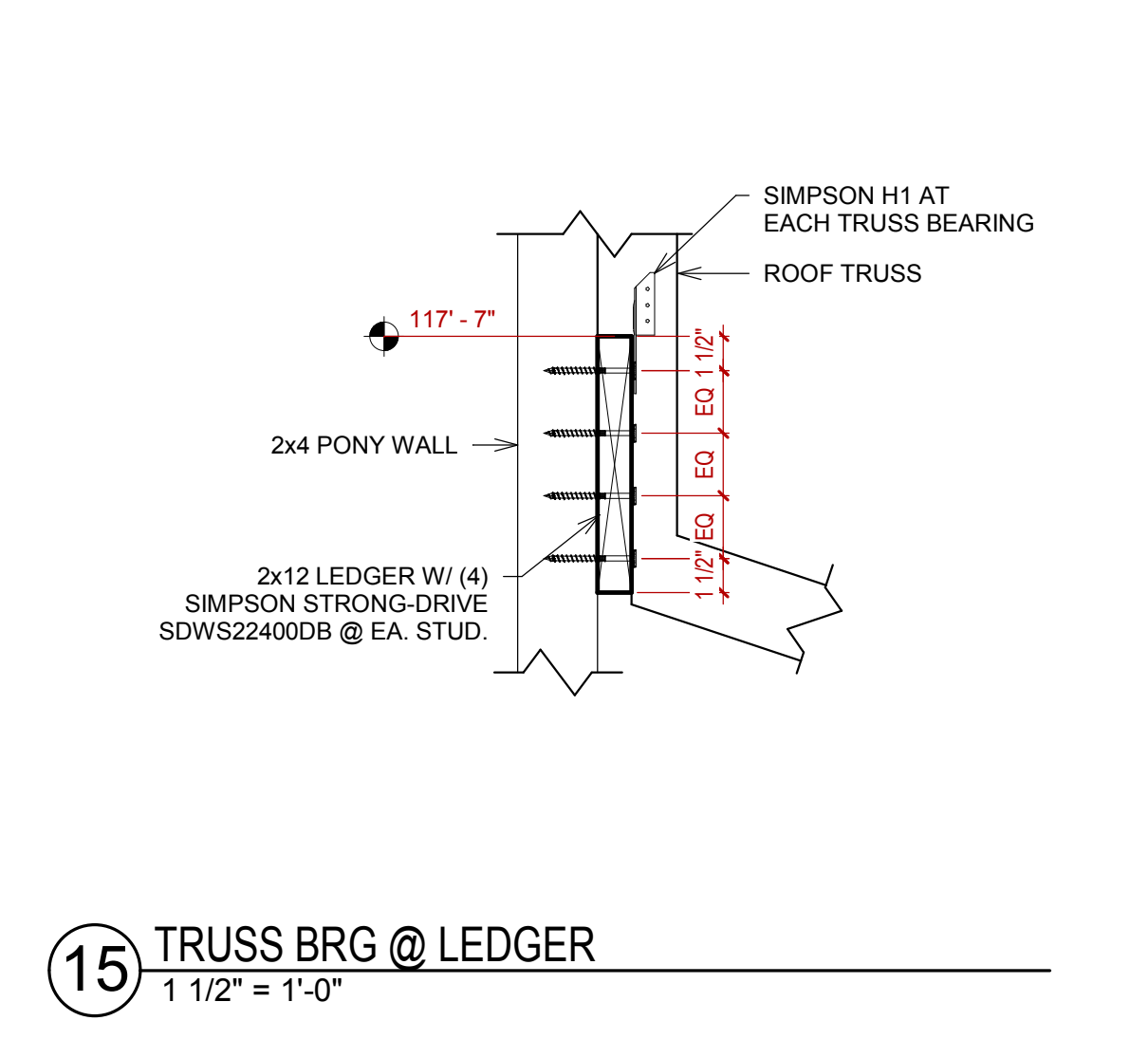
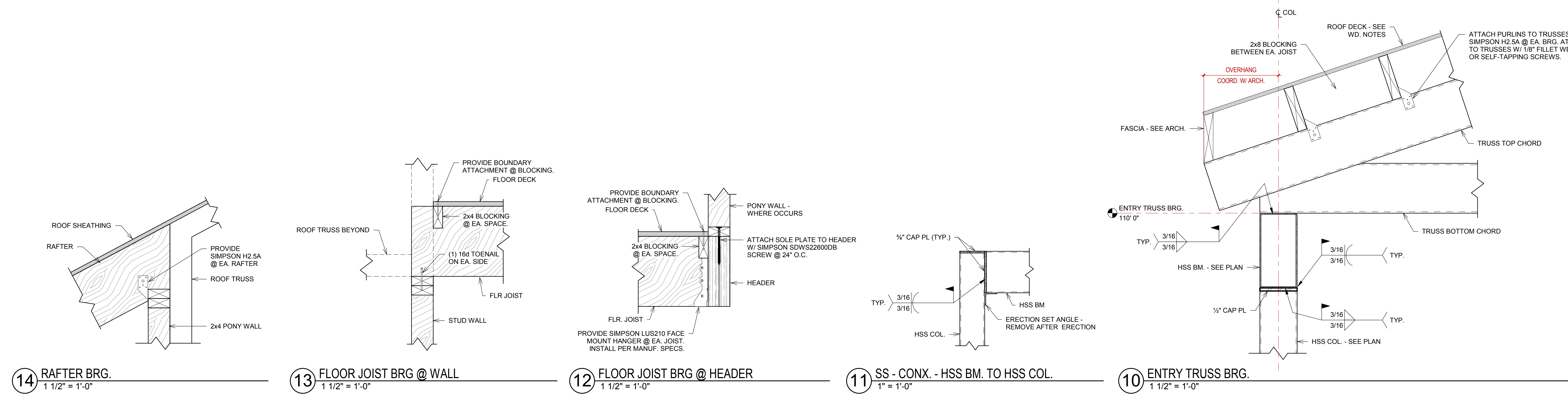
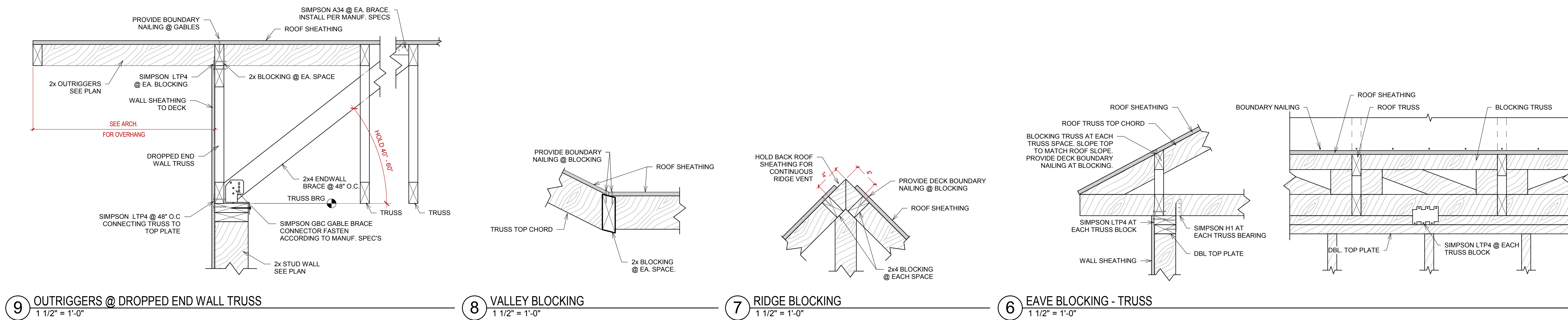
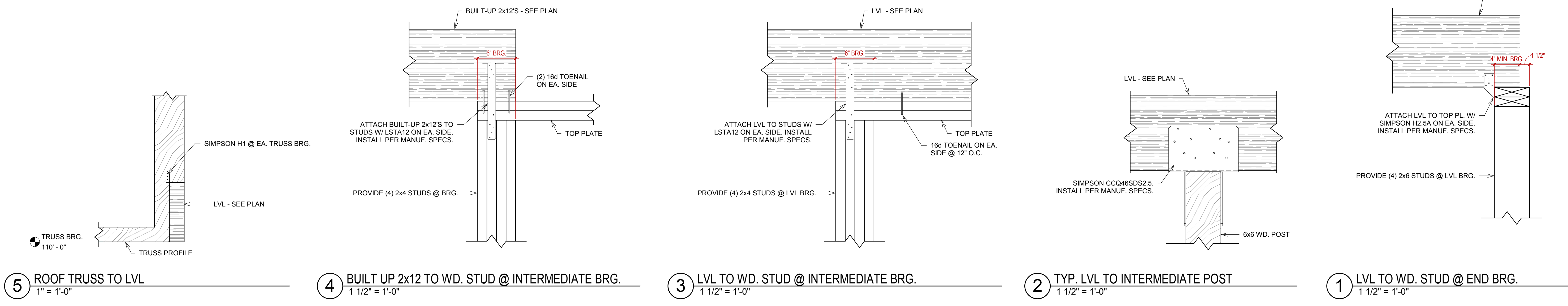
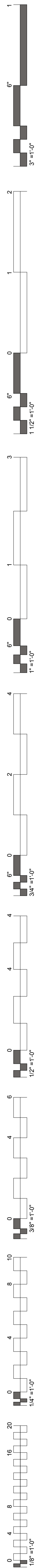
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JOB NUMBER: 18-01.10  
SHEET NUMBER:

S3.1

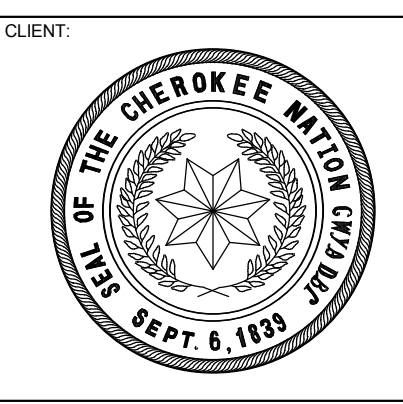
BUILDING SECTIONS







CONSULTANT LOGO  
**Myers-Beatty Engineering, PLLC**  
OK CA 4899  
4411 Fayetteville Road, Suite B  
Fort Smith, AR 72901  
Tel: (479) 474-4412



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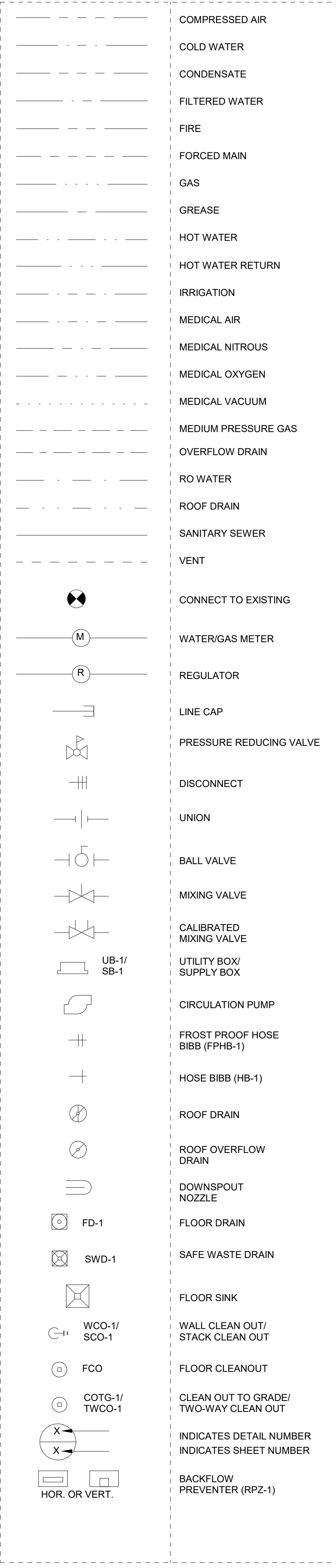
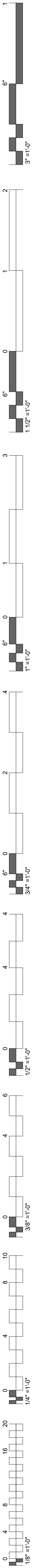
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DATE: 07-31-2020  
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SHEET NUMBER:  
**S4.1**

STRUCTURAL DETAILS





- ### GENERAL PLUMBING NOTES
- THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE INTERNATIONAL PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
  - THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATICAL. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH EXISTING CONDITIONS AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
  - THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, INSPECTIONS, TAP-ON FEES, ETC.
  - THE CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUTDOWN WITH THE OWNER 48 HOURS IN ADVANCE.
  - ALL DOMESTIC WATER PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, AND WITHIN WALLS UNLESS OTHERWISE NOTED. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT DISHWASHERS, WASHING MACHINES, SUPPLY BOXES, AND QUICK CLOSING VALVES NOT LISTED. INSTALL WHA-1 AS CLOSE TO QUICK CLOSING VALVE AS POSSIBLE PER MANUFACTURER'S RECOMMENDATIONS. ISOLATION VALVES SHALL BE INSTALLED ON ALL SUPPLY FIXTURE GROUPS AND HOT WATER BALANCING VALVES.
  - FROST PROOF HOSE BIBBS AND SUPPLY PIPING SHALL BE INSTALLED ON THE INSIDE OF THE INSULATION. SEAL SHEATHING PENETRATION TO PREVENT AIR FROM REACHING THE VALVE.
  - ALL SANITARY WASTE PIPING SHOWN IS BELOW SLAB, BELOW FLOOR, OR WITHIN WALLS UNLESS OTHERWISE NOTED. ALL SANITARY VENT PIPING SHOWN IS ABOVE CEILING, EXPOSED OVERHEAD, OR WITHIN WALLS UNLESS OTHERWISE NOTED.
  - FLOOR DRAIN CONNECTION SIZE TO BE THE SAME SIZE AS THE DRAIN LINE IT CONNECTS UNLESS NOTED OTHERWISE. IF SIZE IS NOT INDICATED ON DRAWINGS REFER TO PLUMBING ROUGH-IN SCHEDULE FOR PROPER SIZE.
  - FLUSH CONTROLS FOR HANDICAPPED WATER CLOSETS ARE TO BE MOUNTED TO THE OPEN SIDE OF THE TOILET AREAS.
  - CONTRACTOR SHALL COORDINATE AND PROVIDE ALL NECESSARY PIPING & PLUMBING FITTINGS, PIPING, MISCELLANEOUS ITEMS REQUIRED FOR A COMPLETE INSTALLATION OF ALL PLUMBING RELATED ITEMS.
  - THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL UNDER SLAB PIPING WITH EXISTING STRUCTURAL FOUNDATIONS. UNDERGROUND UTILITY LOCATIONS SHALL BE VERIFIED PRIOR TO ANY WORK BEING PERFORMED. CONTRACTOR SHALL REPAIR OR REPLACE ALL PIPING NOT IN PROPER WORKING ORDER OR DAMAGED DURING INSTALLATION OF THE NEW UNDERGROUND PIPING.
  - ALL PIPING PENETRATIONS THROUGH NEW, EXISTING WALL, OR FLOOR SHALL BE SEALED TO EQUAL THE RATING OF THE NEW, EXISTING WALL OR FLOOR.
  - THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY LOCAL CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
  - THE ENTIRE DOMESTIC WATER SYSTEM (EXISTING/NEW) SHALL BE DISINFECTED IN ACCORDANCE TO THE LOCAL CODE & HEALTH DEPARTMENT REQUIREMENTS.
  - DOMESTIC WATER AND SEWER LOCATED OUTSIDE OF FOOTING SHALL MAINTAIN A MINIMUM OF 10" SEPARATION UNLESS WRITTEN PERMISSION IS OBTAINED FROM LOCAL AUTHORITIES AND/OR PROPER CONTAMINATION PROVISIONS PER LOCAL CODE HAVE BEEN MET.
  - FINISHED FLOOR ELEVATION (IF F.E.) SHALL BE 0.00' FOR CALCULATION PURPOSES ONLY, UNLESS NOTED OTHERWISE.
  - THE BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER LOCAL CODE & PER AUTHORITY HAVING JURISDICTION REQUIREMENTS. NON-LEAD TYPE ONLY.
  - ALL VENT THRU ROOF (VTR) PENETRATIONS INDICATED ON PLANS ARE PRELIMINARY. FINAL LOCATIONS SHALL BE COORDINATED WITH ALL TRADES. ALL VTR'S SHALL BE A MINIMUM OF 10'-0" FROM ALL FRESH AIR INTAKE OPENINGS.
  - ANY PVC PIPE PENETRATING A FIRE RATED ASSEMBLY SHALL BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY. ANY SPACE BETWEEN THE SLEEVE AND THE FIRE RATED ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900 OR FLAME STOPPER 5000.
  - CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS FOR DISHWASHER, WASHING MACHINE, REFRIGERATOR, ETC.
  - PROVIDE SHUT-OFF VALVES FOR PROPER OPERATION AND SERVICING OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE BASE OF EACH RISER. COORDINATE WITH ARCHITECTURAL PLAN FOR ACCESS DOOR LOCATIONS.
  - VALVES SHALL BE LOCATED AT ABOVE ACCESSIBLE CEILING WHEN AT ALL POSSIBLE AND SHALL BE CLEAR OF ANY OBSTRUCTIONS FROM OTHER TRADES. MAINTENANCE SHALL BE ABLE TO ACCESS VALVES WITH STANDARD LADDER. SHOULD LOCATION NOT BE APPLICABLE CONTRACTOR SHALL PROVIDE A CONTROL CHAIN AND/OR ARM.
  - TEMPERED WATER, NOT EXCEEDING A MAXIMUM OF 110° F, SHALL BE DELIVERED FROM PUBLIC HANDWASHING FACILITIES THROUGH AN APPROVED WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070.
  - IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT THE INVERTS AND LOCATIONS OF THE BUILDING UTILITIES ARE COMPATIBLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.
  - CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV-1) SHOULD THE WATER PRESSURE EXCEED 75 PSI. CONTRACTOR SHALL CONFIRM WITH ON-SITE CONDITIONS AND LOCAL UTILITY.
  - PROVIDE BALANCING VALVES FOR PROPER OPERATION AND PRESSURE OF DOMESTIC WATER DISTRIBUTION SYSTEM. LOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: AT EACH FIXTURE GROUP, AT EACH BRANCH TAKE-OFF FROM MAINS AND AT THE EACH RISER. INSTALL PER MANUFACTURER'S REQUIREMENTS.
  - ANY LINE VOLTAGE WIRING THAT IS RUN BY THE PLUMBING CONTRACTOR SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL PLANS, NOTES, AND SPECIFICATIONS. INSULATION JACKET SHALL BE PROVIDED WHEN PIPING INSULATION IS EXPOSED.

### PIPING MATERIAL SCHEDULE

DESCRIPTION	MATERIAL
ABOVE GROUND SANITARY SEWER AND VENT	PVC SCHEDULE 40 PIPE AND FITTINGS EXCEPT IN PLENUM RETURN AREAS. IN PLENUM RETURN AREAS WRAP PVC WITH 1" FIRE WRAP.
UNDERGROUND SANITARY SEWER AND VENT PIPING INSIDE BUILDING AND OUTSIDE BUILDING	PVC SCHEDULE 40 PIPE AND FITTINGS.
WATER DISTRIBUTION PIPE	WATER DISTRIBUTION PIPE SHALL CONFORM TO NSF 61 AND SHALL BE PEX AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.4 OF THE I.P.C. PEX TUBING SHALL BE UPONOR AQUAPEX OR EQUIVALENT. PEX FITTINGS SHALL BE FULL-DIAMETER FITTINGS.
WATER SERVICE PIPE	WATER SERVICE PIPE SHALL CONFORM TO NSF 61 AND SHALL BE COPPER AND CONFORM TO THE STANDARDS LISTED IN TABLE 605.3 OF THE I.P.C.

### PLUMBING EQUIPMENT SCHEDULE

FIXTURE TAG	DESCRIPTION	MANUFACTURER	TRIM	ELECTRICAL REQUIREMENTS
BV-1	BALL VALVE	APOLLO INTERNATIONAL 94ALF-A	LEAD FREE BALL VALVE, FULL PORT, BLOWOUT-PROOF, PRESSURE RETAINING, ADJUSTABLE STEM PACKING	
COTG-1	CLEANOUT TO GRADE, SPEEDI-SET OUTLET	J. R. SMITH 4237	UNFINISHED FLOOR CLEANOUT WITH ADJUSTABLE ROUND CAST IRON TRAP COVER TOP, DUCCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORiated SECURED CAST IRON TOP, TAPERED THREADED BRONZE PLUG, REFER TO PLANS FOR SIZES	
CP-1	CIRCULATING PUMP	ARMSTRONG ASTRO 280 SS	THREE SPEED, BRONZE BODY WITH BRASS IMPELLER, WITH AQUASTAT AND AUTOMATIC TIMER KIT, 5 GPM @ 25'	230V, 1PH, 216 WATTS
ET-1	EXPANSION TANK	WATTS PL-5	BRASS CONNECTION, WELDED STEEL CONSTRUCTION, POLYPROPYLENE LINER, BUTYL DIAPHRAGM, GROOVED DIAPHRAGM HOOP RING, WELDED AIR CHARGE FITTING	
EW-1	ELECTRIC WATER COOLER, SINGLE LEVEL, WALL MOUNTED, HANDICAPPED, NO LEAD DESIGN, ONE PIECE, STAINLESS STEEL BASIN, FLEXIBLE SAFETY BUBBLER	ELKAY E238	ADA APPROVED, W/ TOUCH PADS ON FRONT, FLEXIBLE SAFETY BUBBLER, P-TRAP, WATER VALVE, MLP100 CARRIER	115V, 1PH, 370W
EW-2	ELECTRIC WATER COOLER, SINGLE LEVEL, WALL MOUNTED, STANDARD, NO LEAD DESIGN, ONE PIECE, STAINLESS STEEL BASIN, FLEXIBLE SAFETY BUBBLER	ELKAY E238	STANDARD, W/ TOUCH PADS ON FRONT, FLEXIBLE SAFETY BUBBLER, P-TRAP, WATER VALVE, MLP100 CARRIER	115V, 1PH, 370W
EWH-1	ELECTRIC WATER HEATER, LOWBOY 30 GALLON	BRADFORD WHITE LE130L3-3	BRASS DRAIN VALVE, ANODE ROD, AUTOMATIC THERMOSTAT, HEAT TRAP, EXPANSION TANK (ET-1), CATCH PAN & DRAIN, MIXING VALVE	208V, 4.5KW, 1PH
FD-1	FLOOR DRAIN-ROUND	MIFAB F1000	CAST IRON BODY, ANCHOR FLANGE, SECURED ROUND ADJUSTABLE STRAINER HEAD WITH HOLE GRATE, LOOSE GRATE AND SEDIMENT BUCKETS, MIFAB TRAP GUARD, REFER TO PLANS FOR SIZES	
FPBH-1	FROST PROOF HOSE BIBB - BOX	J. R. SMITH 5519	1/4 TURN NON-FREEZE WALL HYDRANT WITH AUTOMATIC DRAINING INTEGRAL VACUUM BREAKER, DUAL CHECK VALVE AND STAINLESS STEEL BOX, PROVIDE SHUTOFF VALVE FOR SUPPLY LINE IN AN ACCESSIBLE LOCATION	
FS-1	FLOOR SINK	J. R. SMITH 3150	CAST IRON FLANGED RECEPTOR, SEEPAGE HOLES, ACID RESISTANT COATED INTERIOR, NICKEL BRONZE RIM, LOOSE GRATE, ALUMINUM DOME BOTTOM STRAINER, GRATE, MIFAB TRAP GUARD	
HL-1	HANDICAPPED LAVATORY, WALL MOUNT, VITREOUS CHINA	ZURN Z5314	ZURN 26915-XL BATTERY SENSOR FAUCET WITH THERMOSTATIC MIXING VALVE, TMV-1, ZURN Z8743-PC GRID STRAINER, ZURN Z8700 SERIES P-TRAP, ZURN Z8800 SERIES STOP WITH FLEXIBLE SUPPLIES AND TURN KEY, ZURN Z8846-LNT ADA TRAP, STOP AND SUPPLY PROTECTOR PVC TYPE INSULATION AROUND "P" TRAP & IPS CONNECTIONS, CONSEALED ARM CARRIER SYSTEM, THREE HOLES ON DECK 4" CENTERS	
HWC-1	HANDICAPPED WATER CLOSET, VITREOUS CHINA, FLUSH VALVE, FLOOR MOUNTED, ELONGATED RIM, 12" ROUGH-IN, SIPHON JET BOWL, 1.28 GPF	ZURN Z5965-BWL1	EZ-FLO 65913 OPEN FRONT SEAT, ZURN ZTR6200EV-LL 1.28 GPF SENSOR FLUSH VALVE BATTERY POWERED, Z5972-COMB CLOSET BOX/TWAX RING KIT	
JS-1	JANITOR'S SINK, FLOOR MOUNTED 24" X 24", TERRAZZO NEO-CORNER SERIS WITH STAINLESS STEEL CAPS ON ALL CURBS	FIATS BC6010	PROVIDE SERVICE FAUCET MUSTEEE #63 600A CHROME PLATED BRASS ON 8" CENTER W/ VACUUM BREAKER, HOSE & BRACKET 832AA, MOP HANGER MUSTEEE #65 600, WALL GUARDS 2 PANELS MSG, SUPPLIED W/ CAST BRASS DRAIN, PROVIDE CHECK VALVES ON HOT AND COLD WATER LINES IN AN ACCESSIBLE LOCATION	
RPZ-1	REDUCE PRESSURE PRINCIPLE BACKFLOW PREVENTER, FOR DOMESTIC WATER	WATTS LP09M2 QT	PROVIDE SAME SIZE AS WATER LINE FROM METER, WATTS BALL VALVES AND "Y" STRAINER, SHALL MEET APPROVAL BY FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA	
S-1	SINK DOUBLE COMPARTMENT, COUNTER MOUNT	ELKAY LRAD332255	PFISTER G136-5000(C) DUAL LEVER FAUCET WITH SPRAY, 12" HIGH SWING SPOUT, 6" REACH, 0.5GPM AERATOR, 3-1/2" OPENING DRAIN, McGUIRE 151M HEAVY DUTY BRASS BASKET & STRAINER, 1 1/2" CHROME PLATED TAILPIECE, McGUIRE 8912 1 1/2" x 1 1/2" HEAVY DUTY CHROME PLATED CAST BRASS P-TRAP W/ CLEANOUT PLUG, McGUIRE 170LK CHROME PLATED SOLID BRASS ANGLE STOPS W/ 5" CHROME PLATED COPPER EXTENSION TUBE & LOOSE KEYS, FLEXIBLE CHROME PLATED COPPER RISERS, McGUIRE 111C SERIES 1 1/2" END OUTLET CONTINUOUS WASTE, PROVIDE THREE FAUCET HOLES ON DECK	
SB-1	SUPPLY BOX	GLY GRAY BIM-875	(1) 1/2" SUPPLY, PROVIDE WHA-1 (WATER HAMMER ARRESTOR)	
TMV-1	THERMOSTATIC MIXING VALVE - POINT OF USE	LEONARD 2704E	LEAD FREE, INTEGRAL CHECK VALVE AND STRAINER, PROVIDE, TEMPERATURE CONTROL SET AT 110°	
TWCO-1	TWO WAY CLEANOUT, SPEEDI-SET OUTLET	J. R. SMITH 4237	UNFINISHED FLOOR DUCCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORiated SECURED CAST IRON TOP, TAPERED THREADED BRONZE PLUG, REFER TO PLANS FOR SIZES	
WCO-1	WALL CLEANOUT	J. R. SMITH 4510	DUCCO CAST IRON CLEANOUT TEE, BRONZE PLUG, REMOVABLE STAINLESS STEEL COVER, REFER TO PLANS FOR SIZE, PROVIDE ROUND OR SQUARE FRAME AND COVER AS REQUIRED, REFER TO ARCHITECT	
WHA-1	WATER HAMMER ARRESTOR	SIOUX CHIEF 650&660 HYDRARRESTER	VACURESTER VACUUM BREAKER ARRESTER, TYPE L COPPER CONSTRUCTION, IF AN ACCESS DOOR IS NEEDED CONTACT THE ARCHITECT	

### COPPER TO PEX SIZING CHART

PLAN SIZE (COPPER)	PLAN SIZE (PEX)
1/2"	1/2"
3/4"	1"
1"	1-1/4"
1-1/4"	1-1/2"
1-1/2"	2"
2"	N/A
2-1/2"	N/A
3"	N/A
4"	N/A

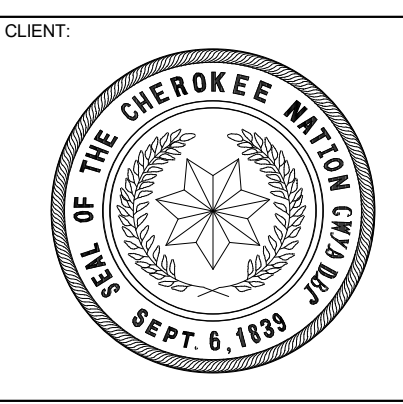
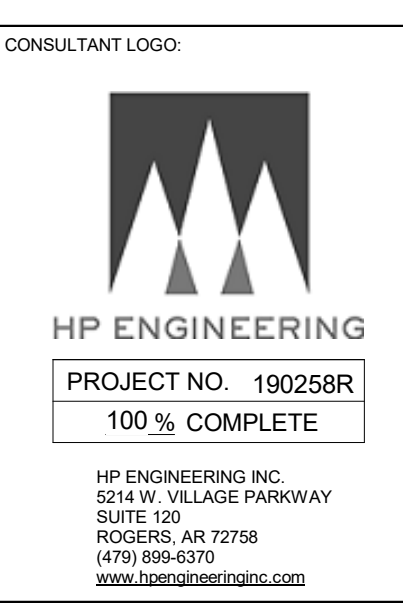
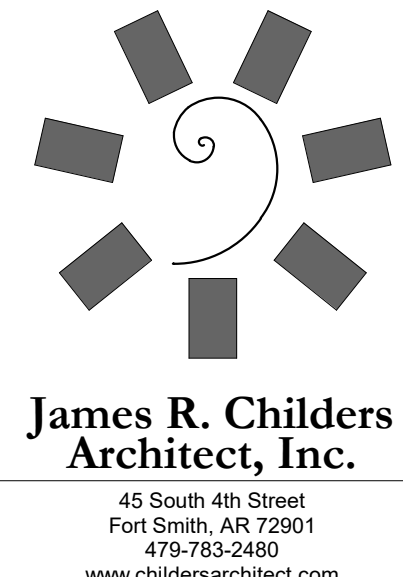
### PLUMBING PIPING INSULATION SCHEDULE

DESCRIPTION	INSULATION TYPE	INSULATION THICKNESS NOMINAL PIPE SIZE				
		<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
DOMESTIC COLD WATER PIPING BELOW GRADE	PVC OR HDPE JACKET ONLY, NO INSULATION	1	1	1.5	1.5	1.5
CONDENSATE PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	0.5	1	1	1	1.5
PVC WASTE VENT AND WASTE DRAIN IN AIR PLENUM SPACE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	0.5	0.5	0.5	0.5	0.5
PVC AND CAST IRON ROOF DRAINS IN ALL AREAS ABOVE GRADE	COMPRESSED FIBERGLASS OR ELASTOMERIC WITH ASTM E84 COMPLIANT JACKET	1	1	1.5	1.5	1.5
WATER COOLER TRAPS, ALL EXPOSED LAVATORY AND SINK TRAPS, TAILPIECES, HOT AND COLD WATER SUPPLY LINES/ANGLE VALVES TO THESE DEVICES	EQUIVALENT TO TRUEBRO 102 E-Z PIPE COVER	0.125	0.125	0.125	0.125	0.125
DOMESTIC HOT WATER AND HOT WATER RETURN PIPING BELOW GRADE	ELASTOMERIC OR FOAM, ENCAPSULATE WITH PVC OR HDPE JACKET	1	1	1.5	1.5	1.5
DOMESTIC COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING ABOVE GRADE	ELASTOMERIC, ADD ASTM E84 COMPLIANT JACKET IN AIR PLENUM SPACES	1	1	1.5	1.5	1.5

### ROUGH-IN AND MOUNTING HEIGHT SCHEDULE

NOTES:  
1. ALL VENT LINE SIZES SHOWN ARE MINIMUM UNLESS SHOWN LARGER ON RISER DIAGRAMS.  
2. SIZES SHOWN FOR WASTE ARE FOR RISERS ONLY.  
3. ALL DRAIN AND VENT LINES BELOW SLAB SHALL BE 2" OR LARGER.  
4. VENT LINES SHALL RISE 6" ABOVE FLOOD LEVEL RIM BEFORE OFFSETTING HORIZONTALLY, EXCEPT FOR INTERCEPTORS LOCATED OUTDOORS.  
5. SIZES SHOWN APPLY UNLESS NOTED DIFFERENTLY ON PLANS.

FIXTURE	WASTE	COLD WATER	HOT WATER	HEIGHT OF INSTALLATION
DRINKING FOUNTAIN	1-1/2"	1-1/2"	1/2"	NON-ADA 40" TO TOP OF ORIFICE ADA 36" TO TOP OF ORIFICE
FLOOR DRAINS/SINKS	2"	1-1/2"		
HOSE BIBB		3/4"	1/2"	18" ABOVE GRADE OUTSIDE, 18" A.F.F. INSIDE
JANITOR'S SINK	3"	1-1/2"	1/2"	
LAVATORIES AND SINKS, COUNTER MOUNTED	1-1/2"	1-1/4"	1/2"	
LAVATORIES AND SINKS, WALL MOUNTED	1-1/2"	1-1/4"	1/2"	NON-ADA 31" TO TOP OF RIM ADA 34" TO TOP OF RIM
SUPPLY BOX			1/2"	12" TO BOTTOM OF BOX
WATER CLOSET FLUSH VALVE WALL MOUNTED	3"	1-1/2"	1-1/4"	NON-ADA 15" TO TOP OF BOWL ADA 17" TO TOP OF BOWL



**CHEROKEE NATION**  
**TAG OFFICE**  
 CATOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE  
**CONSTRUCTION DOCUMENTS**

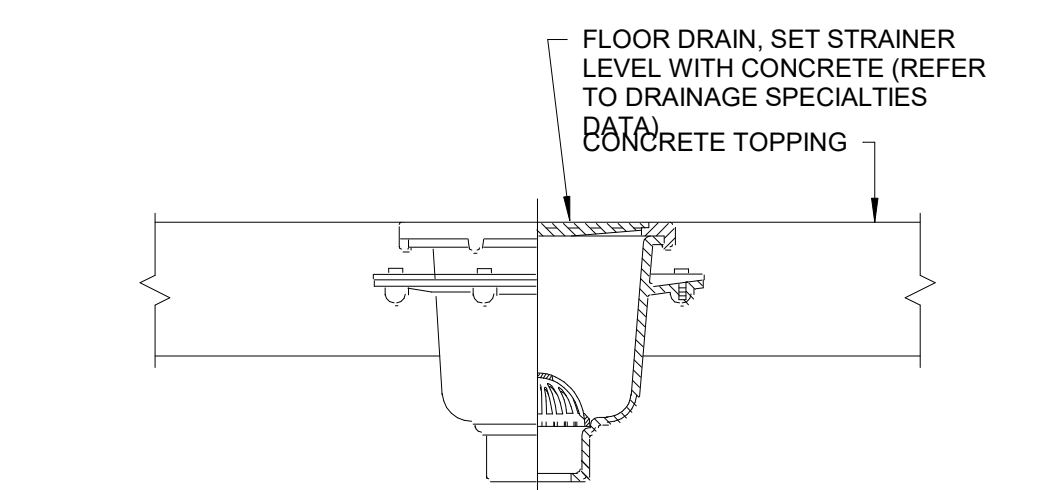
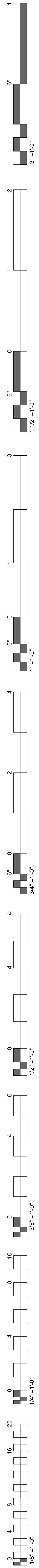
#	DATE	REVISIONS	DESCRIPTION

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JOB NUMBER: 18-01.10

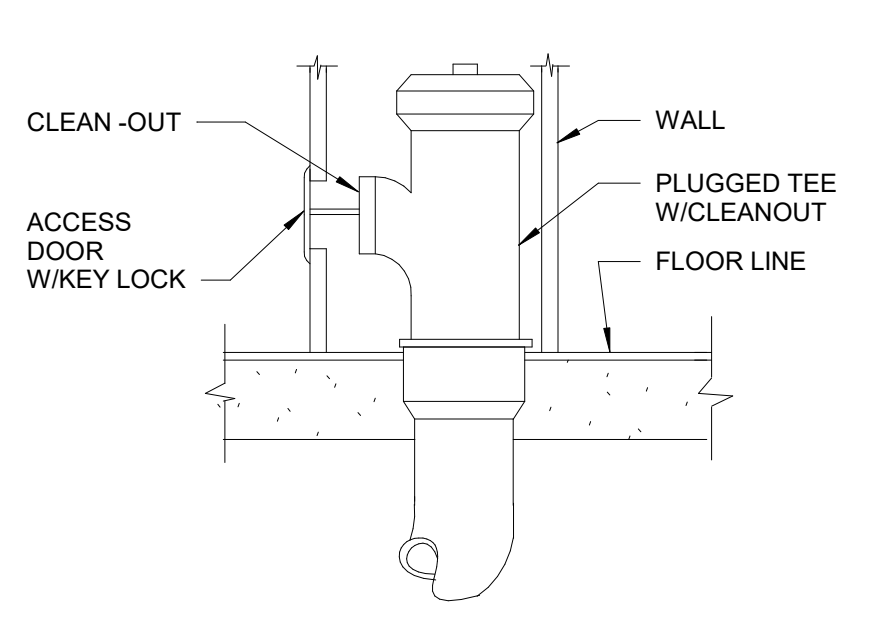
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PLUMBING LEGENDS, NOTES AND SCHEDULES

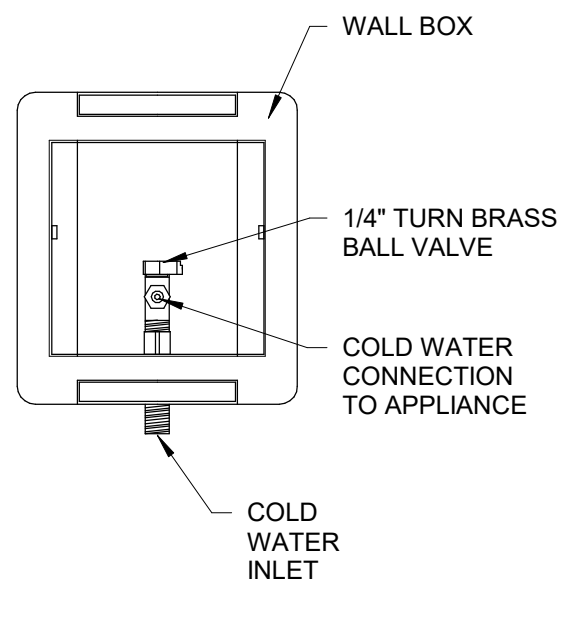




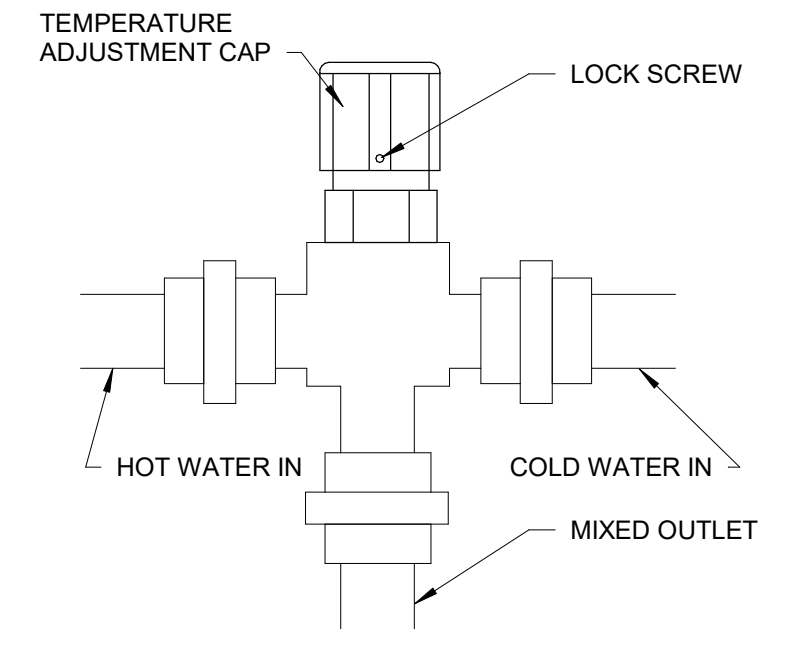
**13 FLOOR SINK**  
N.T.S.



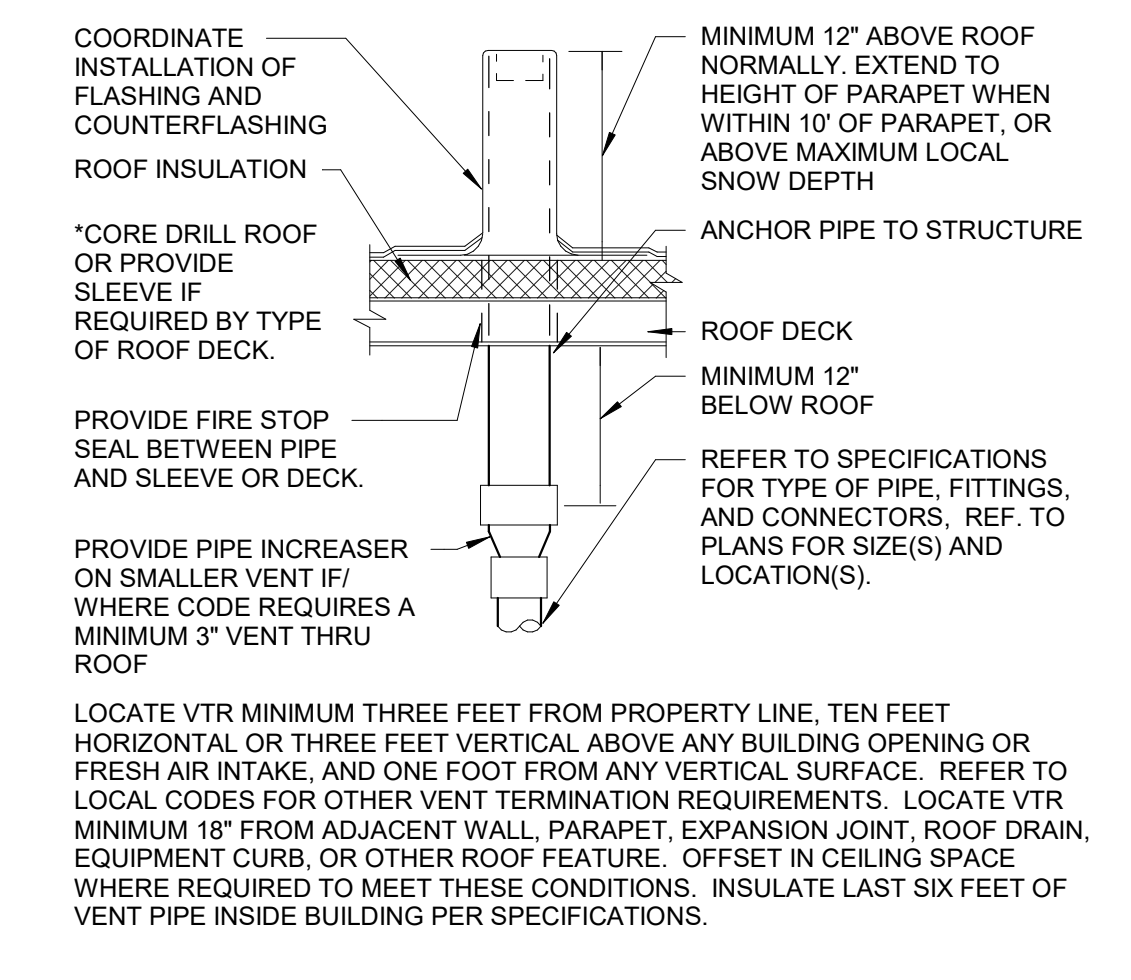
**8 WALL AND STACK CLEANOUT**  
N.T.S.



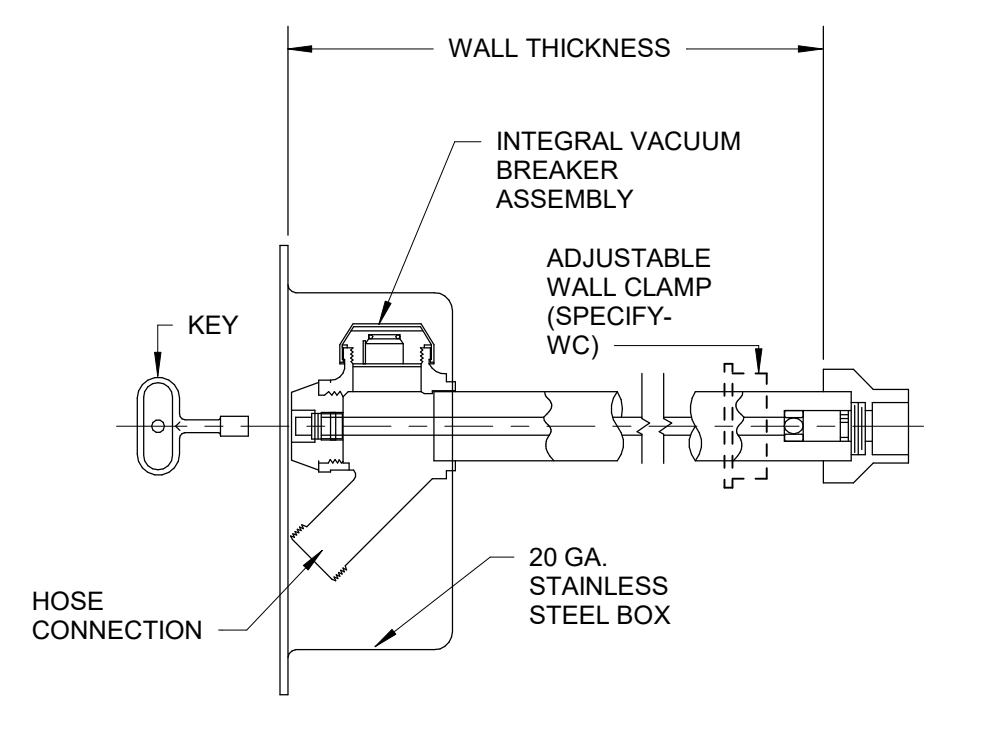
**9 SUPPLY BOX**  
N.T.S.



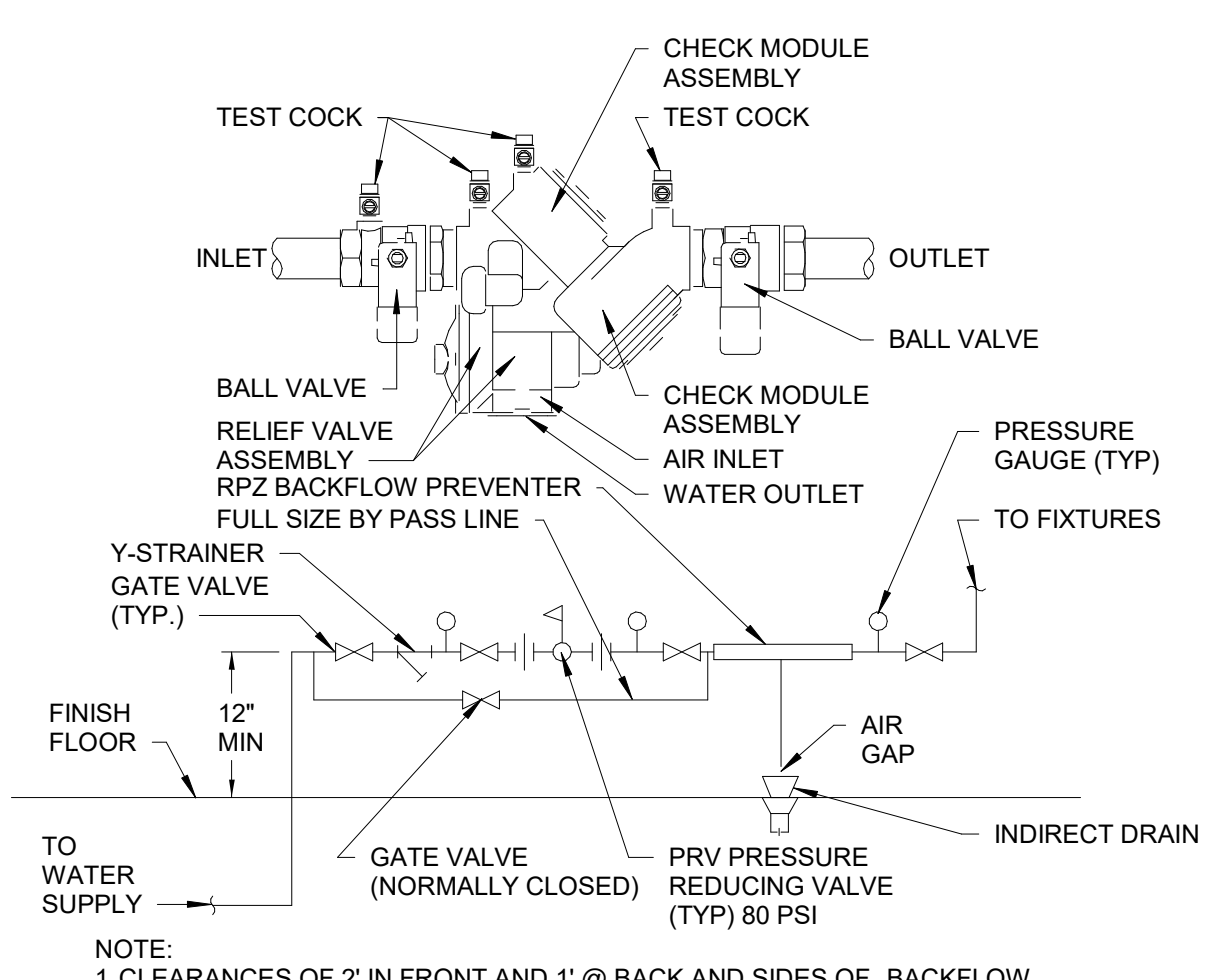
**10 POINT OF USE - THERMOSTATIC MIXING VALVE**  
N.T.S.



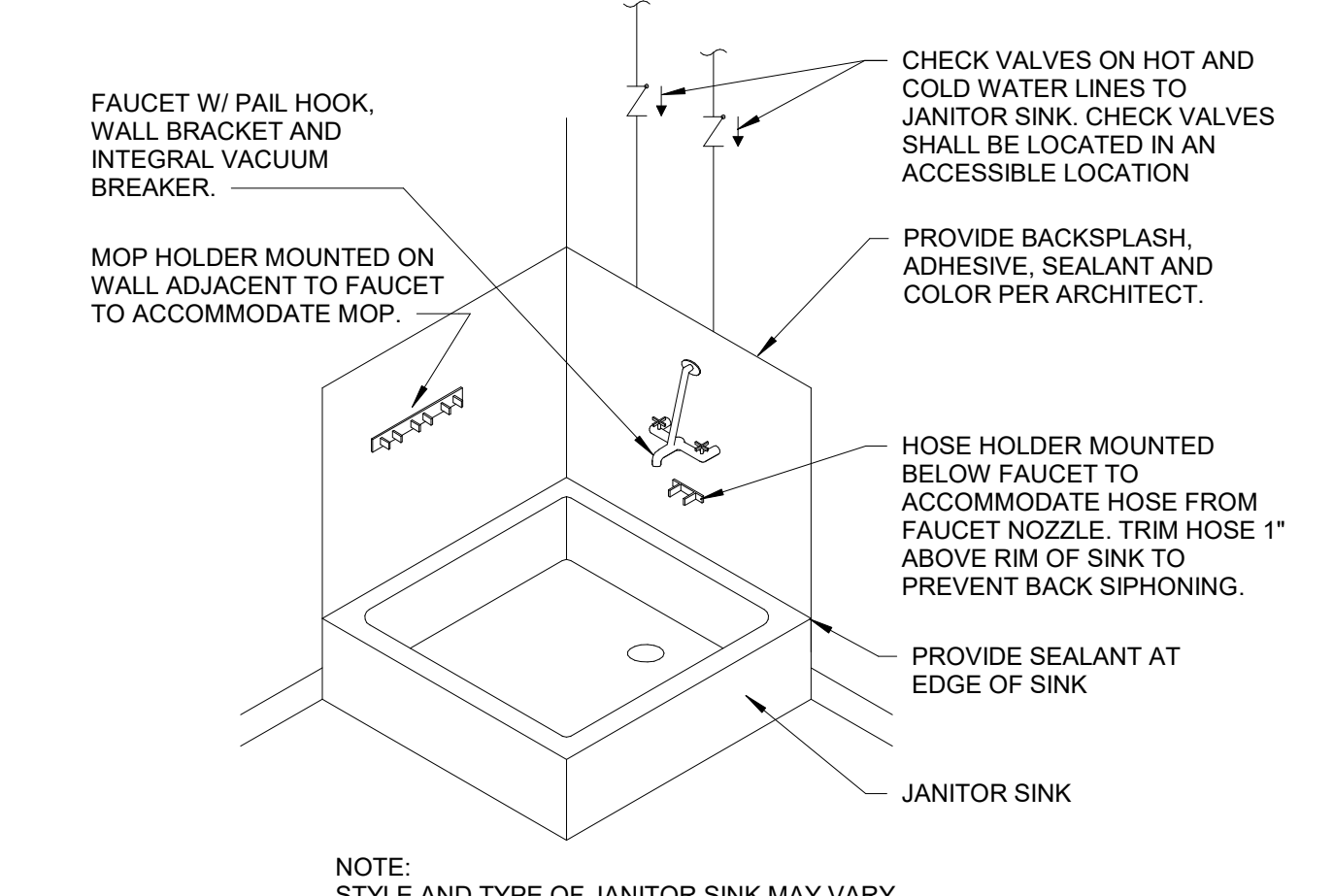
**11 VENT THRU ROOF ('VTR')**  
N.T.S.



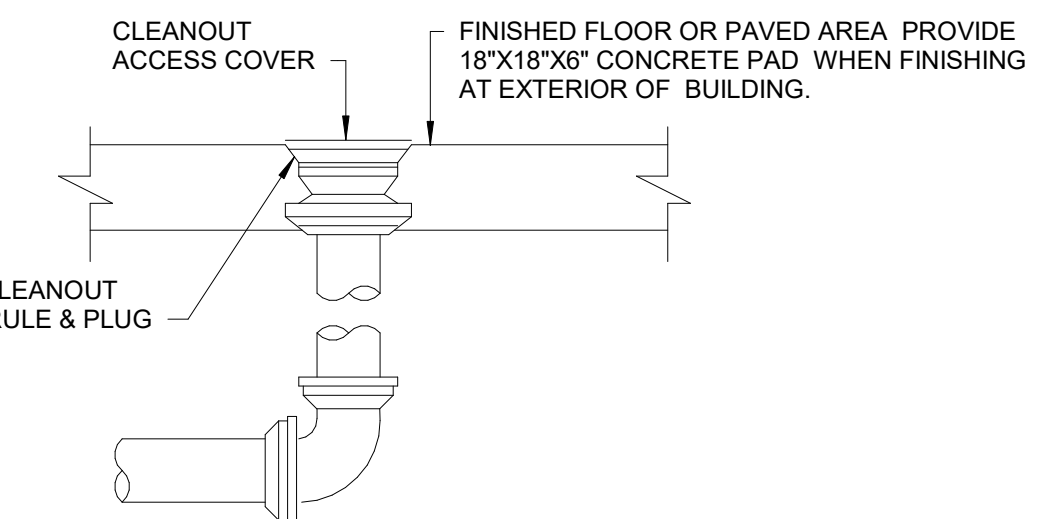
**12 NON-FREEZE WALL HYDRANT**  
N.T.S.



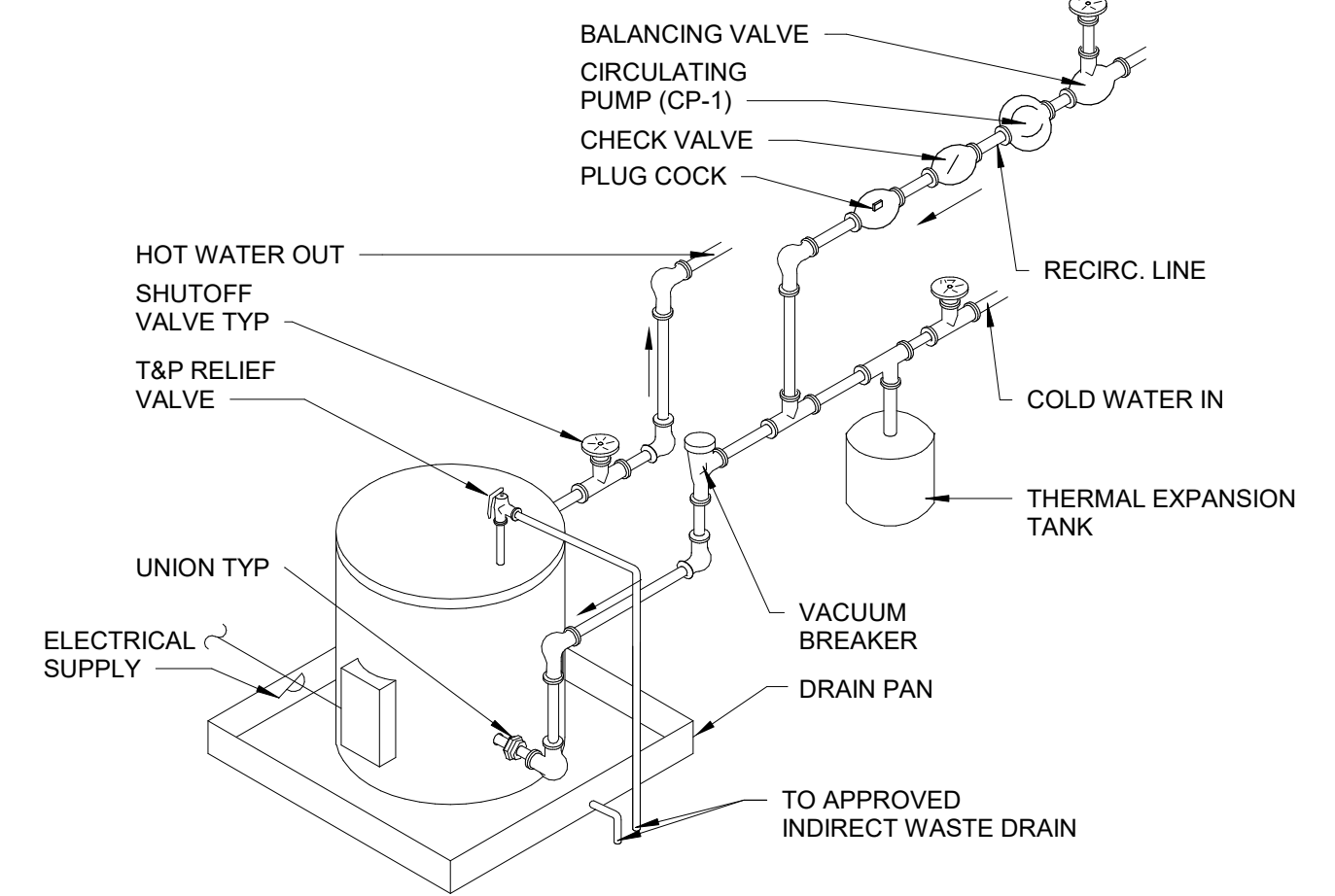
**4 BACKFLOW PREVENTER DETAIL - HORIZONTAL**  
N.T.S.



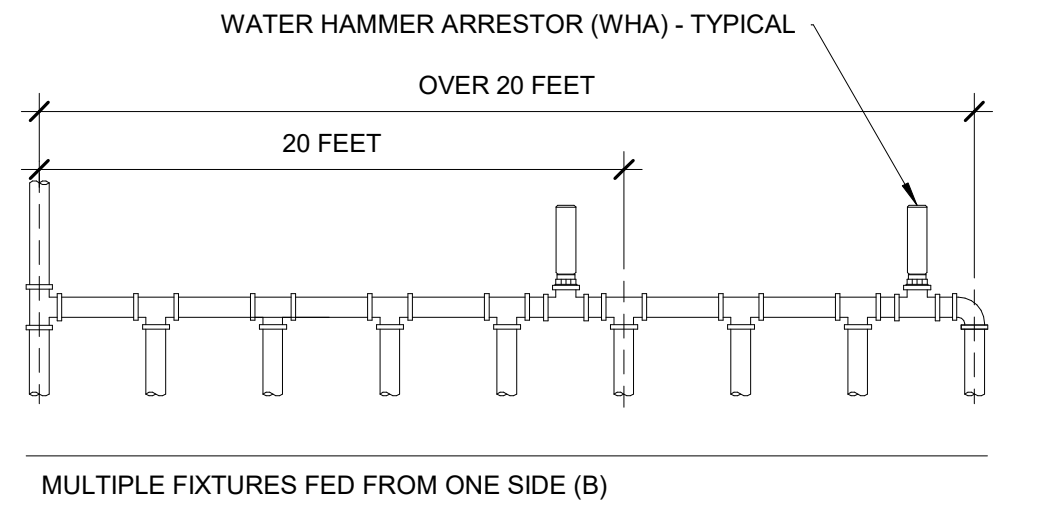
**5 JANITOR'S SINK - SQUARE**  
N.T.S.



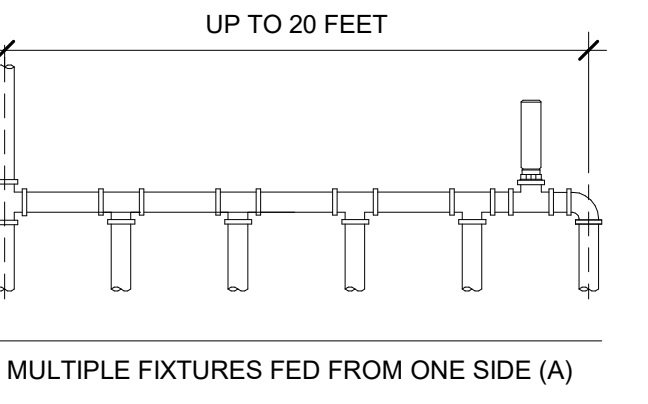
**6 CLEANOUT TO GRADE**  
N.T.S.



**7 ELECTRIC WATER HEATER - SHORT W/RECIRC.**  
N.T.S.

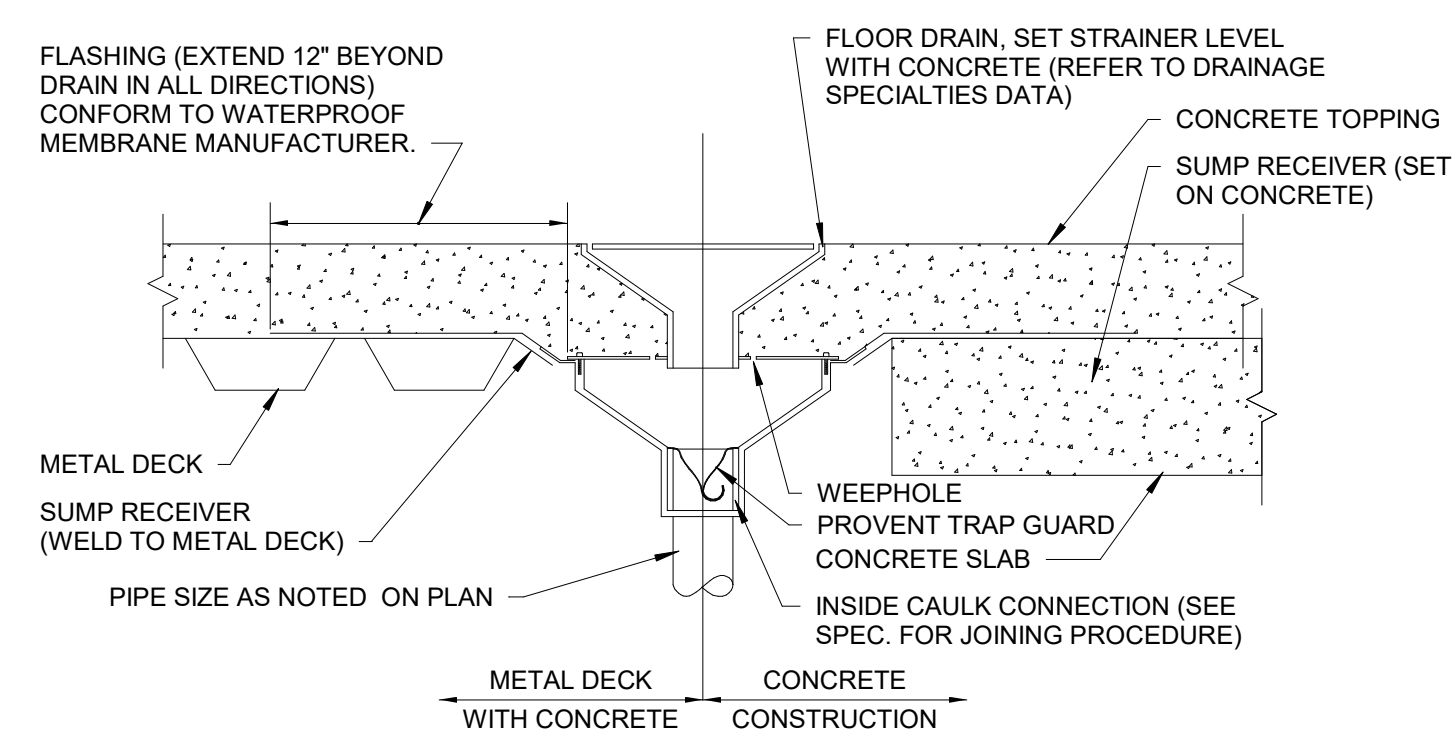
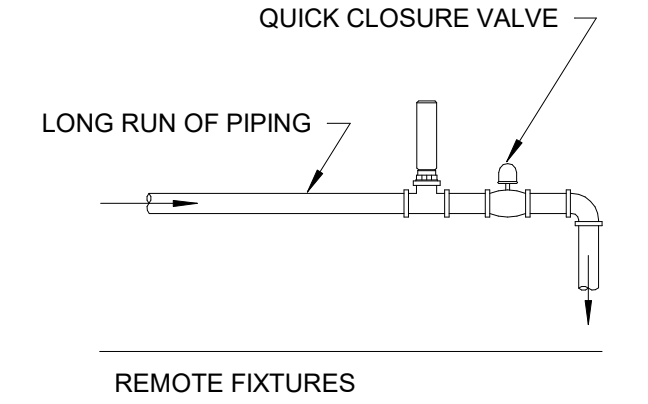
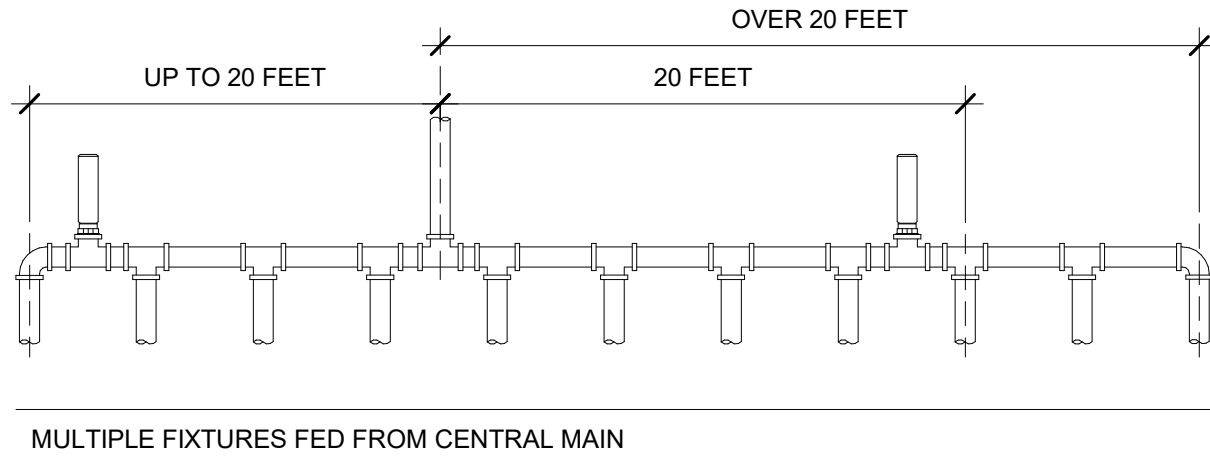


**1 WATER HAMMER ARRESTOR INSTALLATION DETAIL**  
SCALE: N.T.S.

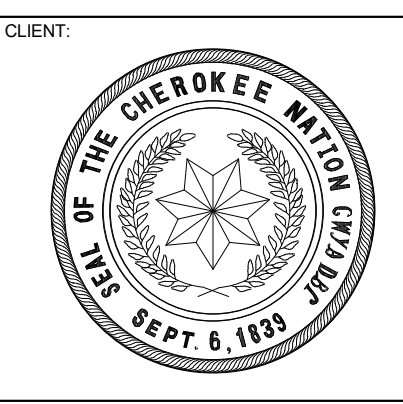
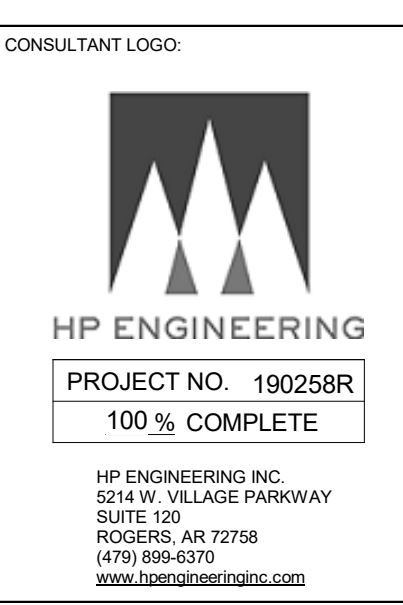


**2 TWO WAY CLEANOUT**  
N.T.S.

GENERAL WHA NOTES:  
LOCATE THE WHA IN A MULTIPLE FIXTURE SYSTEM AT THE END OF THE BRANCH LINE BETWEEN THE LAST TWO FIXTURES SERVED.  
FOR REMOTE INSTALLATIONS THE WHA SHOULD BE PLACED AS CLOSE TO THE POINT OF VALVE CLOSURE AS POSSIBLE.  
INSTALL WHA'S APPROVED FOR SEALED-WALL INSTALLATION ON WATER LINES CONNECTED TO SOLENOID VALVES OR FLUSH VALVES. SIZE, LOCATE, AND INSTALL IN ACCORDANCE WITH PD1 STANDARD WH 201.  
IDEALLY THE FLOW PRESSURE IN BRANCH LINES SERVING FIXTURES SHOULD NEVER EXCEED 55 P.S.I.G.  
PROVIDE ACCESS PANEL AT EACH LOCATION WHERE THERE IS NOT AN ACCESSIBLE CEILING. MINIMUM SIZE OF 8" x 8".



**3 FLOOR DRAIN**  
N.T.S.



**CHEROKEE NATION  
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KEY PLAN

PROJECT PHASE

CONSTRUCTION DOCUMENTS

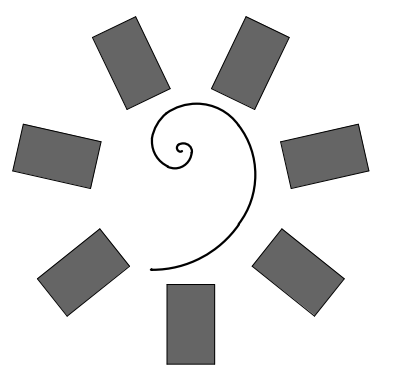
#	DATE	REVISIONS	DESCRIPTION

DATE: 07-31-2020

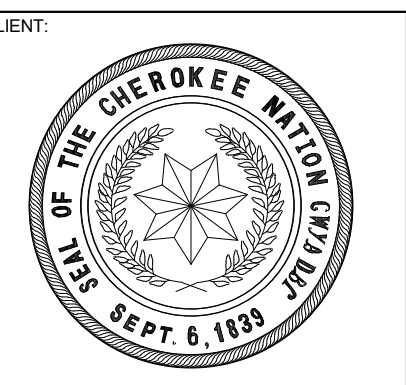
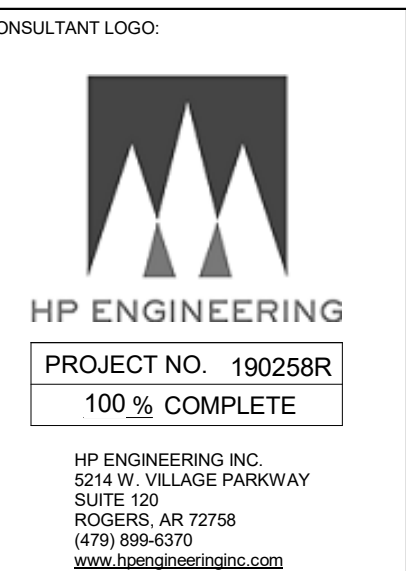
JOB NUMBER: 18-01.10

SHEET NUMBER:





**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



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KEY PLAN:

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DATE: 07-31-2020 JOB NUMBER: 18-01.10

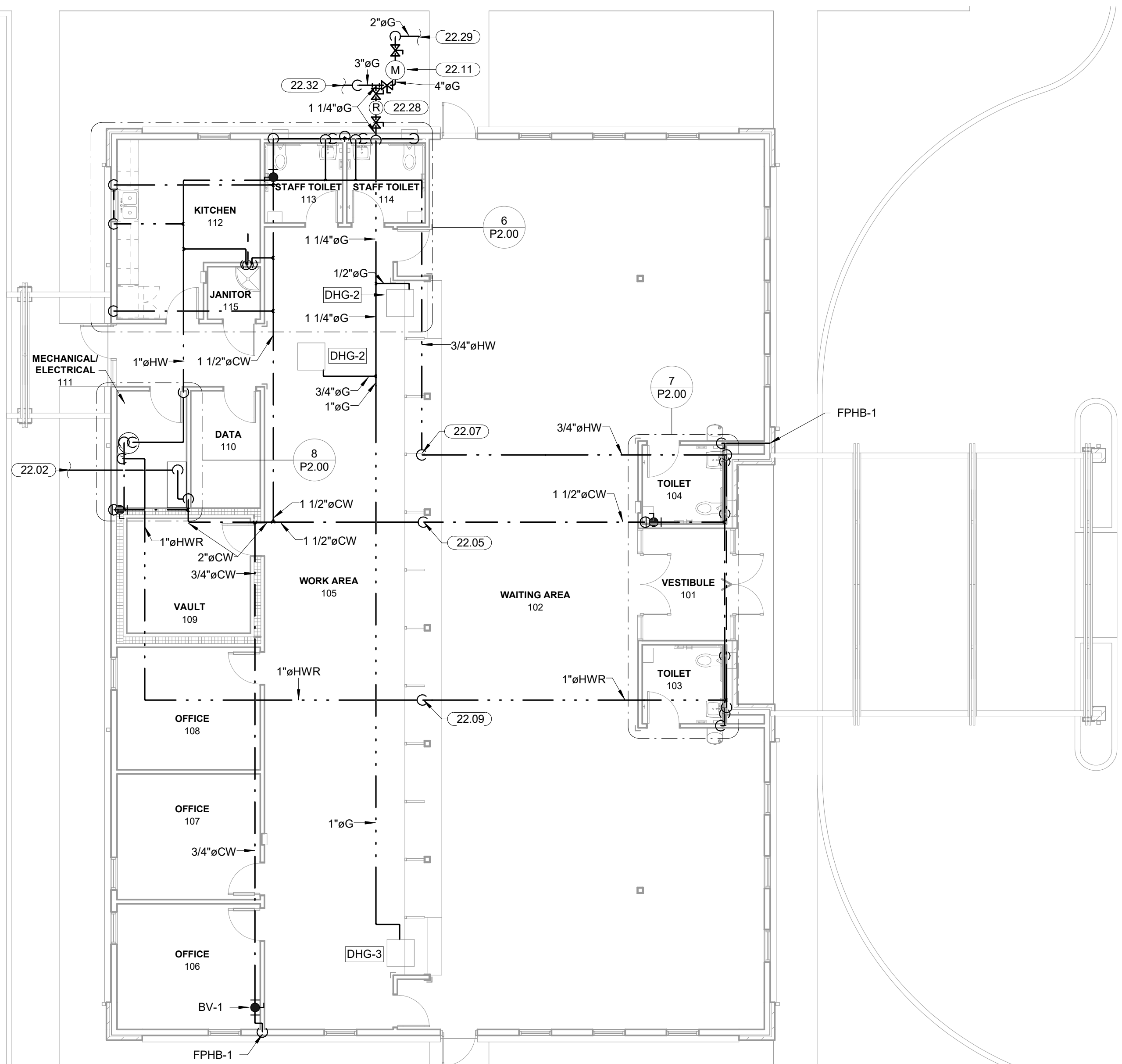
SHEET NUMBER:  
**P2.00**  
PLUMBING DRAIN AND SUPPLY PLANS

**KEYNOTES**

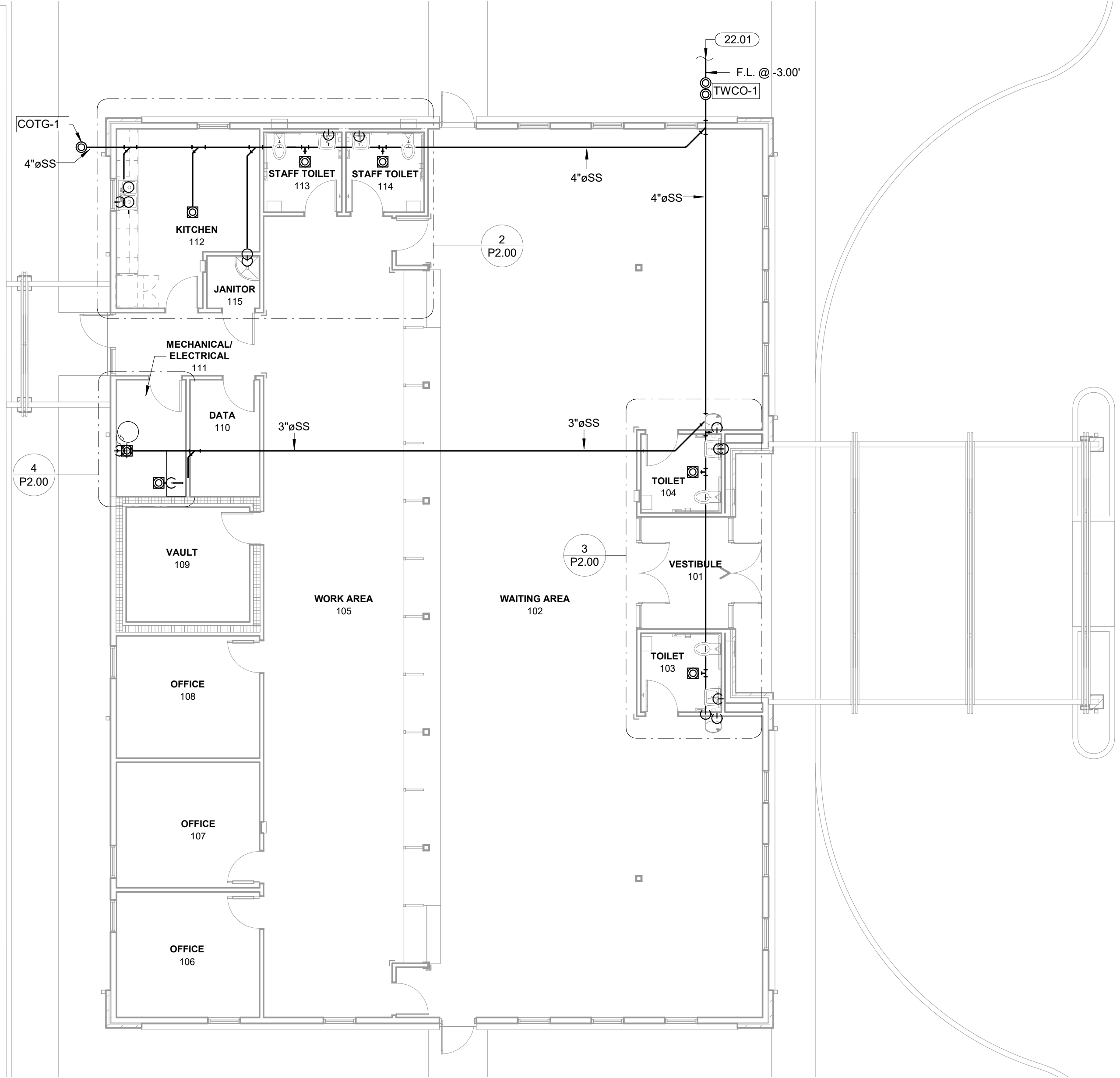
- 22.01 4" BUILDING DRAIN LINE. REFER TO CIVIL PLANS FOR CONTINUATION. 46 D.F.U.
- 22.02 2" DOMESTIC WATER LINE. REFER TO CIVIL PLANS FOR CONTINUATION. 50 G.P.M.
- 22.05 1-1/2" CW UP. HOLD TIGHT TO STRUCTURE. REFER TO ARCHITECTURAL PLANS FOR CEILING HEIGHT IN THE CIRCULATION AREA.
- 22.07 3/4" HW UP. HOLD TIGHT TO STRUCTURE. REFER TO ARCHITECTURAL PLANS FOR CEILING HEIGHT IN THE CIRCULATION AREA.
- 22.09 1" HWR UP. HOLD TIGHT TO STRUCTURE. REFER TO ARCHITECTURAL PLANS FOR CEILING HEIGHT IN THE CIRCULATION AREA.
- 22.10 EWH-1: MOUNT ON FLOOR. ROUTE DRAIN PAN DRAIN AND T&P VALVE TO FD-1.
- 22.11 NATURAL GAS METER (UTILITY-PROVIDED). SET METER TO PROVIDE 2.345 MBH AT 1 PSI.
- 22.14 4" WASTE UP TO WATER CLOSET.
- 22.15 3" TRAPPED WASTE UP TO FLOOR DRAIN.
- 22.16 2" TRAPPED WASTE UP TO LAVATORY.
- 22.17 3" TRAPPED WASTE UP TO FLOOR DRAIN.
- 22.18 2" TRAPPED WASTE UP TO SINK.
- 22.19 3" TRAPPED WASTE UP TO JANITOR SINK.
- 22.20 2" WASTE UP TO WATER COOLER.
- 22.21 1/2" CW DN TO WATER COOLER.
- 22.22 1/2" HW AND 1/2" CW DN TO LAVATORY.
- 22.23 1-1/4" CW DN TO WATER CLOSET.
- 22.24 REFER TO CIVIL DRAWINGS FOR CONTINUATION.
- 22.25 1/2" HW AND 1/2" CW DN TO SINK.
- 22.26 1/2" HW AND 1/2" CW DN TO JANITOR SINK.
- 22.27 1/2" CW DN TO SUPPLY BOX.
- 22.28 PROVIDE NATURAL GAS REGULATOR TO REGULATE 285 MBH DN TO 0.5 PSI.
- 22.29 REFER TO CIVIL DRAWINGS FOR CONTINUATION OF 2" UNDERGROUND NATURAL GAS PIPING TO CONNECTION TO 2 PSI UTILITY SERVICE LINE.
- 22.32 REFER TO CIVIL DRAWINGS FOR CONTINUATION OF UNDERGROUND 3" NATURAL GAS PIPING TO A VALVED AND CAPPED STUB-IN (2,060 MBH) AT THE FUTURE GENERATOR PAD SITE. REGULATOR FOR FUTURE GENERATOR TO BE PROVIDED AT TIME OF FUTURE GENERATOR INSTALLATION.

**SUPPLY PIPING NOTE:**  
ALL SIZES INDICATED ON PLANS ARE COPPER PIPE SIZES. USE COPPER-TO-PEX SIZING CHART ON P1.00 FOR PEX PIPING SIZES WHERE PEX PIPING IS USED.

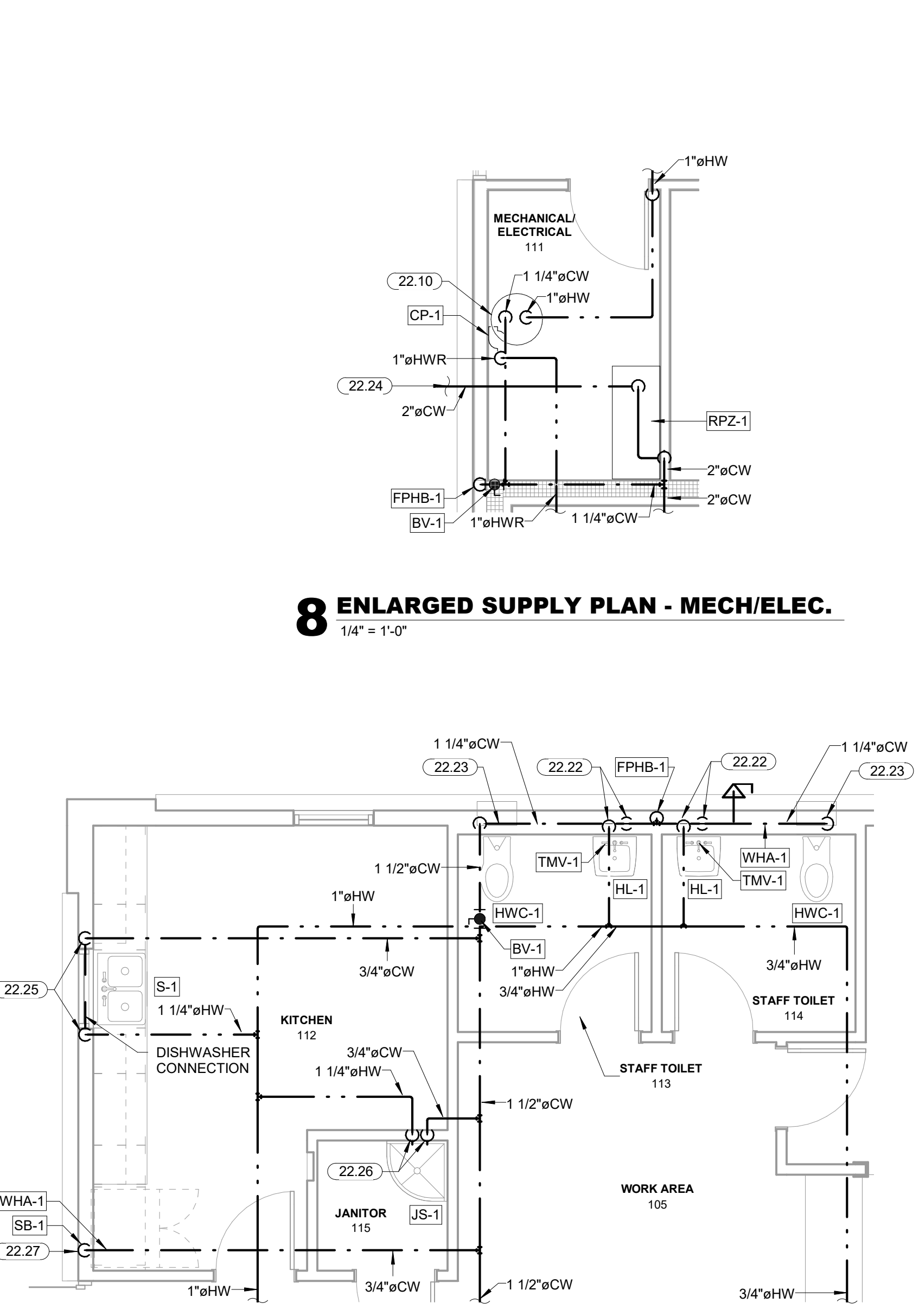
**NOTE: VERIFY ALL INVERTS:**  
IT IS THE PLUMBING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE SITE CONTRACTOR TO CONFIRM THAT INVERT AND LOCATION ARE COMPATIBLE WITH THE SITE UTILITIES PRIOR TO BEGINNING WORK.  
SCOPE INVERT AND EXACT LOCATION OF EXISTING SANITARY SEWER PRIOR TO BID.



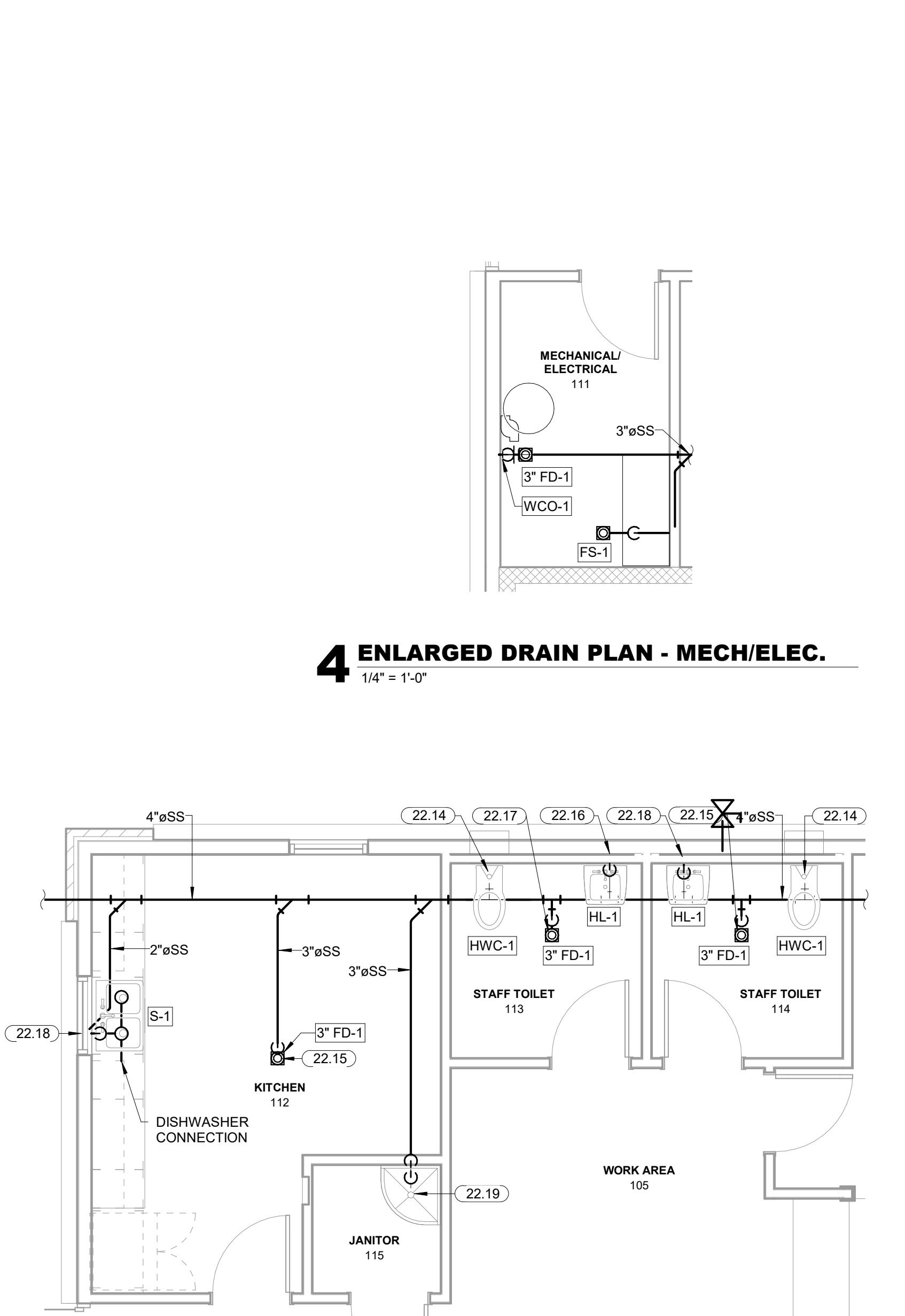
**5 PLUMBING SUPPLY PLAN**  
1/8" = 1'-0"



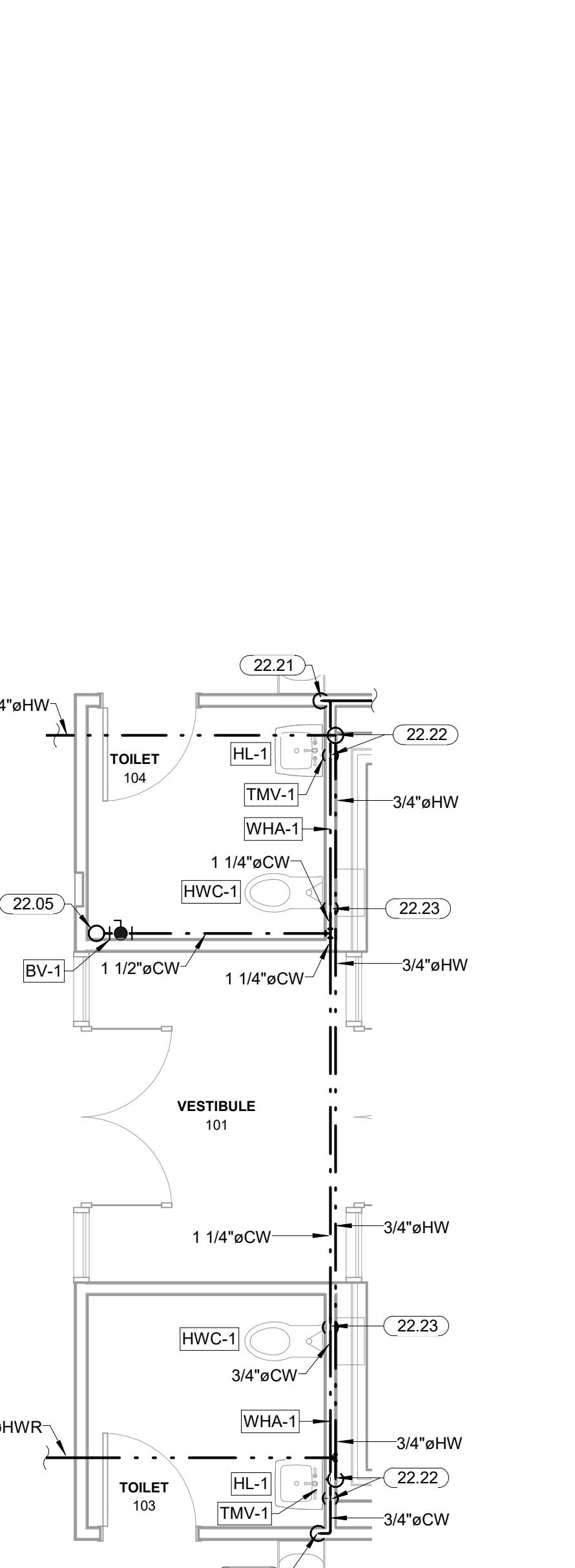
**1 PLUMBING DRAIN PLAN**  
1/8" = 1'-0"



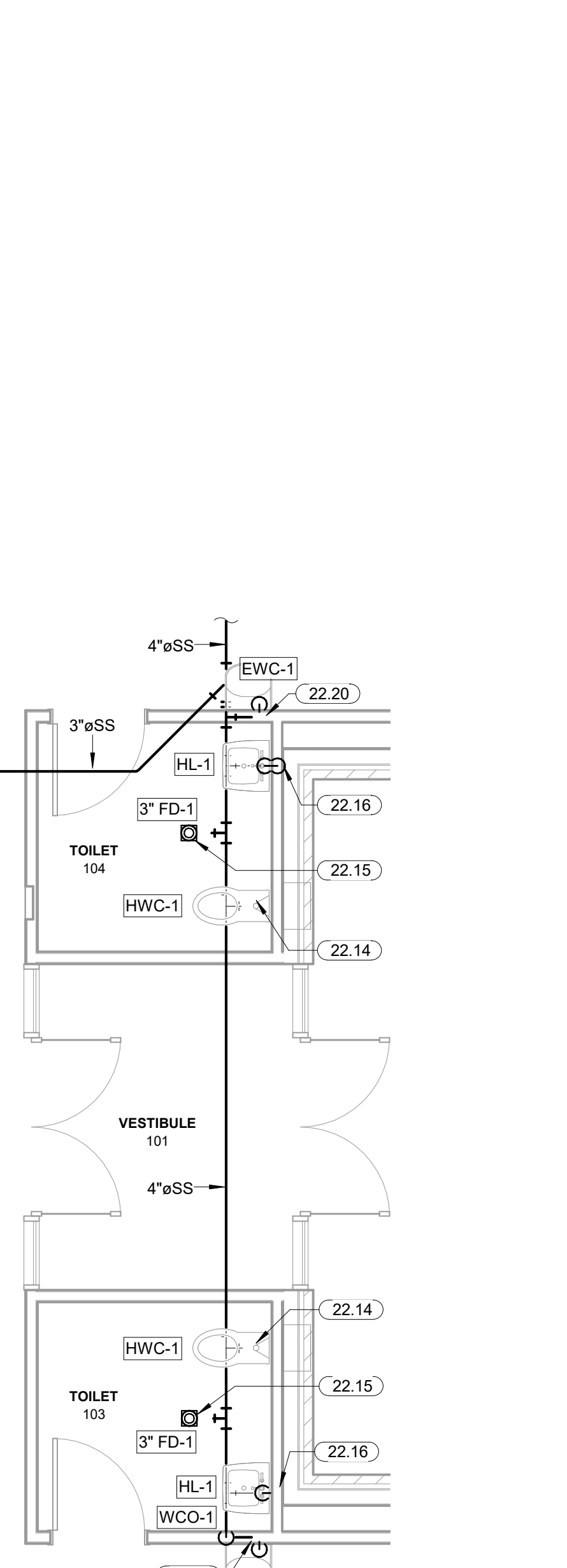
**8 ENLARGED SUPPLY PLAN - MECH/ELEC.**  
1/4" = 1'-0"



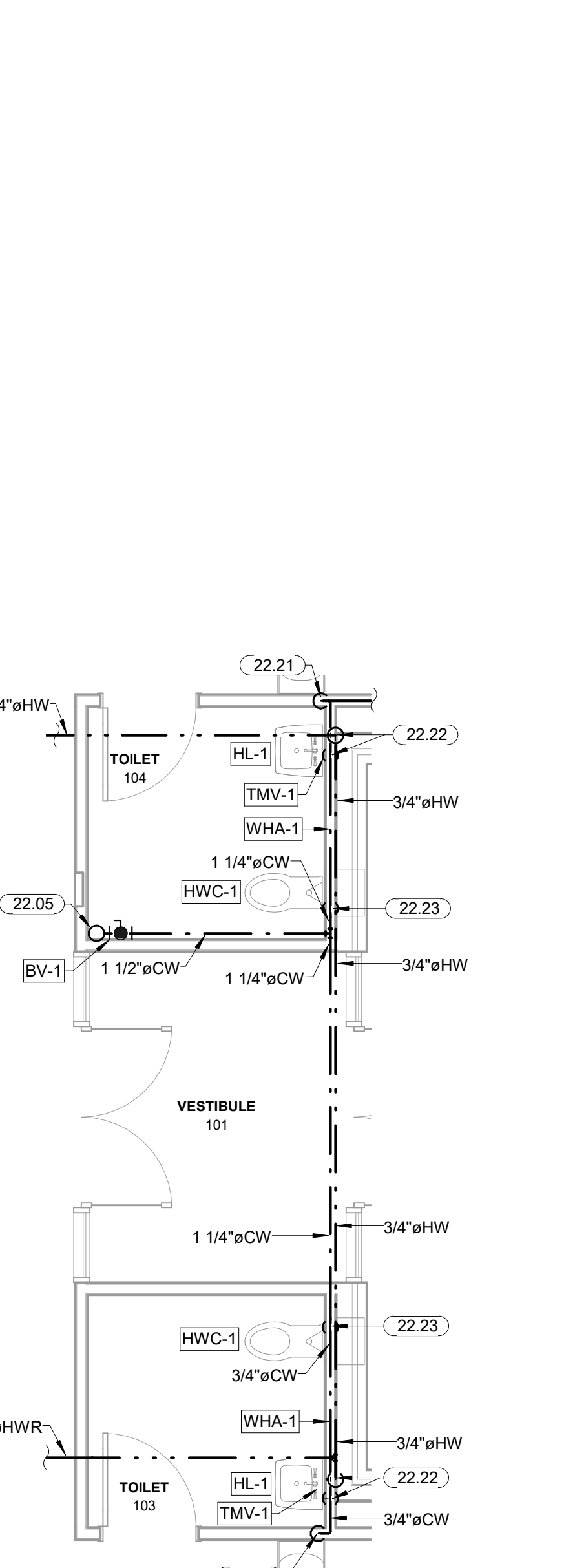
**2 ENLARGED DRAIN PLAN - KITCHEN/TOILETS**  
1/4" = 1'-0"



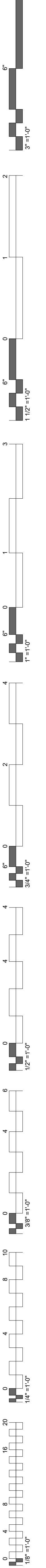
**6 ENLARGED SUPPLY PLAN - KITCHEN/TOILETS**  
1/4" = 1'-0"



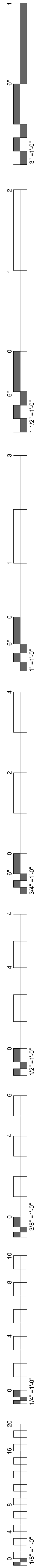
**3 ENLARGED DRAIN PLAN - RESTROOMS**  
1/4" = 1'-0"



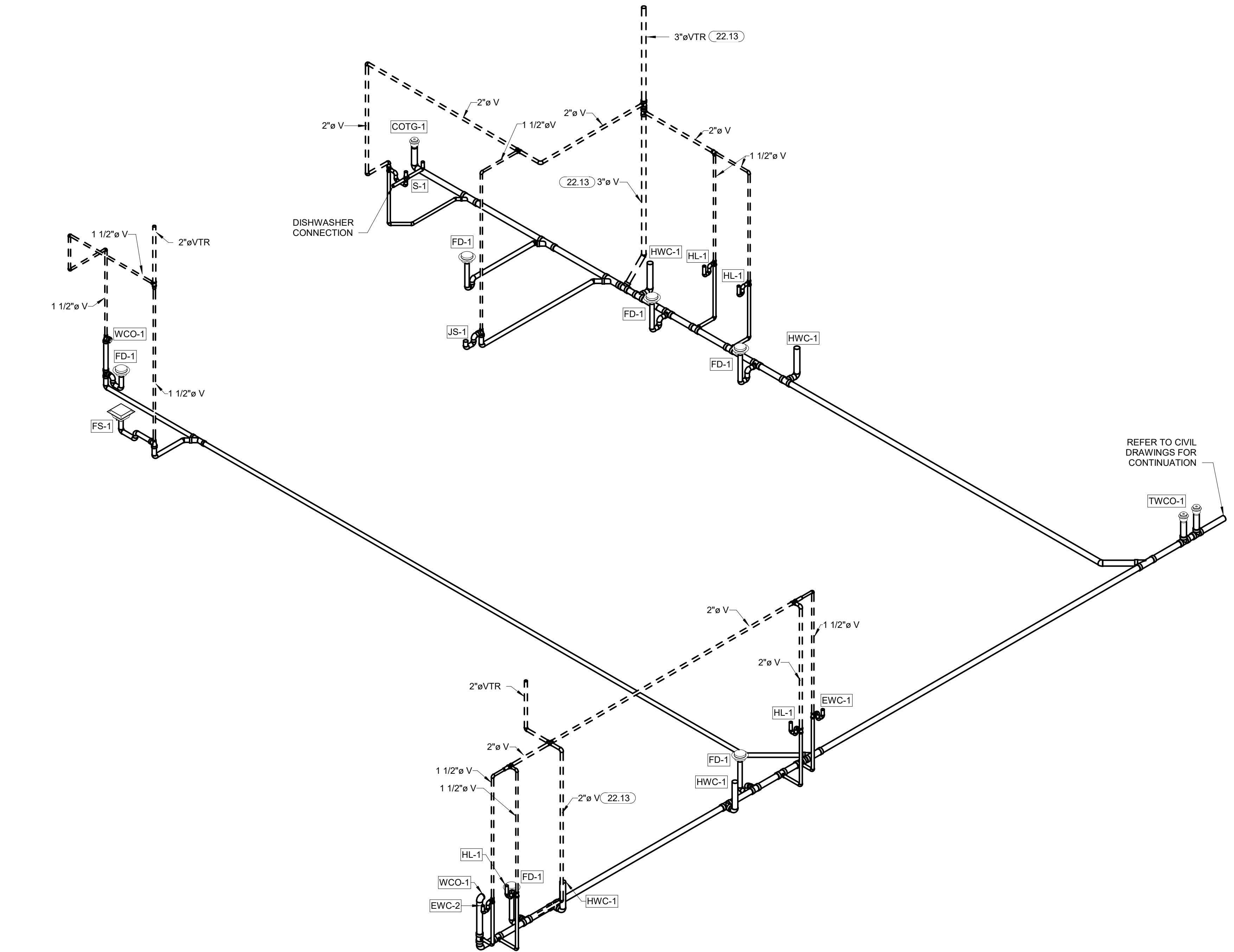
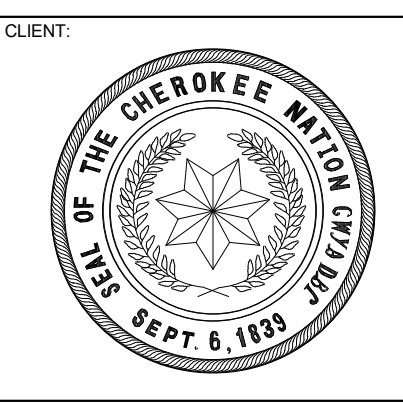
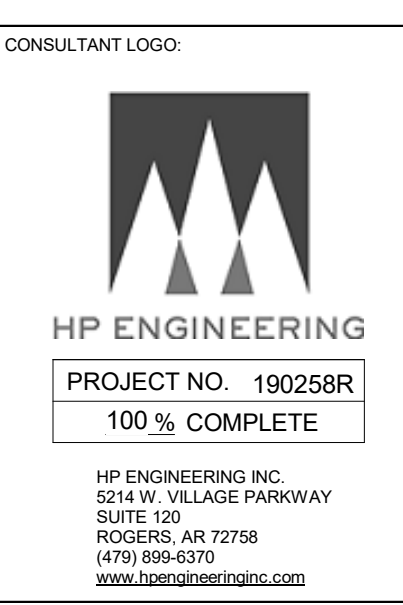
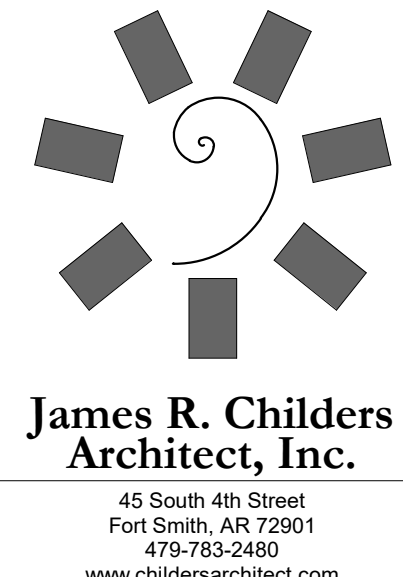
**7 ENLARGED SUPPLY PLAN - RESTROOMS**  
1/4" = 1'-0"







**KEYNOTES**  
 22.13 CIRCUIT VENT: ALL WASTE PIPING CONNECTIONS TO MAIN SHALL BE HORIZONTAL.



**1 PLUMBING WASTE/VENT ISOMETRIC**

KEY PLAN:

PROJECT PHASE:  
 CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020  
 JOB NUMBER: 18-01.10

SHEET NUMBER:  
**P2.01**  
 PLUMBING DRAIN/VENT ISOMETRIC



22A-PLUMBING  
rev – 20150529

22A 1 GENERAL INSTRUCTIONS

22A 1-1 GENERAL REQUIREMENTS

Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and portions of the work described in one, shall be provided and verified in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will provide a complete, coordinated, satisfactory and properly operating system. Check all materials, equipment, and workmanship, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

22A 1-2 DEFINITIONS

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, cutting, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, ready and for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the architect.

AJH: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "equivalent", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

22A 1-3 PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

22A 1-4 MATERIAL AND WORKMANSHIP

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size and capacity. In general, provide the following quality grades for all materials and equipment:

Commercial Specification Grade

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the first workmanlike by experienced mechanics of the proper trade.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

22A 1-5 MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products superior to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

22A 1-6 COORDINATION

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are not necessarily related to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required in design, equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the equipment. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers shown in the construction documents are not necessarily intended to designate the required trim.

22A 1-7 ORDINANCES, CODES, AND STANDARDS

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict conformance with current applicable codes adopted by the local AHJ including any amendments and standards set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

22A 1-8 PROTECTION OF EQUIPMENT AND MATERIAL

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems. Keep the manufacturer provided protective coverings on floor drains, floor sinks and trench drains during construction. Remove coverings at the termination of the work and polish exposed surfaces.

22A 1-9 SUBSTITUTIONS

Include in the base bid the products specifically named in these specifications or in the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request in writing, with each such request, the names of such requestor, the manufacturer of the proposed substitute is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of \$150.00 per hour for time spent evaluating proposed substitutions and/or the subsequent revisions to the design required to utilize the substitution.

The Architect's or Engineer's decision to approve or disapprove a substitution is a bid is final.

If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract.

No substitutions will be considered after the Contract is awarded unless provided in the Contract Documents.

22A 1-10 SUBMITTALS

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information. Submittals not so identified will be returned to the contractor without action:

The project name.  
The applicable specification section and paragraph.  
The submittal date.  
The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submittal reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities, or for omitting components or fittings, or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, contractor shall copy the architect and engineer's designated representatives. Contractor shall allow the engineer review time as specified above and indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form shall be received before electronic drawing files will be sent. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

22A 1-11 ELECTRONIC DRAWINGS

In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of \$200 for the first sheet and \$100 per sheet for each additional sheet. Contact the architect for written authorization, and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form shall be received before electronic drawing files will be sent.

22A 1-12 OPERATION AND MAINTENANCE INSTRUCTIONS

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed: start-up procedures, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts.

Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

Provide "as-built" drawings (see Division 1 and general conditions).

22A 1-13 TRAINING

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to start-up and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified in the schedule of values, time, attendance and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule owner training with at least 7 days' advance notice.

22A 1-14 WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 15 months from date of final acceptance and subject of training. The contractor and owner shall be responsible for the return of documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner.

Perform any required remedial work promptly, upon written notice from the engineer or owner.

At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including time limits warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term.

22A 1-15 EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of building without prior consultation with the architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6" layers of well-compacted dry earth in a manner to prevent future settlement.

Excavation as herein specified shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposal of material of whatever substances and of every description and of every depth and extent, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Excavated materials which are considered unsuitable for backfill, and surplus of excavated material which is not required for backfill, shall be disposed of by the contractor at his own expense and responsibility, and to the satisfaction of the architect.

22A 1-16 COINCIDENTAL DAMAGE

Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this work. Repair materials shall match existing construction. All backfilling and repairing shall meet all requirements of the owner, city and other having jurisdiction. Repair work shall be thoroughly first class. Conform to all requirements of Division 2 of these specifications.

22A 1-17 CUTTING AND PATCHING

Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required to perform work under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patching shall be thoroughly first class and shall match the original material and construction, including fire ratings if applicable in a manner satisfactory to the architect.

22A 1-18 ROUGH-IN

Coordinate and verify all rough-in work with other divisions. Conceal all piping and rough-in except in unfinished areas and where otherwise indicated in the construction documents.

22A 1-19 CONCRETE BASES

Provide concrete bases for equipment where indicated on the drawings. Concrete bases shall have chamfered edges. Size of pad shall be a minimum of 4' greater than the footprint of the equipment that it is supporting.

Construct equipment bases and hosekeeping pads of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type 1, aggregate conforming to ASTM C-33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and hosekeeping pads with No. 4 reinforcing bars conforming to ASTM A 615 or 616 – W2 x 9 W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24" on center with a minimum of two bars each direction.

Provide galvanneal anchor bolts for equipment placed on concrete equipment bases and hosekeeping pads or on concrete slabs. Anchor bolt sizes, number and placement shall be as recommended by the manufacturer of the equipment.

Concrete equipment bases shall have minimum heights in accordance with the following: for water heaters, water softeners and other equipment not listed, minimum height is 4". For water heaters over 200 gallons capacity and domestic water booster pumps, minimum height is 49". Height of equipment bases applies to equipment installed on slab-on-grade. For equipment installed on floors above grade and on the roof, refer to the drawings.

22A 1-20 STRUCTURAL STEEL

Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.

Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements.

22A 1-21 ACCESS DOORS

Provide access doors in ceilings and walls where indicated or required for access to concealed valves and equipment installed under this section. Provide concealed hinges, screwdriver-type lock, anchor straps, manufactured by Milcor, Zurn, Tilus, or equivalent. Obtain architect's approval of type, size, location, and color before ordering.

22A 1-22 PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6" and smaller. Provide galvanneal sheet metal sleeves for larger than 6". Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening compound. Pack with mineral wool and seal both ends with minimum of 1/2" of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe installation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1" annular clear space between inside of sleeve and outside of insulation.

Seal concrete or masonry exterior wall penetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Thunderrite / Link Seal, Caipico, Inc., and Metrallex.

Seal elevated concrete slabs with water proof membrane penetrations with "wall pipes" and water proof sealant. Secure waterproof membranes flashing between "wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2" thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2" above and below the concrete slab.

22A 1-24 ELECTRICAL WIRING

Line Voltage control and interlock wiring shall be provided by the Division 26 contractor. Low Voltage control wiring shall be provided by the Division 23 contractor. Required conduit and rough-ins for low voltage control wiring shall be provided by the Division 26 contractor. Furnish wiring diagrams to the Division 26 contractor as required for proper equipment hookup. Coordinate with the Division 23 contractor the actual wire sizing amps for the equipment (from the equipment nameplate) to ensure proper installation.

22A 1-25 EQUIPMENT FURNISHED BY OTHERS

Furnish and install roughed-in-wastes, vents and water services. Provide final connection to kitchen equipment, furnished by others, in locations as indicated on the drawings. Provide accessory items that are required but not furnished with the equipment, including traps, stop valves, PRV's, indirect drain from equipment to floor drains, and accessory items indicated or required for the proper operation of the complete system at the termination of the work.

Contractor shall be responsible for correct rough-in dimensions, and shall verify same with architect and/or equipment supplier prior to service installations.

22A 1-26 ALTERNATES

Refer to the architectural portion of the specification for list of alternates. Applicable sections of the base specifications shall apply to all work required by the alternate unless otherwise specified. Determine whether or not and how each alternate affects work. Include labor, materials, equipment and transportation services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bid for each alternate applicable to work, stating the amount to be added or deducted from the base bid.

22A 1-27 EXTERIOR UTILITY CONNECTIONS

Terminate domestic water, storm, and sewer lines at a point approximately five feet from the building wall, or as shown on the drawings. Make connection to the various services provided by others and coordinate connection requirements with civil engineer. Verify that installation will tie into the various services provided by others at the indicated invert elevation point prior to installation. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify architect and civil engineer so that an alternative may be determined.

Provide service piping and accessories required to complete utility connections that are not furnished by the serving utility. Coordinate with the local gas service company to provide a new gas service, including gas meter, shut-off valves, and regulator as indicated on the drawings. Installation shall be in complete conformance with the requirements of the local gas service company.

22A 1-28 BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work that requires interruption of building operation at a time when the building is not in operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner and/or tenant a minimum of 7 days in advance of work.

22A 1-30 SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test plumbing work under this contract, and assume costs involved in making the tests, and repairing and/or replacing damage resulting therefrom.

Notify the architect and the authority having jurisdiction, three (3) working days prior to making plumbing system tests. Leave concealed work uncovered until the required tests have been completed, but if necessary due to construction procedure, tests on portions of the work may be made, and when satisfactory, the work may be concealed. Test piping before insulation is installed, and before backfill. Pipes, joints, flanges, valve stems, etc., shall be tested under full operating conditions. Repair or replace defective parts with new materials. Cautioning of defective joints, cracks or holes will not be permitted. Repeat tests after defects have been eliminated. Make tests in the presence of the administrative authority and/or the owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the architect and engineer, make general operation tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

Test the drainage and vent system by plugging openings with test plugs, except those at the top of the stacks. Fill the system with water; test results shall be satisfactory if the water level remains constant for not less than one (1) hour. Subject the drainage and vent system to a pressure of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

Test the domestic water system by filling it with water and then isolating the system from its source. Keep the system closed for a period of twenty-four hours, with no fixture being used. The pressure differential for this test period shall not exceed 10 psig. Test water piping to a 125 psi hydrostatic pressure.

Test low pressure natural gas systems, subject the pipe to 10 psig air pressure for a period of one hour. The resultant pressure differential for this period shall be 0 psig. Test per gas company requirements where required.

22A 2 PLUMBING PIPING

22A 2-1 PIPING MATERIALS

Materials specified or noted on the drawings are subject to the approval of local code authorities. Verify approval before installing any material or joining method.

Domestic Water (cold, hot and hot water recirculation): Domestic water piping installed above the floor slab inside the building shall be 1/2" hard temper copper tube with wrought copper fittings and soldered connections made up with 95/5 solder. Brazed mechanically formed tee connections (T-drill) are used in copper lines where approved by code; connections shall be made with brazed silver solder (Silcos) joints in conformance with manufacturer's instructions.

Underground domestic water piping 2" and smaller shall be type "K" soft temper copper tubing with flared copper alloy fittings and connections, or type "K" hard temper copper tubing with conventional wrought copper fittings and silver solder (Silcos) joints. Install as few underground copper piping joints as possible. At building service entrance, no joints shall be installed under or within 5 feet of the building. Install domestic water piping below grade outside building at adequate depth to prevent freezing.

Underground domestic water piping 3" and larger shall be Class 52 ductile iron meeting the requirements of ANSI /AWWA Standard C151/A21.51. Piping shall be double cement lined in accordance with ANSI /AWWA Standard C104/A21.4. Fittings shall have mechanical joints. At contractor's option, pipe joints in straight runs of pipe shall be flanged and not installed under or within 5 feet of the building slab may be push-on joints. Joints shall conform to the requirements of ANSI 21.11.

Interior Waste and Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB & I Foundry, Charlotte or Tyler Pipe and bearing the trademark of the CISPI and NSF. Hubless waste pipe shall be Phillips Driscopipe Series BR00 or R000, Omega Engineering, Pepco, or equivalent. Installation shall be in conformance with utility company rules. Provide polyethylene to steel pipe transition fittings by Perfection Corporation, RW Lyall or Central Plastics at transitions from below grade to above grade. Factory assembled and pressure tested one piece design, with steel hub of Schedule 40 steel pipe with beveled edge for welding and polyethylene half shall be of ample length for making welds. Steel pipe shall have epoxy protective coating.

Connections To Plumbing Fixtures And Equipment: 1-1/4" and larger waste connections from fixture traps to cast iron pipe shall be "DWV" copper with wrought copper drainage pattern fittings with copper sweat or compression joints at fixture trap connections and brazed joints at connections to cast iron pipe.

Indirect and Condensate Drain Inside Building: Indirect and condensate drain installed inside the building shall be Type "M" hard copper with wrought copper fittings for 1" and smaller and "DWV" copper with wrought copper drainage pattern fittings for 1-1/4" and larger. Install cleanouts at elbows greater than 45 degrees.

Indirect and Condensate Drain Outside Building: Indirect and condensate drain pipe installed outside the building above ground shall be Type "M" for 1" and smaller and "DWV" for 1-1/4" and larger. Terminate at nearest roof level, gutter or other (Silcos) joints as shown on drawings. Install cleanouts at elbows greater than 45 degrees.

22A 2-2 PIPING AND EQUIPMENT INSULATION

Domestic cold water, hot water, hot water recirculation, indirect and condensate drain pipes (within building) shall be insulated in accordance with drawings for insulation details. Provide with sealanting lap to provide a continuous vapor barrier by Certainteed, Owens-Corning or Armstrong. For hot piping, provide pipe hangers and riser clamps sized to the outside diameter of piping. Butt insulation to hanger or riser clamp for vertical pipe. Seal exposed insulation with insulation sealer. Exception for vertical piping: provide clamps sized to the outside diameter of the vertical pipe and extend down through insulation. Seal penetrations of insulation and vapor barrier with wet coat of vapor barrier lap cement. For cold piping at hangers provide 8" long sections of high density, high temperature calcium silicate by Johns-Manville, fiberglass by Knurr, or 8" long styrofoam billets by Dow or Insulate unicellular piping insulation meeting ASTM E-540-01, Type I with integral high density pipe supports and encased in steel insulation shield by Cooper B-Line / Armaclor or equivalent. Insulation shall be continuous along the pipe surface, except at valves, unions, and where piping is exposed at fixtures. Provide insulation on vent piping with six feet of vent through the roof. Provide insulation on domestic cold and hot water pipes installed in walls and chases.

Provide insulation protection shield at each hanger for insulated piping.

Cover fittings with Zeston, Knurr, or equal one-piece PVC pre-molded insulating covers. Fitting covers, jackets and adhesives shall not extend flame spread rating of 25 and smoke development rating of 50 per ASTM E-84. At all above areas, fill voids between covers and piping with fiberglass insulation or tape joints. Install pipe insulation in compliance with manufacturer's and recommendations. Where pre-molded insulating fittings are not approved by local authorities, mill insulation at fittings.

Provide 2" fiberglass thick insulation for water, sanitary, waste or grease waste piping in unheated spaces when indicated on the drawings.

For hot and cold water piping installed inside masonry units of walls, provide 1/2" flexible unicellular insulation by Armaclor.

22A 2-3 PIPING JOINTS

Copper Tubing: Joints in hard temper tubing shall be soldered joints using lead-free 95/5 solder except where tubing is installed below grade or below the base slab, in which case joints shall be soldered with silver solder (Silcos). Joints in soft temper copper tubing shall be of the flared type installed in compliance with the fitting manufacturer's recommendations.

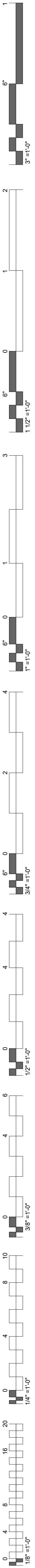
Threaded Steel Pipe: Threaded joints shall be full and clean, out with not more than three (3) threads exposed beyond the fittings. Make joints tight with graphite based pipe joint compound and paint exposed threads with acid-resisting primer. After piping has been tested and proven tight, no caulking, lamp-wick or other material will be permitted for correction of defective joints.

Welded Steel Pipe: Welded joints shall be of the butt welded single "vee" type. Bevel pipe to a 45 degree angle to within 1/16" of the inside wall, and build up the weld to one fourth greater depth than the pipe wall thickness. Welding shall be either electric or oxy-acetylene, performed in conformance with the ASME code for pressure pipe welding, and only by experienced certified welders.

Cast Iron Pipe Below Grade: Joints in bell and spigot cast iron waste and vent pipe shall be neoprene compression gaskets, Tysal or equal.

Cast Iron Pipe Above Grade: Joints in hubless pipe shall be standard CISPI 310 domestically manufactured by Anaco, AB & I Foundry, Charlotte, Husky





**22A 2-8 HEAT TRACE**

Provide heat trace system as indicated on the drawings manufactured by Raychem, Chromalox, Nextron, Nelson or equivalent.

**Heat trace cables:** Pair of parallel no. 16 AWG tinned-copper bus wires embedded in cross linked conductor polymer core, which varies power output in response to temperature along its length; line Voltage as indicated on the drawings. Provide outer jacket material as indicated on the drawings. Cable shall be capable of crossing over itself without overheating. Cable shall be capable of a heat output of 90% of rating over a temperature range of 40°F to 150°F pipe temperature. Provide field-applied power connection kits, end seal kits and any tee kits as required.

**Heat trace control panel:** For "on-off" control of heat tape circuit with NEMA 4x fiberglass reinforced plastic enclosure for outdoor installation with hinged access door with window and furnished with the following: microprocessor based controller with LED display with keypad interface and non-volatile memory. Ground fault circuit protection of heating cable circuit faults. LED indicator lights: current mode, heater on, alarm conditions and receive / transmit data. Alarm conditions: RTD failure, high/low temperature, high/low current, high/low resistance and high/low Voltage, ground fault alarm, trip, loss of programmed values and electromechanical relay failure. Alarm contacts: one single pole single throw rated at 75 Amp 120 to 277 Volt relay and one dry pilot duty only relay rated at 48 VAC / DC 50 mA, 10VA maximum resistive switching. Power strip for connecting 277 Volt single phase at 30 Amps maximum. Temperature control sensors: total of two three wire 100 Ohm RTD's with 10 foot long stainless steel sheath, ambient temperature range of -76 deg. F to 1058 deg. F with an accuracy of +/- 3 deg. F and a repeatability of +/- 3 deg. F.

Thermostats: shall be as scheduled on the drawings and of the same manufacturer as the heat trace cable.

**22A 2-9 AIR ADMITTANCE VALVES**

Provide air admittance valves where indicated on drawings. Air admittance valves shall meet ASSE 1050 or 1051 where applicable by Studor or equal, by Oatey, Proset, or Rectoseal. Install per code and manufacturer requirements.

**22A 2-10 HEAT TEMPERATURE MAINTENANCE SYSTEM**

Provide heat trace system as indicated on the drawings manufactured by Raychem with no substitutions accepted.

**Heat trace cables:** Pair of parallel No. 16 AWG tinned-copper bus wires embedded in cross linked conductor polymer core, which varies power output in response to temperature along its length; line voltage as indicated on the drawings. Provide outer jacket material. Cable shall be capable of crossing over itself without overheating. Cable shall capable of a heat output of 90% of rating over a temperature range as indicated on the drawings pipe temperature. Provide field-applied power connection kits, end seal kits and any tee kits as required. Provide pipe identification markers stating "electrically heat traced" every fifteen feet.

**Heat trace control panel:** For control of heat tape circuit with integrated function that lowers the maintenance temperature during low use hours, nine customizable predefined programs and capable of operating as a master for up to 8 slave controllers. NEMA 12 ABS plastic enclosure for indoor installation with hinged access door with window and furnished with the following: microprocessor based controller with LED display with keypad interface and non-volatile memory. 30 mA equipment ground fault circuit protection. LED indicator lights: power on, power to heating cable, heat-up cycle, water heater alarm and alarm. Alarm conditions: loss of power, controller reinitialized, high internal controller temperature, high water temperature, low water temperature and master / slave error. Alarm contacts: one single pole single throw rated at 1 Amp 24VAC or VDC. Power strip for connecting 240 Volt single phase at 30 Amps maximum. Temperature control sensor: thermostat with 13'-3" long lead.

**22A 3 PLUMBING SPECIALTIES**

**22A 3-1 WATER HAMMER ARRESTORS, AND TRAPS** Provide water hammer arrestors at valves or batteries of fixtures as indicated on the drawings to prevent water hammer. Arrestors shall be Josam, Jay R. Smith, Precision Plumbing Products, Proflo, Sioux Chief, Watts, Watts, or Zum, stainless steel bellows type, or o-ring sealed and lubricated acetel piston. Install water hammer arrestors per the Plumbing and Drainage Institute PDI WH-201 installation instructions. Installation of arrestors at batteries of fixtures precludes the requirement for individual air chambers at each battery fixture. Air chambers are not acceptable as a substitute for water hammer arrestors.

Provide water-seal traps on floor drains, fixtures and equipment with drain connections, including traps not furnished in combination with fixtures and equipment. Place trap as close to the fixture or drain as possible. Exposed traps in finished spaces shall be chrome-plated brass.

Provide conventional "p" type trap, water-sealed self-cleaning design. Full "s" traps or trap standards shall be used only where specifically called for on the drawings or elsewhere in this specification. Trap water seals shall not be less than 2", and deep seal traps shall be provided where specified or indicated. Each trap not integral with the fixture or floor drain or installed below the base slab shall be provided with an accessible cleanout of adequate size. Provide trap primers where required by code and where indicated on the drawings.

**22A 3-2 CLEANOUTS, FLOOR DRAINS AND ROOF DRAINS**

Cleanouts, floor drains and roof drains shall be by one manufacturer if possible. Acceptable manufacturers are Josam, Jay R. Smith, Wade, Watts, Watts, Mifab, and Zum. Provide long sweep fittings for cleanout extensions; short sweeps at start of runs or change in direction and combination wye and eighth bend fittings in horizontal runs. Install cleanouts with a minimum of 18" clear all around, consult local codes for other requirements, for easy system maintenance. Install plug with lefton joint compound.

**FLOOR DRAINS:** Shall be as scheduled on the drawings, manufactured by Zum or equivalent by ABT, Inc., Polydrain, Quazite, Mifab, Jay R. Smith - ACO or NDS.

**TRENCH DRAINS:** Shall be as scheduled on the drawings, manufactured by Zum or equivalent by ABT, Inc., Polydrain, Quazite, Mifab, Jay R. Smith - ACO or NDS.

**FLOOR CLEANOUTS:** Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit, at a minimum of every 50 feet in horizontal soil and waste lines, and at turns of pipe greater than 45 degrees. Cleanouts shall be full size of the pipe up to 4", and 4" size for pipes larger than 4". Determine the type of floor covering to be used at each floor cleanout location and provide top with variations suitable for floor covering (carpet markers, recessed for tile and scotched for unfinished floor). Rough-in and install each floor cleanout flush with the finished floor construction.

**EXTERIOR CLEANOUTS:** Shall be as scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit, at a minimum of every 100 feet in horizontal soil, waste and storm service lines. Embed each exterior cleanout in a block of concrete, flush with finished grade. Coordinate size of block with construction documents.

**WALL CLEANOUTS:** Shall be as scheduled on the drawings. Install wall cleanouts at points as noted on the drawings; at the foot of each soil, waste or interior downspout stack; at horizontal soil and waste branches longer than five feet not served by a floor cleanout; consult local codes for installation at specific fixture types. Install wall cleanouts above the flood rim of the fixture served within four feet of the floor and install extensions from the cleanout tee to the wall to locate the plug within 2" of the wall where required. Install cleanouts on urinals and sinks where required by code.

**ROOF DRAINS:** Shall be as scheduled on the drawings. Provide with roof sump receiver, extension, secondary flashing clamps and underdeck clamp as required, provide expansion joints where required. Provide overflow roof drains where indicated on the drawings with inlet flow line 2" above the primary roof drain inlet.

**BACKWATER VALVES -** removable flapper type: Shall be as scheduled on the drawings by Cleancheck or equal, by Mainline Backflow Products or Spears.

**22A 3-3 VALVES, STRAINERS, HOSE BIBBS, AND UNIONS**

Plumbing system valves shall be Crane Company or Nibco of models herein specified, or equivalent by Hammond, Milwaukee, Stockham or Mueller Valves. Valves shall be of the best quality, designed for 125 psi steam working pressure. Install valves on the hot and cold water lines at the water heater connections and other items of equipment, at branches from mains serving groups of fixtures, and at other places indicated or required by the installation to allow ease of future maintenance.

**GATE VALVES:** Class 125, size 2" and smaller shall be Nibco #S-113-LF non-rising stem, soldered lead free bronze body and parts, with wedge disc. Gate valves 2-1/2" and larger shall be Crane #465-1/2 or Nibco #617-0, OS&Y, iron body flanged wedge gate with brass seats and stem.

**BALL VALVES** (may be used in lieu of gate valves up to 2"); 2" and smaller, Nibco #S-685-80-LF; two piece lead free bronze body, with soldered ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem.

**GLOBE VALVES:** Globe valves shall be Class 125. Globe valves 2" and smaller shall be Milwaukee #UP1502, screwed lead free bronze body and brass disc. Globe valves 2-1/2" and larger shall be Crane #351 iron body flanged valve with brass trim.

**CHECK VALVES:** Check valves shall be Class 125. Check valves for installation in horizontal pipe runs shall be of the "swing disc" design. Horizontal check valves 2" and smaller shall be Milwaukee #UP1509 or Nibco #S-413-Y-LF with soldered lead free bronze body and bronze disc. Horizontal check valves 2-1/2" and larger shall be Crane #373 or Nibco #R18 iron body flanged valve with brass trim. Check valves for installation in vertical pipe runs shall be of the "vertical" spring loaded design. Vertical check valves 2" and smaller shall be Milwaukee #UP1548T or Nibco #S-480-Y-LF with soldered lead free bronze body and bronze disc. Vertical check valves 3" and larger shall be center guided.

**GAS COCKS:** Gas cocks 2" and smaller shall be Homestead #611, screwed iron body with brass trim and flat head. Gas cocks 2-1/2" and larger shall be Homestead #612 flanged semi-steel body with iron trim and square head. Equivalent are Flowserve-Nordstrom or RM Energy Systems "Hercules".

**THERMOSTATIC MIXING VALVES:** Thermostatic mixing valves shall be Powers as described on the drawings or equal Armstrong, Bradley, Leonard, Lawler, Symmons or Watts meeting ASSE 1070 with brass body, non-corrosive internal parts, tamper resistant temperature adjustment, union inlets and check stops with strainers. Set temperature at 110 deg. F for hand washing.

**GAS LINE PRESSURE REGULATORS:** Gas line pressure regulators shall be by American Meter Company, Fisher, Itron, Maxtrol or Sensus with capacities as scheduled on the drawings. Regulators shall be single stage, steel jacketed, corrosion-resistant type with interstitial relief valve with atmospheric vent, elevation compensator, with threaded ends, for inlet and outlet.

**STRAINERS:** Strainers 2" and smaller shall be Watts #S777S1 or Watts #LFS777S1 with soldered lead free bronze, brass cap and Monel 40 mesh screen. Strainers 2-1/2" and larger shall be Watts #77F-DI-FDA-125 with flanged iron body with fused FDA epoxy coating, bolted iron cap and stainless steel screen with 1/16" perforations. Strainers size 2-1/2" and larger shall have a 1" blow-off line with a 1" gate valve connected to the blow-off connection and shall be extended to the nearest floor drain.

**DRAIN VALVES & INTERIOR HOSE BIBBS:** Woodford #24P, equivalent by Watts, Zum, or J.R. Smith with rough brass body, 1/2" screwed inlet, with 3/4" hose thread outlet, integral vacuum breaker, wheel handle and composition disc.

**EXPOSED INTERIOR HOSE BIBBS:** Chicago #952, equivalent by Watts, Zum, or J.R. Smith with chrome plated brass body, 3/4" screwed inlet, 3/4" hose thread outlet, integral vacuum breaker, wheel handle and composition disc.

**HOT & COLD WATER MIXING HOSE BIBBS:** Chicago #897-CP-4C, equivalent by Watts, Zum, or J.R. Smith with vacuum breaker, stops in shanks with integral checks, and 3/4" hose thread outlet.

**WALL HYDRANTS:** Jay R. Smith #5609-QT "non-freezer" surface type with cast bronze satin nickel plated face, with integral vacuum breaker, 3/4" hose connection, adjustable wye clamp, removable key handle operator, or equal by Woodford, Josam, Prier, Wade, Watts or Zum. Provide accessible shut off valve and water hammer arrestor inside building.

**MILD CLIMATE WALL HYDRANTS:** Mifab #MY-25 surface type with top or bottom feed close coupled connection for installation in a 4" nominal wall, cast bronze, with nickel plated face, with integral vacuum breaker, 3/4" hose connection, adjustable wye clamp, removable key handle operator, or equal by Woodford, Josam, or Zum. Provide accessible stop valve and water hammer arrestor inside building.

**SANITARY POST HYDRANTS:** Hoepfner "freeze-flow executive" or equal by Woodford, Watts, Zum, or J.R. Smith meeting ASSE #1057.

**SANITARY ROOF HYDRANTS:** As scheduled on the drawings, by Mapa, Woodford, Watts, Zum, or J.R. Smith.

**UNIONS:** Ferrous unions shall be Crane or equal, combination iron and brass, ground joint with screwed ends. Copper unions shall be Streamline or equal, cast bronze sweat type with ground joint. Ferrous to copper unions shall be Universal Controls or equal, dielectric type with threaded nylon insert.

**FLOW CONTROL VALVES:** For installation in hot water recirculation lines, shall be Bell & Gossett RRF-1/2S "circuit setter" or equal by Armstrong or Nibco; rest bronze body, brass ball, TFE seal rings, calibrated orifice, memory stop, radiator valves with internal check valves, drain port and sweat connections. Provide ball valve, strainer and check valve upstream and union and ball valve downstream of each flow control valve. Set the flow control valves to the flows as indicated on the drawings.

**PRESSURE REDUCING VALVES:** Self-contained type shall be of the type as scheduled and indicated on the drawings by Watts or equal by Cash-Acme or Wilkins.

**PRESSURE REDUCING VALVES:** Pilot operated type shall be as scheduled on the drawings by Watts or equal by Clay-Val, OCV or Wilkins.

**BACKFLOW PREVENTERS:** Shall be of the type as scheduled and indicated on the drawings by Watts, Conbraco, Febco or Wilkins.

**22A 3-5 WATER SERVICE ENTRANCE: PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER**

Provide a backflow preventer (BFP) or type required by local code, and a pressure reducing valve (PRV) if required by water pressure greater than 80 psi, on the domestic water service immediately downstream of the BFP at the water service entry. Set the PRV as indicated on the drawings. Provide a pressure gauge and hose bibb with isolation valve downstream of the BFP and/or PRV for system drain down.

For water services 2" and smaller provide a Type "K" soft copper tube that runs continuously from five feet outside the building with sweeping bend to 12" above the floor slab. Provide a shutoff valve at 12" above the floor. There shall be no fittings under the floor slab. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.

For water services 3" and larger provide ductile iron pipe and fittings from five feet outside the building to 12" above the floor. Provide a shutoff valve at 12" above the floor. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.

**22A 3-6 SYSTEM ACCESSORIES**

Thermometers shall be American 3" bi-metal dial type with separable socket, and shall be installed where indicated or required.

Pressure gauges shall be Ashcroft 3" dial type with shut-off cock, and shall be installed where indicated or required.

Ice maker connection boxes shall be as specified on the drawings, Guy Gray #BIM875 or equivalent, with 20 gauge steel body, wall flange and water connection.

Trap guards shall be by Proset Systems of molded PVC elastomer that allows the flow of waste water and closes upon termination of flow. Install per manufacturer's installation instructions. Do not touch elastomeric plug or allow contact with primer or solvent cement.

**22A 4 PLUMBING FIXTURES AND EQUIPMENT**

**22A 4-1 PLUMBING FIXTURES**

Provide china fixtures as scheduled by American-Standard or equivalent by Crane, Eljer, Gerber, Kohler, Toto-kiki or Zum. Provide stainless steel sinks as scheduled by Elkay or equal by Just. Provide electric water coolers as scheduled by Elkay or equivalent by Acoim / Aqua, Halsey Taylor or Haves. Provide mop sinks as scheduled by Stan-Williams or equal by Acoim Engineering Co., Flat or Forestone. Provide fixtures of same manufacturer where possible.

Fixtures shown on the drawings or specified herein shall be furnished and installed, set firm and true, connected to required piping services, thoroughly cleaned, left clean and ready for use. Exposed fittings and piping at the fixtures shall be chrome-plated, and water supply piping shall be valved at each fixture.

Vitreous china fixtures shall be of the best grade vitreous ware, without pit holes or blemishes, and the outlines shall be generally true. The engineer reserves the right to reject any pieces which, in his opinion, are faulty. Fixtures set against walls shall have ground tanks and shall be caulked with silicone sealant of a matching color.

**22A 4-2 PLUMBING FIXTURE TRIM**

Faucets and trim in contact with drinking water shall meet or exceed the safe water drinking act (SWDA) lead-free standards of ANSINFSF Standard 61, Section 9.

Provide faucets as scheduled on drawings.

Provide single lever handle faucets as scheduled on drawings.

Fixture p-traps shall be 17 gauge brass body with cleanout, 17 gauge seamless tubular wall bend with cast brass slip nut, shallow steel flange, all chrome plated.

Lavatory, sink and water closet supplies shall be solid brass angle or straight type with full turn brass stem, wheel handle or loose key types as noted on drawings, shallow steel flange, 3/8" copper riser flange, all chrome plated, final connection as required.

Lavatory drains shall be grid type chrome plated 17 gauge brass open grid with 1-1/4" x 6" long seamless brass tailpiece and brass locknut with heavy rubber basin washer and fiber friction washer.

Provide shower valves as scheduled on drawings.

Sink drains shall be basket type with chrome plated forged brass basket strainer and strainer body with 1-1/2" x 4" long seamless brass tailpiece and cast brass lock and coupling nuts.

Provide handicap insulation kits for lavatories and sinks on exposed water and waste pipes and fittings, including offset drain and continuous waste covers where required.

Provide flush valves as specified on drawings: Sloan or equivalent with chrome plated brass body, chromamine resistant diaphragm with protected orifice, screw driver angle stop, non-hold open feature and sweat adapter kit. Provide ADA handles on ADA compliant fixtures. Provide solid pipe ring supports for urinal flush tubes anchored securely to wall where indicated on the drawings. Provide low consumption type valves with 1.28 gallons per flush for water closets and 0.125 gallons per flush for urinals.

Furnish to the owner, with receipt, the spare parts to include faucet washers and o-rings, flushometer repair kits and water closet tank repair kits for the fixtures furnished under the construction documents for this project.

**22A 4-3 WATER HEATER**

Water heater shall be by A.O. Smith, Bradford-White, Lochinvar, State, Rheem, Ruud, or equivalent with capacity as scheduled on the drawings. Unit shall be electric, glasslined tank type complete with steel jacket, fiberglass insulation, magnesium anode, integral thermostats and controls, and temperature & pressure relief valve. Water heater shall be UL listed and meet ASHRAE 90.1B standards for thermal efficiency and standby heat loss.

Relief valve: Water heater relief valve shall be of the test lever type, with automatic reset, combination temperature and pressure relief, and shall be ASME and AGA stamped and approved. It shall be installed directly on the heater tank, or in the hot water outlet, not more than 3" from the tank. The temperature shall be normally set to relieve at 210 deg. F and the pressure relief shall be at 125 psi. The relief valve discharge line shall be piped down and terminate 6" above a floor drain.

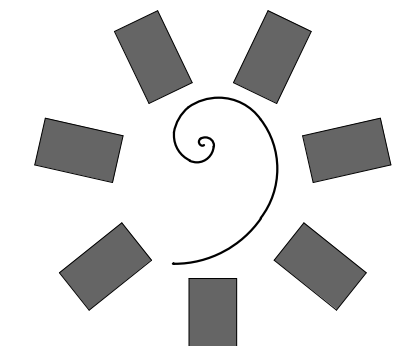
Vacuum relief valve: Watts #N36 or Wilkins #VR-10 with bronze body and silicon disc. Valve shall open at 0.5" Hg vacuum and be rated for 200 psig working pressure and 250 deg. F temperature. Install in cold water supply to each water heater downstream of the shutoff and check valves.

Recirculation pump: Shall be by Taco as scheduled on the drawings, or equal by Armstrong, Grundfos, or Bell & Gossett, of all bronze construction with aquastat and/or timer.

Expansion tank: Expansion tank shall be Amtrol "Therm-X-Trol" as scheduled on the drawings or equal by Armstrong, Bell & Gossett, Proflo, Taco, or Watts. Unit shall be constructed of welded carbon steel listed for ASME labeled for 125 psig working pressure, with a FDA approved butyl rubber diaphragm, taps for pressure gage, air charging fitting, and drain fitting. Support as detailed on the drawings. Charge tank with air pressure equal to the static water pressure.

Storage tank: Hot water storage tank shall be as scheduled; by Lochinvar or equivalent welded carbon steel, vertical glass-lined type as noted on the drawings, listed for ASME labeled for 125 psig working pressure, magnesium anodes, threaded leg sockets on one head for vertical mounting, and pressure and temperature relief valve. Provide external insulation for tank, if not factory insulated.

END OF SECTION 22A

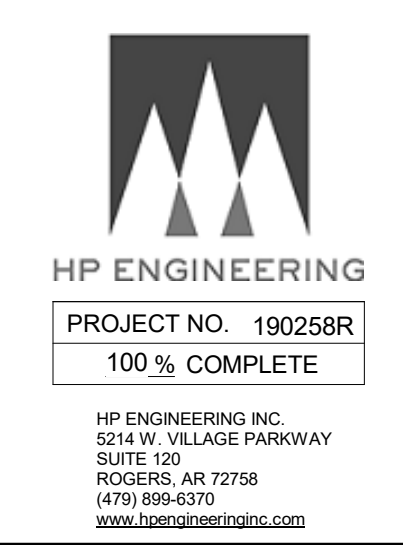


**James R. Childers Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2460  
www.childersarchitect.com



07/31/2020

CONSULTANT LOGO



CLIENT:



**CHEROKEE NATION TAG OFFICE**  
CATOOSA, OKLAHOMA

KEY PLAN:

REVISIONS	
#	DESCRIPTION

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

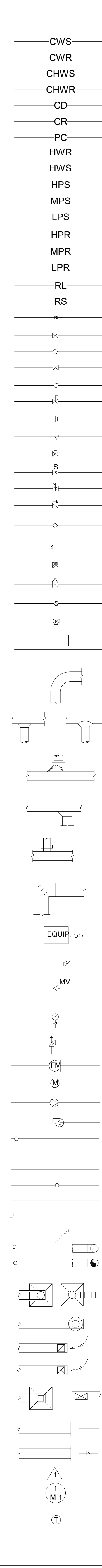
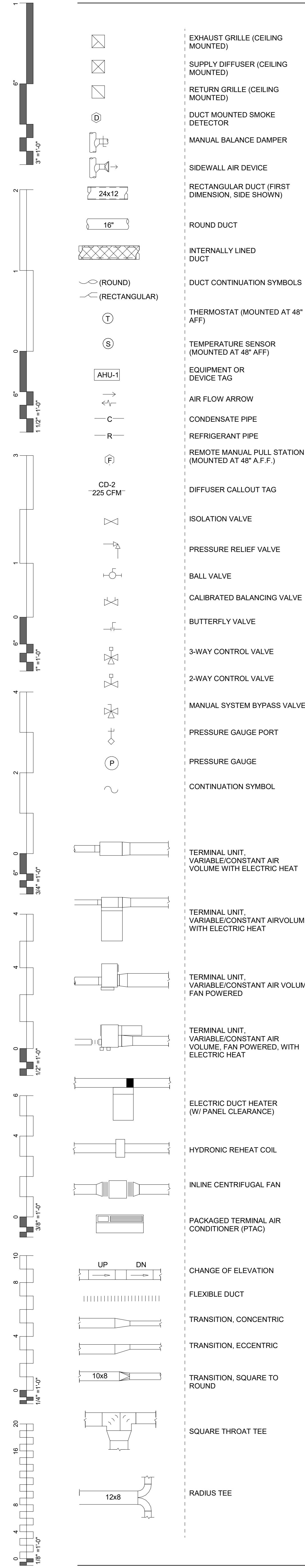
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07-31-2020	18-01.10

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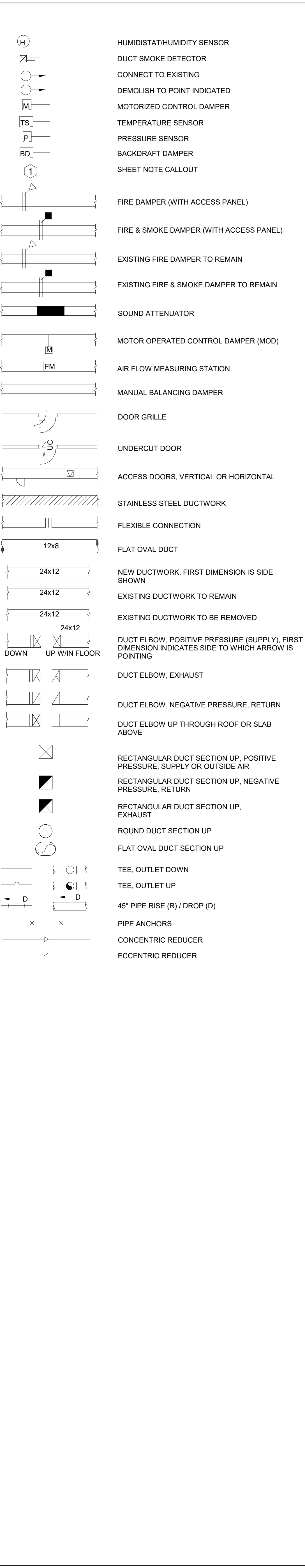
**P3.01**

**PLUMBING SPECIFICATIONS**





CWS - CONDENSER WATER SUPPLY  
 CWR - CONDENSER WATER RETURN  
 CHWS - CHILLED WATER SUPPLY  
 CHWR - CHILLED WATER RETURN  
 CD - CONDENSATE  
 CR - CONDENSATE RETURN  
 PC - PUMPED CONDENSATE  
 HWR - HOT WATER RETURN  
 HWS - HOT WATER SUPPLY  
 HPS - HIGH PRESSURE STEAM SUPPLY  
 MPS - MEDIUM PRESSURE STEAM SUPPLY  
 LPS - LOW PRESSURE STEAM SUPPLY  
 HPR - HIGH PRESSURE STEAM RETURN  
 MPR - MEDIUM PRESSURE STEAM RETURN  
 LPR - LOW PRESSURE STEAM RETURN  
 RL - REFRIGERANT LIQUID  
 RS - REFRIGERANT SUCTION  
 FLOW DIRECTION  
 GATE VALVE  
 BALL VALVE  
 CALIBRATING BALANCING VALVE  
 BUTTERFLY VALVE  
 GAS COCK  
 UNION  
 STRAINER  
 CONTROL VALVE  
 SOLENOID VALVE  
 PSI REG.  
 CHECK VALVE  
 FLOW SWITCH  
 SLOPE DIRECTION (DOWN)  
 FLEX CONNECTION  
 O.S.&Y. GATE VALVE  
 STEAM TRAP  
 THREE-WAY CONTROL VALVE  
 THERMOMETER  
 RADIUS ELBOW  
 RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF  
 STANDARD BRANCH TAKE-OFF  
 SPIN-IN TAKE-OFF  
 SQUARE THROAT ELBOW WITH TURNING VANES  
 P-TRAP  
 TWO-WAY CHECK VALVE  
 MANUAL VENT  
 PRESSURE GAUGE  
 RELIEF VALVE  
 FLOW METER  
 WATER METER  
 INLINE PUMP  
 VALVE ON RISER  
 CAP  
 CONNECTION, BOTTOM  
 CONNECTION, TOP  
 COUPLING  
 ELBOW, 90°  
 ELBOW, 45°  
 ELBOW, TURNED DOWN  
 ELBOW, TURNED UP  
 CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)  
 ROUND DIFFUSER  
 CEILING RETURN  
 CEILING EXHAUST  
 CEILING DIFFUSER, RECTANGULAR OR SQUARE NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)  
 SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)  
 RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)  
 REVISION REFERENCE  
 DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON  
 THERMOSTAT/TEMPERATURE SENSOR



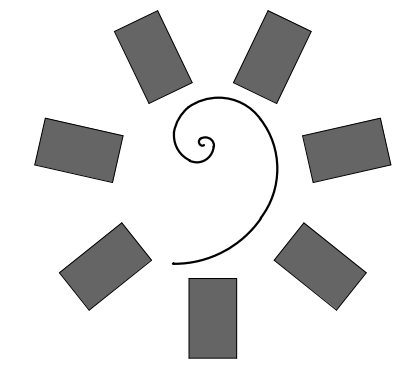
HUMIDISTAT/HUMIDITY SENSOR  
 DUCT SMOKE DETECTOR  
 CONNECT TO EXISTING  
 DEMOLISH TO POINT INDICATED  
 MOTORIZED CONTROL DAMPER  
 TEMPERATURE SENSOR  
 PRESSURE SENSOR  
 BACKDRAFT DAMPER  
 SHEET NOTE CALLOUT  
 FIRE DAMPER (WITH ACCESS PANEL)  
 FIRE & SMOKE DAMPER (WITH ACCESS PANEL)  
 EXISTING FIRE DAMPER TO REMAIN  
 EXISTING FIRE & SMOKE DAMPER TO REMAIN  
 SOUND ATTENUATOR  
 MOTOR OPERATED CONTROL DAMPER (MOD)  
 AIR FLOW MEASURING STATION  
 MANUAL BALANCING DAMPER  
 DOOR GRILLE  
 UNDERCUT DOOR  
 ACCESS DOORS, VERTICAL OR HORIZONTAL  
 STAINLESS STEEL DUCTWORK  
 FLEXIBLE CONNECTION  
 FLAT OVAL DUCT  
 NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN  
 EXISTING DUCTWORK TO REMAIN  
 EXISTING DUCTWORK TO BE REMOVED  
 DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING  
 DUCT ELBOW, EXHAUST  
 DUCT ELBOW, NEGATIVE PRESSURE, RETURN  
 DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE  
 RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR  
 RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN  
 RECTANGULAR DUCT SECTION UP, EXHAUST  
 ROUND DUCT SECTION UP  
 FLAT OVAL DUCT SECTION UP  
 TEE, OUTLET DOWN  
 TEE, OUTLET UP  
 45° PIPE RISE (R) / DROP (D)  
 PIPE ANCHORS  
 CONCENTRIC REDUCER  
 ECCENTRIC REDUCER

A - COMPRESSED AIR LINE OR AREA  
 ABC - ABOVE CEILING  
 AC - AIR CHAMBER, ALTERNATING CURRENT  
 AC - AIR CONDITIONING  
 ADJ - ADJUSTABLE  
 AFF - ABOVE FINISHED FLOOR  
 AG - ABOVE FINISHED GRADE  
 AL - ALUMINUM  
 AMB - AMBIENT  
 AMP - AMPERE  
 ARR - ARRANGEMENT  
 ATC - AUTOMATIC TEMPERATURE CONTROL AT CEILING  
 ATM - ATMOSPHERE  
 AUTO - AUTOMATIC  
 AUX - AUXILIARY  
 AVG - AVERAGE  
 BBD - BOILER BLOWDOWN  
 BF - BOILER FEED  
 BHP - BOILER HORSEPOWER, BRAKE HORSEPOWER  
 BOB - BOTTOM OF BEAM  
 BOD - BOTTOM OF DUCT  
 BOP - BOTTOM OF PIPE  
 BOT - BOTTOM  
 BP - BACK PRESSURE  
 B & S - BELL-AND-SPIGOT  
 BSMT - BASEMENT  
 BTU - BRITISH THERMAL UNIT  
 BV - BUTTERFLY VALVE  
 C - CENTER  
 C TO C - CENTER TO CENTER  
 CA - COMPRESSED AIR  
 CAL - CALORIE  
 CAP - CAPACITY  
 CD - CONDENSATE DRAIN  
 CF - CHEMICAL FEED, CUBIC FOOT  
 CFH - CUBIC FEET PER HOUR  
 CFM - CUBIC FEET PER MINUTE  
 CI - CAST IRON  
 CIRC - CIRCULAR  
 CL - CENTER LINE  
 CM - CENTIMETER  
 CM2 - SQUARE CENTIMETER  
 CO - CLEAN OUT  
 COL - COLUMN  
 CONC - CONCRETE, CONCENTRIC  
 CONN - CONNECT, CONNECTION  
 CONT - CONTINUATION  
 CPVC - CHLORINATED POLYVINYL CHLORIDE  
 CR - CONDENSER RETURN  
 CRW - CHEMICAL RESISTANT WASTE  
 CS - CONDENSER SUPPLY  
 CTR - CENTER  
 CU - CUBIC  
 CU FT - CUBIC FEET  
 CU IN. - CUBIC INCHES  
 CV - CHECK VALVE  
 CW - COLD WATER  
 CWR - COLD WATER RISER  
 D - DRAIN, DEEP  
 DB - DRY BULB  
 DDC - DIRECT DIGITAL CONTROL  
 DEG - DEGREE  
 DELTAT - TEMPERATURE DIFFERENCE  
 DET - DETAIL  
 DIA - DIAMETER  
 DISC - DISCONNECT  
 DN - DOWN  
 DP - DEW POINT TEMPERATURE  
 DR - DRAIN  
 DWG - DRAWING  
 EA - EXHAUST AIR, EACH  
 EAT - ENTERING TEMPERATURE  
 EATR - EXHAUST AIR TRANSFER RATIO  
 E TO C - END TO CENTER  
 EER - ENERGY EFFICIENT RATIO  
 EFF - EFFICIENCY  
 EJ - EXPANSION JOINT  
 EL - ELEVATION  
 ELB - ELBOW  
 ELEC - ELECTRICAL  
 ENT - ENTERING  
 ERV - ENERGY RECOVERY VENTILATOR  
 ESP - EXTERNAL STATIC PRESSURE  
 ET - EXPANSION TANK  
 EVAP - EVAPORATOR  
 EWT - ENTERING WATER TEMPERATURE  
 EXH - EXHAUST  
 EXP - EXPANSION  
 EXST - EXISTING  
 EXT - EXTERNAL  
 OF - DEGREES FAHRENHEIT  
 F - FAHRENHEIT  
 FC - FLEXIBLE CONNECTOR, FLEXIBLE CONNECTION  
 FCO - FLOOR CLEAN OUT  
 FD - FIRE DAMPER  
 FDW - FEED WATER  
 FEC - FIRE EXTINGUISHER CABINET  
 FF - FINISH FLOOR  
 FG - FINISH GRADE  
 FHC - FIRE HOSE CABINET  
 FLA - FULL LOAD AMPS  
 FLR - FLOOR  
 FM - FLOW METER  
 FO - FUEL OIL  
 FOV - FLUSH OUT VALVE  
 FPM - FEET PER MINUTE  
 FPS - FEET PER SECOND  
 FS - FLOW SWITCH, FEDERAL SPECS  
 FT - FOOT, FEET  
 FTG - FITTING  
 FU - FIXTURE UNIT  
 FV - FLUSH VALVE  
 G - GRAM, GAS LINE  
 GA - GAUGE  
 GAL - GALLONS  
 GALV - GALVANIZED  
 GLV - GLOBE VALVE  
 GND - GROUND  
 GPD - GALLONS PER DAY  
 GPH - GALLONS PER HOUR  
 GPM - GALLONS PER MINUTE  
 GPS - GALLONS PER SECOND  
 GR - GRAIN  
 GV - GATE VALVE  
 GWH - GAS WATER HEATER  
 H2O - WATER  
 HB - HOSE BIBB  
 HD - HEAD  
 HG - MERCURY  
 HGT - HEIGHT  
 HMD - HUMIDITY  
 HORIZ - HORIZONTAL  
 HP - HORSEPOWER  
 HR - HOURS  
 HRV - HEAT RECOVERY VENTILATOR  
 HTD - HEATED  
 HTR - HEATER  
 HW - HOT WATER  
 HWH - HOT WATER HEATER  
 HWR - HOT WATER RETURN

HWS - HOT WATER SUPPLY  
 HWT - HOT WATER TANK  
 IZ - HERTZ  
 ID - INSIDE DIAMETER  
 IN - INCH  
 INHG - INCHES OF MERCURY  
 INSUL - INSULATION  
 INT - INTERNATIONAL  
 INTL - INTERNAL  
 IPS - IRON PIPE SIZE  
 IV - INDIRECT VENT  
 IW - INDIRECT WASTE  
 J - JOINT  
 K - KELVIN  
 KG - KILOGRAM  
 KM - KILOMETRE  
 KM2 - SQUARE KILOMETRE  
 KPA - KILO PASCAL  
 KS - KITCHEN SINK  
 KW - KILOWATT  
 L - LENGTH, LITER  
 LAT - LEAVING AIR TEMPERATURE  
 LB - POUND  
 LBF - POUND-FORCE  
 LIQ - LIQUID  
 LP - LOW PRESSURE  
 LRA - LOCKED ROTOR AMPS  
 LVL - LEVEL  
 LVR - LOUVER  
 LWT - LEAVING WATER TEMPERATURE  
 M - METER  
 M2 - SQUARE METER  
 M TYPE - LIGHTEST TYPE OF RIGID COPPER PIPE  
 MAN - MANUAL  
 MAT - MIXED AIR TEMPERATURE  
 MAX - MAXIMUM  
 MBH - THOUSAND BRITISH THERMAL UNITS PER HOUR  
 MFR - MANUFACTURER  
 MG - MILLISECOND  
 MGD - MILLIONS GALLONS PER DAY  
 MIN - MINIMUM OR MINUTE  
 ML - MILLILITER  
 MM - MILLIMETER  
 MM3 - CUBIC MILLIMETRE  
 MPT - MALE PIPE THREAD  
 MTD - MOUNTED  
 MU - MAKE UP  
 NA - NOT APPLICABLE  
 NC - NORMALLY CLOSED  
 NEG - NEGATIVE  
 NIC - NOT IN CONTACT  
 NO - NORMALLY OPEN  
 NPHP - NAME PLATE HORSEPOWER  
 NPS - NOMINAL PIPE SIZE  
 NPSH - NET POSITIVE SUCTION HEAD  
 NTS - NOT TO SCALE  
 O - OXYGEN  
 OA - OUTSIDE AIR  
 OAT - OUTSIDE TEMPERATURE  
 OC - ON CENTER  
 OD - OUTSIDE DIAMETER  
 OED - OPEN END DUCT  
 OF - OVERFLOW  
 OVA - OUTLET VELOCITY  
 OZ - OUNCE  
 PA - PASCAL  
 PC - PLUMBING CONTRACTOR  
 PCR - PUMPED CONDENSATE RETURN  
 PD - PRESSURE DROP  
 PF - POWER FACTOR  
 PG - PRESSURE GAUGE  
 PL - PLATE  
 PNEJ - PNEUMATIC PRESS - PRESSURE  
 PROP - PROPELLER  
 PRV - PRESSURE REDUCING VALVE  
 PSI - POUNDS PER SQUARE INCH  
 PSIA - POUND PER SQUARE INCH ABSOLUTE  
 PSIG - POUND PER SQUARE INCH GAUGE  
 PV - PLUG VALVE  
 QTY - QUANTITY  
 RA - RETURN AIR  
 RAD - RADIUS  
 RAT - RETURN AIR TEMPERATURE  
 RD - ROOF DRAIN  
 RIE - RETURN AND EXHAUST RECOV - RECOVERY  
 RED - REDUCER  
 REF - REFERENCE  
 RH - RELATIVE HUMIDITY  
 REQD - REQUIRED  
 REV - REVISION  
 RL - REFRIGERANT LIQUID  
 RLA - RATED LOAD AMPERES  
 RM - ROOM  
 RS - REFRIGERANT SUCTION  
 RTN - RETURN  
 RV - RELIEF VALVE  
 S - SWITCH  
 SA - SHOCK ABSORBER, SUPPLY AIR  
 SAT - SUPPLY AIR TEMPERATURE  
 SCH - SCHEDULE  
 SDT - SATURATED DISCHARGE TEMPERATURE  
 SEC - SECONDS, SECONDARY  
 SENS - SENSIBLE  
 SEP - SEPARATE  
 SEQ - SEQUENCE  
 SER - SERIES  
 SERV - SERVICE  
 SF - SERVICE FACTOR  
 SHI - SHEET  
 SI - INTERNATIONAL SYSTEMS OF UNITS  
 SOL - SOLENOID  
 SP - STATIC PRESSURE  
 SPEC - SPECIFICATION  
 SQ - SQUARE  
 SQ FT. - SQUARE FEET  
 SS - STAINLESS STEEL  
 SSH - STATIC SUCTION HEAD  
 SST - SATURATED SUCTION TEMPERATURE  
 STD - STANDARD  
 STH - STATIC TOTAL HEAD  
 STL - STEEL  
 SUCT - SUCTION  
 SPLV - SUPPLY  
 SV - SERVICE  
 SVH - STATIC VELOCITY HEAD  
 SW - SERVICE WEIGHT  
 SWS - SERVICE WATER  
 TD - TEMPERATURE DIFFERENCE  
 TDH - TOTAL DYNAMIC HEAD  
 TEMP - TEMPERATURE  
 TH - THERMOMETER  
 THK - THICK  
 TP - TOTAL PRESSURE  
 TSP - TOTAL STATIC PRESSURE  
 UF - UNDER FLOOR  
 UH - UNIT HEATER  
 V - VENT, VOLT, VOLUME

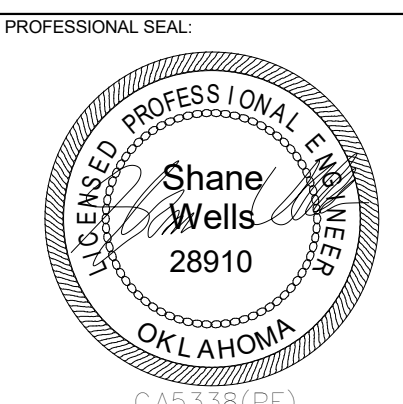
1. SUBMISSION OF PROPOSAL IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.  
 2. ALL DUCT SIZES SHOWN ARE THE AIRFLOW DIMENSIONS. DUCT DIMENSIONS DO NOT HAVE ALLOWANCES FOR INSULATION LINES. ALL REQUIRED REVISIONS SHALL BE RECORDED ON A DESIGNATED HARD COPY SET OF RED-LINE PLANS TO BE KEPT CURRENT TO JOBSITE PROGRESS. AT MINIMUM, THIS DOCUMENT SHALL BE UPDATED WEEKLY AND READILY AVAILABLE FOR REVIEW AND REFERENCE.  
 3. ALL WORK SHALL CONFORM TO STATE AND LOCAL CODES, RULES, REGULATIONS, AND ORDINANCES, WHICH SHALL TAKE PRECEDENCE OVER THE PLANS IF CONFLICTS EXIST BETWEEN THEM.  
 4. THE DRAWINGS INDICATE THE GENERAL LAYOUT REQUIREMENTS FOR EQUIPMENT, FIXTURES, PIPING, DUCTWORK, ETC. FINAL LAYOUT SHALL BE MODIFIED AS NECESSARY TO FIT ACTUAL SITE CONDITIONS. ALL REQUIRED REVISIONS SHALL BE RECORDED ON A DESIGNATED HARD COPY SET OF RED-LINE PLANS TO BE KEPT CURRENT TO JOBSITE PROGRESS. AT MINIMUM, THIS DOCUMENT SHALL BE UPDATED WEEKLY AND READILY AVAILABLE FOR REVIEW AND REFERENCE.  
 5. COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING, AND PROTECTION OF MATERIALS. PROVIDE LABOR TO RECEIVE, SHUTDOWN, STORE, PROTECT, AND TRANSFER TO POINT OF INSTALLATION OF ANY OWNER FURNISHED ITEMS.  
 6. IN CASES OF EQUIPMENT SUBSTITUTION, CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL SYSTEMS AND COMPONENTS WILL FIT PROPERLY PRIOR TO FABRICATION OR ORDERING. INSTALLED DUCTS MAY BE RESIZED BY THE CONTRACTOR TO FIT FIELD CONDITIONS AS LONG AS THE INSTALLED DUCTS SHALL HAVE EQUAL FRICTION LOSS TO THOSE SHOWN. RECTANGULAR DUCTS SHALL NOT BE CHANGED TO ROUND DUCTS. PROVIDE COMPLETE SHEET METAL SHOP DRAWINGS TO ENGINEER SHOWING ACTUAL DUCT SIZES, ARRANGEMENTS, AND UNIT LOCATIONS TO BE INSTALLED. THIS SHALL BE DONE PRIOR TO FABRICATION OR INSTALLATION.  
 7. INSTALL ACOUSTIC TURNING VANES IN ELBOWS IN RECTANGULAR DUCTS 20" AND LARGER. INSTALL RADIUS TYPE ELBOWS IN RECTANGULAR DUCTS SMALLER THAN 20". USE 45 DEGREE TAKE-OFF FITTINGS AT ALL ROUND SUPPLY BRANCH TAKEOFFS. PROVIDE BALANCE DAMPERS AT ALL SUPPLY DUCT RUNOUTS TO GRILLES. LOCATE AS FAR AS POSSIBLE FROM GRILLES IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS PANELS IN SOLID WALLS AND CEILINGS FOR BALANCING DAMPERS.  
 8. USE FLEX DUCTS FOR FINAL CONNECTION TO ALL CEILING DIFFUSERS, AND WHERE NECESSARY, SIDEWALL DIFFUSERS, AND LIMIT TO 6' MAX. LENGTHS.  
 9. PROVIDE A COMPLETE AND OPERATING MECHANICAL SYSTEM, INCLUDING ALL INCIDENTAL ITEMS AND CONNECTIONS NECESSARY FOR PROPER OPERATION OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM MAY NOT BE IDENTIFIED.  
 10. THE MECHANICAL INSTALLATION SHALL BE SAFE, RELIABLE, ENERGY EFFICIENT AND EASILY MAINTAINED WITH ADEQUATE PROVISIONS ALLOWED FOR ACCESS TO EQUIPMENT.  
 11. THE MECHANICAL SYSTEM SHALL OPERATE QUIETLY WITH NOISE LEVELS BELOW THE CRITERIA RECOMMENDED FOR THE APPLICATION BY ASHRAE. PROVIDE CORRECTIVE ACTION AS REQUIRED TO REDUCE OBJECTIONABLE NOISE OR VIBRATION.  
 12. UNDERCUT DOORS 3/4 INCH WHERE NO RETURN NOR EXHAUST GRILLE IS SHOWN TO ALLOW FOR AIR TRANSFER (DO NOT UNDERCUT DOORS).  
 13. REFER TO ARCH. PLANS AND DETAILS FOR EXACT LOCATION OF ALL WALL AND CEILING MOUNTED DEVICES. ADJUST LOCATION OF SIDEWALL DEVICES AS NECESSARY TO AVOID INTERFERENCE WITH MOLDING OR OTHER ELECTRICAL DEVICES.  
 14. WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY LOCAL AUTHORITIES HAVING JURISDICTION (AHJ) AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOWIN CORNING CORP. SILICONE ELASTOMER, RTV FOAM, OR SIMILAR MATERIAL TO MAINTAIN FIRE RATING OF THE WALL OR FLOOR.  
 15. CONTRACTOR SHALL BE RESPONSIBLE FOR THOROUGHLY COORDINATING PRIOR TO PERFORMING ALL CORING, BEAM, AND FLOOR PENETRATIONS AS IT RELATES TO HIS WORK.  
 16. IF A CENTRAL FIRE ALARM SYSTEM IS REQUIRED FOR THIS PROJECT, MECHANICAL CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS PROVIDED BY FIRE ALARM CONTRACTOR. REFER TO ELECTRICAL NOTES FOR EXACT REQUIREMENTS. MECHANICAL CONTRACTOR SHALL IDENTIFY A SET OF TERMINALS FOR EQUIPMENT SHUTDOWN ON ALL FAN POWERED EQUIPMENT REQUIRING SHUTDOWN CONTROLS. FIRE ALARM CONTRACTOR SHALL WIRE FROM DUCT MOUNTED SMOKE DETECTOR TO SHUTDOWN TERMINALS TO SHUT DOWN FAN OPERATION WHEN SMOKE IS DETECTED. CONTRACTOR SHALL NOT INSTALL ANY MAINTENANCE ITEMS ABOVE HARD CEILINGS. THIS SHALL INCLUDE VALVES, DAMPERS, OR ANY OTHER ITEMS THAT REQUIRE ACCESS AFTER CONSTRUCTION IS COMPLETED. IF INSTALLATION ABOVE A HARD CEILING OF THESE ITEMS CANNOT BE AVOIDED, PROVIDE CEILING ACCESS DOORS EQUAL TO ACUDOR MODEL FW-505 WHERE REQUIRED. AT FIRE-RATED WALLS, USE EQUIVALENT OF ACUDOR MODEL FW-500. MINIMUM SIZE SHALL BE 12"x12". USE 18"x18" WHEN PERSONNEL ACCESS IS REQUIRED.  
 17. PROVIDE AN INSULATED BACK ON ALL THERMOSTATS AND TEMPERATURE SENSORS THAT ARE MOUNTED ON CMU, HOLLOW, OR EXTERIOR WALLS. PROVIDE SHALLOW DEVICE EXTENSION BOX BEHIND T-STATS AND SENSORS ON MASONRY WALLS IN COMMERCIAL/RETAIL SPACES.  
 18. PROVIDE FIRE DAMPERS AT ALL FIRE-RATED WALLS AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE BARRIER WALLS AND CEILINGS. REFER TO ELECTRICAL DRAWINGS FOR SMOKE DAMPER AND FIRE/SMOKE DAMPER DETAIL. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL DAMPERS WITH MOTORIZED ACTUATORS AND INSTALL SMOKE DETECTORS AND PROVIDE WIRING FOR FAN SHUTDOWN CONTROLS. COORDINATE WITH ELECTRICAL CONTRACTOR AND PROVIDE DAMPER ACTUATOR COMPATIBLE WITH ELECTRICAL WIRING PROVIDED. PROVIDE ANY WIRING OR COMPONENTS NOT PROVIDED BY THE ELECTRICAL CONTRACTOR THAT ARE REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.  
 19. LINE VOLTAGE WIRING INSTALLED BY MECHANICAL CONTRACTOR SHALL BE ACCOMPLISHED ACCORDING TO ELECTRICAL DRAWINGS, NOTES, AND SPECIFICATIONS.

\* DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.




**James R. Childers**  
Architect, Inc.


45 South 4th Street  
Ft. Smith, AR 72901  
479-783-2460  
www.childersarchitect.com



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KEY PLAN

PROJECT PHASE

CONSTRUCTION DOCUMENTS

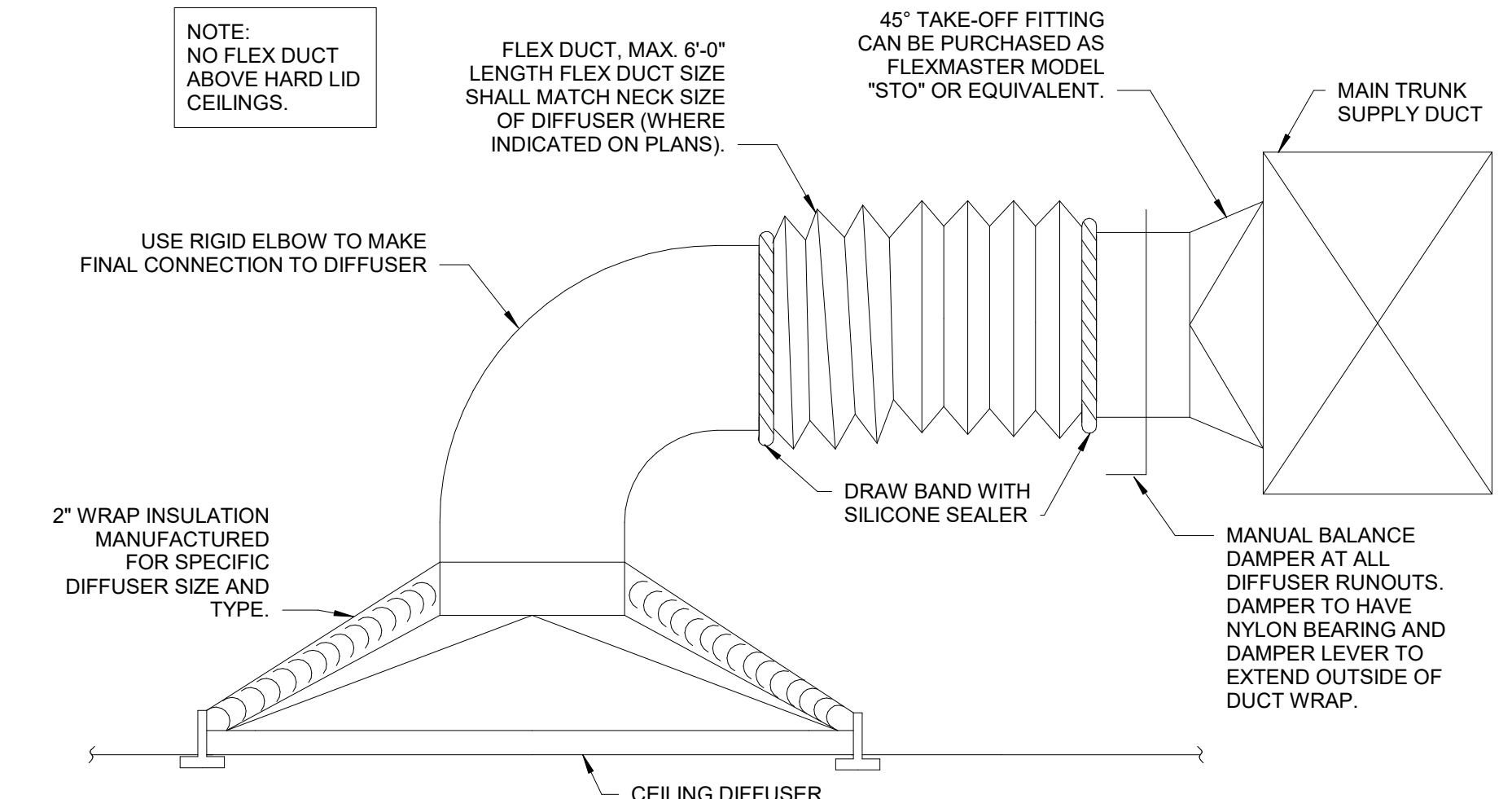
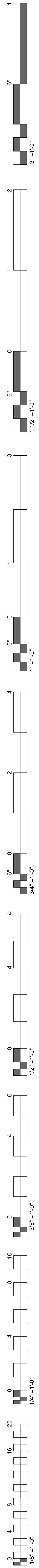
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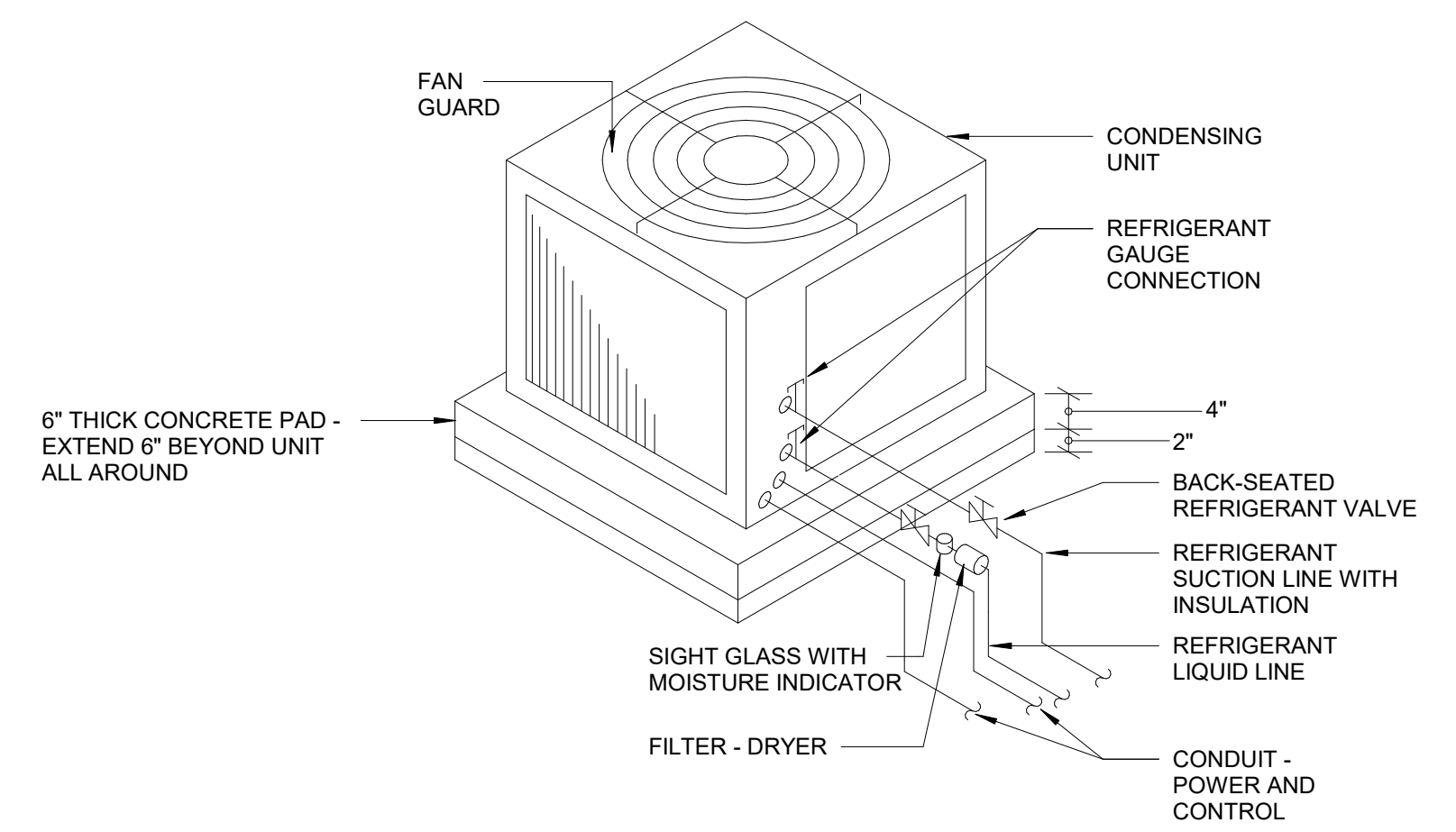
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MECHANICAL LEGEND AND NOTES





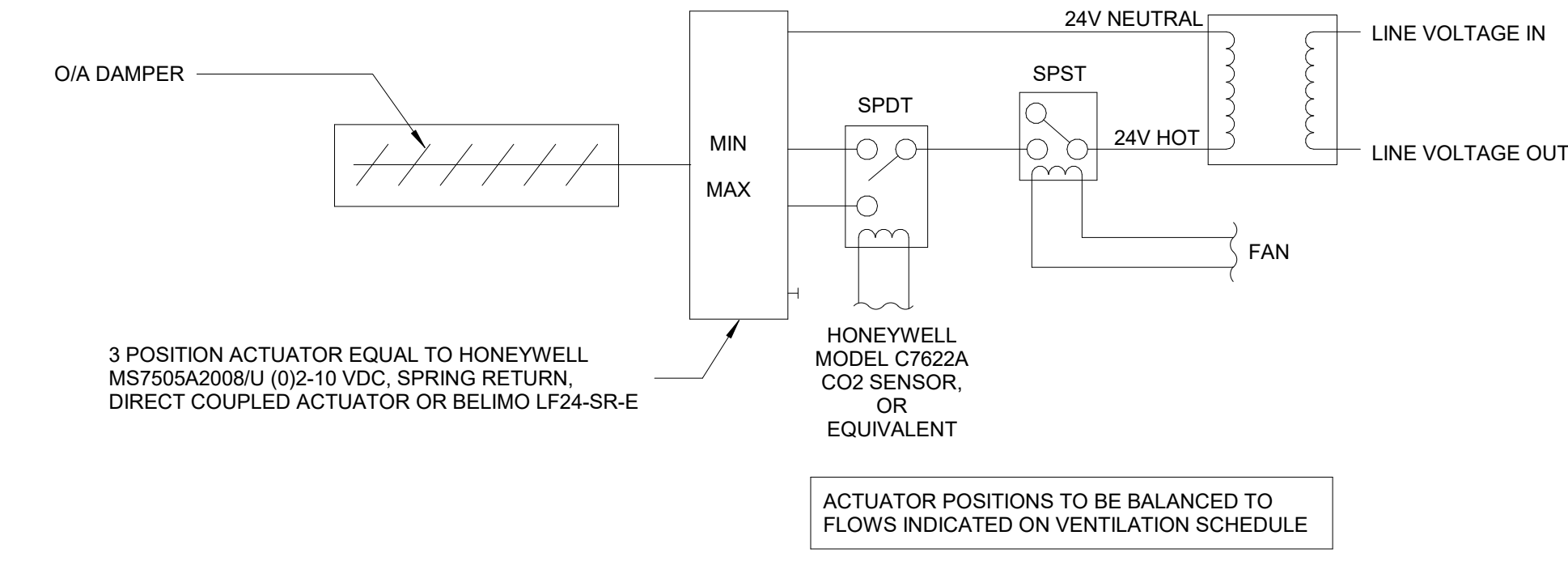
**4 TYPICAL DIFFUSER CONNECTION WITH INSULATION**  
SCALE: N.T.S.



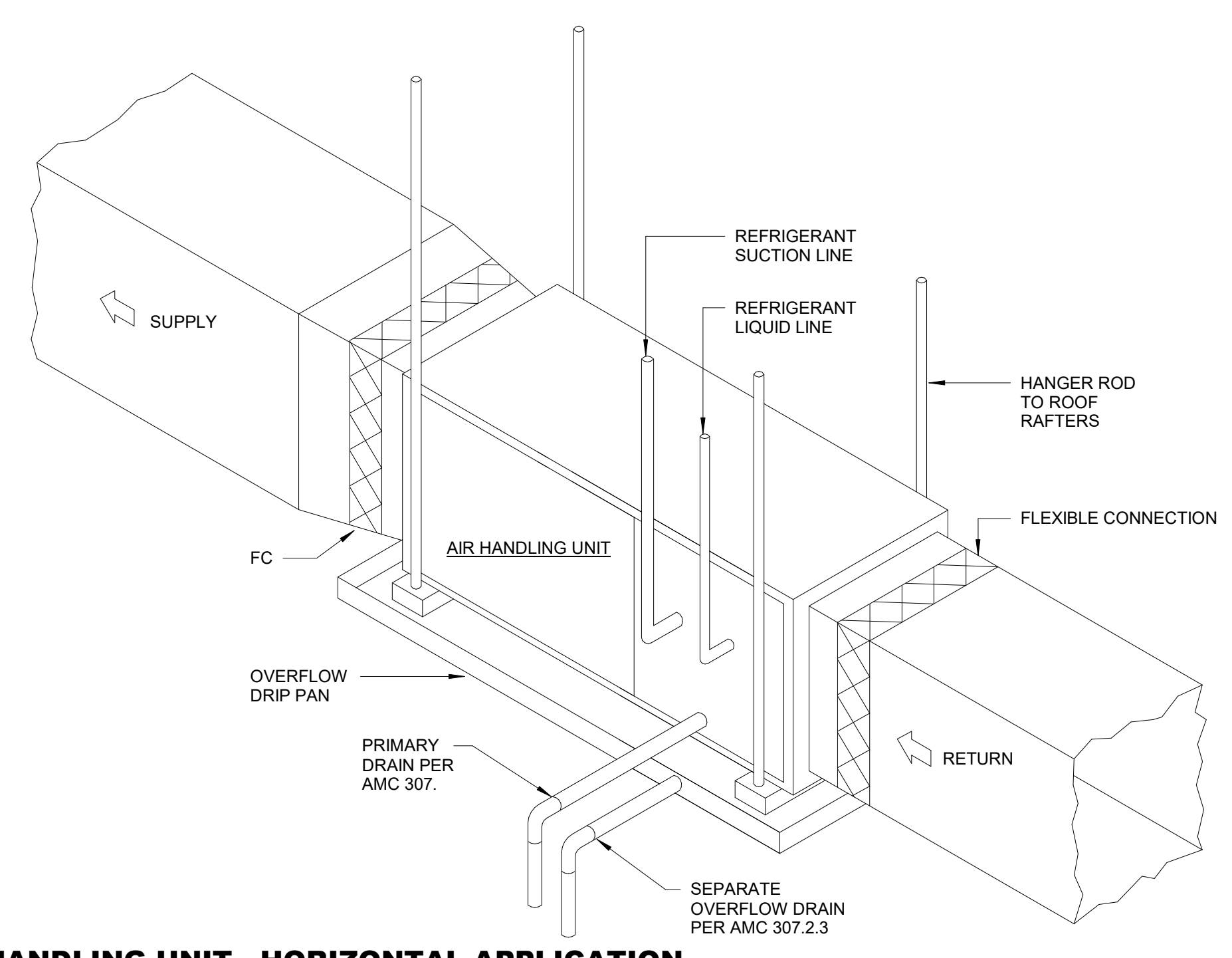
**3 AIR-COOLED CONDENSING UNIT**  
SCALE: N.T.S.

**VENTILATION SEQUENCE OF OPERATIONS**  
 PROVIDE COMPLETE CONTROLS SYSTEM TO PROVIDE THE FOLLOWING:  
 CO2 BASED DEMAND CONTROL VENTILATION SEQUENCE (DENSELY OCCUPIED SPACES):  
 WHEN INDOOR UNIT SUPPLY FAN IS RUNNING, O/A DAMPER IS TO REMAIN OPENED TO POSITION REQUIRED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW AS SPECIFIED ON SCHEDULE. AS LONG AS THE CO2 SENSOR INDICATES CO2 LEVELS LESS THAN OR EQUAL TO 1100 PPM.  
 WHEN INDOOR UNIT SUPPLY FAN IS RUNNING, THE CO2 LEVEL CLIMBS ABOVE 1100 PPM, O/A DAMPER IS TO OPEN UP TO POSITION REQUIRED TO MAINTAIN THE PEAK VENTILATION AIRFLOW AS SPECIFIED IN THE VENTILATION SCHEDULE, UNTIL SUCH TIME AS THE CO2 SENSOR INDICATES THAT LEVELS HAVE AGAIN RETURNED TO 1100 PPM OR LESS.  
 WHEN INDOOR UNIT SUPPLY FAN IS NOT RUNNING, O/A DAMPER IS TO CLOSE COMPLETELY.

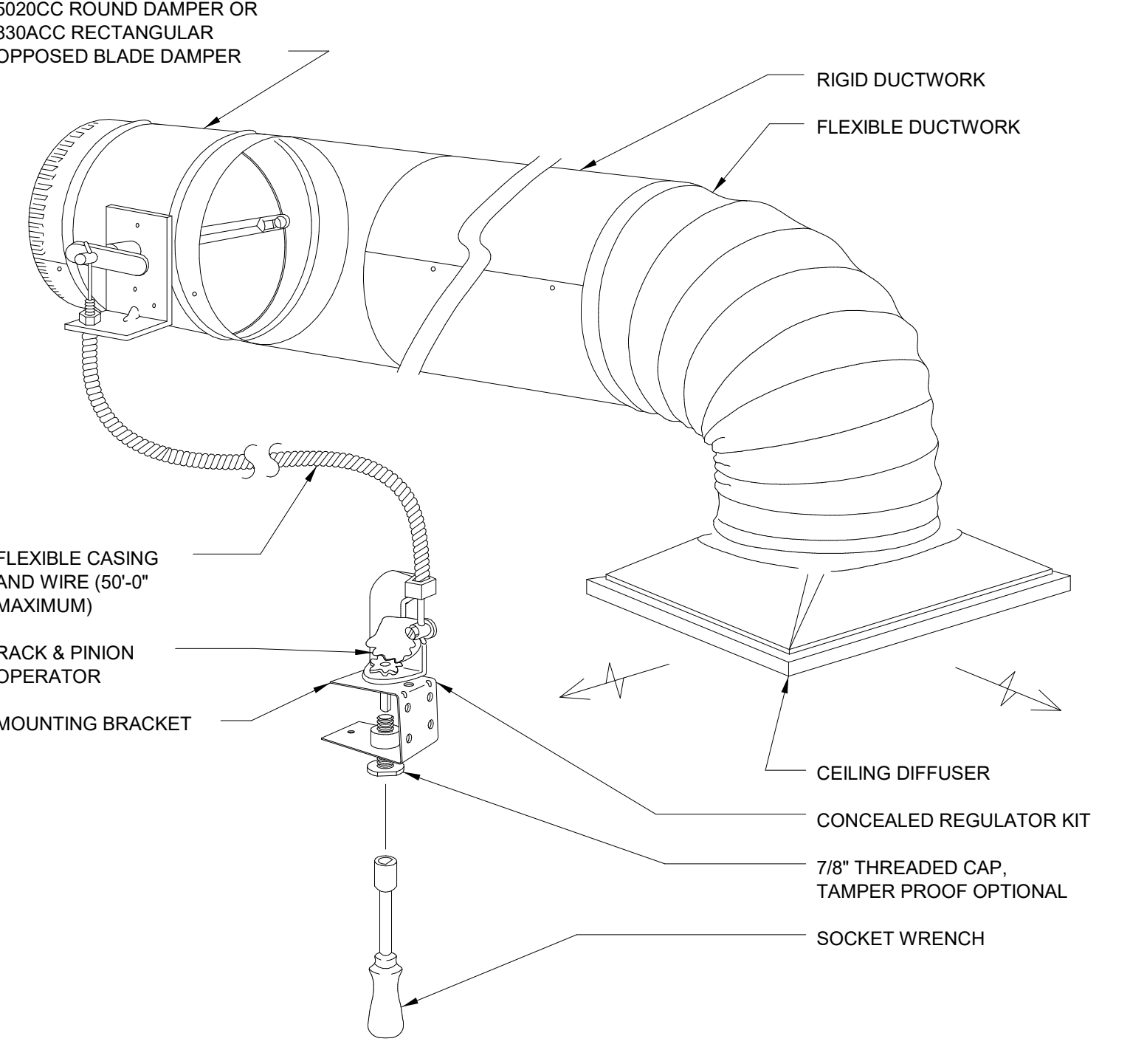
CONTRACTOR MAY UTILIZE HONEYWELL JADE MODEL W7220 VENTILATION CONTROL MODULE.  
 ALTERNATIVELY, CONTRACTOR MAY CHOOSE TO PROVIDE FIELD WIRE, CO2 SENSORS, RELAYS AND ACTUATORS (SIMILAR TO DIAGRAM BELOW) TO ACHIEVE THE SAME SEQUENCE OF OPERATIONS. COORDINATE RELAY WITH ACTUATOR INPUTS, SUPPLY FAN SIGNAL AND CO2 SENSOR OUTPUTS.



**2 CO2 BASED ACTUATOR CONTROL**  
SCALE: N.T.S.

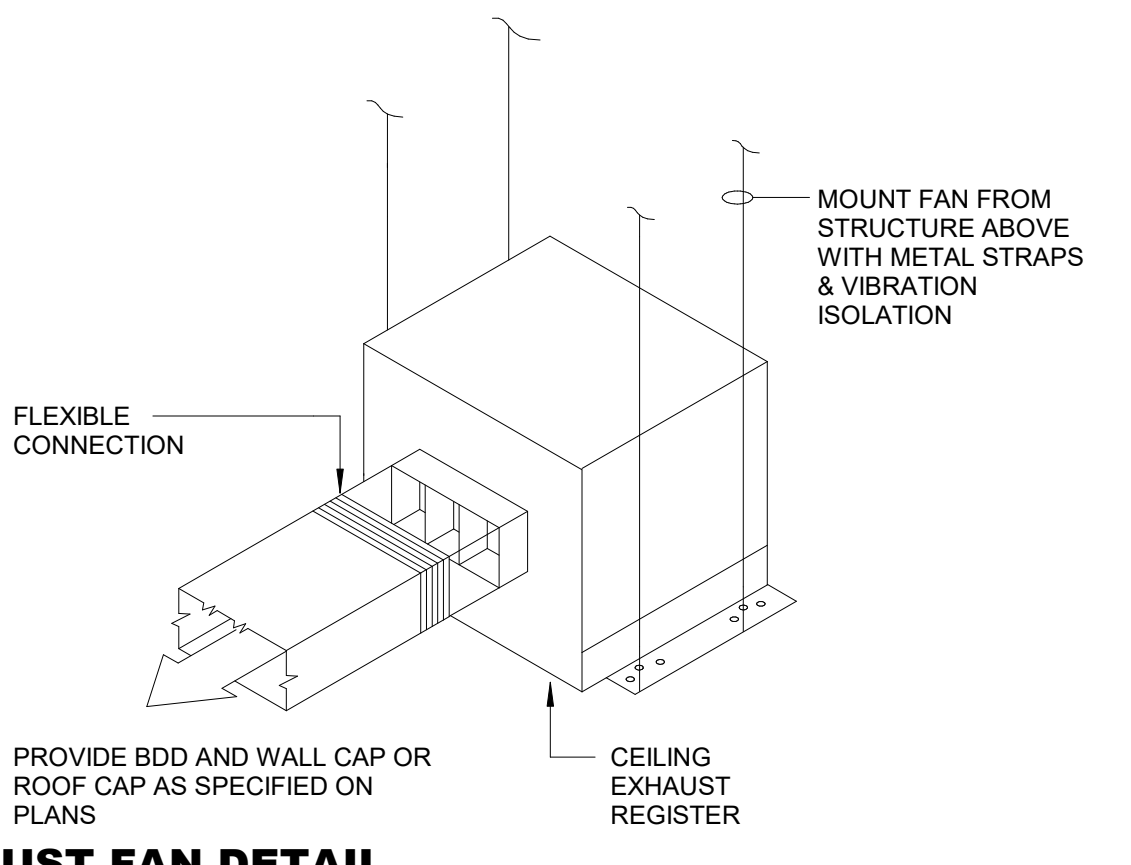


**1 AIR HANDLING UNIT - HORIZONTAL APPLICATION**  
SCALE: N.T.S.

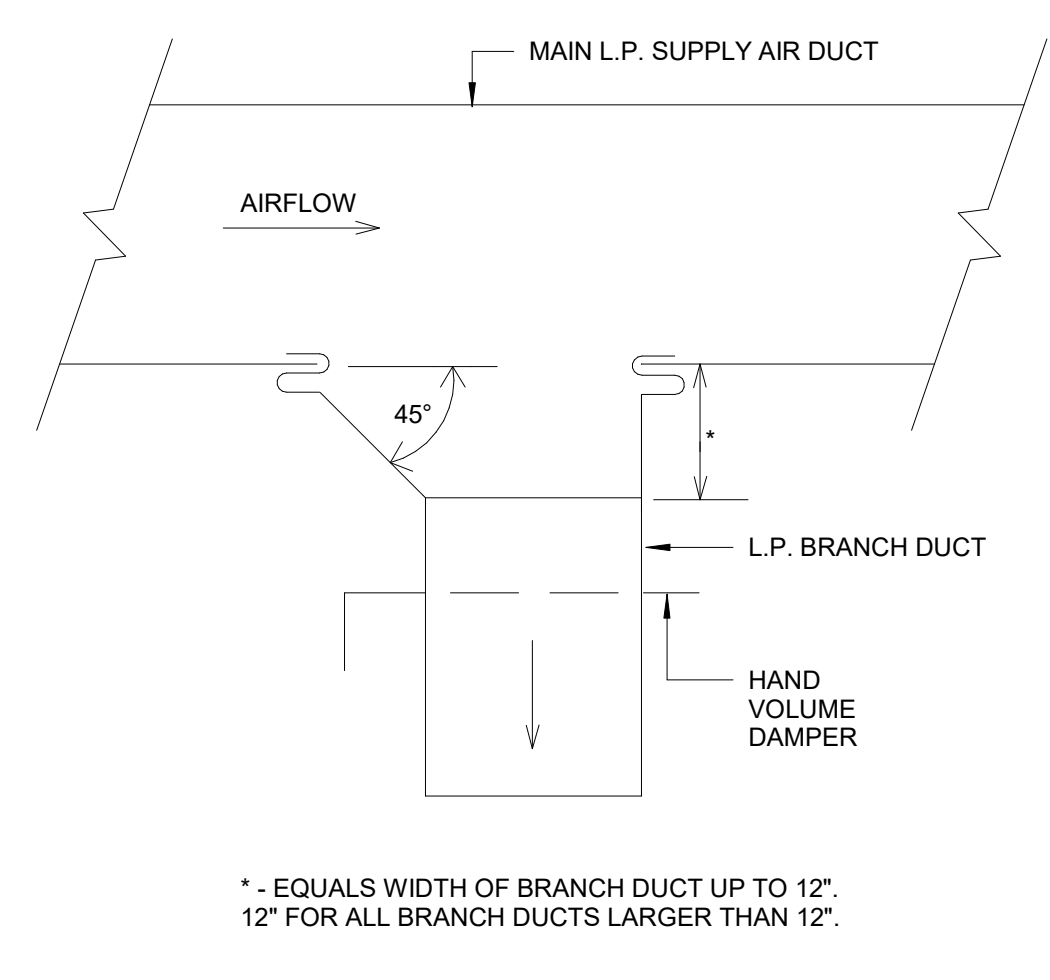


270-896 BOWDEN CABLE CONTROL SYSTEM  
 NO SCALE  
 NOTE:  
 1) CABLE SHALL CONSIST OF 0.054\"/>

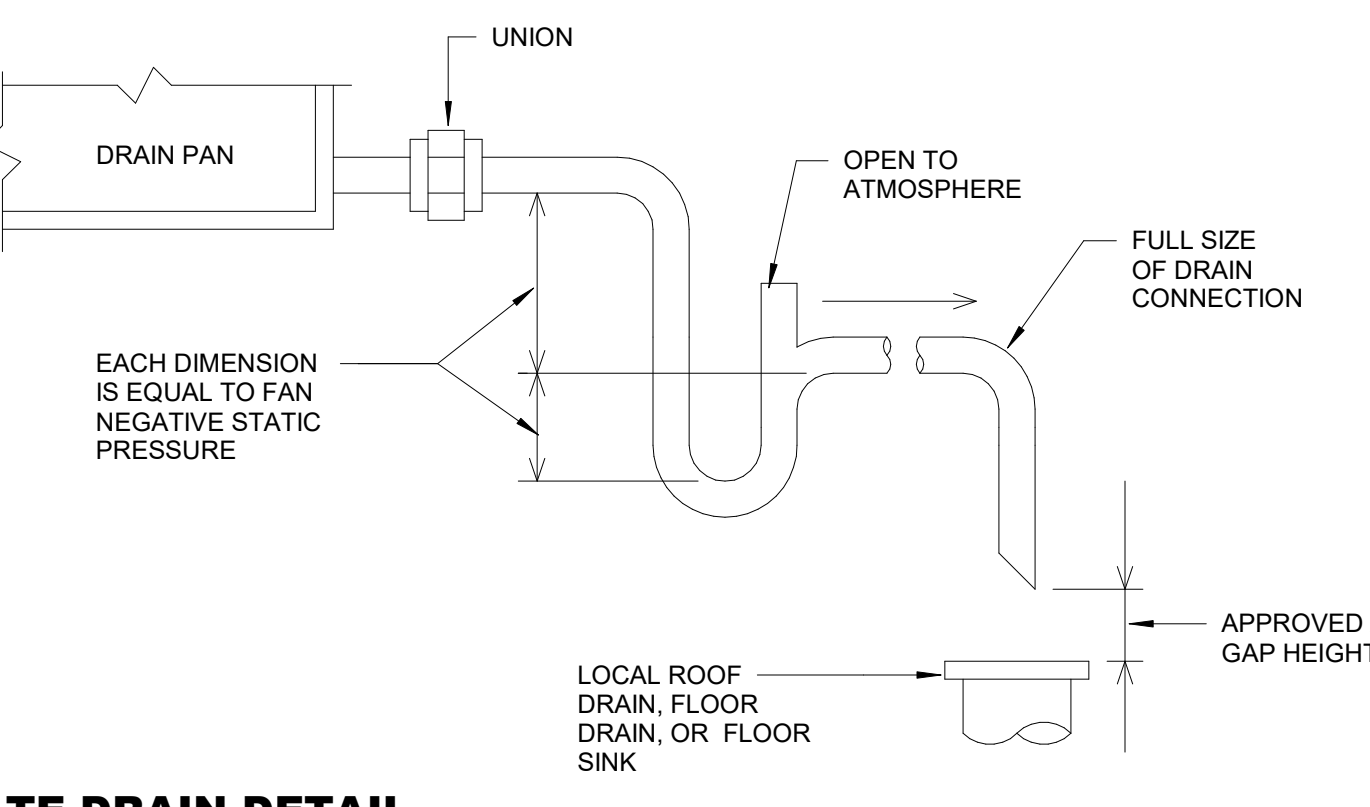
**8 REMOTE DAMPER OPERATOR DETAIL**  
SCALE: N.T.S.



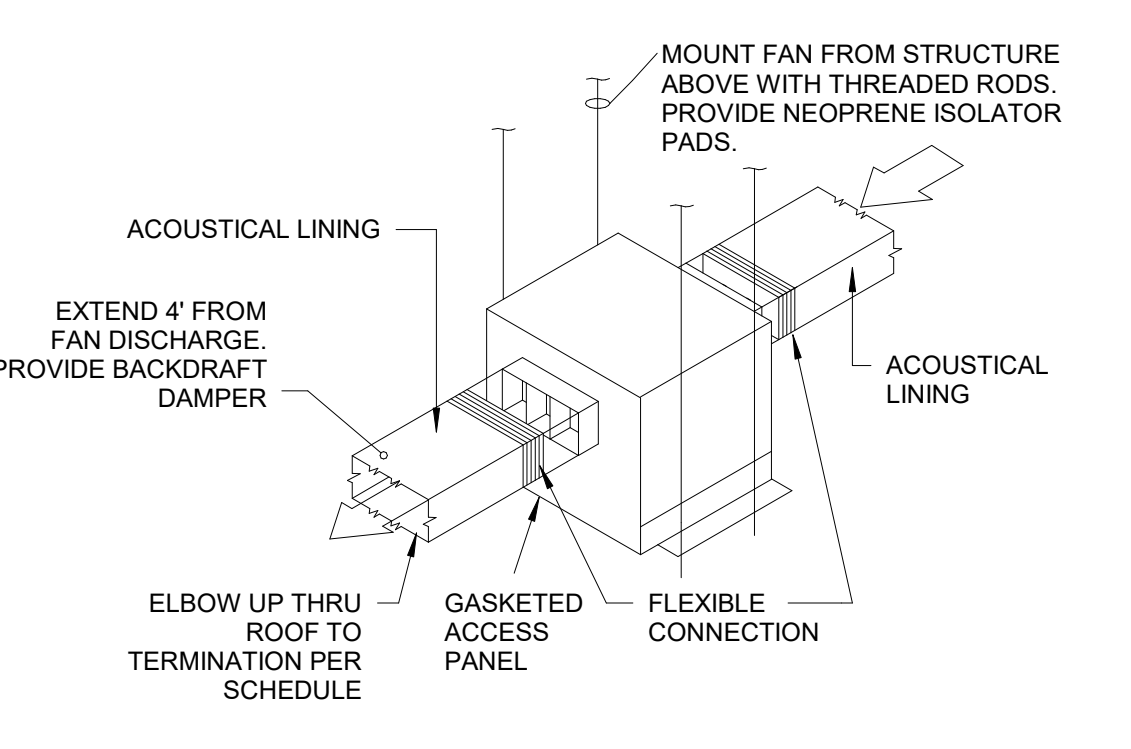
**7 CEILING EXHAUST FAN DETAIL**  
SCALE: N.T.S.



**6 TYPICAL SUPPLY AIR BRANCH DUCT TAKE-OFF**  
SCALE: N.T.S.



**5 CONDENSATE DRAIN DETAIL**  
SCALE: N.T.S.



**9 IN-LINE CEILING EXHAUST FAN DETAIL**  
SCALE: N.T.S.



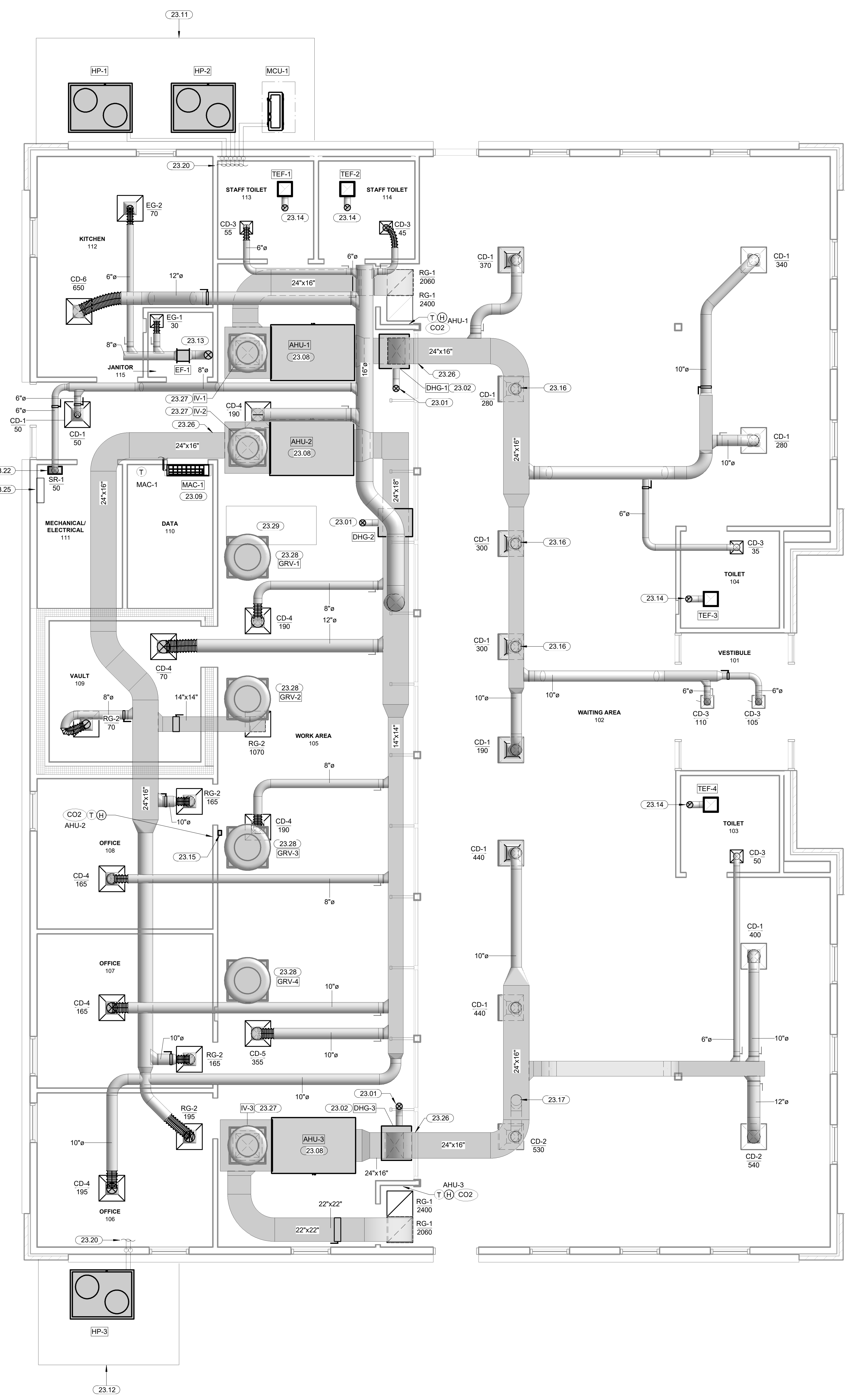
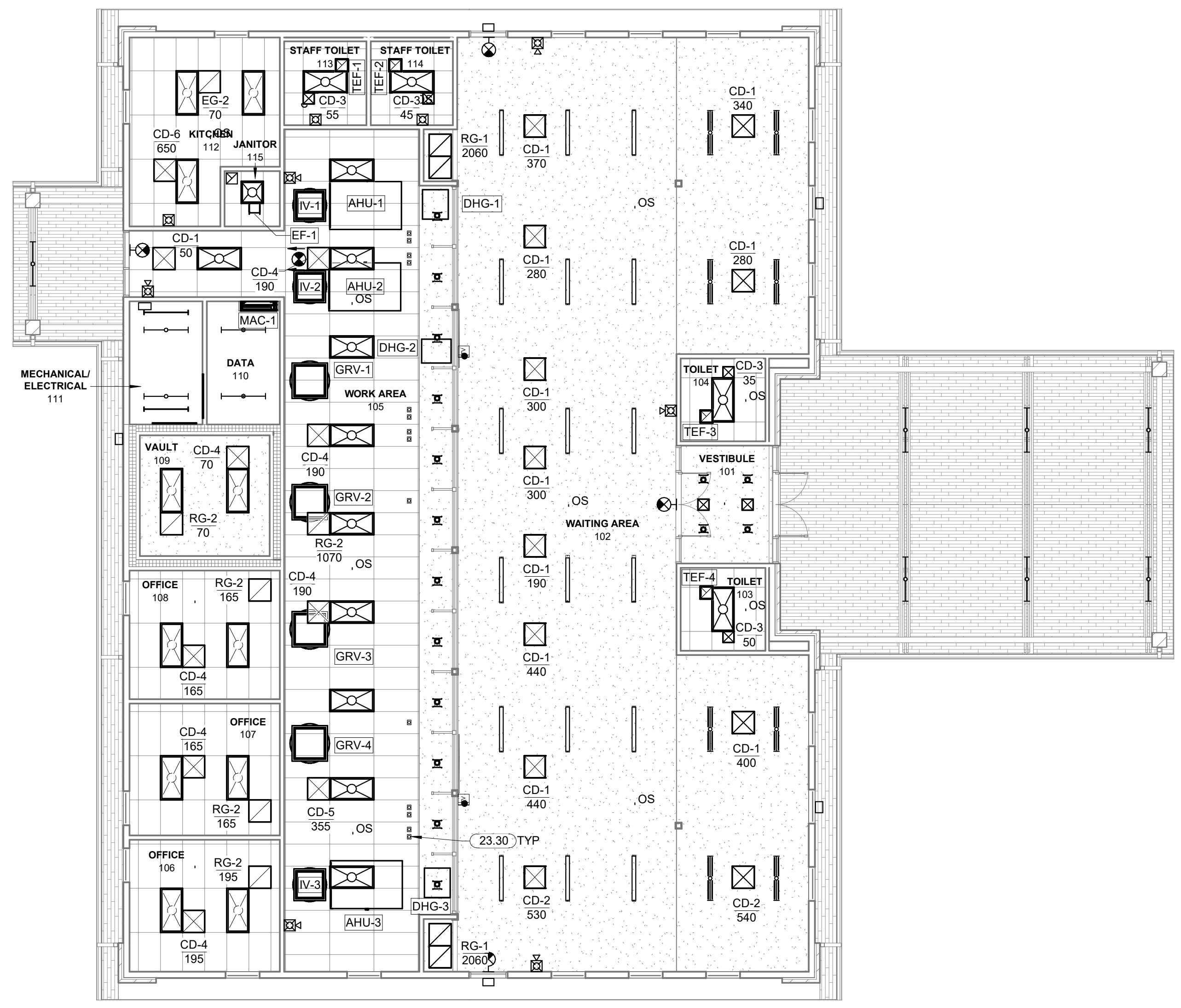
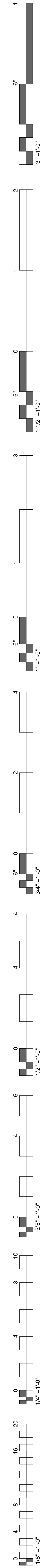
**GENERAL NOTE:**  
IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM EQUIPMENT SIZE AND ORIENTATION PRIOR TO EQUIPMENT ORDERING.

**REMOTE DAMPER OPERATORS:**  
PROVIDE REMOTE CABLE OPERATORS PER DETAIL 8/M1.01 FOR ALL BALANCING DAMPERS ABOVE HARD LID CEILINGS.

**RETURN AIR DUCT SEALING:**  
COMPLETELY (POSITIVELY) SEAL ALL RETURN AIR DUCTWORK JOINTS AND SEAMS SO AS NOT TO NEGATIVELY INTERFERE WITH DUCT HEATER DRAFT OPERATION.

**KEYNOTES**

- 23.01 6" Ø DOUBLE-WALL LISTED TYPE-B FLUE VENT (REFER TO SCHEDULE) UP THROUGH ROOF. PROVIDE THYMBOL LISTED AND APPROVED FOR PENETRATIONS THROUGH COMBUSTIBLE MATERIALS FOR PENETRATION THROUGH ROOF. TERMINATE PER CODE ABOVE ROOF WITH LISTED AND APPROVED VENT TERMINATION. SUPPORT FLUE PER MANUFACTURER.
- 23.02 DUCT HEATER IN VERTICAL POSITION. INSTALL AND SUPPORT PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE DUCTWORK TRANSITIONS AS REQUIRED AT BOTH INLET AND OUTLET. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES TO BOTH UPSTREAM AND DOWNSTREAM ELBOWS. ROUTE FULL-SIZE CONDENSATE BY GRAVITY TO JANITOR'S SINK.
- 23.08 PROVIDE 1/2" CONDENSATE DRAIN CONNECTIONS TO BOTH AHU COOLING COIL AND ASSOCIATED DUCT HEATER. COMBINE DRAINS INTO SINGLE 3/4" DRAIN AND SLOPE PIPING AT 1/8" PER FOOT TO JANITOR SINK. MOUNT AHU AND HEATER AT SUFFICIENT ELEVATION TO DRAIN ALL CONDENSATE BY GRAVITY.
- 23.09 ROUTE 1/2" CONDENSATE DRAIN LINE FROM MAC-1'S INTEGRAL CONDENSATE PUMP (REFER TO SCHEDULE) TO JANITOR SINK.
- 23.11 PROVIDE 6" TALL HOUSEKEEPING PAD 22" x 8.5" FOR CONDENSING UNITS.
- 23.12 PROVIDE 6" TALL HOUSEKEEPING PAD 11" x 8.5" FOR CONDENSING UNITS.
- 23.13 8" Ø EXHAUST DUCT UP THRU ROOF. TERMINATE WITH CURBED ROOF VENT, COOK MODEL PR OR EQUIVALENT, PER DETAIL. PROVIDE BACK-DRAFT DAMPER AND INSECT SCREEN.
- 23.14 6" Ø EXHAUST DUCT UP THRU ROOF. TERMINATE WITH ROOF JACK COOK MODEL RJ200 OR EQUIVALENT. PROVIDE WITH BACKDRAFT DAMPER, BIRDSCREEN, AND FLASHING.
- 23.15 PROVIDE REMOTE SENSOR FOR AHU-2 WHERE INDICATED WITHIN WORK AREA-105. THERMOSTAT CONTROL TO BE LOCATED IN OFFICE-108.
- 23.16 10" Ø DUCT WITH DAMPER DOWN TO DIFFUSER. PROVIDE DUCT TRANSITION TO SCHEDULED DIFFUSER NECK SIZE AS REQUIRED.
- 23.17 12" Ø DUCT WITH DAMPER DOWN TO DIFFUSER. PROVIDE DUCT TRANSITION TO SCHEDULED DIFFUSER NECK SIZE AS REQUIRED.
- 23.20 EXTEND REFRIGERANT SUPPLY AND RETURN PIPING, SIZED AND SUPPORTED PER MANUFACTURER, IN FROM EXTERIOR THROUGH SINGLE EXTERIOR WALL PENETRATION, COMPLETELY SEALING PENETRATION FROM BOTH SIDES OF WALL. ROUTE PIPING UP WITHIN WALL ON INTERIOR SIDE OF INSULATION TO CEILING PLENUM SPACE. EXTEND PIPING PAIRS TO ASSOCIATED AHU/MAC UNITS BY THE MOST DIRECT ROUTE USING MINIMAL PIPING OFFSETS, MAINTAINING MANUFACTURER'S MAXIMUM ALLOWABLE PIPING LENGTHS. PROVIDE GALVANIZED PIPE RAIL SUPPORT ON ALL EXTERIOR REFRIGERANT PIPING RUN ON GRADE.
- 23.22 TURN DOWN DUCT BETWEEN JOISTS AND PROVIDE SUPPLY GRILLE AS SCHEDULED. SUPPORT DUCT AND GRILLE SECURELY FROM STRUCTURE.
- 23.25 ELECTRICAL PANEL LOCATION - REFER TO ELECTRICAL DRAWINGS.
- 23.26 COORDINATE WITH STRUCTURAL FOR ALL REQUIRED STRUCTURAL FRAME-OUTS FOR DUCTWORK THROUGH TRUSSES (TYPICAL).
- 23.27 PROVIDE 20" Ø INSULATED OUTSIDE AIR DUCT UP FROM AHU ECONOMIZER PLENUM TO INTAKE VENT ON ROOF ABOVE.
- 23.28 GRAVITY RELIEF VENT ON ROOF ABOVE.
- 23.29 ACCESS HATCH: 80"x40". COORDINATE WITH STRUCTURAL.
- 23.30 PROVIDE REMOTE DAMPER OPERATOR FOR ALL BALANCING DAMPERS ABOVE HARD LID CEILINGS. REFER TO REMOTE DAMPER OPERATOR DETAIL.

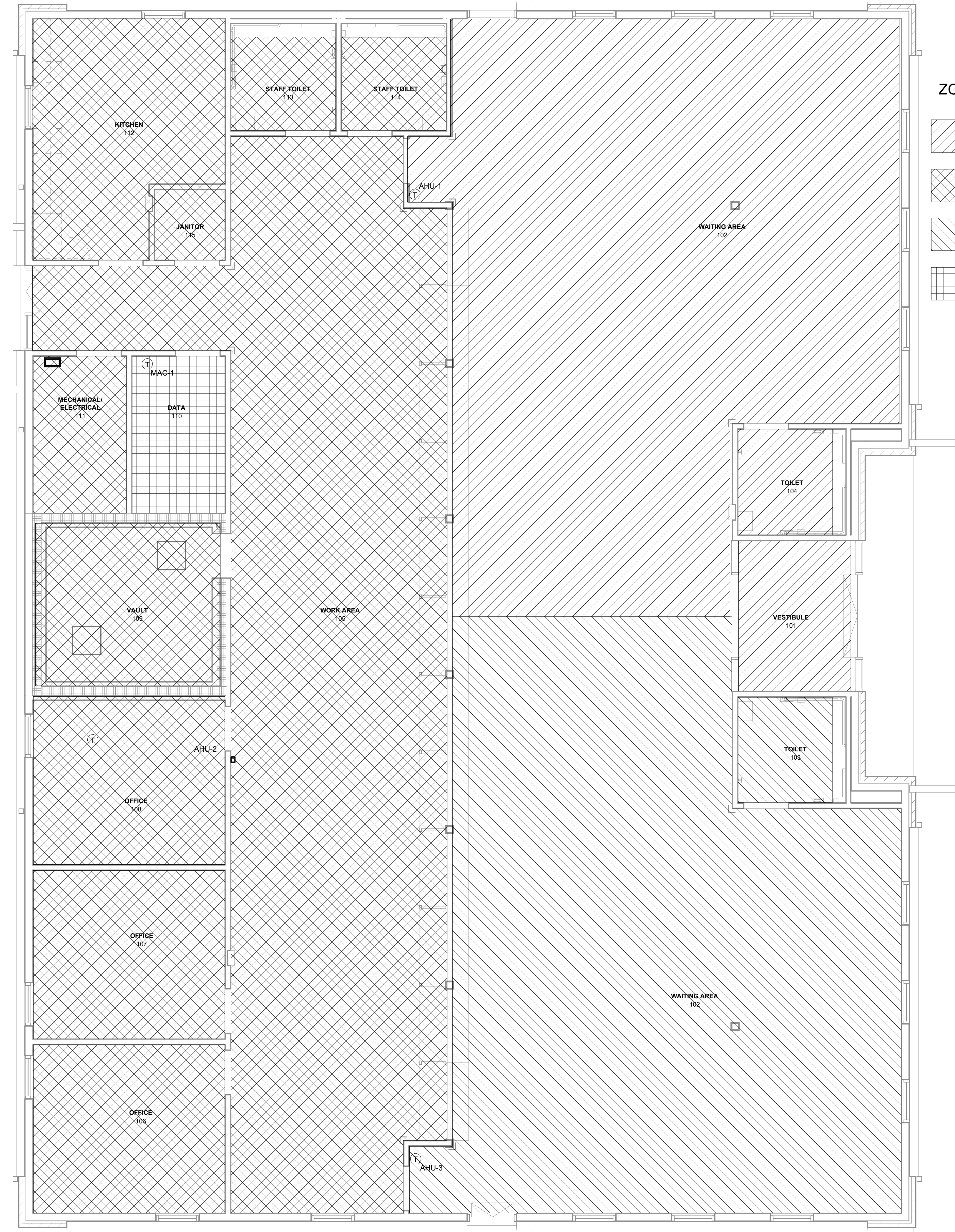
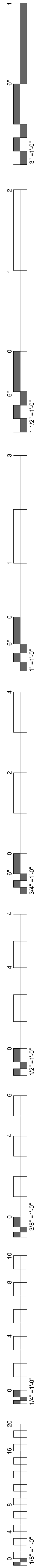


**2 HVAC CEILING PLAN**  
1/8" = 1'-0"

**1 OVERALL HVAC PLAN**  
1/4" = 1'-0"

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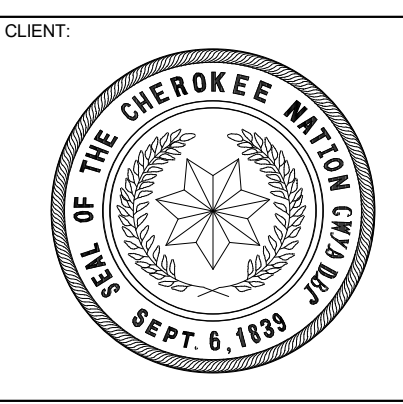
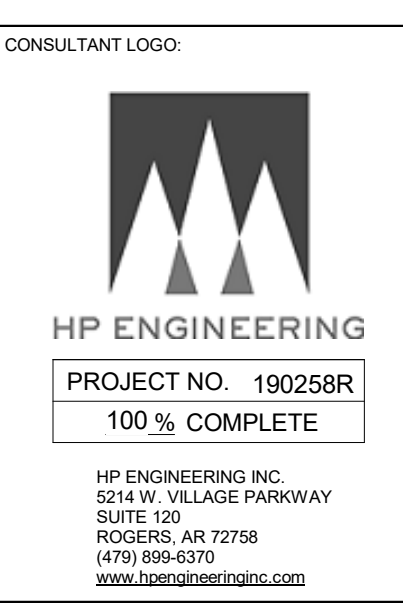




ZONING LEGEND

- AHU-1
- AHU-2
- AHU-3
- MAC-1

**1 HVAC ZONING PLAN**  
1/4" = 1'-0"



**CHEROKEE NATION  
TAG OFFICE  
CATOOSA, OKLAHOMA**

KEY PLAN:

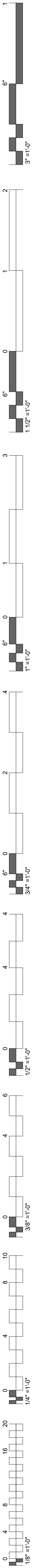
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DATE: 07-31-2020      JOB NUMBER: 18-01.10

SHEET NUMBER:  
**M2.01**  
MECHANICAL ZONING PLAN





GENERAL NOTE:  
ALL DUCT SIZES SHOWN ARE THE INSIDE CLEAR DIMENSIONS.

**MECHANICAL DUCTWORK & INSULATION SCHEDULE**

SERVICE	DUCT TYPE	INSULATION TYPE	INSULATION THICKNESS
ALL LOW PRESSURE CONSTANT VOLUME SUPPLY AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL RUNOUTS TO SUPPLY DIFFUSERS AND RETURN GRILLES CONCEALED ABOVE CEILING	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL SUPPLY AIR DIFFUSERS (BACKSIDE, NOT EXPOSED TO SPACE)	N/A	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
FRESH AIR SUPPLY DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER, N/A IF IN UNCONDITIONED SPACE	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
RESTROOM EXHAUST DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL LOW PRESSURE RETURN AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0

**MECHANICAL PIPING & INSULATION SCHEDULE**

NOTE: ALL EXTERIOR INSULATED PIPING TO BE PROVIDED WITH ALUMINUM JACKET.

SERVICE	PIPING TYPE	INSULATION TYPE	INSULATION THICKNESS NOMINAL PIPE SIZE			
			<1"	1 TO <1-1/2"	4 TO <8"	≥8"
EQUIPMENT DRAINS, COOLING CONDENSATE LINES, AND OVERFLOWS	TYPE "L" HARD COPPER	ELASTOMERIC	0.5	0.5	1.0	1.0
REFRIGERANT PIPING	COPPER REFRIGERANT PIPING	ELASTOMERIC	0.5	1.0	1.0	1.5
ALL OUTDOOR INSULATED PIPING	PROVIDE WITH EMBOSSED ALUMINUM JACKET OVER SCHEDULED INSULATION	PER SCHEDULE				

**NATURAL GAS DUCT FURNACE SCHEDULE**

MARK	DESCRIPTION	MFR	MODEL	CFM	MAX PRESSURE DROP (IN W.G.)	FUEL	MBH INPUT	MBH OUTPUT	GAS VALVE	VOLTS /PH	WEIGHT	CONTROL TYPE
DHG-1	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT
DHG-2	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT
DHG-3	INDOOR GRAVITY-VENTED	REZNOR	X-100	2400	0.5	NAT. GAS	95	80	2-STAGE	208 / 1	150 lb	2-STAGE T-STAT

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. FACTORY MOUNTED INTEGRAL 30A, 240V NONFUSIBLE DISCONNECT DEVICE.  
 2. THERMAL OVERLOAD PROTECTION.  
 3. PROVIDE THERMOSTAT CAPABLE OF 2-STAGE FURNACE CONTROL.  
 4. PROVIDE BLOCKED VENT SHUT-OFF SYSTEM.  
 5. 24V 2-STAGE GAS VALVE.  
 6. ENERGY CUT-OFF (ECO).  
 7. REMOVABLE AIR BAFFLES FOR HIGHER AIR FLOWS - BAFFLES TO BE REMOVED IN ALL UNITS.  
 8. INSTALL PER MANUFACTURER'S RECOMMENDED STRAIGHT DUCT LENGTHS UPSTREAM AND DOWNSTREAM OF HEATER.  
 9. MOTORIZED VENT DAMPER.  
 10. DAT SENSOR.  
 11. PROVIDE THYRIBOL THRU ROOF APPROVED FOR ZERO CLEARANCE TO COMBUSTIBLES.  
 12. TERMINATE EXHAUST FLUE WITH UL-LISTED AND APPROVED VENT CAP.  
 13. VENT PIPE TO BE MINIMUM 26-GAUGE GALVANIZED STEEL.  
 14. PROVIDE DOUBLE-WALL TYPE "B" VENT PIPE (METALBESTOS OR AMERVENT).  
 15. MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES TO COMBUSTIBLES.  
 16. SUPPORT FLUE AT MANUF. RECOMMENDED DISTANCES OF NON-COMBUSTIBLE SUPPORTS.  
 17. CONDENSATE DRAIN FLANGE IN BOTTOM OF HEATER - PIPE TO GRAVITY DRAIN PER PLAN NOTES.

- NOTES  
 A. HANGING BRACKET  
 B. 24V CONTROL TRANSFORMER  
 C. AIRFLOW PROVING SWITCH  
 D. SPARK PILOT  
 E. INTEGRAL FAN CONTROL  
 F. HIGH LIMIT SAFETY CUT-OUT  
 G. SIDE-ACCESS FOR BURNER AND CONTROLS

**AIR DEVICE SCHEDULE**

TAG	DESCRIPTION	MFR	MODEL	FACE SIZE	NECK SIZE	MATERIAL/ FINISH
CD-1	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	20x20	8	ALUMINUM / WHITE
CD-2	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	20x20	10	ALUMINUM / WHITE
CD-3	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	12x12	6	ALUMINUM / WHITE
CD-4	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	6	ALUMINUM / WHITE
CD-5	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	8	ALUMINUM / WHITE
CD-6	ADJUSTABLE LOUVERED CEILING SUPPLY DIFFUSER	TITUS	TMSA	24x24	12	ALUMINUM / WHITE
EG-1	EGGCRATE EXHAUST GRILLE	TITUS	50-F	12x12	PER PLANS	ALUMINUM / WHITE
EG-2	EGGCRATE EXHAUST GRILLE	TITUS	50-F	24x24	PER PLANS	ALUMINUM / WHITE
RG-1	EGGCRATE RETURN GRILLE	TITUS	50-F	20x20	PER PLANS	ALUMINUM / WHITE
RG-2	EGGCRATE RETURN GRILLE	TITUS	50-F	24x24	PER PLANS	ALUMINUM / WHITE
SR-1	SIDE-WALL SUPPLY GRILLE	TITUS	272-RL	12x6	-	ALUMINUM / WHITE

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.  
 2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.  
 3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.  
 4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.  
 5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.  
 6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE.  
 7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR PALETTE SAMPLE FOR FINAL APPROVAL WITH THE SUBMITTALS.  
 8. COORDINATE WITH ARCHITECT'S REFLECTED CEILING PLAN TO PROVIDE APPROPRIATE FRAME TYPE AND MOUNTING ACCESSORIES.  
 9. EQUALS PER SPECIFICATIONS.

**ROOF VENT SCHEDULE**

TAG	SERVICE	MFR	MODEL	CFM	MAX PRESSURE DROP (IN W.G.)	MATERIAL	SIZE
GRV-1	GRAVITY RELIEF	LOREN COOK, CO.	TR	1800	0.05	ALUMINUM	24
GRV-2	GRAVITY RELIEF	LOREN COOK, CO.	TR	1800	0.05	ALUMINUM	24
GRV-3	GRAVITY RELIEF	LOREN COOK, CO.	TR	1800	0.05	ALUMINUM	24
GRV-4	GRAVITY RELIEF	LOREN COOK, CO.	TR	1800	0.05	ALUMINUM	24
GRV-5							
IV-1	OUTSIDE AIR INTAKE	LOREN COOK, CO.	TR	2400	0.1	ALUMINUM	20
IV-2	OUTSIDE AIR INTAKE	LOREN COOK, CO.	TR	2400	0.1	ALUMINUM	20
IV-3	OUTSIDE AIR INTAKE	LOREN COOK, CO.	TR	2400	0.1	ALUMINUM	20

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. FLATTENED ALUMINUM BIRD SCREEN.  
 2. PROVIDE WITH ROOF CURB, COORDINATE WITH ROOFING CONTRACTOR FOR ROOF CONSTRUCTION AND PITCH.  
 3. PROVIDE COUNTERBALANCED BACKDRAFT DAMPER ON RELIEF VENTS. DAMPER TO BE FULLY OPEN AT 0.01" PRESSURE.

**EXHAUST FAN SCHEDULE**

MARK	DESCRIPTION	MFR	MODEL	DRIVE	FLOW (CFM)	ESP (IN W.G.)	RPM	VOLTS	PH	POWER	MAX SONES	CONTROL TYPE	WEIGHT (LBS)	NOTES
EF-1	INLINE EXHAUST FAN	LOREN COOK	70SON17DEC	DIRECT - ECM	100	0.3	1600	120 V	1	29 VA	4.7	TIMELOCK	65	A, C, E, F
TEF-1	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-2	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-3	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F
TEF-4	CEILING MOUNTED EXHAUST FAN	LOREN COOK	GC-146	DIRECT - FSC	70	0.3	820	120 V	1	31 VA	1.3	LIGHT SWITCH	21	A, B, D, E, F

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. PROVIDE PRE-WIRED FACTORY MOUNTED INTEGRAL DISCONNECT DEVICE (NEMA 3R FOR EXTERIOR).  
 2. PROVIDE VARIABLE SPEED CONTROLLER FACTORY INSTALLED IF AVAILABLE) ON ALL DIRECT DRIVE FANS FOR FAN BALANCING.  
 3. MOUNT FAN SPEED CONTROLLER IN ACCESSIBLE LOCATION ABOVE CEILING UNLESS OTHERWISE NOTED.

NOTES  
 A. PROVIDE BACKDRAFT DAMPER.  
 B. PROVIDE ROOF JACK COOK RJ200 OR EQUIVALENT WITH ROOF JACK TRANSITION.  
 C. PROVIDE COOK MODEL "PR" ROOFTOP GRAVITY RELIEF HOOD WITH CURB. COORDINATE CURB HEIGHT AND SLOPE WITH ROOFING CONTRACTOR.  
 D. PROVIDE MANUFACTURER'S WHITE ALUMINUM GRILLE.  
 E. PROVIDE BIRD SCREEN.  
 F. PROVIDE ISOLATOR KIT.  
 G. PROVIDE MANUFACTURER'S WALL CAP.

**AIR COOLED HEAT PUMP (OUTDOOR UNIT) SCHEDULE**

MARK	DESCRIPTION	PAIR WITH	MFR	MODEL	NOM. TONS	DESIGN OUTDOOR AIR TEMP (F)	ARI EER	COMPRESSOR STAGES	VOLTS	PH	DISCONNECT	MCA	MOCP	MAX SOUND RATING (dBA)	WEIGHT (LBS)
HP-1	GROUND-MOUNTED HEAT PUMP	AHU-1	LENNOX	ELP90S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425
HP-2	GROUND-MOUNTED HEAT PUMP	AHU-2	LENNOX	ELP90S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425
HP-3	GROUND-MOUNTED HEAT PUMP	AHU-3	LENNOX	ELP90S4S	7.5	97	11	2	208 V	3	BY DIV. 26	37 A	60 A	85	425

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. PROVIDE ANTI-RECYCLE TIMERS, LOW AMBIENT CONTROLS, TXV AND COIL HAIL GUARDS.  
 2. PROVIDE 6" CONCRETE PAD AND 'STAND-OFF' SPACERS FOR GROUND MOUNTED UNITS.

ACCEPTABLE MANUFACTURERS:  
 A. LENNOX/DAIKIN NORTH AMERICA  
 B. YORK/JOHNSON CONTROL COMPANY  
 C. TRANE  
 D. TEMPMASTER

ANY SUBSTITUTIONS OR VARIATIONS FROM SCHEDULED EQUIPMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO BID DATE.

**AIR HANDLING UNIT (INDOOR UNIT) SCHEDULE**

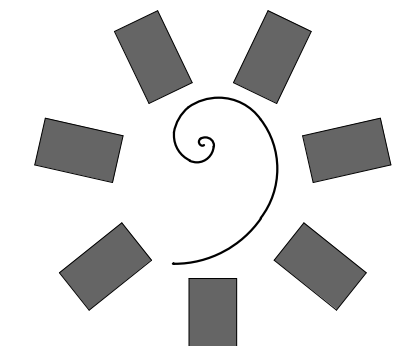
MARK	DESCRIPTION	PAIR WITH	MANUF	MODEL	NOM. TONS	NET TOTAL COOLING (BTU/H)	NET SENS COOLING (BTU/H)	MIXED AIR TEMP - DB (F)	MIXED AIR TEMP - WB (F)	MAXIMUM LEAVING UNIT AIR TEMP (F)	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	ESP (IN WG)	ARI EER	FAN STAGES	HEAT OUTPUT AT 17-DEGREES F	VOLTS	PH	DISCONNECT	MCA	MOCP	WEIGHT (lbs.)	NOTES
AHU-1	HORIZONTAL AIR HANDLING UNIT	HP-1	LENNOX	ELA90S4D	7.5	84152	57811	78	66	56.2	2400	340	1	11	2	5000	208 V	3	BY DIV. 26	10 A	15 A	431	B
AHU-2	HORIZONTAL AIR HANDLING UNIT	HP-2	LENNOX	ELA90S4D	7.5	82777	60490	78	65	54.2	2400	190	1	11	2	5000	208 V	3	BY DIV. 26	10 A	15 A	431	B
AHU-3	HORIZONTAL AIR HANDLING UNIT	HP-3	LENNOX	ELA90S4D	7.5	85527	57468	79	67	56.3	2400	340	1	11	2	5000	208 V	3	BY DIV. 26	10 A	15 A	431	A

GENERAL NOTES APPLICABLE TO ALL UNITS:  
 1. PROVIDE METAL RAIL SUPPORTS FOR HORIZONTAL CEILING-HUNG MOUNTED UNITS.  
 2. PROVIDE COOLING COIL TO MATCH ORIENTATION OF FURNACE OR AIR-HANDLING UNIT, AND THE SPECIFIED TARGET EFFICIENCY OF THE SPLIT SYSTEM.  
 3. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT OR COMBINATION THERMOSTAT + CO2 SENSOR, AS INDICATED ON DRAWINGS. PROVIDE STAT WITH AUXILIARY CONTACTS TO CONTROL OUTSIDE AIR CONTROL DAMPER.  
 4. FILTER: 2" PLEATED THROW-AWAY, MERV 8. COORDINATE FILTER BOX ACCESS DOOR ORIENTATION WITH SITE CONDITIONS TO ENSURE FULL FILTER ACCESS CLEARANCE IS ALLOTTED PRIOR TO ORDERING. MAX PRESSURE DROP 0.1" WC.  
 5. PROVIDE WITH FULLY-ASSEMBLED INLINE ECONOMIZER BY MCDANIEL METALS, PLENUMS OF FLORIDA, OR EQUAL. 20-GA GALVANIZED STEEL, FULLY INSULATED WITH LOW-LEAK DAMPERS WITH BRONZE BUSHINGS, AND FILTER RACK. ECONOMIZER CONTROLLER (HONEYWELL W7220), MIXED AIR SENSOR (HONEYWELL C7250), ENTHALPY SENSOR (HONEYWELL C7400) AND ACTUATORS (HONEYWELL MS3109K202). ENTHALPY SENSOR TO SHIP LOOSE FOR FIELD INSTALLATION BY CONTROLS CONTRACTOR. ECONOMIZER CONTROLLER TO BE CAPABLE OF OPERATING AT 100% RETURN AIR, MINIMUM OUTSIDE AIR, AND FULL ECONOMIZER.

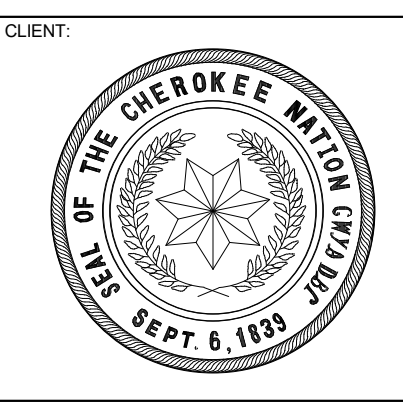
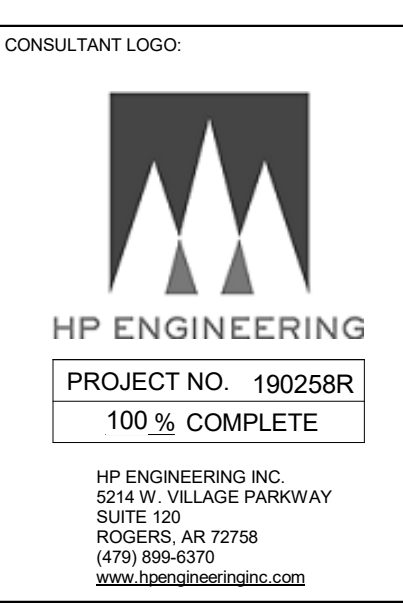
A. OUTSIDE AIR DAMPER TO BE NORMALLY CLOSED AND TO OPEN TO MINIMUM OUTSIDE AIR POSITION UPON CALL FROM ASSOCIATED CO2 SENSOR.  
 B. OUTSIDE AIR DAMPER TO FULLY CLOSE DURING UNOCCUPIED MODE AS DEFINED BY ASSOCIATED PROGRAMMABLE THERMOSTAT.

ACCEPTABLE MANUFACTURERS:  
 I. LENNOX / DAIKIN NORTH AMERICA  
 II. YORK- A JOHNSON CONTROL COMPANY  
 III. TRANE  
 IV. TEMPMASTER

ANY SUBSTITUTIONS OR VARIATIONS FROM SCHEDULED EQUIPMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO BID DATE.



**James R. Childers Architect, Inc.**  
 45 South 4th Street  
 Fort Smith, AR 72901  
 479-783-2450  
 www.childersarchitect.com



**CHEROKEE NATION TAG OFFICE**  
 CATAOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE

CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

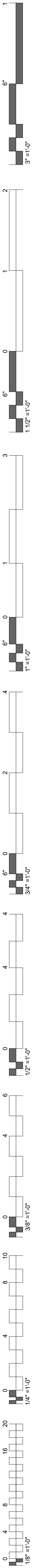
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MECHANICAL SCHEDULES









23A 3 HVAC EQUIPMENT  
23A 3-5 CONDENSING UNITS 7.5-20 TONS

Provide split system, air cooled condensing units as scheduled on the drawings, manufactured by Trane, Carrier, McQuay, Lennox or York, complete with factory installed hermetic or semi-hermetic motor/compressor assembly with internal spring vibration isolation, built-in thermal overload protection, and crankcase heater; top discharge condenser fan and motor; low ambient head pressure controls for operation to 40 degrees Fahrenheit; anti-short cycle timers; time delay relays; external high and low pressure cutout devices; full refrigerant holding charge; factory installed condenser coil guards (PVC coated metal); and weatherlight housing constructed of zinc coated, heavy gauge, galvanized steel with weather-resistant baked enamel finish. Provide liquid line drier and refrigerant sight glass. Provide a five year guarantee on the compressor and refrigerant circuit, and a one year guarantee on the remaining components. Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section.

For heat pump units provide reversing valve, suction line accumulator, flow control check valve, and solid state defrost/timed-off control.

Provide 3-1/2" thick concrete slabs for condensing units located on grade.  
23A 3-7 FAN COIL UNITS (DIRECT EXPANSION, 6-20 TONS)

Provide split system, fan coil units as scheduled on the drawings, manufactured by Trane, Carrier, McQuay, Lennox or York, horizontal configuration complete with zinc coated, heavy gauge, galvanized steel cabinet with weather-resistant baked enamel finish; internally insulated, access doors; direct expansion cooling coil section of aluminum/copper construction; condensate drain pan; statically and dynamically balanced centrifugal fan section with built-in motor thermal overload protection; factory installed and wired controls including evaporator defrost control and single point electrical power connection; magnetic motor starters and contactors as required; air filter rack with 2" (15 & 20 ton units only) thick throwaway filters; factory installed electric heating coil with code required integral safety features and controls. Provide Honeywell or equal electronic programmable type thermostat, seven-day model, manual changeover, switching subbase, multi-stage as required to match unit cooling/heating staging.

Division 28 contractor shall provide and wire UL listed duct type smoke detectors as required by code to shut down fan coil unit upon detection of smoke.

Provide spring vibration isolators and all-thread hanging rods for horizontal installations.

Provide an auxiliary drain pan for suspended units with auxiliary condensate drain provided by plumbing contractor.

float switch to shut off unit when water is detected in auxiliary drain pan. Float switch shall be Aquahub #FLT231 or equal by Cole-Palmer, Flowline, Omega or SMD Micro float switch with polypropylene body and float with 1/2" NPT pipe connection and normally closed contact. Contact shall close when float raises due to water present in drain pan minimum 1" above bottom of pan.

23A 3-11 DUCT FURNACES

Provide where indicated on the drawings, natural gas-fired duct heater, each having an AGA rated output capacity of no less than that indicated on the drawings. Provide high cfm model, manufactured by Hastings, Reznor, Trane, or Modine, complete with Type 321 stainless steel heat exchanger, stainless steel drain pan below the burner, draft diverter, aluminumized steel casing, high limit control, automatic pilot, main and pilot shutoff cocks, electric gas valve, gas pressure regulator, and provide with a 100 percent automatic gas shutoff control.

Hang duct furnaces from supporting angles connecting to the structure above with 1/2" steel all-thread rod, in an approved manner. Locate each duct furnace so there will be vertical clearance of not less than 18" from the top of the unit to a combustible material, and if possible, a run of at least 3 feet measured along the centerline of the vent pipe, from the duct furnace to the point where the vent pipe pierces or passes through combustible material.

Provide electronic programmable type thermostat, Honeywell seven-day model or approved equal, auto changeover type, multi-stage, if required to match unit heating staging. Provide relays as required to interface duct furnace with thermostat control sequence and provide wiring diagrams showing power and control connections.

23A 3-19 SPLIT DUCTLESS AIR-CONDITIONING SYSTEMS

Provide split ductless system consisting of evaporator section for wall or ceiling mounting as indicated and remote condensing section similar to Mitsubishi, Fujitsu, Friedrich, or Dakin. Evaporator cabinet shall be factory assembled pre-wired consisting of furniture-grade steel with baked-enamel finish; front access; with direct-drive centrifugal fans, 2-speed motor; and cleanable foam filter. Evaporator coil shall be direct expansion cooling coil of seamless copper tubes expanded into aluminum fins, with thermal-expansion valve with external equalizer. Air-cooled condenser shall be of corrosion-resistant cabinet containing compressor, copper-tube aluminum-fin coils, direct-drive propeller fans with motors with internal overload protection; capacity control to 0 degrees Fahrenheit.

Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section.

Control system: Unit-mounted panel with contactors, control transformer with circuit breaker, solid-state temperature- and humidity-control modules. Provide solid-state, unit-mounted control panel with start-stop switch, adjustable humidity set point, and adjustable temperature set point. Refer to sequence of operation.

23A 3-20 REFRIGERANT PIPING AND INSULATION

Provide ASTM B 88, Type 1 or ASTM B 280, Type ACR hard drawn copper refrigerant piping, cleaned and sealed at the factory, and specifically designed for refrigerant. Fittings shall be hard drawn and have long radius turns. Solder joints with "silfos" (15 percent silver, 5 percent phosphorus, 80 percent copper, 1500 degrees Fahrenheit, low temperature). Solder joints with a slow stream of dry nitrogen passing through the piping.

Insulate suction lines with foamed plastic insulation, Armaflex or equal. Piping insulation shall have a flame spread of 25 or less, and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1" in 20') towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high.

Install liquid line sight glasses in liquid lines nearest the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation.

Provide foamed plastic insulation, Armaflex or equal, on the suction line. Provide quick-connect flare tubing compression fittings or solder connections as required to match the connections of the condensing unit and evaporator coil.

23A 3-21 SYSTEM EVACUATION AND CHARGING

Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29" of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 0 psig. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat with the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded to the nearest 1/4 pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC contractor.

23A 4 TEMPERATURE CONTROLS

23A 4-1 GENERAL REQUIREMENTS

Provide a system of temperature controls including thermostats, control panels, time switches, override timers, damper motors, and relays required to provide the desired sequence of operation. Contract with Building Owner's Building Automation System contractor for new devices, programming, and interconnection with the existing BAS system. Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment.

Provide supervision and on-job checkout service as required to ensure that installation meets requirements of the specification. The system shall be guaranteed for a period of one year following the acceptance of the system by the architect/engineer. Correct defects occurring during this period at no additional cost to the owner.

23A 4-2 EQUIPMENT

Manufacturers and model numbers are listed for reference as to quality and features required for the control devices. Provide control devices by Barber-Colman, Alerton, Honeywell, Johnson Controls, Carrier, Trane or White Rodgers with quality and features as indicated.

Low voltage type non-programmable heating and cooling thermostats shall be Honeywell series T FocusPro 5000 or equal with integral subbase.

Smoke detectors furnished and installed as indicated in section 23A Part 3 or as scheduled on the plans (or heat detectors, if permitted by code) shall shut down each associated unit supply fan upon activation where required by code. Provide remote visual and audible alarm device in an approved location if smoke detectors are not connected to a fire alarm panel and label device as "Air Duct Detector Trouble".

23A 5-7 DX HEAT PUMP UNIT CONTROL

During occupied hours, operate heat pump unit supply fan continuously and open outdoor air damper to maintain minimum ventilation. Cycle DX heat pump refrigeration system stage(s) in cooling or heating mode with supplemental electric heat as required to maintain room thermostat set point (72 degrees Fahrenheit cooling, 70 degrees Fahrenheit heating). Duct mounted smoke detectors shall shutdown unit upon alarm.

23A 5-11 CONTROL DAMPER CONTROL

Thermostat shall modulate automatic control damper with automatic changeover between cooling and heating mode to maintain space temperature set point. When RTU or AHU is in cooling mode, damper shall modulate open on call for cooling and close on call for heating. When RTU or AHU is in heating mode, damper shall modulate open on call for heating and close on call for cooling.

23A 5-13 TENANT RESTROOM EXHAUST FAN CONTROL

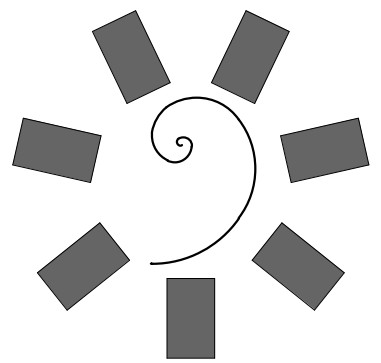
Exhaust fan shall be interlocked with respective restroom light switch and be energized when light switch is 'on' and de-energized when light switch is 'off'.

23A 6 ALTERNATES

23A 6-1 DESCRIPTION

Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the architectural portion of the specification.

END OF SECTION 23A

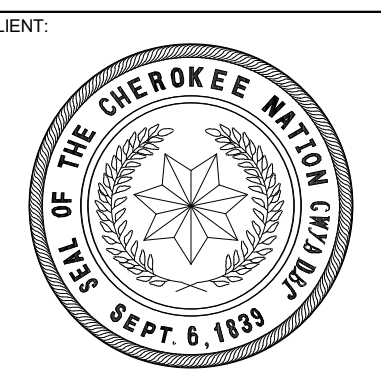
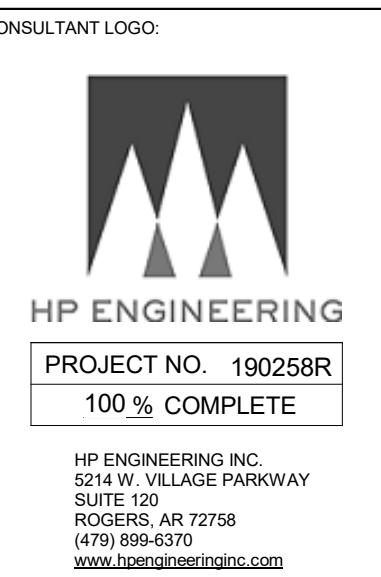


**James R. Childers  
Architect, Inc.**

45 South 4th Street  
Fort Smith, AR 72901  
479-783-2460  
www.childersarchitect.com



07/31/2020



**CHEROKEE NATION  
TAG OFFICE**  
 CATAHOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:  
CONSTRUCTION DOCUMENTS

#	REVISIONS	
	DATE	DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER:  
**M4.01**

MECHANICAL  
SPECIFICATIONS



GENERAL POWER NOTES	
1	ALL RECEPTACLES SHALL BE GROUNDING TYPE.
2	ALL RECEPTACLES INSTALLED IN BATHROOMS, OUTDOORS AND KITCHENS SHALL HAVE GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION AS REQUIRED BY THE NATIONAL ELECTRIC CODE.
3	COORDINATE MECHANICAL EQUIPMENT CONNECTIONS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. LOCATE FEEDERS, DISCONNECTS AND MAINTENANCE RECEPTACLES SO THAT THEY WILL NOT INTERFERE WITH OPERATION OR MAINTENANCE OF MECHANICAL EQUIPMENT.
4	PROVIDE POWER TO MECHANICAL, PLUMBING, AND ALL OTHER EQUIPMENT AS REQUIRED FOR PROPER OPERATION. COORDINATE AND VERIFY EACH PIECE OF EQUIPMENT'S POWER/CONTROL REQUIREMENTS PRIOR TO ORDERING RELATED ELECTRICAL EQUIPMENT. REFER TO RELATED MECHANICAL, PLUMBING, AND OTHER RELATED DOCUMENTS FOR LOCATIONS OF EQUIPMENT AND REQUIRED CLEARANCES AROUND EQUIPMENT.
5	COORDINATE EXACT MOUNTING HEIGHT OF EACH ABOVE COUNTER RECEPTACLE WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
6	ALL OUTLETS LOCATED IN AREAS REQUIRING GROUND-FAULT CIRCUIT INTERRUPTER PROTECTION PER NEC-210 SHALL CONSIST OF A GFCI PROTECTED DEVICE, EVEN IF NOT SPECIFICALLY INDICATED IN THE DRAWINGS. THE GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE INSTALLED IN A READILY ACCESSIBLE LOCATION AS DEFINED IN THE NEC. ALL RECEPTACLES SUPPLIED THROUGH A GROUND-FAULT CIRCUIT INTERRUPTER SHALL BE MARKED "GFCI PROTECTED".

GENERAL LIGHTING NOTES	
1	WHERE RECESSED LIGHTING FIXTURES ARE INDICATED IN A FIRE RATED CEILING, PROVIDE A ONE HOUR RATED "TENT" FOR FIXTURE.
2	PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS, REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF FIXTURES.
3	CONNECT "UN-SWITCHED" HOT CONDUCTOR FROM CIRCUIT SERVING SPACE LIGHTING TO EACH EXIT SIGN, EMERGENCY LIGHT, AND ANY FIXTURE DESIGNATED AS NIGHT LIGHT SERVING THE SPACE.
4	COORDINATE ALL DEVICES AND WALL-MOUNTED LIGHT FIXTURE LOCATIONS WITH THE ARCHITECTURAL WALL FINISHES AND ELEVATIONS. SPECIAL ATTENTION AND COORDINATION OF WALL TYPES AND FINISHES IS REQUIRED PRIOR TO ROUGH-IN. EXACT LOCATION OF DEVICES SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN TO AVOID INSTALLATION ON SPECIAL ARCHITECTURAL WALL FINISHES. DEVICES NOT PROPERLY COORDINATED WITH THE SPECIAL WALL FINISHES INDICATED IN THE CONSTRUCTION DOCUMENTS PRIOR TO ROUGH-IN SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.
5	ELECTRICAL CONTRACTOR SHALL VERIFY CHEVRON DIRECTIONS OF ALL EXIT SIGNS PRIOR TO ORDERING.
6	FOR BATTERY FED EMERGENCY LIGHTS: PROVIDE EMERGENCY BALLAST, PROVIDE "HOT" WIRE TO EMERGENCY BALLAST. SWITCH FIXTURE AS INDICATED ON PLANS.
7	COORDINATE AND PROVIDE DIMMER SWITCHES RATED FOR AND COMPATIBLE WITH INTENDED LIGHT FIXTURE(S) TO BE CONTROLLED. CIRCUITS CONTROLLED WITH LINE-VOLTAGE DIMMER SWITCHES SHALL NOT SHARE NEUTRAL CONDUCTORS.

GENERAL LOW VOLTAGE NOTES	
1	PROVIDE 4 WIDE X 4 TALL X 3/4" FIRE RATED, PAINTED CDX PLYWOOD BACKBOARD WHERE SHOWN ON DRAWINGS OR AS REQUIRED FOR TELEPHONE, CATV, ALARM SYSTEM EQUIPMENT, ECT. COORDINATE EXACT LOCATION(S) WITH RESPONSIBLE CONTRACTOR(S).
2	PROVIDE (1) 1/2" CONDUIT, AND #2 SQUARE BOX WITH SINGLE GANG DEVICE RING FOR ALL THERMOSTAT LOCATIONS INDICATED ON THE MECHANICAL DRAWINGS. ROUTE CONDUIT FROM BOX TO ACCESSIBLE CEILING CAVITY. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. PROVIDE PULL STRING IN ALL EMPTY CONDUIT SYSTEMS. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
3	PROVIDE ROUGH-IN OF ALL BACK BOXES, CONDUITS (WITH BUSHINGS AND PULL STRINGS) AND OTHER WIRE WAYS AS REQUIRED FOR LOW VOLTAGE SYSTEMS. COORDINATE ALL REQUIRED LOCATIONS WITH OWNER AND RESPONSIBLE CONTRACTOR(S).
4	FURNISH AND INSTALL A TELEPHONE SERVICE CONDUIT(S) PER TELEPHONE SERVICE PROVIDER SPECIFICATIONS. STUB UP AT DESIGNATED EQUIPMENT BOARD.
5	PROVIDE ONE #6 COPPER INSULATED GROUND WIRE FROM THE ELECTRICAL SERVICE GROUND TO THE TELEPHONE EQUIPMENT BOARD. LEAVE 30" EXTRA WIRE AT FREE END.
6	FURNISH AND INSTALL A CABLE TV SERVICE CONDUIT(S) PER CABLE TV PROVIDER SPECIFICATIONS. STUB UP AT SERVICE POINT.
7	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH CABLE TV SERVICE PROVIDER.
8	REFER TO SITE UTILITIES PLAN AND COORDINATE ENTIRE INSTALLATION WITH PHONE SERVICE PROVIDER.
9	PROVIDE BACK BOX AND CONDUIT TO ABOVE THE ACCESSIBLE CEILING AS REQUIRED FOR THE HVAC BUILDING AUTOMATION SYSTEM DEVICES. COORDINATE EXACT LOCATIONS AND OTHER REQUIREMENTS WITH RELATIVE MEP DRAWINGS AND THE CONTRACTOR PRIOR TO ROUGH-IN. THERMOSTATS, TEMPERATURE SENSORS, STATIC PRESSURE SENSORS, HUMIDISTATS, ETC. SHALL BE INSTALLED AT THE SAME ELEVATION AS THE LIGHT SWITCHES UNLESS REQUIRED OTHERWISE.

GENERAL ELECTRICAL NOTES	
1	DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW ALL GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.
2	SPECIAL ATTENTION SHALL BE GIVEN TO ALL RACEWAYS WITHIN FINISHED AREAS WITHOUT CEILINGS AND EXPOSED TO STRUCTURE. IN GENERAL, ALL RACEWAYS SHALL BE CONCEALED WITHIN WALLS, ABOVE STRUCTURE FINISH, OR BELOW FLOOR SLABS WHEN SPECIFIED. WHERE EXPOSED CONDITIONS ARE NECESSARY OR UNAVOIDABLE DUE TO OTHER CONDITIONS, THE BID SHALL INCLUDE ANY REASONABLE MEANS TO MINIMIZE THE AMOUNT OF SURFACE MOUNTED EQUIPMENT. PRIOR TO ROUGH-IN, COORDINATE ALL EXPOSED RACEWAY AND BOX CONDITIONS WITH ARCHITECT PRIOR TO CONSTRUCTION OF WALLS, ROOF DECK, OR FLOOR SLABS. ATTACHMENT TO ROOF DECK OR JOIST WEBBINGS IS NOT ALLOWED. MAINTAIN A MINIMUM SPACING OF 1-1/2" FROM CONDUIT TO ROOF DECK. IN AREAS WHERE EXPOSED RACEWAYS ARE REQUIRED, INSTALL THEM SQUARE AND TIGHT TO STRUCTURE AND PAINT TO MATCH THE STRUCTURE PER ARCHITECT AND/OR OWNER SPECIFICATIONS. FAILURE TO PROPERLY COORDINATE THE ROUTING OF EXPOSED RACEWAYS MAY RESULT IN RELOCATION OF SUCH RACEWAYS AT NO ADDITIONAL COST TO THE OWNER.
3	OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING. PROVIDE PENETRATION FIRE STOPPING WITH RATINGS DETERMINED PER ASTM E 814 OR UL 1479. FIRE STOPPING SHALL NOT BE LESS THAN FIRE RESISTANCE RATINGS OF CONSTRUCTED PENETRATIONS.
4	FIELD MOUNTED DEVICES SUCH AS SWITCHES, MOTOR STARTERS, RECEPTACLES, ETC., ARE SHOWN IN THEIR APPROXIMATE LOCATION. SWITCH MOUNTING HEIGHT SHALL BE 48" ABOVE FINISHED FLOOR AND RECEPTACLE MOUNTING HEIGHT SHALL BE 18" ABOVE FINISHED FLOOR UON. REFER TO THE TYPICAL MOUNTING HEIGHT DETAIL.
5	INSTALL EQUIPMENT IN A MANNER TO REMAIN ACCESSIBLE WITH REASONABLE MEANS BY THE OWNER FOLLOWING COMPLETION OF WORK. SPECIAL ATTENTION AND ADDITIONAL COORDINATION IS EXPECTED IN AREAS OF THE BUILDING WHERE THE CEILING AND STRUCTURE HEIGHTS HAVE SIGNIFICANT DIFFERENT ELEVATIONS. EQUIPMENT REQUIRING POSSIBLE FUTURE ACCESS SHALL BE INSTALLED SUCH THAT IT MAY BE SAFELY ACCESSED FROM A STANDARD STEP LADDER OR PERSONNEL LIFT SUITABLE FOR THE LOCATION AND CEILING HEIGHT, WITHOUT REMOVING OR DAMAGING THE CEILING GRID STRUCTURE.
6	COORDINATE ALL CEILING MOUNTED ELECTRICAL ITEMS WITH OTHER DISCIPLINES, WITH CEILING, AND STRUCTURE. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
7	FIELD VERIFY LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, INCLUDING POWER POLES, TELEPHONE PEDESTALS, OVERHEAD AND UNDERGROUND FEEDERS, METERS, PANELS, DEVICES, ETC. PROVIDE FOR COORDINATION WITH EXISTING EQUIPMENT.
8	ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANELBOARD SCHEDULES AT COMPLETION OF PROJECT WITH OWNER PROVIDED ROOM NAMES/NUMBERS.
9	CONDUCTORS FOR BRANCH CIRCUITS AS DEFINED IN ARTICLE 100, SHALL BE SIZED TO PREVENT A VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST LOAD, AND WHERE THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST LOAD DOES NOT EXCEED 5%.
10	ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, STATE LAWS, ALL AUTHORITIES HAVING JURISDICTION, AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.
11	THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIAL, AND LABOR TO SATISFY A COMPLETE AND WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
12	CONTRACTOR TO CONFIRM EXACT LOCATION OF EXISTING AND NEW EQUIPMENT.
13	THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING SYSTEMS (AS REQUIRED) IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
14	ALL ELECTRIC MATERIALS AND EQUIPMENT FOR THE PROJECT SHALL BE NEW AND U.L. OR EQUALLY LISTED.
15	SUBMIT TO THE OWNER CERTIFICATES OF INSPECTIONS IN DUPLICATE FROM AN APPROVED INSPECTION AGENCY UPON COMPLETION.
16	THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES AS REQUIRED.
17	THE CONTRACTOR SHALL FURNISH ALL INSTRUMENTS AND QUALIFIED PERSONNEL OR FIRM TO PERFORM ALL REQUIRED TESTS.
18	NO EQUIPMENT SHALL BE ENERGIZED UNTIL ALL TEST AND ADJUSTMENTS HAVE BEEN MADE. THREE COPIES OF ALL TEST RESULTS SHALL BE DELIVERED TO THE OWNER.
19	ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE MECHANICAL WORK AS CALLED FOR IN MECHANICAL SPECIFICATIONS AND PLANS.
20	JUNCTION BOXES LOCATED ABOVE GRID CEILINGS SHALL BE LOCATED NO GREATER THAN 4-FEET ABOVE THE CEILING IN A LOCATION ACCESSIBLE VIA A LADDER FROM THE ROOM BELOW.
21	ALL WIRING DEVICE COVERPLATES SHALL INDICATE PANELBOARD AND CIRCUIT SERVING THE DEVICE. UTILIZE CLEAR VINYL (BLACK LETTERING) IDENTIFICATION LABELS MANUFACTURED BY 3M COMPANY (OR APPROVED EQUIVALENT).
22	THE TYPE OF CONDUIT SHALL BE AS FOLLOWS FOR ALL FEEDERS AND DISTRIBUTION CIRCUITS, UNLESS OTHERWISE SPECIFIED.  APPLICATION - TYPE OF CONDUIT BURIED IN CONCRETE OR OUTDOORS - PVC WITH RIGID GALVANIZED STEEL ELBOWS SERVICE ENTRANCE - GALVANIZED RIGID STEEL OR SERVICE UTILITY SPECIFICATIONS.
23	UNLESS NOTED OTHERWISE PROVIDE MINIMUM #8 AWG CONDUCTORS IN 1" CONDUIT(S) FOR ALL UNDERGROUND SITE POWER AND LIGHTING CIRCUITS. INCREASE CONDUCTOR AND RELATED CONDUIT SIZE AS NOTED OR OTHERWISE REQUIRED TO LIMIT VOLTAGE DROP TO LESS THAN 5% FOR THE ENTIRE LENGTH OF SYSTEM.
24	UNDERGROUND UTILITIES/FEEDERS/BRANCH CIRCUITS/ETC. SHALL NOT BE ROUTED THROUGH OR WITHIN 25 FEET OF ANY AREAS DEDICATED FOR FUTURE BUILDING ADDITION.
25	DESIGNATED SPARE CIRCUIT BREAKERS SHALL BE PLACED IN THE OFF POSITION.
26	PROVIDE SPD AS REQUIRED FOR OWNER PROVIDED EQUIPMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ACCESS CONTROL SYSTEM, COMMUNICATION SYSTEM, DATA SYSTEM, SECURITY SYSTEM.

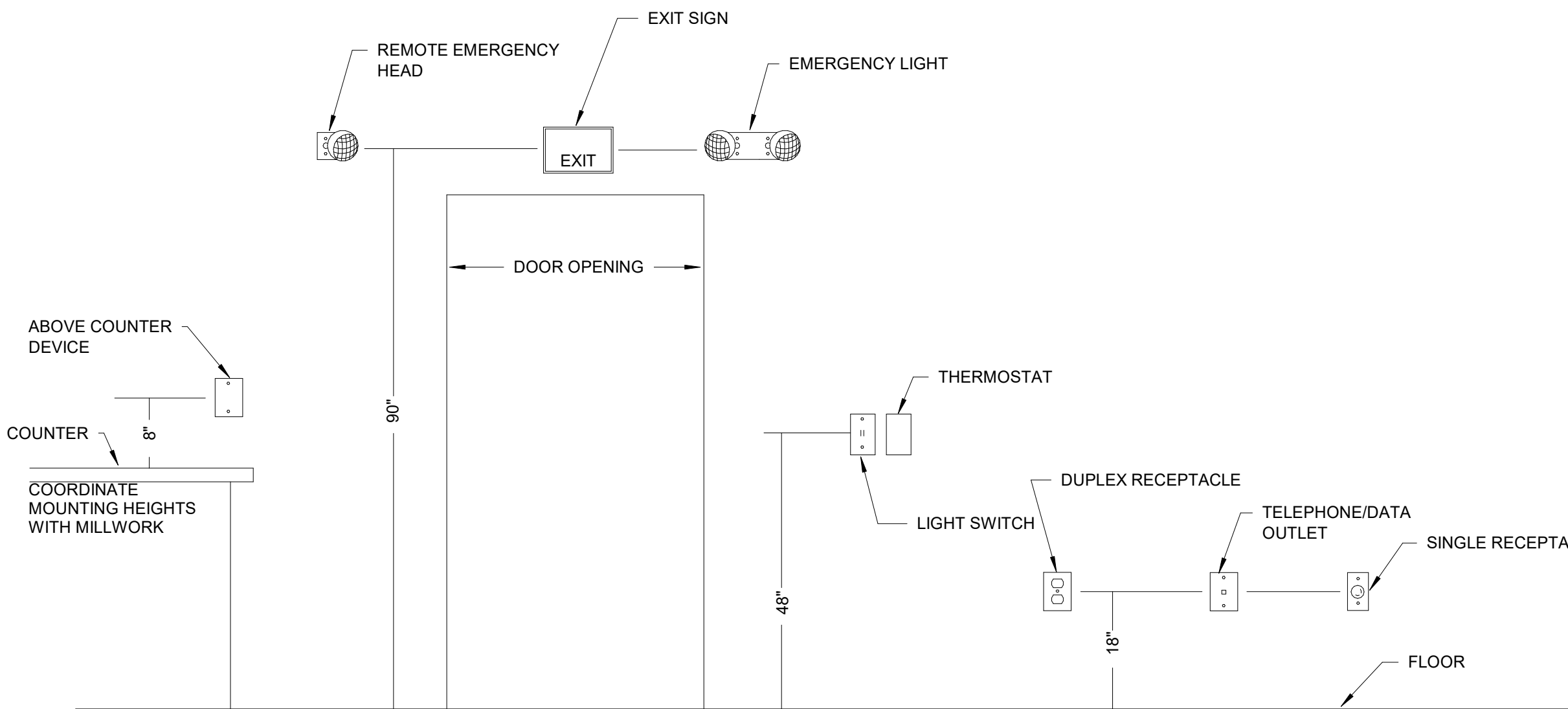
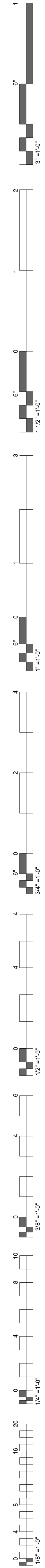
ABBREVIATIONS			
AC	ABOVE COUNTER	IG	ISOLATED GROUND
AF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
E	EXISTING	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC. NOT IN CONTACT
EC	ELECTRICAL CONTRACTOR	NIC	NIGHT LIGHT
EP	EXPLOSION PROOF	NL	NIGHT LIGHT
GFI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GR	GROUND	UON	UNLESS OTHERWISE NOTED
HP	HORSE POWER	WP	WEATHERPROOF
		WR	WEATHER RESISTANT

WIRING	
	WIRING CONCEALED IN CEILING OR WALLS UON. ALL WIRE IS NUMBER #12 AWG MINIMUM.
	EXPOSED RACEWAY.
	UNDERGROUND RACEWAY, TYPE, SIZE, CONDUCTORS, AND ARRANGEMENT BY NOTATION OR SCHEDULE.

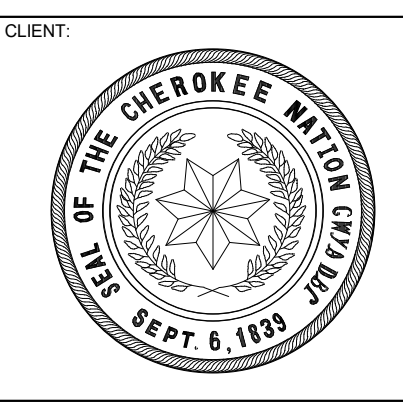
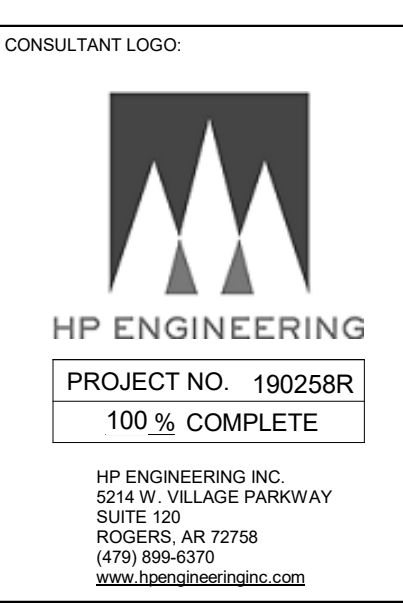
SWITCHES	
\$*	SWITCH MOUNTED AT +48" SINGLE POLE UON. LOWER CASE LETTER, WHEN PRESENT, INDICATES FIXTURES CONTROLLED.
2	ABBREVIATIONS FOR SWITCH
2	DOUBLE POLE SWITCH
3	3-WAY SWITCH
4	4-WAY SWITCH
D	DIMMER SWITCH (SHALL BE COMPATIBLE WITH FIXTURE BEING DIMMED)
F	FAN SWITCH, DUAL OPERATION WITH DIMMER
K	KEYED SWITCH
M	MOTOR RATED SWITCH
OS	DUAL TECHNOLOGY OCCUPANCY SENSOR
V	VOLUME CONTROL SWITCH
◇ OS	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR WITH SPARE DRY CONTACTS. HUBBELL OMINIDIARY SERIES

RECEPTACLES	
⊕	DUPLEX RECEPTACLE (NEMA 5-20R)
⊕	DUPLEX RECEPTACLE (NEMA 5-20R); MOUNTED 8" ABOVE COUNTERTOP.
⊕ U	(ALL RECEPTACLE TYPES) WITH USB CHARGING PORTS
⊕	GFI DUPLEX RECEPTACLE (NEMA 5-20R); SELF-TEST TYPE
⊕	GFI DUPLEX RECEPTACLE (NEMA 5-20R); SELF-TEST TYPE; MOUNTED 8" ABOVE COUNTERTOP.
⊕	QUADRUPLX RECEPTACLE (TWO NEMA 5-20R)
⊕	SPECIAL RECEPTACLE: VERIFY NEMA TYPE WITH MANUFACTURER
⊕ TV	FLOOR BOX WITH DATA: LEGRAND WIREMOLD SERIES RFB4E-0G OR RFB6E-0G WITH EVOLUTION COVER. ROUTE (2) 1" FOR DATA FROM FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES. LEGRAND 6AT SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON.
⊕ TV	TELEVISION: PROVIDE HUBBELL NSAV62M JUNCTION BOX (OR EQUAL) WITH 1/2" CONDUIT FOR POWER AND 1" CONDUIT (WITH PULL STRINGS) FOR AV ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE CONNECTIONS FOR POWER, DATA, COAX, AND HDMI. MOUNT AT +60" AFF UON. CONFIRM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN.
⊕	SINGLE RECEPTACLE (NEMA 5-20R)
⊕	SPLIT WIRED DUPLEX RECEPTACLE (NEMA 5-20R)
⊕	DIRECT EQUIPMENT CONNECTION: VERIFY CONNECTION DETAILS WITH MANUFACTURER
⊕	FLOOR BOX: HUBBELL 3SFBSS WITH 3SFBCC COVER. EC SHALL ROUTE A 1" FOR FLOOR BOX TO NEAREST ACCESSIBLE CEILING SPACE. ON FLOOR LEVELS WITH ACCESSIBLE SPACE BELOW, USE POKE-THRU STYLE FLOOR BOXES: HUBBELL PT2X SERIES. SEE ARCHITECTURAL PLANS FOR LOCATION UON.
⊕	CEILING MOUNTED RECEPTACLE(NEMA 5-20R)

PANELS AND MISC.	
	LIGHT OR POWER PANEL.
⊕	4x4 JUNCTION BOX.
	EQUIPMENT DISCONNECT: INTERIOR DISCONNECTS SHALL BE NEMA 1 TYPE. EXTERIOR DISCONNECTS SHALL BE NEMA 3R TYPE. SIZE AS INDICATED IN THE PLANS AND PER NAMEPLATE RATING.
▽	PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX AT 8" ABOVE COUNTER (UON) WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS.
▽	PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX AT +18" (UON) WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. PROVIDE PLASTIC BUSHINGS ON EXPOSED CONDUIT ENDS. WIRING BY OTHERS.
▽	PHONE/DATA: PROVIDE 4"x4", 30-1/4 CUBIC INCH OUTLET BOX IN CEILING. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. WIRING BY OTHERS.
TV	TELEVISION: PROVIDE 4x4 JUNCTION BOX WITH (2) 3/4" CONDUITS (WITH PULL STRINGS) ROUTED TO ACCESSIBLE CEILING SPACE. PROVIDE SINGLE GANG MUD RING WITH BLANK COVER. CONFIRM HEIGHTS WITH ARCHITECT PRIOR TO ROUGH-IN.
S	CEILING MOUNTED SPEAKER
CR	CARD READER: REFER TO SYSTEM PLANS AND SPECIFICATIONS. AT EACH DOOR WITH A CARD READER PROVIDE ALL ELECTRICAL CONNECTIONS FOR DOOR HARDWARE SYSTEMS AS REQUIRED TO MAKE A COMPLETE OPERATIONAL SYSTEM. WHERE REQUIRED, BACK TO BACK 2"x4" BOXES ARE ALLOWED FOR CARD READER AND PUSH TO EXIT SWITCH. PROVIDE POWER TO THE LOCK SYSTEM IN THE I.T. ROOM WHERE NEEDED BY CONTRACTOR INSTALLING SYSTEM.
WAP	WIRELESS ACCESS POINT



**1 TYPICAL MOUNTING HEIGHT**  
N.T.S.



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KEY PLAN

PROJECT PHASE	
CONSTRUCTION DOCUMENTS	

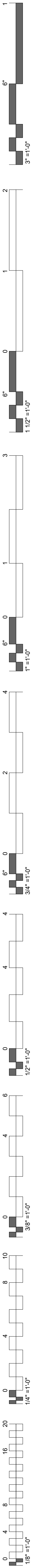
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DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER: **E1.00**

ELECTRICAL NOTES AND LEGENDS



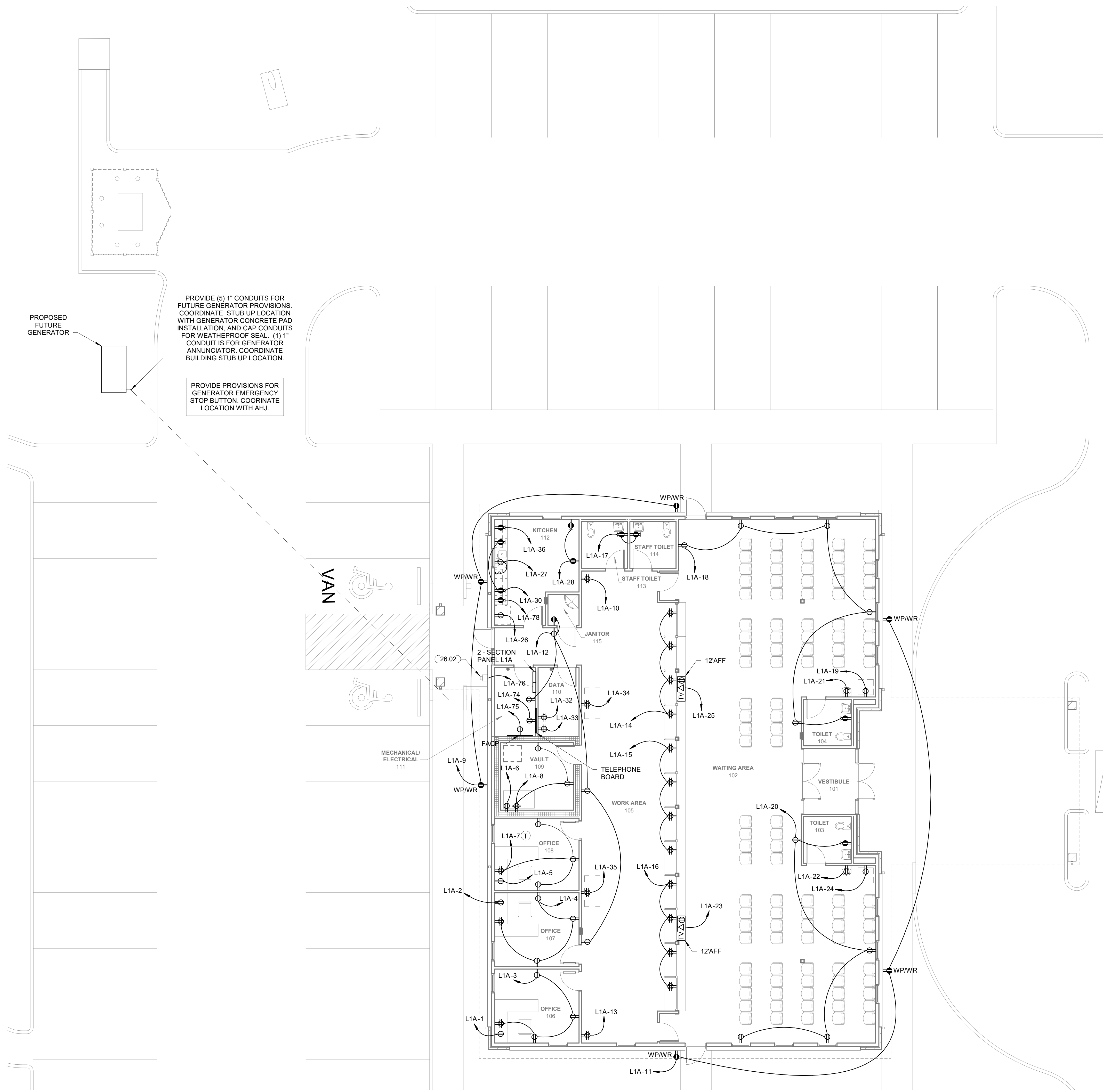


**POWER PLAN NOTES**

COORDINATE MOUNTING HEIGHTS FOR POWER ASSOCIATED WITH TV OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.

**KEYNOTES**

26.02 KNOX REMOTE POWER BOX SERIES #4500 (OR EQUAL) FOR OPERATION OF SERVICE DISCONNECTING MEANS SHUNT TRIP. COORDINATE KEYING AND LOCATION WITH AHJ AND FIRE DEPARTMENT PRIOR TO ROUGH-IN. CIRCUIT AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.



PROVIDE (5) 1" CONDUITS FOR FUTURE GENERATOR PROVISIONS. COORDINATE STUB UP LOCATION WITH GENERATOR CONCRETE PAD INSTALLATION, AND CAP CONDUITS FOR WEATHERPROOF SEAL. (1) 1" CONDUIT IS FOR GENERATOR ANNUNCIATOR. COORDINATE BUILDING STUB UP LOCATION.

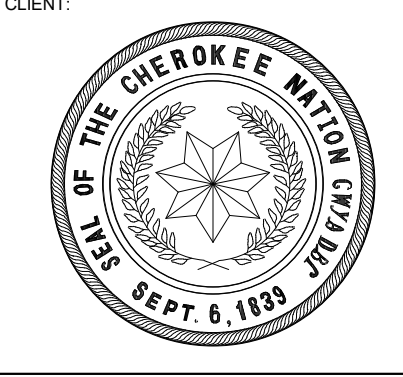
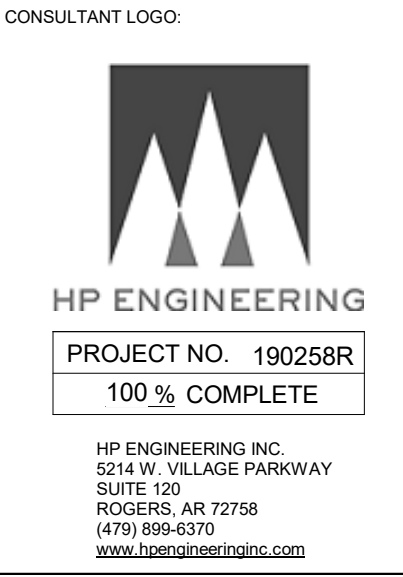
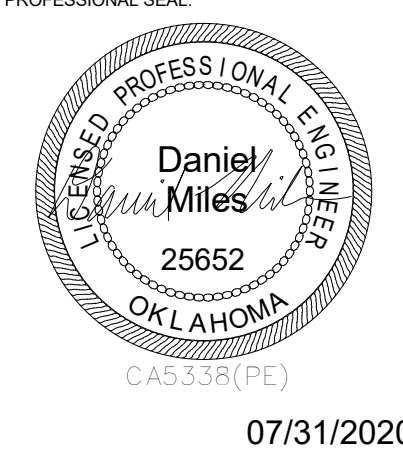
PROVIDE PROVISIONS FOR GENERATOR EMERGENCY STOP BUTTON. COORDINATE LOCATION WITH AHJ.

**1 POWER PLAN**

1/8" = 1'-0"



**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



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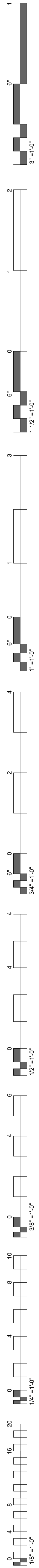
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POWER PLAN



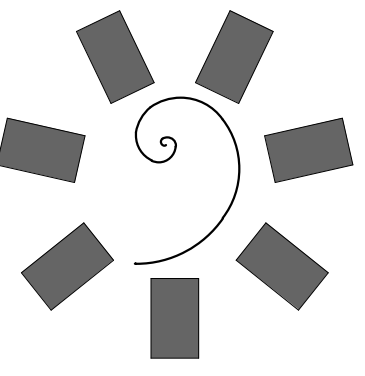


**MECHANICAL POWER PLAN NOTES**

MAKE CONNECTIONS TO AUTOMATIC FLUSH TOILETS/URINAL AND AUTOMATIC SINKS PER MANUFACTURER SPECIFICATIONS.  
 EXHAUST FANS SHALL BE CIRCUITED WITH LIGHTS UNLESS SHOWN OTHERWISE. REFER TO MECHANICAL PLANS FOR CONTROLS OF EXHAUST FANS.

**KEYNOTES**

26.03 COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR AND MANUFACTURER INSTRUCTIONS.



**James R. Childers  
Architect, Inc.**

45 South 4th Street  
 Fort Smith, AR 72901  
 479-783-2450  
 www.childersarchitect.com

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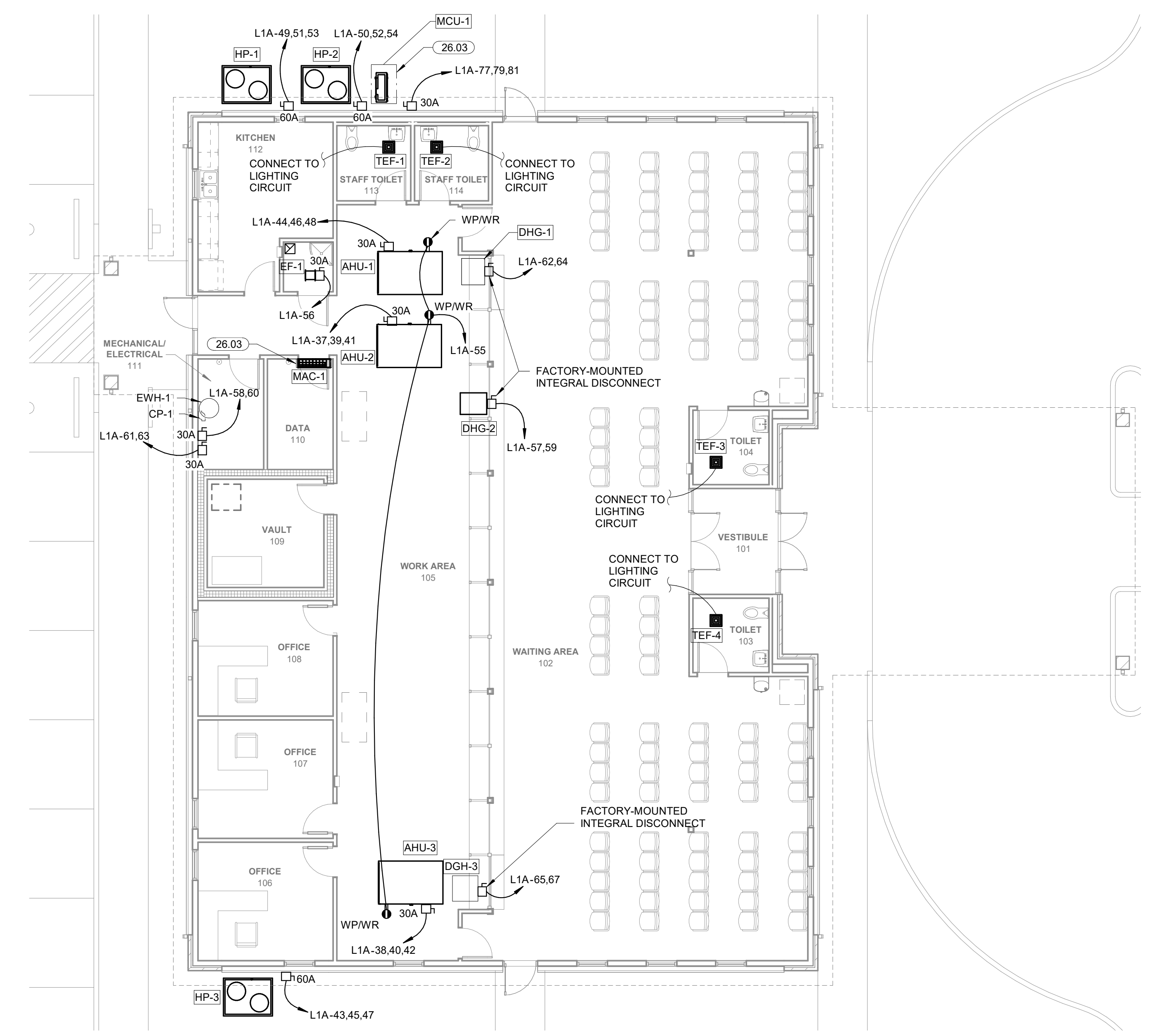
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 214 W. WILKIE PARKWAY  
 SUITE 120  
 ROGERS, AR 72719  
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**1 MECHANICAL POWER PLAN**  
 1/8" = 1'-0"

KEY PLAN:



PROJECT PHASE:

CONSTRUCTION DOCUMENTS

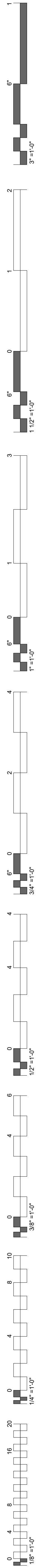
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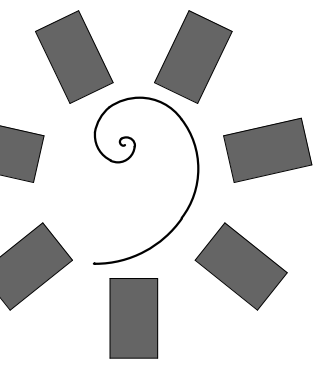
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MECHANICAL POWER PLAN





**1 SYSTEMS PLAN**  
1/8" = 1'-0"



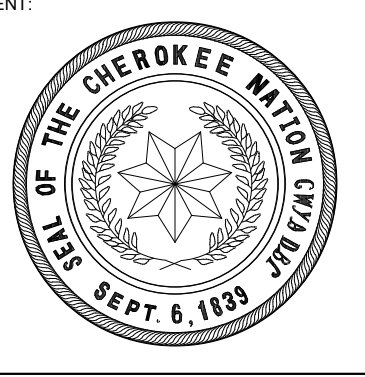
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Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com



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214 W. WILKIE PARKWAY  
SUITE 120  
ROCKWELL, AR 72768  
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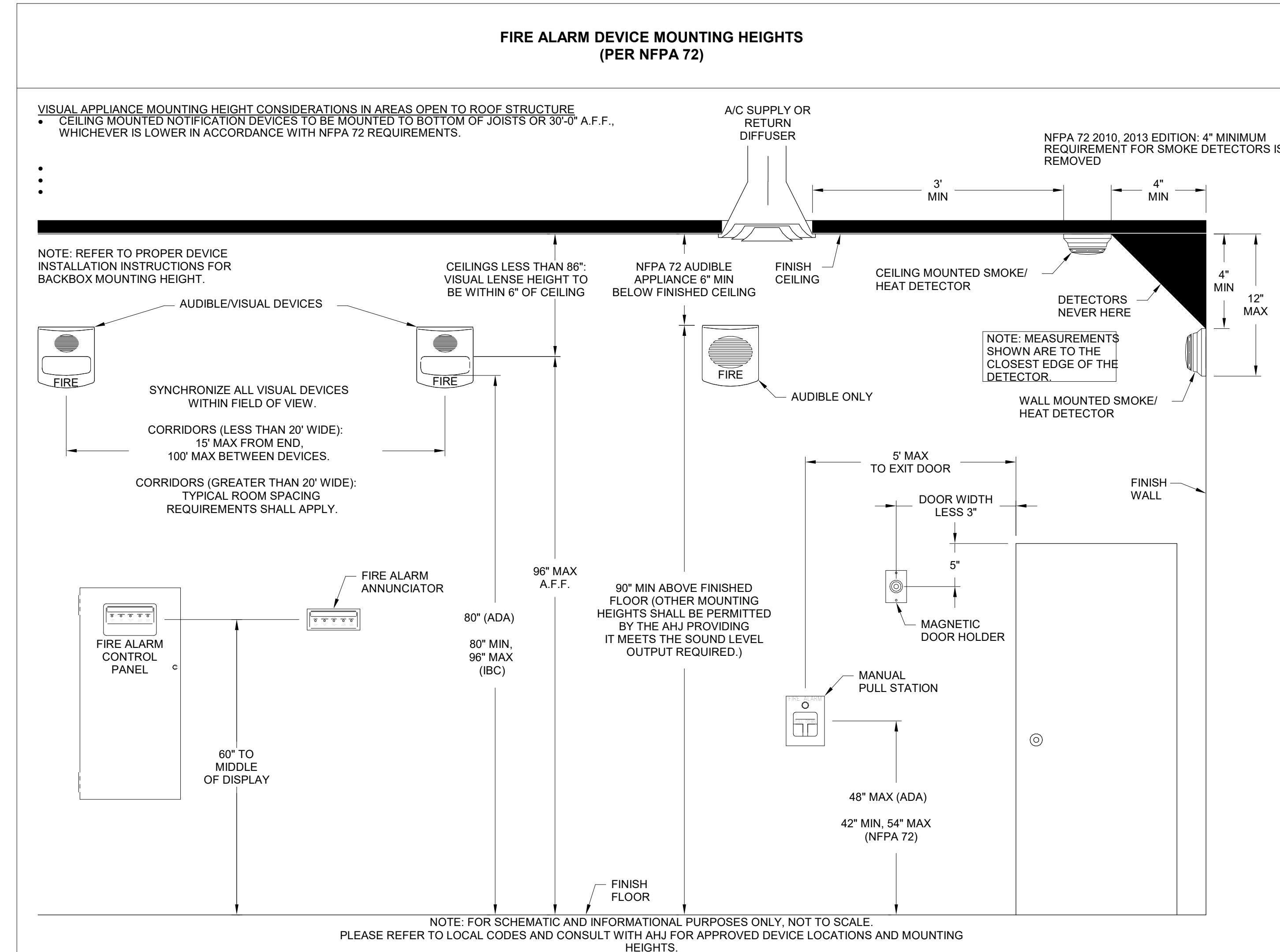
SYSTEMS PLAN



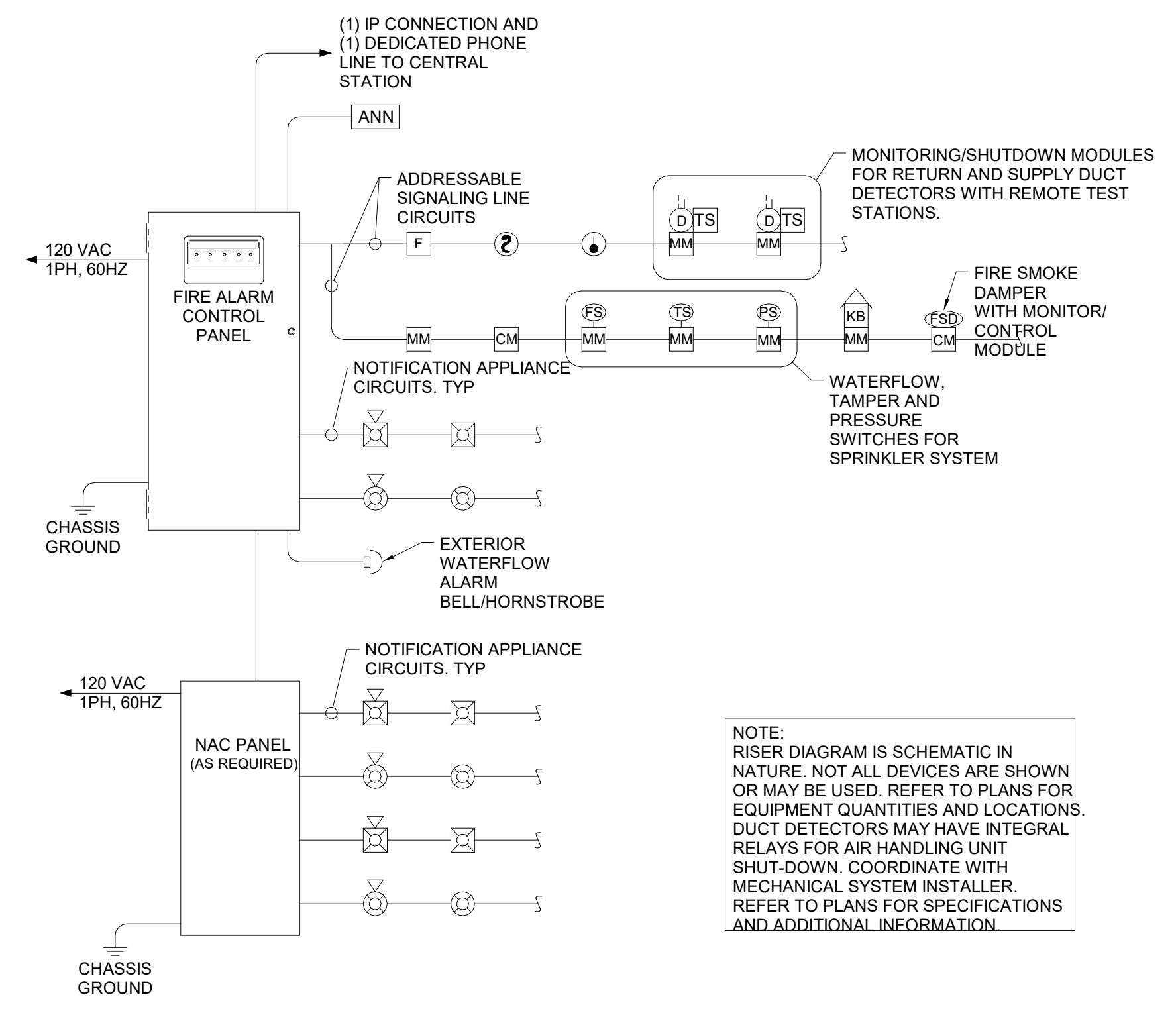
FIRE ALARM INSTALLATION NOTES	FIRE ALARM GENERAL NOTES
1 SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 72 AND LOCAL CODES AND REGULATIONS. ALL EQUIPMENT AND MATERIALS SHALL BE UL LISTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.	1 FIRE ALARM SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH NFPA 70 AND NFPA 72. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL.
2 INTERFACE WITH AND MONITOR ALL FIRE SUPPRESSION SYSTEM DEVICES INCLUDING (BUT NOT LIMITED TO) SPRINKLER FLOW AND TAMPER SWITCHES.	2 INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. PERFORM REQUIRED CALCULATIONS AND COORDINATE WITH OTHER TRADES. DEVIATIONS FROM ENGINEERS LAYOUT WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED.
3 WIRE AND CABLE SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760. SIGNALING LINE CIRCUITS TO BE TWISTED, SHIELDED PAIR, SIZED AS RECOMMENDED BY SYSTEM MANUFACTURER. NON-POWER LIMITED CIRCUITS TO BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C, COLOR-CODED INSULATION.	3 PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
4 INSTALL AND TEST SYSTEMS ACCORDING TO NFPA 72. COMPLY WITH NECA 1.	4 PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
5 TEST ALL SYSTEM DEVICES FOR PROPER OPERATION IN THE PRESENCE OF THE AHJ AND OTHER OFFICIALS INSPECTING THE FIRE ALARM SYSTEM.	5 AUDIBLE NOTIFICATION DEVICES SHALL SOUND UNTIL SILENCED AT THE CONTROL PANEL OR REMOTE ANNUNCIATOR AS REQUIRED. VISUAL ALARM IS DISPLAYED UNTIL DEVICE IS RETURNED TO ITS NORMAL POSITION OR SUPERVISORY CONDITION IS CLEARED.
6 IF REQUIRED BY THE LOCAL AHJ, EQUIPMENT DATA SHEETS AND BATTERY CALCULATIONS IN ACCEPTANCE WITH NFPA 72 SHALL BE PERFORMED BY THE FIRE ALARM SYSTEM MANUFACTURER/INSTALLER TO MATCH EQUIPMENT TO BE INSTALLED.	6 FORWARD COMPLETED FIRE ALARM CERTIFICATE OF COMPLETION TO THE OWNER.
7 SYSTEM INSTALLER SHALL BE A LICENSED FIRE ALARM CONTRACTOR IN THE RESPECTIVE STATE OF THIS PROJECT.	7 REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8 FIRE ALARM CONTROL PANEL SHALL BE MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, UL 864 LISTED, AND DESIGNED TO TRANSMIT ALARM, TROUBLE, AND SUPERVISORY SIGNALS TO A UL LISTED CENTRAL STATION THROUGH A DIGITAL ALARM COMMUNICATOR TRANSMITTER WITH (1) ETHERNET PORT CONNECTION AND (1) DEDICATED TELEPHONE LINE.	8 PROVIDE CONNECTION TO EXTERIOR WATERFLOW ALARM BELL AS REQUIRED.
9 PROVIDE 120VAC POWER THROUGH DEDICATED LOCKING BREAKER AT CONTROL PANEL.	9 PROVIDE NOTIFICATION, INITIATING AND MONITORING DEVICES AS INDICATED ON THE DRAWINGS. FIRE ALARM DEVICES SHALL BE OF ONE MANUFACTURER AND SHALL BE LISTED FOR USE WITH THE FIRE ALARM CONTROL PANEL.
10 GROUND THE FACP AND ALL ASSOCIATED CIRCUITS.	10 PROVIDE NOTIFICATION APPLIANCE CIRCUIT (PANEL(S) TO POWER NOTIFICATION DEVICES AS REQUIRED. CONNECT TO FIRE ALARM SYSTEM CONTROL PANEL.
11 INSTALL A #6 AWG GROUND WIRE FROM THE TELE-COMMUNICATIONS EQUIPMENT GROUNDING POINT TO THE FACP.	11 THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR LOCATIONS SHOWN SHALL BE COORDINATED WITH THE FIRE DEPARTMENT AND AHJ PRIOR TO INSTALLATION.
12 SYSTEM SHALL INCLUDE 24V DC POWER SYSTEM WITH SEALED LEAD CALCIUM BATTERIES AND AUTOMATIC BATTERY CHARGER IN ACCORDANCE WITH NFPA 72.	12 PROVIDE DEDICATED CONNECTION OF THE FIRE ALARM SYSTEM TO A UL LISTED CENTRAL STATION.
13 PROVIDE (1) IP CONNECTION TO CUSTOMERS INTERNET NETWORK AND (1) DEDICATED TELEPHONE LINE TERMINATED WITH (1) RJ31X MODULAR OUTLET AT DACT LOCATION.	13 PROVIDE KNOX BOX FOR FIRE DEPARTMENT ACCESS. CONNECT TAMPER SWITCH TO FIRE ALARM SYSTEM AS REQUIRED.
	14 AIR HANDLING SYSTEMS THAT ARE MONITORED SHALL SHUTDOWN AND REMAIN DOWN UNTIL MANUALLY RESET.
	15 ROOF TOP AIR DISTRIBUTION SYSTEMS EXCEEDING 2,000 CFM. PROVIDE DUCT MOUNTED SMOKE DETECTORS FOR AIR HANDLING UNIT SHUTDOWN AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MONITOR MODULE FOR SUPPLY AIR DUCT DETECTOR AND RELAY/MONITOR MODULE FOR RETURN AIR DUCT DETECTOR. REFER TO MECHANICAL SHEETS FOR AIR HANDLING UNIT AND DUCTWORK LAYOUT AND DETAILS.
	16 DUCT SMOKE DETECTION SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE FACP.

**FIRE ALARM LEGEND**

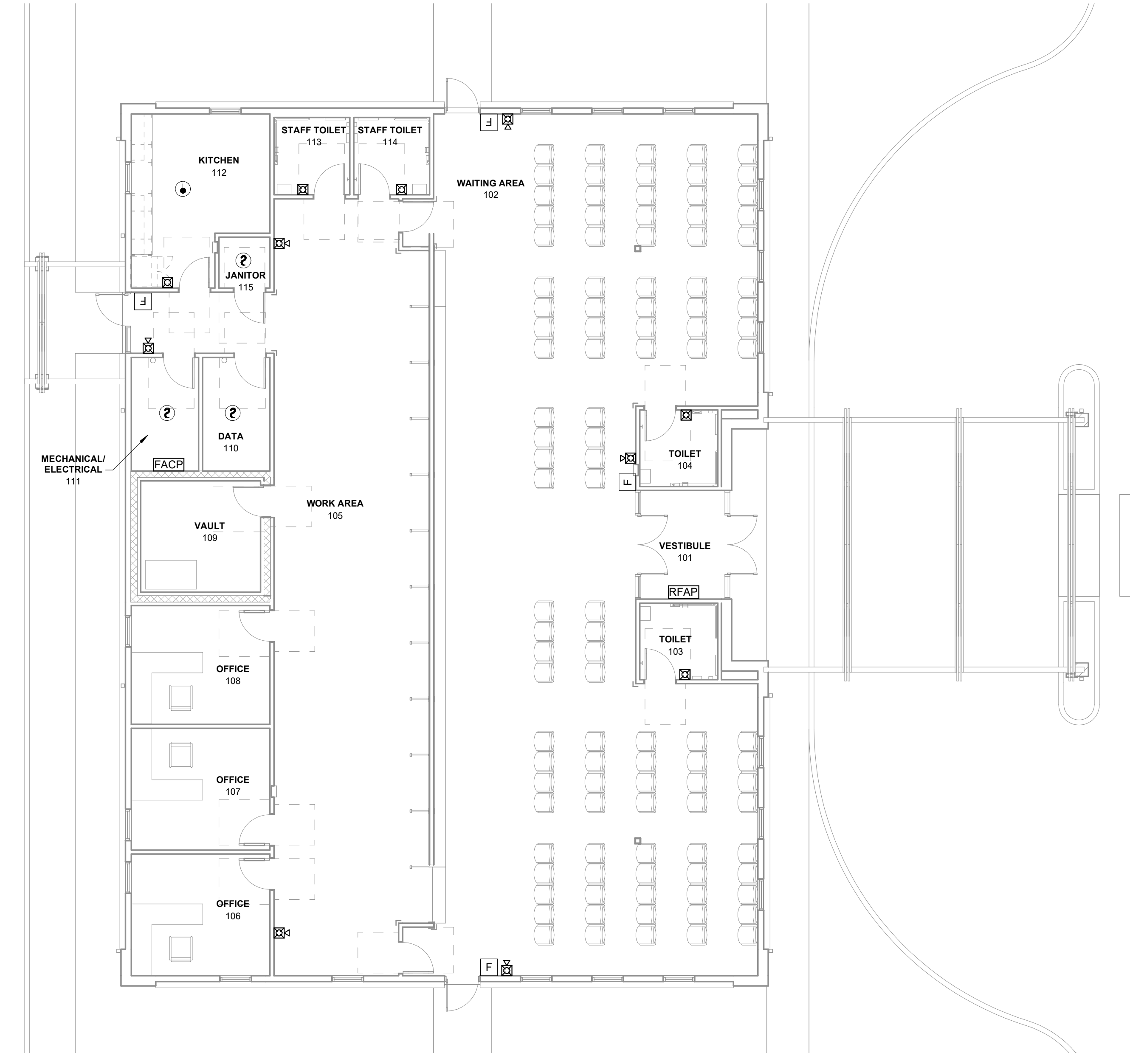
	SMOKE DETECTOR
	HEAT DETECTOR
	DUCT DETECTOR
	WALL MOUNT HORN STROBE
	CEILING MOUNT HORN STROBE
	WALL MOUNT STROBE
	CEILING MOUNT STROBE
	PULL STATION
	FIRE ALARM ANNUNCIATOR PANEL
	FIRE ALARM CONTROL PANEL
	SPRINKLER FLOW SWITCH
	SPRINKLER TAMPER SWITCH
	FIRE ALARM MONITOR MODULE
	FIRE ALARM CONTROL MODULE



**3 FIRE ALARM MOUNTING HEIGHTS**  
 N.T.S.



**2 TYPICAL FIRE ALARM RISER DETAIL**  
 N.T.S.



**1 FIRE ALARM PLAN**  
 1/8" = 1'-0"



LUMINAIRE SCHEDULE

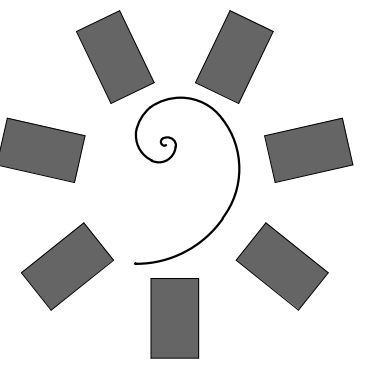
- NOTES:  
 1. EC SHALL PROVIDE A SUBMITTAL PACKAGE INCLUDING CUTSHEETS FOR EACH FIXTURE.  
 2. EC SHALL PROVIDE ALL ACCESSORIES FOR A COMPLETE ASSEMBLY INCLUDING MOUNTING HARDWARE.  
 3. THE MOUNTING TYPE OF EACH FIXTURE SHALL BE COMPATIBLE WITH INSTALLATION SURFACE OF EACH FIXTURE.  
 4. ALL FINISHES SHALL BE COORDINATED WITH ARCHITECT AND DOCUMENTED ON SUBMITTALS.

TYPE	LAMP	DIMMING	COLOR TEMPERATURE	VOLTS	WATTS	DESCRIPTION	MANUFACTURER
A1	LED	0-10V	3500K	120/277	30 W	2X2, FLAT PANEL, 2953LM	LSI SFP22
A2	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM	LS1 SFP24
A2E	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM, EMERGENCY, INTEGRAL TEST SWITCH	LS1 SFP24
A3	LED	0-10V	3500K	120/277	50 W	2X4, FLAT PANEL, 5000LM, PROVIDE WITH DRYWALL FLANGE KIT	LS1 SFP24
G1	LED	0-10V	3500K	120/277	14 W	6", RECESSED, DOWNLIGHT, WHITE, 1400LM	CONTECH R8NC
G1E	LED	0-10V	3500K	120/277	14 W	6", RECESSED, DOWNLIGHT, WHITE, 1400LM, EMERGENCY	CONTECH R8NC
F1	LED	0-10V	4000K	120/277	18 W	4" SURFACE DIRECT, SILVER, 500 LM/FT	LUX EOS 4.0.S
G1	LED	0-10V	4000K	120/277	30 W	4" SURFACE STRIP, 4000LM	LSI LCL4
G1E	LED	0-10V	4000K	120/277	30 W	4" SURFACE STRIP, 4000LM, EMERGENCY	LSI LCL4
L1	LED	0-10V	4000K	120/277	8 W	* SEE ADDITIONAL NOTES BELOW LIGHT FIXTURE SCHEDULE	BM4-L-LUM-0123
L1E	LED	0-10V	4000K	120/277	8 W	* SEE ADDITIONAL NOTES BELOW LIGHT FIXTURE SCHEDULE	BM4-L-LUM-0123 EM
S1	LED	NA	4000K	120/277	250 W	25" POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L
S2	LED	NA	4000K	120/277	250 W	25" POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L
S3	LED	NA	4000K	120/277	250 W	25" POLE LIGHT, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L
S4	LED	NA	4000K	120/277	500 W	25" POLE LIGHT, 2-HEADED, FORWARD THROW, 30000LM, 70CRI, BLACK	LSI MRM-LED-30L
W1	LED	NA	4000K	120/277	30 W	WALL PACK, 4000LM, BLACK	LSI XWM
W1E	LED	NA	4000K	120/277	30 W	WALL PACK, 4000LM, BLACK, EMERGENCY	LSI XWM
X1	LED	NA	NA	120/277	5 W	EXIT SIGN, EDGE LIT, SELF DIAGNOSTIC, RED LETTERS, WHITE, EMERGENCY	LSI ELX
Z1	LED	0-10V	4000K	120/277	13 W	4" SURFACE STRIP, 2024LM, SP FINISH (TO MATCH SW9090 CARAIBE TRUSS COLOR)	ADVANTAGE LDL24SMSW
Z1E	LED	0-10V	4000K	120/277	13 W	4" SURFACE STRIP, 2024LM, SP FINISH (TO MATCH SW9090 CARAIBE TRUSS COLOR), EMERGENCY	ADVANTAGE LDL24SMSW

\*EMAIL KENDELL STUCKI AT [kstucki@bellandmccoy.com](mailto:kstucki@bellandmccoy.com) FOR INFORMATION ON TYPE L1 AND L1E FIXTURES.

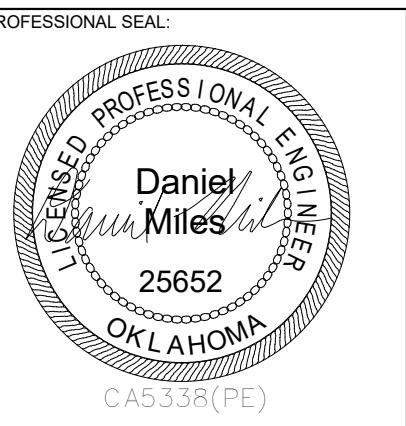
LIGHTING PLAN NOTES

VERIFY MOUNTING HEIGHT OF ALL PENDANT FIXTURES PRIOR TO ROUGH-IN.



James R. Childers  
Architect, Inc.

45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
[www.childersarchitect.com](http://www.childersarchitect.com)



07/31/2020

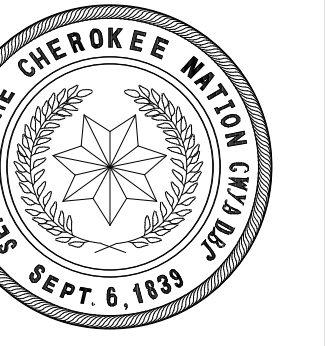
CONSULTANT LOGO



HP ENGINEERING  
PROJECT NO. 190258R  
100% COMPLETE

HP ENGINEERING INC.  
214 W. WILLIAMS PARKWAY  
SUITE 120  
ROCKWELL, AR 72766  
(479) 896-8370  
[www.hpengineering.com](http://www.hpengineering.com)

CLIENT:



CHEROKEE NATION  
TAG OFFICE  
CATOOSA, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

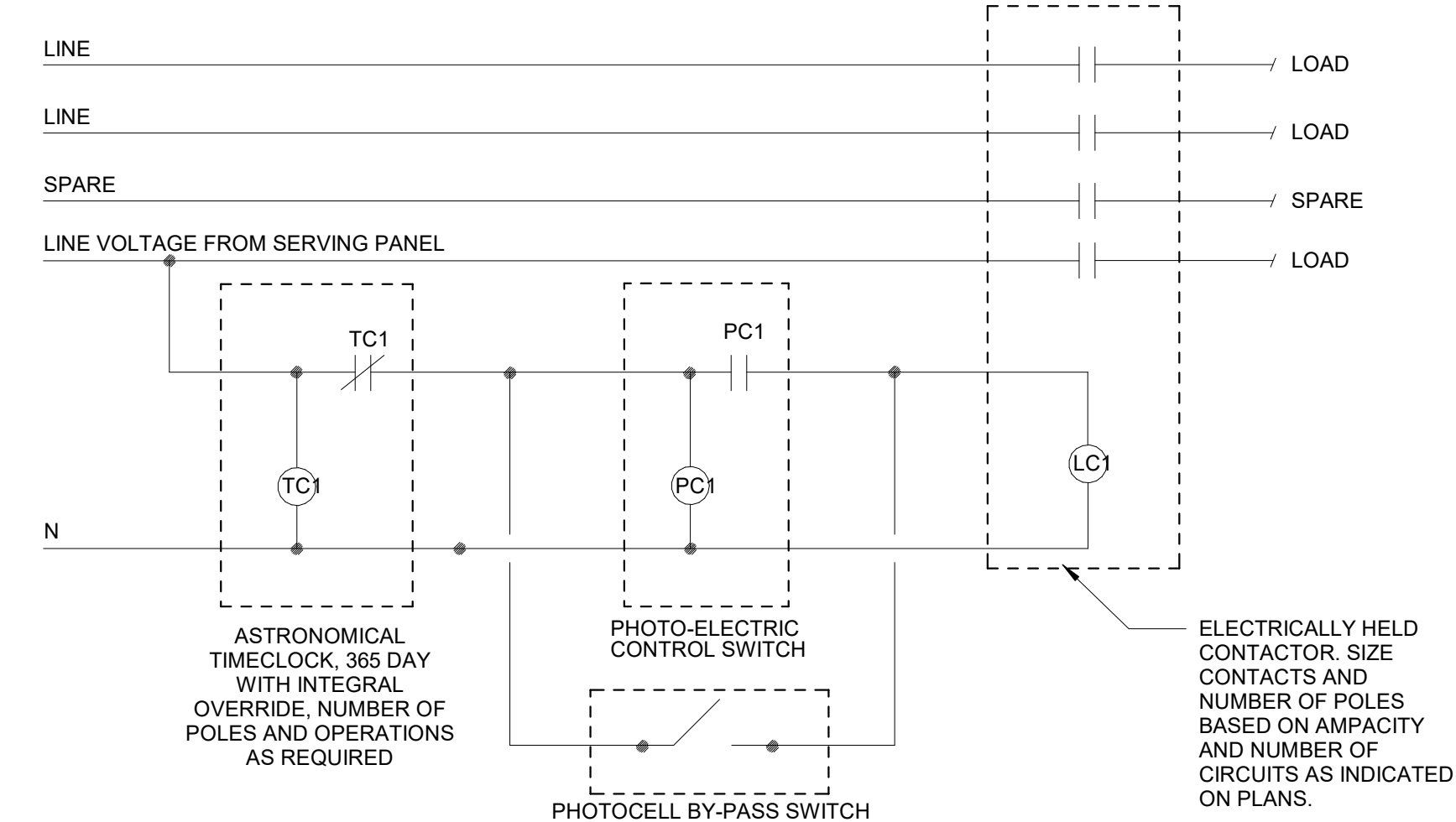
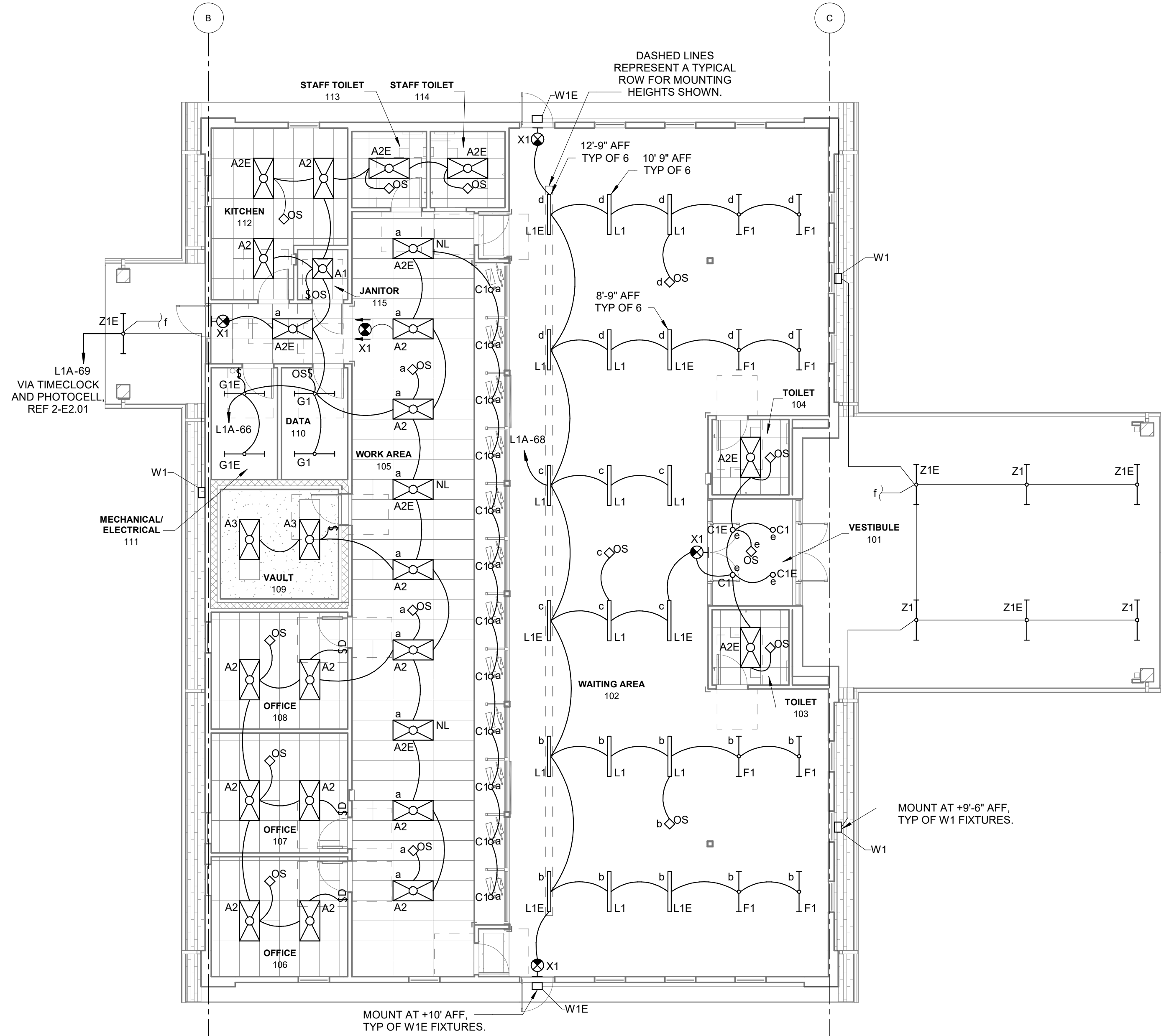
#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER:

E2.01

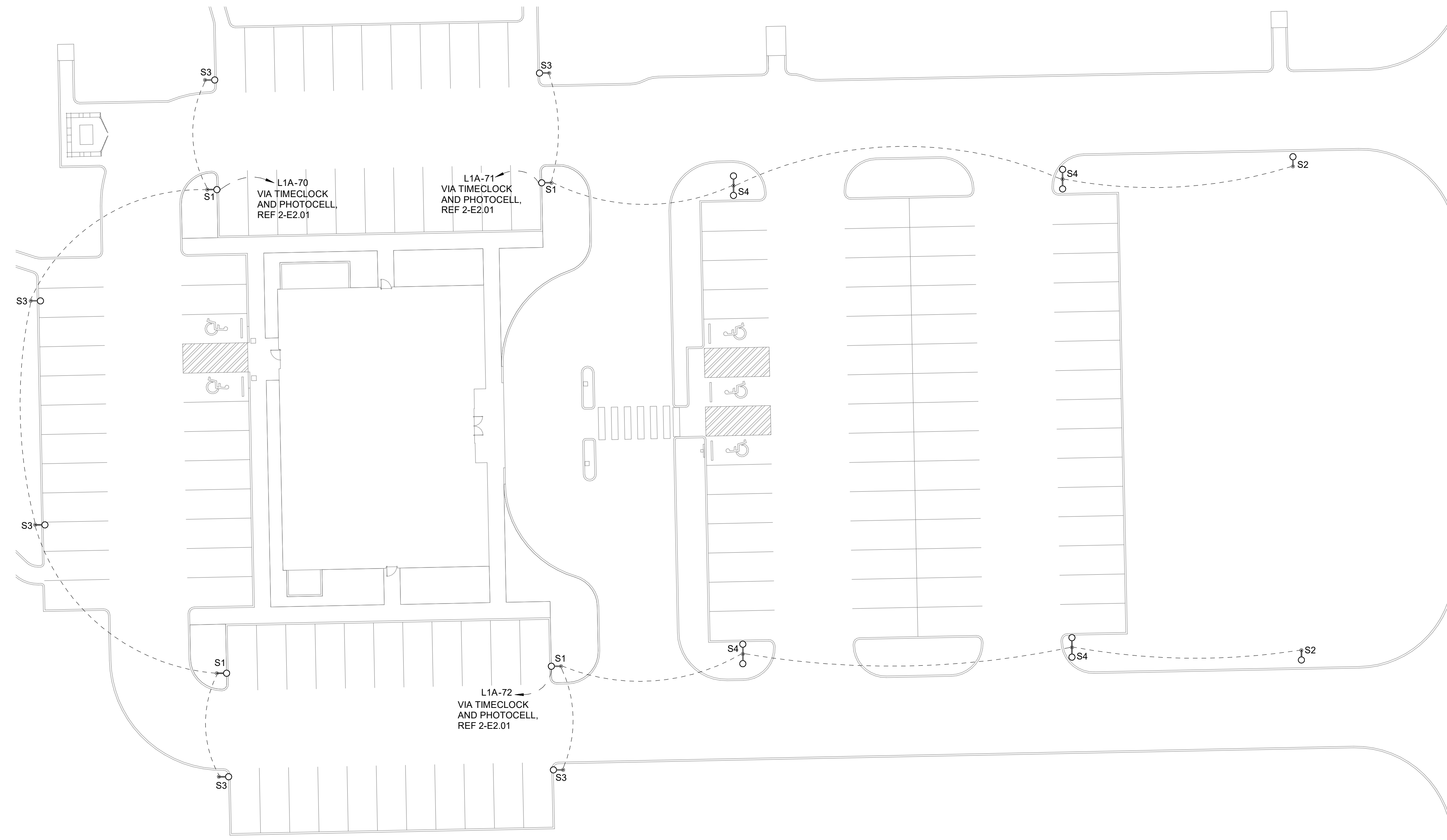
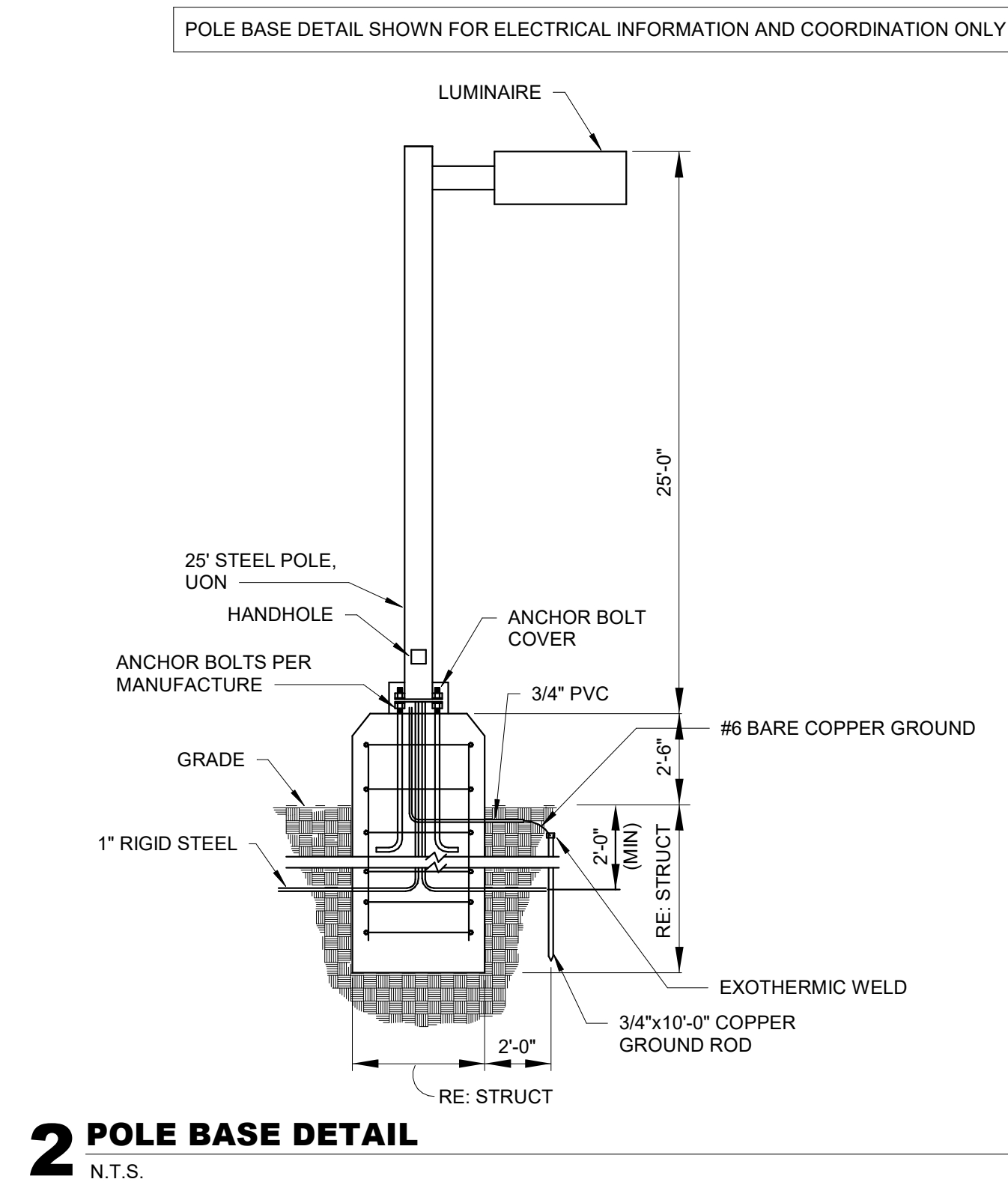
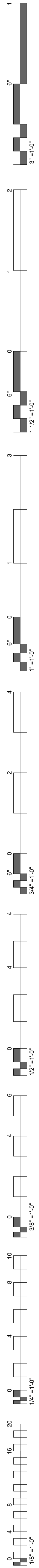
LIGHTING PLAN



2 TYPICAL LIGHTING CONTACTOR  
N.T.S.

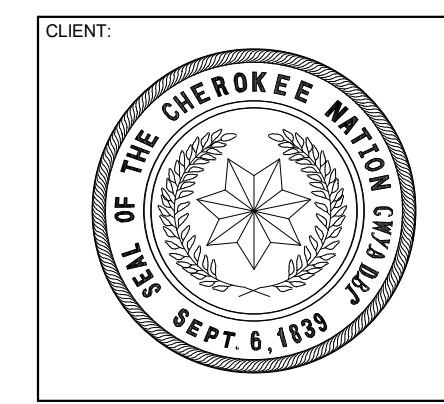
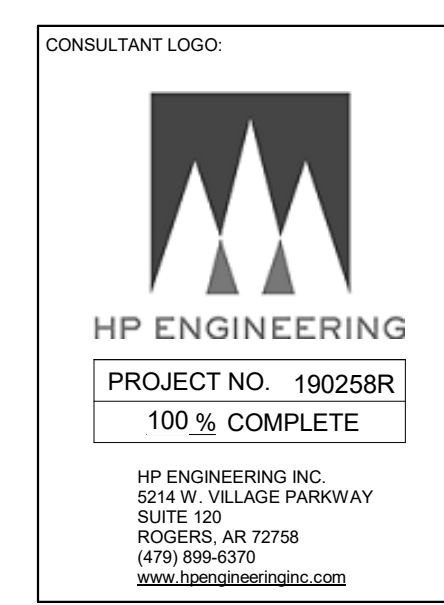
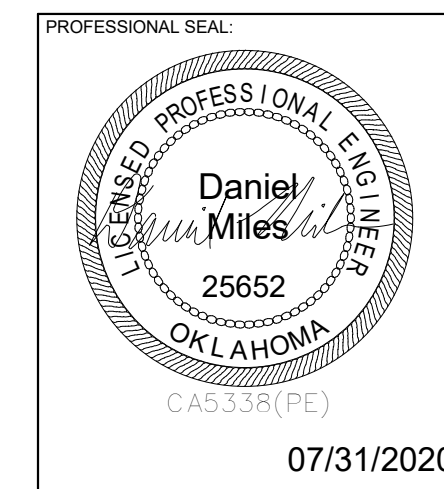
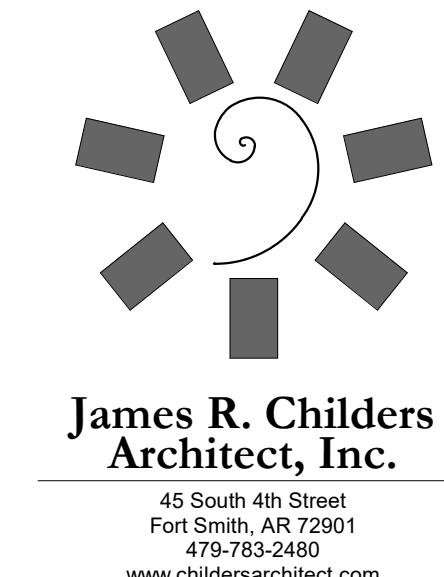
1 LIGHTING PLAN  
1/8" = 1'-0"





#	DATE	REVISIONS DESCRIPTION





CHEROKEE NATION  
 TAG OFFICE  
 CATAOOSA, OKLAHOMA

KEY PLAN

PROJECT PHASE

CONSTRUCTION DOCUMENTS

#	DATE	REVISIONS	DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

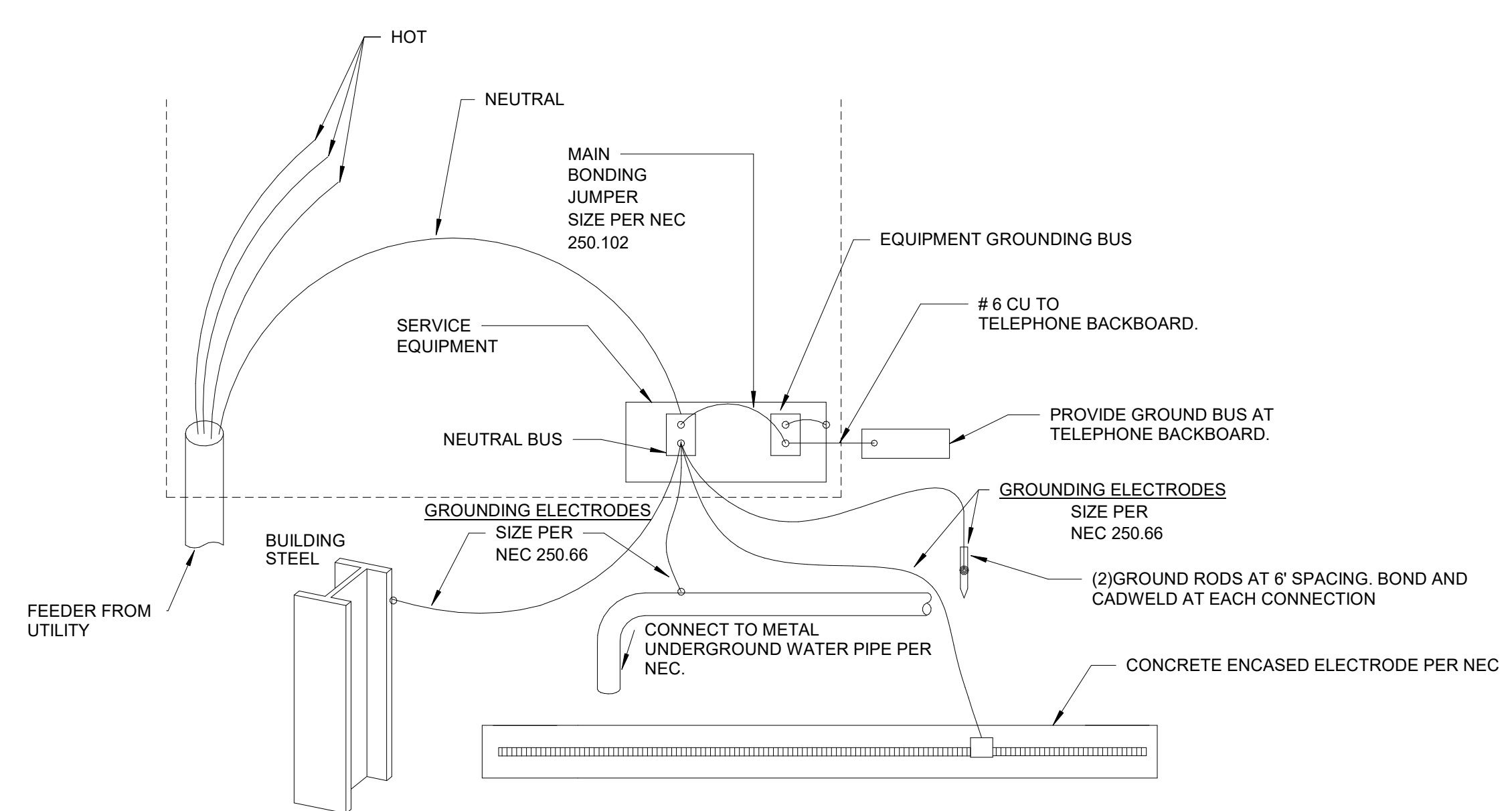
SHEET NUMBER: E3.00

ELECTRICAL SCHEDULES AND RISER

Branch Panel: L1A				NEW								
Location: MECHANICAL/ELECTRICAL 111				Volts: 120/208 Wye								
Supply From: UTILITY TRANSFORMER				Phases: 3								
Mounting: SURFACE				Wires: 4								
Enclosure: NEMA 1				A.I.C. Rating: FULLY RATED (7)								
Notes: 54 POLES PER SECTION				Mains Type: MCB WITH SHUNT TRIP								
				Mains Rating: 400 A								
CKT	Load Name	CB	P	W	A	B	C	W	P	CB	Load Name	CKT
1	OFFICE 106 HEATER RECEPTACLE	20	1		1200 1200				1	20	OFFICE 107 HEATER RECEPTACLE	2
3	OFFICE 106 RECEPTACLES	20	1			900 900			1	20	OFFICE 107 RECEPTACLES	4
5	OFFICE 108 HEATER RECEPTACLE	20	1				1200 1200		1	20	VAULT 109 HEATER RECEPTACLE	6
7	OFFICE 108 RECEPTACLES	20	1		720 540				1	20	VAULT 109 RECEPTACLES	8
9	EXTERIOR RECEPTACLES	20	1			540 1200			1	20	WORK AREA 105 RECEPTACLES	10
11	EXTERIOR RECEPTACLES	20	1				540 900		1	20	WORK AREA 105 RECEPTACLES	12
13	WORK AREA 105 RECEPTACLES	20	1		1200 1440				1	20	WORKSTATION RECEPTACLES	14
15	WORKSTATION RECEPTACLES	20	1			1440 1440			1	20	WORKSTATION RECEPTACLES	16
17	STAFF TOILET 113 & 114 RECEPTACLES	20	1				360 1080		1	20	WAITING AREA 102A RECEPTACLES	18
19	WAITING AREA 102A VENDING (4)	20	1		1440 900				1	20	WAITING AREA 102B RECEPTACLES	20
21	WAITING AREA 102A W.C. (4)	20	1			600 600			1	20	WAITING AREA 102B W.C. (4)	22
23	WAITING AREA 102B TV	20	1				360 1440		1	20	WAITING AREA 102B VENDING (4)	24
25	WAITING AREA 102A TV	20	1		360 1000				1	20	REFRIGERATOR (4)	26
27	GARBAGE DISPOSAL (4)	20	1			864 360			1	20	KITCHEN RECEPTACLES	28
29	SPARE	20	1	--			0 360		1	20	KITCHEN RECEPTACLES	30
31	SPARE	20	1	--	0 360				1	20	DATA RACK	32
33	DATA RACK	20	1			360 1000			1	20	PRINTER	34
35	PRINTER	20	1				1000 1500		1	20	MICROWAVE	36
37					1201 167							38
39	AHU-2	15	3			1201 167			3	15	AHU-3	40
41					4443 1201							42
43						4443 1201			3	15	AHU-1	44
45	HP-3	60	3	#6		4443 1201						46
47						4443 1201						48
49					4443 4443							50
51	HP-1	60	3	#6		4443 4443		#6	3	60	HP-2	52
53						4443 4443						54
55	MAINTENANCE RECEPTACLES	20	1		540 500				1	20	EF-1	56
57	DHG-2	15	2			250 2250	#10	2	30		EW-1	58
59												60
61	CP-1	15	2		250 250				2	15	DHG-1	62
63						250 250			1	20	BACK OF HOUSE LIGHTING	64
65							250 1473		1	20	LOBBY LIGHTING	66
67	DHG-3	15	2		250 519				1	20	LOBBY LIGHTING	68
69	EXTERIOR LIGHTING	20	1			91 1500	#10	1	20	SITE LIGHTING (6)	70	
71	SITE LIGHTING (6)	20	1	#10			1750 1750	#10	1	20	SITE LIGHTING (6)	72
73	MCB SHUNT TRIP (3)	20	1		180 180				1	20	TELEPHONE BACKBOARD	74
75	FIRE ALARM CONTROL PANEL (3)	20	1			180 180			1	20	MCB SHUNT TRIP (3)	76
77									1	20	MICROWAVE	78
79	MCU-1	30	3	#10	3002 0		3002 1500	--	1	20	SPARE	80
81						3002 0		--	1	20	SPARE	82
83	SPARE	20	1	--	0 0		0 0	--	--	--	SPACE	84
85	SPARE	20	1	--	0 0		0 0	--	--	--	SPACE	86
87	SPARE	20	1	--	0 0		0 0	--	--	--	SPACE	88
89	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	90
91	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	92
93	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	94
95	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	96
97	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	98
99	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	100
101	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	102
103	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	104
105	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	106
107	SPARE	--	--	--	0 0		0 0	--	--	--	SPACE	108
				Total Load: 31929 VA 34055 VA 38903 VA								
				Total Amps: 266 A 287 A 320 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	58701 VA	100.00%	58701 VA	
LIGHTING	7083 VA	125.00%	8854 VA	Total Conn. Load: 104048 VA
RECEPTACLE	17120 VA	79.21%	13560 VA	Total Est. Demand: 98709 VA
HEATING	4800 VA	0.00%	0 VA	Total Conn. Current: 289 A
CONTINUOUS	5000 VA	125.00%	6250 VA	Total Est. Demand: 274 A
MISCELLANEOUS	11344 VA	100.00%	11344 VA	

THE AVAILABLE FAULT CURRENT AT THE SECONDARY OF THE TRANSFORMER IS CALCULATED AT 12,811 AMPS BASED ON A 150KVA WITH 3.25% IMPEDANCE UTILITY TRANSFORMERS AND INFINITE PRIMARY. PRIOR TO BID, ELECTRICAL CONTRACTOR SHALL CONFIRM THE AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY. ELECTRICAL CONTRACTOR SHALL ADJUST EQUIPMENT AIC RATINGS AS REQUIRED FOR ACTUAL AVAILABLE FAULT CURRENT.



2 TYPICAL GROUNDING DETAIL  
N.T.S.

- ### ELECTRICAL SERVICE NOTES
- THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL SERVICE AND METERING REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO BID AND SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AS REQUIRED BY THE SERVING UTILITY AS WELL AS COST INCURRED BY SERVING UTILITY.
  - THE ELECTRICAL CONTRACTOR SHALL VERIFY THE FAULT CURRENT AT THE SECONDARY OF THE TRANSFORMER WITH THE UTILITY COMPANY AND ADJUST THE ELECTRICAL PANEL AIC RATINGS TO THE NEXT HIGHER STANDARD RATING.
  - ALUMINUM SERVICE CONDUCTORS ARE NOT RECOMMENDED AND SHOULD ONLY BE USED WHERE ABSOLUTELY NECESSARY OR REQUIRED BY THE OWNER. CONTRACTOR TO CONTACT ENGINEER FOR SIZING. WHERE ALUMINUM CONDUCTORS ARE USED, THE OWNER SHALL PROVIDE ANNUAL MAINTENANCE OF ALL TERMINATIONS TO ENSURE SECURE CONNECTIONS. ALUMINUM WIRE WILL EXPAND AND CONTRACT AND OVER TIME MAY BECOME BRITTLE. THE OWNER SHALL ASSUME RESPONSIBILITY FOR USING ALUMINUM CONDUCTORS WITHOUT PROPER INSTALLATION, CARE, AND MAINTENANCE.
  - COORDINATE ALL SERVICE AND METERING DETAILS INCLUDING ANY RELOCATION OF EXISTING UTILITY LINES WITH POWER COMPANY.
  - CONTRACTOR TO CONFIRM EXACT LOCATION OF METERS WITH ELECTRIC UTILITY.
  - PAY ANY POWER COMPANY FEES CHARGED TO OWNER FOR SERVICE AND UTILITY LINE WORK ASSOCIATED WITH THIS PROJECT. THESE COSTS SHALL BE INCLUDED IN BIDS.
  - FURNISH AND INSTALL MATERIALS FOR A TEMPORARY CONSTRUCTION SERVICE AS REQUIRED.
  - FURNISH AND/OR INSTALL ALL REQUIRED MATERIAL AND LABOR IN COMPLIANCE WITH POWER COMPANY REQUIREMENTS TO PROVIDE A COMPLETE ELECTRICAL SERVICE, INCLUDING TRENCHING AND BACK FILLING, PRIMARY CONDUIT, CONCRETE TRANSFORMER PAD, SECONDARY CONDUITS AND CABLES, C.T. CABINET, METERING AND GROUNDING SYSTEM.

- ### ELECTRICAL FEEDER KEYNOTES
- 400-4-S | 2 - 2" C.4#3/0 EACH

- CONDUIT SIZED BASED ON CONDUCTOR PROPERTIES LISTED IN THE CURRENT NEC EDITION, CHAPTER 9, TABLES 5 AND 5A, AND CONDUIT AREAS LISTED CHAPTER 9, TABLE 4 FOR EMT WITH 40% FILL. OTHER CONDITIONS MAY REQUIRE A LARGER CONDUIT, SUCH AS UNDERGROUND PVC, SIZED FOR NEC.
- GROUND SIZES: EQUIPMENT GROUNDING CONDUCTOR BASED ON NEC TABLE 250.122 - COPPER/ GROUNDING ELECTRODE CONDUCTOR BASED ON NEC TABLE 250.66 - COPPER
- CONDUCTOR SIZES BASED ON NEC TABLE 310.15 - COPPER 75°C.

### EQUIPMENT LABELS

ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A LABEL APPLIED TO WARN OF POTENTIAL ARC FLASH HAZARDS

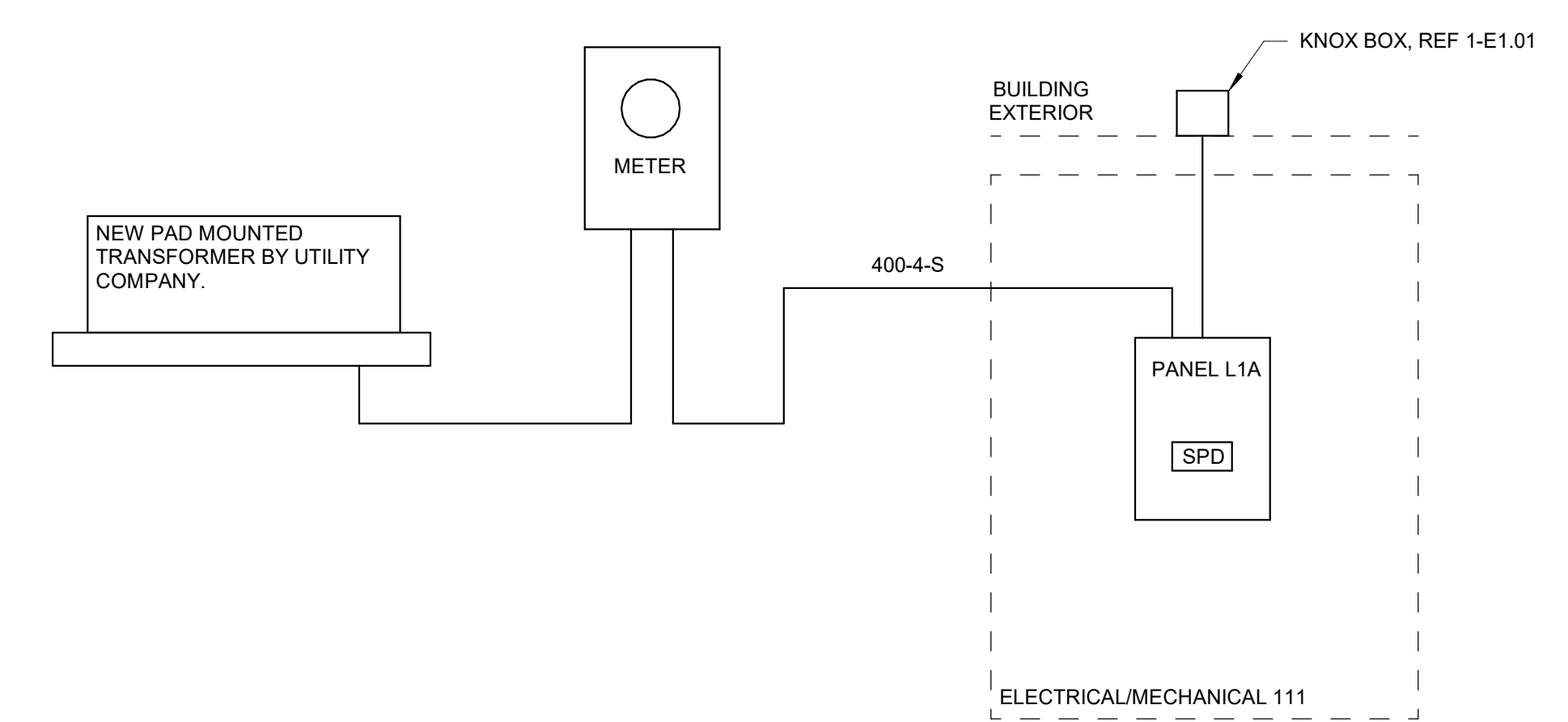
**WARNING**

ARC FLASH AND SHOCK HAZARD.  
APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED.

NOTES:

A. ALL SWITCHBOARDS AND PANELBOARDS SHALL HAVE A COMMERCIALY PRODUCED PERMANENT LABEL APPLIED, SIMILAR TO THE ABOVE, TO WARN OF POTENTIAL ARC FLASH HAZARDS, IN ACCORDANCE WITH NEC 110.16 AND NFPA 70E.

B. LABELING MAY BE COMPLETED BY EQUIPMENT MANUFACTURER, EQUIPMENT VENDOR/SUPPLIER, OR THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THAT ALL SWITCHBOARDS AND PANELBOARDS ARE PROPERLY LABELED IN THE FIELD.



1 RISER DIAGRAM  
NTS



**SECTION 26A GENERAL ELECTRICAL REQUIREMENTS**  
Rev - 20150422

**26A 1 GENERAL INSTRUCTIONS**

**26A 1-1 GENERAL REQUIREMENTS**  
Requirements under Division 1 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 1, this section and division take precedence. Become thoroughly familiar with all their contents as to requirements that affect this division, section or both. The work required under this section includes material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate each system's functioning as implied by the design and the equipment specified.

The specifications and drawings for the projects are complementary, and portions of the work described in one, shall be provided as described in both. In the event of discrepancies, notify the engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They also convey the scope of work, indicating the intended general arrangement of the equipment and other materials without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory and properly operating system. Determine exact locations by job measurements, by checking the requirements of other trades, and by reviewing all contract documents. Correct errors that could have been avoided by proper checking and inspection, at no additional cost to the owner.

Specifications define the qualitative requirements for products, materials, and workmanship upon which the contract is based.

**26A 1-2 DEFINITIONS**

Whenever used in these specifications or drawings, the following terms shall have the indicated meanings:  
Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site, including, but not limited to, and as required: unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install complete, and ready for the intended use."

Furnished by owner (or owner-furnished) or furnished by others: "an item furnished by the owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: where referenced in this division, "engineer" is the engineer of record and the design professional for the work under this division, and is a consultant to, and an authorized representative of, the architect, as defined in the general and/or supplementary conditions. When used in this division, it means increased involvement by, and obligations to, the engineer, in addition to involvement by, and obligations to, the architect.  
AHJ: the local code and/or inspection agency (authority) having jurisdiction over the work.

NRTL: nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the engineer as equivalent to the item or manufacturer specified." The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

**26A 1-3 PRE-BID SITE VISIT**

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to do so will not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

**26A 1-4 MATERIAL AND WORKMANSHIP**

Provide all material and equipment new and in first class condition. Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to the established quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:  
Commercial Specification Grade

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade. The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

**26A 1-5 MANUFACTURERS**

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers listed are not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for not less than 5 years.

**26A 1-6 COORDINATION**

Coordinate all work with other divisions and trades so that the various components of the systems will be installed at the proper time, fit the available space, and will allow proper service access to those items requiring maintenance. Refer to all other division's drawings, and to relevant equipment submittals and shop drawings to determine the extent of clear spaces. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, the general contractor will provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the general contractor with information where chases and openings are required. Make all offsets required to clear equipment, beams and other structural members, and to facilitate concealing system components in the manner anticipated in the design. Keep informed as to the work of other trades engaged in the construction of the project, and execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor will be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the construction documents are not necessarily intended to designate the required trim.

**26A 1-7 ORDINANCES, CODES, AND STANDARDS**

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ including any amendments and standards as set forth by the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), Occupational Safety and Health Administration (OSHA), American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), American National Standards Institute (ANSI), American Society of Testing Materials (ASTM) and other national standards and codes where applicable. Additionally, comply with rules and regulations of public utilities and municipal departments affected by connection of services.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the engineer's attention for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for and furnish certificates of inspection to owner. Contractor will be held responsible for violations of the law.

**26A 1-8 PROTECTION OF EQUIPMENT AND MATERIALS**

Store and protect from damage equipment and materials delivered to job site, in accordance with manufacturers' recommendations. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material that has been damaged by construction activities will be rejected, and contractor shall furnish new equipment and material as required at no additional cost to the owner.

Keep premises broom clean from foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

**26A 1-9 SUBSTITUTIONS**

Include in the base bid the products specifically named in these specifications or on the drawings. Submit, in the form of alternates, with bid, products of any other manufacturers for similar use, provided the differences in cost, if any, are included for each proposed alternate.

No substitutions will be considered with receipt of Bids, unless the Architect and Engineer have received from the Bidder a written request for approval to bid a substitution at least ten calendar days prior to the date for receipt of Bids, and have approved the substitution request. Include, with each such request, the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution, including drawings, cut sheets, performance criteria and test data, and all other information necessary for an evaluation. Include also a statement setting forth changes in other materials, equipment or other work that would be required to incorporate the substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The proposer of any substitutions shall compensate the Engineer at a rate of \$150.00 per hour for time spent evaluating proposed substitutions and/or the subsequent revisions to the design required to utilize the substitution.

The Architect or Engineer's decision to approve or disapprove a substitution in a Bid is final. If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner, including verbal.

No substitutions will be considered after receipt of Bids and before award of the Contract. No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

**26A 1-10 SUBMITTALS**

Assemble and submit to the architect, for engineer's review, manufacturers' product literature for material and equipment to be furnished, installed, or both, under this division, including shop drawings, manufacturers' product data and performance sheets, samples, and other submittals required by this division. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Provide the number of submittals required by division 1; however, at a minimum, submit two (2) sets. Before submitting, verify that all materials and equipment submitted are mutually compatible and suitable for the intended use, fit the available spaces, and allow ample and code-required room for access and maintenance. Submittals shall contain the following information: Submittals not so identified will be returned to the contractor without action:

The project name.  
The applicable specification section and paragraph.  
The submittal date.  
The contractor's stamp, which shall certify that the stamped drawings have been checked by the contractor, comply with the drawings and specifications, and have been coordinated with other trades.

Submittals and shop drawings shall not contain HP Engineering's firm name or logo, nor shall it contain the HP Engineering's engineers' seal and signature. They shall not be copies of HP Engineering's work product.

Transmit submittals as early as required to support the project schedule. Allow for two weeks engineer review time, plus mailing time, plus a duplication of this time for re-submittals, if required. The engineer's submital reviews will not relieve the contractor from responsibility for errors in dimensions, details, size of members, or quantities, or for omitting components or fittings, or for not coordinating items with actual building conditions.

Refer to division 1 for acceptance of electronic submittals for this project. For electronic submittals, contractor shall submit the documents in accordance with the procedures specified in division 1. Contractor shall notify the architect and engineer that the shop drawings have been posted. If electronic submittal procedures are not defined in division 1, contractor shall include the documents identifying the manufacturer and providing sufficient reference to the established quality, size and capacity. In general, provide the following quality grade(s) for all materials and equipment:  
Commercial Specification Grade

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the architect and engineer. Workmanship shall be the finest possible by experienced mechanics of the proper trade. The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal or excessive noise from equipment, devices or other system components will not be acceptable.

Remove from the premises waste material present as a result of work. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction.

**26A 1-11 ELECTRONIC DRAWING FILES**

In preparation of shop drawings or record drawings, contractor may, as an option, obtain electronic drawing files in Revit, AutoCAD, or DXF format from the engineer for a fee of \$200 for the first sheet and \$100 per sheet for each additional sheet. Contact the architect for written authorization; and, contact the engineer to obtain the necessary release agreement form and to indicate the desired shipping method and drawing format. In addition to payment, architect's written authorization and engineer's release agreement form must be received before electronic drawing files will be sent.

**26A 1-12 OPERATION AND MAINTENANCE MANUALS**

Submit to the architect, for engineer's review, copies each of operations and maintenance instruction manuals, appropriately bound into manual form including approved copies of the following, revised if necessary to show system and equipment as actually installed: Paper clips, staples, rubber bands, and mailing envelopes are not considered approved binders. Provide the number of submittals required by Division 1; however, at a minimum, submit two (2) sets, and include, at a minimum, the following information:  
Cover sheet that lists the project name, date, owner, architect, consulting engineer, general contractor, sub-contractor, and an index of contents.  
Manufacturers' catalogs and product data sheets  
Writing diagrams  
Operation and Maintenance instructions  
Parts lists  
Approved shop drawings  
Test reports as defined in NETA ATS for the systems and equipment provided or furnished or installed under this contract.  
Names, addresses, telephone numbers, and e-mail addresses of local contacts for warranty services and spare parts.

Submit manuals prior to requesting the final punch list and before any requests for substantial completion. Final approval of this division's systems installed under this contract will be withheld until this equipment brochure is received and deemed complete by the architect and engineer.

Provide "as-built" drawings (see Division 1 and general conditions).

**26A 1-13 TRAINING**

At a time mutually agreed upon between the owner and contractor, provide the services of a factory trained and authorized representative to train owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include but not be limited to an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the architect stating that the owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The contractor and the owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with owner with at least 7 days advance notice.

**26A 1-14 WARRANTIES**

Warrant each system and each element thereof against all defects due to faulty workmanship, design or material for a period of 12 months from date of substantial completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds this duration. Warranties shall include labor and material. Remedy all defects, occurring within the warranty period(s), as stated in the general conditions and Division 1 without any additional costs to the owner.

Perform any required remedial work promptly, upon written notice from the engineer or owner.

At the time of substantial completion, deliver to the owner all warranties, in writing and properly executed, including time limits for warranties extending beyond the required period, each warranty instrument being addressed to the owner and stating the commencement date and term.

**26A 2 ELECTRICAL WORK**

**26A 2-1 BUILDING OPERATION**

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in continuous operation. Accomplish work that requires interruption of building operation at a time when the building is not in operation, and only with written approval of building owner and/or tenant. Coordinate interruption of building operation with the owner and/or tenant a minimum of 7 days in advance of work.

**26A 2-2 EXCAVATION AND BACKFILLING**

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of building without prior consultation with the architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6' layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as herein specified shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and deposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Excavated materials which are considered unsuitable for backfill, and surplus of excavated material which is not required for backfill, shall be disposed of by the contractor at his own expense and responsibility, and to the satisfaction of the architect.

**26A 2-3 COINCIDENTAL DAMAGE**

Repair all streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this work. Repair materials shall match existing construction and conform to all requirements identified in other divisions. All backfilling and repairing shall meet all requirements of the owner, city and others having jurisdiction. Repair work shall be thoroughly first class.

**26A 2-4 CUTTING AND PATCHING**

Following the requirements in Division 1, cut walls, floors, ceilings, and other portions of the facility as required to perform work under this division. Obtain permission of the architect, owner, or both, before doing any cutting. Cut all holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. All patching shall be thoroughly first class and shall match the original material and construction, including fire ratings if applicable in a manner satisfactory to the architect.

**26A 2-5 ROUGH-IN**

Coordinate without delay all roughing-in with other divisions. Conceal all piping and rough-in except in unfinished areas and where otherwise indicated in the construction documents.

**26A 2-6 SUPPORT SYSTEMS**

1. Steel slotted support systems (slotted channel): comply with MFMA-3, factory-fabricated components for field assembly, 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporation, Hill, Inc., Power-Strut, Thomas & Betts Corporation, Unistrut.  
Fishes:  
A. Metallic coatings: hot-dip galvanized after fabrication and applied according to MFMA-3  
B. Nonmetallic coatings: manufacturer's standard PVC, polyurethane or polyester coating applied according to MFMA-3.  
C. Painted coatings: manufacturer's standard painted coating applied according to MFMA-3.  
D. Stainless steel: type 304, per ASTM A240.  
2. Aluminum slotted support systems (slotted channel): comply with MFMA-3, type 6063-T6, per ASTM B221; factory-fabricated components for field assembly, 12-gauge, 1-5/8-inch by 1-5/8-inch; Cooper B-Line, Erico International Corporation, Hill, Inc., Power-Strut, Thomas & Betts Corporation, Unistrut.

Field Fabrication:  
Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufactured surfaces.

For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abrasive material (e.g., file, grinding angle, or similar) and cleaner to remove oils, rust, sharp edges and shams.

For channel with a factory-applied coating, re-finish cut edges with a coating compatible with the factory finish and as recommended by the manufacturer (e.g., manufacturer's touch-up paint or zinc-rich cold-galvanizing compound, as applicable).

**26A 2-7 PENETRATIONS**

Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 7 section through-penetration firestop systems."

**Roofs:**

Coordinate all roof penetrations with engineer, owner, and as applicable, the roofing contractor providing a roof warranty. Keep all raceway penetrations within mechanical equipment cutoffs wherever possible. Coordinate with all other applicable Division's work.

Flash and counterflash all openings through roof, and/or provide pre-fabricated molded seals compatible with the roof construction installed, or as required by the engineer, owner, or roofing contractor. All roof penetrations shall be leak-tight at the termination of the work and shall not void any new or existing roof warranties.

**Walls and Floors:**

Sleeves for raceways and cables  
Steel pipe sleeves: ASTM A 53A S3M, type E, grade B, schedule 40, galvanized steel, plain ends and drip rings. Cast-iron pipe sleeves: cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

Sleeves for rectangular openings: galvanized sheet steel with minimum 0.138 inch thickness and of width and length to suit application.

**26A 2-8 FIRE-STOPPING THROUGH PENETRATIONS**

Fire-resistant through penetration sealants: two-part, foamed-in-place, silicone sealant formulated for use in through-penetration fire-stopping around cables, raceways, and cable tray penetrations through fire-rated walls and floors. Sealants and accessories shall have fire-resistance ratings indicated as established by testing identical assemblies in accordance with ASTM E 814, by underwriters laboratories, inc., or other NRTL acceptable to AHJ.

Acceptable manufacturers:  
Hilti, Inc.  
3M Corp.  
Rectorseal.  
Specify Technology Inc.  
United States Gypsum Company.

Submit product data, manufacturer's specifications and technical data for each material including the composition and limitations, documentation of UL firestop systems to be used and manufacturer's installation instructions to comply with Division 1. Manufacturer's engineering judgment identification number and drawing details when no UL system is available for an application. Engineering judgment shall include both project name and contractor's name who will install firestop system as described in drawings.

Submit material safety data sheets provided with product delivered to job-site.  
**26A 2-9 CONCRETE BASES**

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 2 inches greater than the footprint of the equipment that it is supporting.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute standard building code for reinforced concrete (ACI 318-09) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with no. 4 reinforcing bars conforming to ASTM A 615 or 616 - w2.9 x w2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment.  
Concrete equipment bases shall have a minimum height of 4 inches and shall be poured-in-place.

**26A 2-10 ACCESS DOORS**

Provide access doors in ceilings and walls, where indicated or required for access or maintenance to concealed equipment installed under this section. Provide concealed hinges, screwdriver-type lock, and anchor straps.  
Manufactured by Milcor, Zumt, Titus, or equal. Obtain architect's approval of type, size, location and color before ordering.  
**26A 2-11 EQUIPMENT FURNISHED BY OTHERS**

Provide necessary equipment and accessories that are not provided by the equipment supplier or owner to complete installation of equipment furnished by others, in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include such items as flexible cords and plugs, as required for proper operation of the complete system, in accordance with the manufacturers' instructions.

Be responsible for correct rough-in dimensions, and verify them with engineer, owner's representative, equipment supplier, or all three, prior to rough-in and service installations.

**26A 2-12 CLEANING**

In addition to the requirements of Division 1, remove from the premises dirt and refuse resulting from the performance of the work under this division. Coordinate in maintaining reasonably clean premises at all times. Immediately prior to final inspection, make a final cleanup of dirt and refuse resulting from the work. Clean all material and equipment installed under this division. Remove dirt, dust, plaster, stains and foreign matter from all surfaces. Touch up and restore all damaged finishes to their original condition.

**26A 2-13 ADJUSTING, ALIGNING AND TESTING**

Adjust, align, and test all electrical equipment on this project provided under this division and all electrical equipment furnished by others for installation or wiring under this division, for proper operation.

Test all systems and equipment according to the requirements in NETA ATS (latest edition) and all additional requirements specified in following sections.  
Maintain the following on the project premises at all times: a true RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter insulation resistance tester. Provide test data readings as requested or as required by the engineer.

**26A 2-14 EQUIPMENT IDENTIFICATION**

Provide equipment identification nameplates:  
- On all panelboards, switches, starters, dimmers, switches in distribution panelboards and switchboards as well as where indicated elsewhere in the construction documents.  
Nameplates:

Engraved, contrasting color, three-layer, laminated plastic indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications:  
- Field-applied permanent epoxy adhesive, compatible with the equipment finish.  
- Attachment method shall be acceptable to the manufacturers of the equipment to which the nameplates are being applied.  
Color: black background with white letters for normal power; red background with white letters for emergency power. Letter height: 3/8-inch minimum.

**26A 2-15 SYSTEM START UP**

Prior to starting up the electrical systems:  
Check all components and devices.  
Lubricate items accordingly.

Tighten screws and bolts for connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486a and UL 486b.

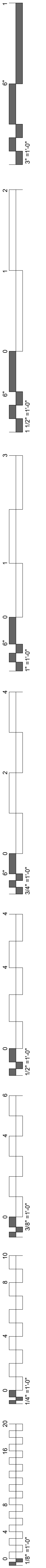
Adjust taps on each transformer for rated secondary voltage when the transformer is at minimum load.  
Check and record building's service entrance voltage, grounding conditions, grounding resistance, and proper phasing.  
Replace all burned-out lamps and lamps used for temporary construction lighting in permanent light fixtures.

After all systems have been inspected and adjusted, confirm all operating features required by the drawings and specifications and make final adjustments as necessary.

**26A 4 ALTERNATES**

Provide all work contemplated under the different alternates to include labor, materials, equipment and services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bids for each alternate applicable to contractor's proposal, stating the amount to be added or deducted from the base bid in case the alternate is accepted. Comply with applicable sections of the base specifications for work required by the alternate unless otherwise specified. Refer to the architectural portion of the specification.

**END OF SECTION 26A**



**James R. Childers**  
**Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2480  
www.childersarchitect.com

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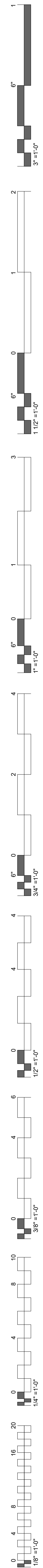
#	DATE	REVISIONS	DESCRIPTION

DATE: 07-31-2020      JOB NUMBER: 18-01.110

SHEET NUMBER: **E4.00**

**ELECTRICAL SPECIFICATIONS**





**26B BASIC ELECTRICAL MATERIALS AND METHODS**  
rev - 20150520

**26B 1 METHODS**

**26B 1-1 RACEWAYS**

Metallic Conduit And Tubing:

Electrical Metallic Tubing and fittings (EMT): ANSI C80.3, UL 797.  
Reduced wall EMT is not allowed.

Flexible Metal Conduit (FMC): zinc-coated steel or aluminum, UL 1.  
Reduced-wall FMC is not allowed.

Intermediate Metal Conduit (IMC): hot-dip galvanized rigid steel conduit: ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): flexible steel conduit with PVC jacket: UL 360

Rigid Metal Conduit (RMC): hot-dip Galvanized Rigid Steel conduit (GRS): ANSI C80.1, UL 16.  
Plastic-coated IMC, RMC, and fittings: NEMA RN 1, UL listed.

IMC and RMC fittings: NEMA FB 1; compatible with conduit type and material, UL listed

Non-Metallic Conduit And Tubing:

Rigid Nonmetallic Conduit (RNC): schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651; fittings: NEMA TC 3, TC 6, UL 514, compatible with conduit/tubing type and material, UL listed.

Electrical Nonmetallic Tubing (ENT): NEMA TC 13, UL listed.

Liquidtight Flexible Nonmetallic Conduit (LFNC): UL 1660.

ENT and LFNC fittings: Compatible with conduit/tubing type and material, UL listed.

**26B 1-2 RACEWAY INSTALLATION**

Above Ground Use:

Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated.

Provide GRS for all conduits run exposed to weather, or exposed to other hazardous conditions.

All other raceway may be EMT where approved by local code. Use compression type fittings for EMT, with all fittings UL listed for the environment in which they are used.

Underground use:

Provide GRS installed below grade with a corrosion resistant bonded-plastic or approved mastic coating. This shall include the 90-degree elbow below grade and the entire vertical transition to above grade.

RNC conduit may be used underground where permitted by local code and where not specifically restricted by these documents. When used, provide coated GRS, as specified above, for all bends greater than 30 degrees, including the 90-degree elbows below grade and the entire vertical risers for transitions from below to above grade or above-slab.

Equipment Connections:  
Use FMC for final connection to each motor and transformer, and to any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors or sunlight, and to connect to kitchen and food service equipment.

Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors. All feeders to variable frequency drives (VFDs) shall be in EMT or other metallic conduit, PVC or fiberglass is not allowed for feeders to VFDs.

General Raceway Installation Requirements:

Install raceways parallel and perpendicular to building lines.

Install raceways to requirements of structure and to requirements of all other work on the project; to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure.

Except where approved in writing by the engineer, install no raceway in a slab-on-grade. Locate raceway in granular fill below slab-on-grade.

Install raceways continuous between connections to outlets, boxes and cabinets with a minimum possible number of bends and not more than the equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- and 90-degree bends, unless approved by the engineer in advance. Make other bends smooth and even and without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible and never shorter than the corresponding trade elbow.

Use long radius elbows for all underground installations, where necessary or indicated.

Securely fasten raceways in place with approved straps, hangers and steel supports as required. Attach raceway supports to the building structure. Hang single raceways for feeders with malleable split ring hangers with rod and turnbuckle suspension from insets spaced not over 10 feet apart in construction above. Clamp groups of horizontal feeder raceways to steel channels that are suspended from insets spaced not over 10 feet apart in construction above. Securely clamp vertical feeder raceways to structural steel members attached to structure. Install cable clamps for support of vertical feeders where required. Add raceway supports within 12 inches of all bends, on both sides of the bends. Do not support raceways from suspended ceiling components.

Ream raceway ends, thoroughly clean raceways before installation, and keep clean after installation. Plug or cover openings and boxes as required to keep raceways clean during construction and fish all raceways clear of obstructions before pulling conductors. Provide raceways of ample size for pulling of wire and not smaller than code requirements and not less than 1/2-inch in size, unless indicated otherwise on drawings.

Protect all raceway installations against damage during construction. Repair all raceways damaged or moved out of line after roughing-in to meet engineer's approval without additional cost to the owner.

Align and install true and plumb all raceway terminations at panelboards, switchboards, motor control equipment and junction boxes.

Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints. Also when using RNC or RAC in exposed environments in accordance with the NEC and expansion/contraction properties of RNC or RAC.

Install a pull wire in each empty raceway that is left for installation of conductors or cables under other divisions or contracts. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.

Make all joints and connections in a manner that will ensure mechanical strength and electrical continuity.

**26B 1-3 BUSHINGS AND LOCKNUTS**

Rigidly terminate conductors entering steel metal enclosures to the enclosure with a bushing and locknut on the inside and a locknut or an approved hub on the outside. Conduit shall enter the enclosure squarely.

Provide bushings and locknuts made of galvanized malleable iron with sharp, clean-cut threads.

Where EMT enters a box, provide approved EMT compression connectors.

Use insulated, grounding, or combination, bushings wherever connection is subject to vibration or moisture, when required by NFPA 70, or both.

**26B 1-4 CONDUCTORS AND CABLES**

Conductor Material:  
Annealed (soft) copper complying with ICEA S-95-658/NEMA WC70.

Conductor insulation types: 90-degree C-rated, type THHN/THWN-2 or XHHW-2 complying with ICEA S-95-658/NEMA WC70.

Sizes of conductors and cables indicated or specified are in American Wire Gauge (AWG - brown and sharpe).

All feeder and branch circuit conductors no. 8 AWG and larger: stranded.

All conductors, no. 10 AWG and smaller: solid copper

All branch circuit wiring: not smaller than no. 12 AWG. If no conductor size is indicated on the drawings for a branch circuit, provide conductors and conduit sized per NFPA 70 and based on the indicated branch circuit overcurrent protective device (OCPD) rating and number of poles. Where no circuit size (i.e., conductors and OCPD) is indicated on the drawings for a branch circuit, provide three no. 12 AWG conductors, in 1/2-inch raceway, and a 20A circuit breaker.

Control wiring: stranded copper conductors, 600V insulation, of the proper type, size and number as required to accomplish specified function. Minimum size: no. 14 AWG, unless noted otherwise.

Stranded for all flexible cords and cables, or as otherwise indicated.

Unless indicated otherwise, special purpose conductors and cables, such as low voltage control and shielded instrument wiring, shall be as recommended by the system equipment manufacturer.

Type MC cable: 600V, unjacketed; ANSI E119 and E814, UL standards 44 or 83 (as applicable), and 1569, NFPA 70 article 330; aluminum or galvanized steel interlocked armor; TH/N- or XHHW-insulated conductors; color code: ICEA method 1, with green insulated grounding conductor

**26B 1-5 INSTALLATION OF CONDUCTORS AND CABLES**

Install all wiring in approved raceway and enclosures , except where specified or indicated, for low-voltage wiring or direct-buried cables; or, where type MC cable is indicated, specified as acceptable, or both.

Support all conductors and cables in vertical installations, as required by NFPA 70, by installing cable supports or plug-type conduit riser supports, or wire-mesh safety grips.

Install all conductors and cable in raceways continuous without taps or splices. Splice or tap only in approved boxes and enclosures with approved solderless connectors, or crimp connectors and terminal blocks for control wiring, and keep to the minimum required. Insulate all splices, taps, and joints as required by code.

All materials used to terminate, splice or tap conductors: designed for, properly sized for, and UL listed for the specific application and conductors involved, and installed in strict accordance with the manufacturer's recommendations, using the manufacturer's recommended tools.

Where wiring is indicated as installed, but the connection is indicated "future" or "by other division, trades, or contracts", leave a minimum 3-foot "pigtail" at the box, tape the ends of the conductors, and cover the box.

The number of conductors in a specific raceway "home run" is typically indicated with cross lines (tick marks) on each "circuit run" on the drawings. In general, the direction of branch circuit "home run" routing is indicated on the drawings, complete with circuit numbers and panelboard designation. Continue all such "home run" wiring to the designated panelboard, as though "circuit runs" were indicated in their entirety.

Multi-wire branch circuits (i.e., shared neutral) shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point the branch circuit originates. Multi-pole breakers or 3 single pole breakers with a handle tie are two examples.

When multiple home runs are combined into a single raceway such that the number of conductors exceeds four (conductor count is made up of any combination of phase and neutral conductors), the following restrictions apply, which are in addition to those in NFPA 70:

**NORMAL or NON-ESSENTIAL CIRCUITS:**  
Maximum of 16 conductors in a single raceway. For up to eight conductors in a raceway, minimum raceway size: 3/4-inch. For greater than eight conductors, minimum raceway size: 1-inch. Do not install any other type of circuit in this raceway.

The minimum wire size for all conductors in this raceway: no. 10 AWG.

Only 15a and 20a branch circuit homeruns may be combined into one raceway.

**ISOLATED GROUND (IG) CIRCUITS:**  
The isolated ground circuit of each IG circuit shall be continuous (no splices) the entire length of the circuit.

IG circuits shall be provided with dedicated neutrals, equipment grounds, and isolated grounds and routed in separate conduits from other circuits.

**GFCI CIRCUITS:**  
Do not use multi-conductor circuits, with a shared neutral, for any GFCI circuit breaker or receptacle circuit.

For branch circuits fed from GFCI circuit breakers, limit the one-way conductor length to 100 feet between the panelboard and the most remote receptacle or load on the GFCI circuit

Properly identify all terminal blocks and wire terminals for control wiring with vinyl stick-on markers or equivalent. Provide engineer with a list of proposed identifying numbers for review prior to installing markers.

Provide an equipment-grounding conductor, or bonding jumper, as applicable, in all feeders and branch circuits, sized in accordance with NFPA 70 tables 250.66 or 250.122, as applicable, unless indicated as larger on the drawings.

Voltage drop in branch circuits shall not exceed 3 percent.

Wiring shall have insulation of the proper color to match color code system in the table below unless there is a color system currently in use by the facility, in which case the colors are to match the existing system. In larger sizes, where properly colored insulation is not available, use vinyl plastic electrical tape of the appropriate color around each conductor at all termination points, junction and pull boxes

System Voltage:  
240v and -208y/120, 120/240, 120/208, 240d/120

Phase A – black, phase B – red, phase C – blue, neutral – white, equipment ground green, isolated ground – green w/yellow stripe

480v and 480y/277v  
Phase A – brown, phase B – orange, phase C – yellow, neutral – gray, equipment ground – green.

Use of MC Cable, May Only Be Used:

In lieu of flexible conduit and wiring from light fixtures in accessible ceilings to junction boxes (attached to building structure) above the ceiling. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

For vertical drops in stud walls.

In lieu of EMT, only for 15a and 20a branch circuits (with up to four (4) conductors, not including ground conductor), and only in dry concealed locations above grade, except where specifically not permitted by NFPA 70.

Do Not Use MC Cable For The Following:

Homeruns to panelboards.

Where exposed to view.

Where exposed to damage.

Hazardous locations.

Wet locations.

When restricted otherwise above, and when specifically disallowed by the local AHJ, landlord, or both.

Circuits that can be supplied by an emergency or standby power source.

26B 1-6 JUNCTION BOXES, PULL BOXES, CABINETS AND WIREWAYS

Provide junction boxes, pull boxes, cabinets and wireways wherever necessary for proper installation of various electrical systems according to NFPA 70 and where indicated on the drawings. Size as required for the specific function or as required by NFPA 70, whichever is larger. Construction shall be of a NEMA design suitable for the environment installed.

Junction boxes installed behind wall cases, and in or on other display fixtures, except where otherwise specified, shall be 4-inch square or larger, with galvanized covers.

**26B 1-7 OUTLET BOXES**

All outlets including light fixture, switch, receptacle, and similar outlets: National Electrical, Appleton, Steel City, Raco, or approved equal, galvanized steel knockout boxes, suitable in design to the purpose they serve and the space they occupy. Size as required for the specific function or as required by NFPA 70, whichever is larger. Set all outlet boxes in walls, columns, floors, or ceilings so they are flush with the finished surface, accurately set, and rigidly secured in position. Provide plaster rings, extension rings and/or masonry rings as required for flush mounting. Provide approved cast outlet boxes, with hubs and weatherproof covers, in all areas subject to damp, wet, or harsh conditions.

**26B 1-8 OUTLET LOCATIONS**

Coordinate locations of outlet boxes. Outlets are only approximately located on the small scale drawings. Use great care in the actual location by consulting the various large scale detailed drawings used by other division trades, and by securing definite locations from the architect and/or engineer.

**26B 1-9 MOUNTING HEIGHTS**

Unless noted otherwise, install wiring devices as indicated below (note: all dimensions are to the bottom of the outlet box unless noted otherwise):

Receptacles:  
Vertically aligned with the ground slot mounted at the bottom: 16 inches above finished floor.  
Horizontally aligned, with neutral slot mounted at the top: 16 inches above finished floor.  
For above counters: 8 inches above top of counter or as specified by others.

Mechanical and electrical equipment rooms and janitors closets: 44 inches above finished floor, vertically aligned.

Garages: 24 inches above finished floor, vertically aligned  
Weatherproof exterior receptacles: 24 inches above finished grade or as indicated on drawings, vertically aligned.

GFCI receptacles: same as general receptacles

Isolated ground receptacles: same as general receptacles

SPD receptacles: same as general receptacles  
Clock receptacles: 84 inches above finished floor or as specified by others.  
Concrete block walls: dimensions above may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom or top of boxes, as applicable, are at block joints.

**Switches:**

General: 46 inches above finished floor.  
Above counters: same as for receptacles.  
Concrete block walls: 40 inches above finished floor (dimension may be adjusted slightly, as required to compensate for variable joint dimensions, such that bottom of boxes are at block joints).

Walls with wainscoting: 6 inches minimum above wainscoting, but not exceeding 48 inches above finished floor.

Telephone/Data Outlet Boxes:  
General: match mounting height of adjacent wiring device listed above.

Wall-mounted telephone: 40 inches above finished floor.

For other than wiring devices, refer to paragraphs, articles, sections, divisions, or drawings to obtain mounting heights for specific equipment or systems.

**26B 1-10 WIRING DEVICES**

Unless noted otherwise on the drawings wiring devices are 20a rated devices. Where 15a rated devices are indicated on the drawings or required for circuit rating limitations, provide wiring device equivalent to those specified for 20a, but rated for 15a.

Provide the following wiring devices where shown on drawings or required. Minor changes relative to the location of electrical equipment may be made to comply with structural and building requirements as determined in the course of construction.

Provide all wiring devices of the same manufacturer and not mixed on the project, to the maximum extent possible. Provide color of toggles and receptacles as requested by the engineer.

Duplex convenience receptacles: Specification Grade, NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent.  
Hospital Grade straight blade receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent.  
Hospital Grade straight blade safety type, tamper-resistant receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, manufactured by Leviton or approved equivalent.

Twist Locking type receptacles: NEMA 5-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, self-grounding, Leviton 2310 or approved equivalent.

Ground fault circuit interrupter type receptacles: Specification Grade, Self-Test type UL listed and labeled complying with UL 943, Class A and NEMA WD-1-1.10, 125V, 20A, trip at 4-6mA within 0.25 second, and feed-thru type with integral heavy duty NEMA 5-20R receptacle arranged to protect receptacles downstream on the same circuit, manufactured by Leviton or approved equivalent.

Isolated ground receptacles: Specification Grade NEMA 5-20R NEMA LS-20R, 125V, 20A, grounding type, UL listed and labeled, nylon face, side and back wired, furnished with a green pigtail connected to the grounding contact, and grounding contacts electrically isolated from the mounting strip, manufactured by Leviton or approved equivalent.

TVSS receptacles Specification Grade for 125V (150V maximum continuous operating voltage) service: NEMA 5-20R, 125V, 20A, self-grounding type, RFI/EMI noise filtering, UL listed 1449 Second Edition (1998) & 489, equipped with LED indicator(s) and audible alarm, manufactured by Leviton or approved equivalent.

Suppression module shall protect normal and common modes, with the following mode characteristics, and be suitable for ANSI/IEEE C62.41-1991 A, B installations:  
Peak Energy 240 joules minimum  
Peak Current 13,000A minimum  
UL 3000A Tri+400V minimum

Response Time 5 nano-seconds  
Special Warranty: Manufacturer agrees to repair or replace TVSS receptacles, or replaceable surge modules (if removable), that fail in materials or workmanship within 5 years from date of Substantial Completion.

Special purpose receptacles: Grounding type, UL listed with NEMA configurations as implied on the Drawings, manufactured by Leviton or approved equivalent.

Switches: Specification Grade, rated for 120/277V, 20A, back and side wired, and UL listed and labeled, manufactured by Leviton or approved equivalent.

Pilot Light switches: 20A, 1-pole, 2-pole, 3-way switch with red neon lighted handle. Toggle shall be illuminated when the switch is in the "ON" position, manufactured by Leviton or approved equivalent.

Lighted Handle switches: 20A, 1-pole, 3-way switch with clear neon lighted handle. Toggle shall be illuminated when the switch is in the "OFF" position. Manufactured by Leviton or approved equivalent.

Key operated light switches: Same as standard light switches except toggle handle shall be operated by a factory provided key, manufactured by Leviton or approved equivalent.

Switches for use with mechanically-held, electrically-operated lighting contactors. Single pole, double throw, momentary, center off switch, rated for 100/277V, and UL listed and labeled, manufactured by Leviton or approved equivalent.

Wall box dimmers: Specification grade slider type wall box dimmers, UL listed and labeled, with Radio Frequency Interference (RFI) filters to avoid interference with electronic equipment, and a minimum wattage as indicated on the Drawings or as required for the load, manufactured by Leviton or approved equivalent.

Dual Voltage Switch Relay: A normally-open, electrically-held relay that allows a single-pole switch to control loads operating at two different voltages (e.g., 120V and 277V); listed to UL Standard 916; installed in a 2-gang outlet box, with a voltage-separating barrier and plaster ring manufactured by Lighting Controls and Designs (GR 2001 DV) or approved equivalent.

Wall switch occupancy sensors: Passive Infrared type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.

Wall switch occupancy sensors: Adaptive technology type, wall box switch, 120/277V, up to 20-minute time delay, light level sensor, 180-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.

Ceiling mounted occupancy sensors: Passive Infrared type, 120/277V, up to 20-minute time delay, light level sensor, 360-degree field of view, square-foot coverage as required for minimum coverage of the space per the manufacturer, UL listed and labeled, and conforms to California Title 24 Energy Code, manufactured by Leviton or approved equivalent.

**26B 1-11 SWITCH AND OUTLET COVER PLATES**

Switch and outlet plates: colored, smooth nylon; by the same manufacturer as the wiring devices, wherever possible. Verify desired materials and colors with architect and/or engineer before installation. Switch plates in unfinished rooms and spaces; stamped steel, cadmium plated. Install groups of switches under one ganged-plate, usually horizontally, or, where required by details, vertically. Set all cover plates plumb, parallel, and finished flush with the wall.

**26B 1-12 WEATHERPROOF COVER PLATES**

For exterior unattended, wet locations or other locations as indicated: in-use NEMA 3R recessed or flush mount, UL-labeled plates molded from a clear high impact ultraviolet stabilized polycarbonate material for easy verification that cords are plugged in and that the GFCI is functioning. Back box must be suitable for conduit connecting. Coordinate back box with wall depth. Informatic WP100CR/HR/C or equal.

For attended wet or damp locations: weatherproof cover plates, UL-listed for wet locations with cover(s) closed; die-cast aluminum or type 302 stainless steel; single-cover for switches and vertically mounted receptacles; double-cover for horizontally mounted receptacles; self-closing covers.

Cover plates: by the same manufacturer as the wiring devices; complying with NFPA 70 406.8 (A) or (B) requirements for attended or unattended use as applicable.

**26B 2 ELECTRICAL SERVICE AND GROUNDING**

**26B 2-1 ELECTRICAL SERVICE**

See drawings for type, size, voltage, phase, and other requirements.

Provide, or arrange with the serving utility for installation to provide, a recording voltmeter at the service point, on the first day the facility is open for business, for a 24-hour voltage test. If voltage and regulation are not within acceptable limits, arrange with the utility for proper voltage. Submit to the owner a report of maximum and minimum voltage and a copy of the recording voltmeter chart.

**26B 2-2 CONNECTION TO SERVING UTILITIES**

Provide raceways, terminations, metering provisions, and miscellaneous equipment, as required, for electrical and telephone services for connection by the serving utility, in strict compliance with the requirements of all applicable codes and of the serving utility involved. Verify all service terminations and connection points in the field and work in conjunction with the utility involved in the installation of all services. Provide all materials and equipment required for complete utility connection but not furnished by the serving utility. Notify the utility companies involved within two weeks after notice to proceed, of all required information necessary for the utility to supply the project without delay. Pay all charges of the serving utility for the electrical service(s).

**26B 2-3 GROUNDING**

Permanently and effectively ground and bond the electrical installation in a thorough and efficient manner, and in conformance, at a minimum, with NFPA 70, or these documents, where they exceed code requirements. Use bare or insulated conductors, as specified herein, and other materials indicated on the drawings.

**26B 3 DISTRIBUTION AND CONTROL EQUIPMENT**

**26B 3-7 GENERAL PURPOSE PANELBOARDS**

Panelboards: Square D type NQOD or NF, as applicable, based on voltage and ampere ratings and required short-circuit interrupting ratings as required unless otherwise indicated on the drawings, or approved equal by Siemens, Cutler Hammer, or General Electric; complete with bolt-on thermal magnetic, molded case circuit breakers assembled in a dead-front finished cabinet containing a prewritten card directory indicating exactly what each circuit breaker controls; main circuit breaker shall be rated at 100% of the ampere size indicated, fully-rated and with the integrated short circuit current ratings as required. Plug-in type breakers will not be acceptable. All two and three pole breakers: common trip type. Breakers used as switches for 120v or 277v lighting circuits: approved for the purpose and marked "SWD". Breakers used for the protection of HVAC and refrigeration equipment: HACR type.

**26B 3-11 DISCONNECT (SAFETY) SWITCHES**

Disconnect (safety) switches: Square D, Siemens, Cutler Hammer, or General Electric fused or non-fused (as indicated on drawings or required) NEMA KSI, heavy duty, externally operated, visible-blade safety switches; NEMA enclosure type indicated on the drawings or suitable for the environment in which installed. Based on fusible switch and fuse sizes indicated, include class R, J, or fuse provisions as applicable.

Where indicated, provide fusible switches permanently labeled as suitable for use as service entrance equipment, with integral and separate neutral and ground assemblies, suitable for the sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor.

Provide switches where not furnished with the starting equipment, at all other points required by NFPA 70, and where indicated on the drawings.

**26B 3-12 SURGE-PROTECTIVE DEVICES (SPD)**

Provide SPD labeled in accordance with the latest editions of UL 1283 and 1449, including the highest fault current of section 37.3 (UL recognized for integral).

SPD shall meet or exceed the following criteria:

UL 1449 ratings: the system performance ratings shall be based on the UL 1449 listing ratings for IEEE C62.41 category C3 impulse waveforms of 6kv 1.2 x 50 microsecond, 3ka, 8 x 20 microsecond wavepasses. The maximum UL 1449 listed surge rating for each and/or all of the specified protection modes shall not be exceeded.

Maximum surge current capability (single pulse rated) per phase shall be:

Service entrance switchboards, switchgear: 240ka.  
Distribution panelboards, panelboards used for service entrance & MCC: 120ka.

Branch panelboards: 80ka (non-modular is acceptable).

UL 1449 listed and recognized component suppression voltage ratings shall not exceed the following:

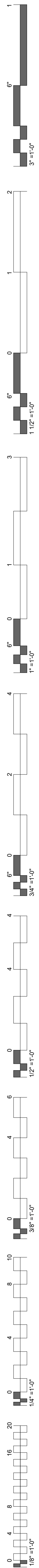
VOLTAGE	L-N	L-G	N-G
208y/120	330v	330v	330v
480y/277	700v	700v	700v

SPD shall have a minimum EMI/RFI filtering of ~50db at 100khz.

Indicators: the SPD shall use LED indicators that provide indication of suppression component failure in all protection modes including N-G, as well as optically isolated N/C dry contacts for remote monitoring.

Transient counter: a transient voltage surge counter shall be included to totalize transient voltage surges which deviate from the sine wave envelope by more than 125v. The readout shall be at least a six digit LCD located on the unit's





26B 4 LIGHT FIXTURES

26B 4-1 LIGHT FIXTURE LOCATIONS

Light fixtures shown on the electrical drawings represent general arrangements only. Refer to architectural drawings for more exact locations. Coordinate locations with all other trades before installation to avoid conflicts. Coordinate light fixture locations in mechanical rooms with final installed piping and ductwork layouts.

26B 4-2 LIGHT FIXTURES

Provide light fixtures as scheduled on drawings, including all lamps, all necessary accessories, material and labor to securely hang, clean, and make light fixtures completely ready for use. Provide: all hangers, supports, and miscellaneous hardware required to install light fixtures; proper trim to fit each ceiling condition actually encountered; additional tie wires connected to structure to conform to seismic requirements where required by the applicable building code.

Packaging of light fixtures will not be allowed. Only those luminaires listed in the light fixture schedule, or approved in accordance with substitutions of these specifications, will be accepted. Where the light fixture schedule indicates an allowance for a specific light fixture, the price is a contractor price. Include all additional costs for freight, lamps, and installation of light fixture and lamps.

Install all linear light fixtures located in areas without ceilings immediately below the roof-framing members, or suspended from chain hangers suitable in length to provide the indicated mounting height.

Through wiring of recessed light fixtures, in suspended ceilings, is not permitted. Connect each light fixture by a whip to a junction box. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

26B 4-3 EMERGENCY LIGHTING UNITS AND EXIT SIGNS

Description: self-contained units complying with UL 924.

Battery: sealed, maintenance-free, lead-acid type. The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 1/2 percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 1/2 hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1 1/2 hours.

Charger: fully automatic, solid-state type with sealed transfer relay.

Operation: relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.  
Test push button: push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.  
LED indicator light: indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

Wire guard: heavy-chrome-plated wire guard protects lamp heads or fixtures.

Integral time-delay relay: holds unit on for fixed interval of 15 minutes when power is restored after an outage

Remote test: switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response

Integral self-test: factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is announced by an integral audible alarm and flashing red LED.

26B 4-6 PARKING LOT LIGHTING

Provide all components of the outdoor lighting system, including pole assemblies as detailed on the drawings and described below. All material furnished shall be of the best quality and workmanship, and the manufacturer may be required to furnish satisfactory evidence of the ability to supply the material in accordance with the drawings and specifications.

Poles and light fixtures shall be as noted on the drawings. If contractor desires to substitute other than the specified manufacturer(s), refer to article "substitutions" in this division, for requirements. No alternate manufacturers will be considered for approval without this prior submittal.

Furnish all poles with hand holes and no less than four high-strength steel anchor bolts for pole mounting. Each anchor bolt shall be threaded at the top, fitted with hexagon nuts, and shall have an "I" bend on the bottom of the bolt. All anchor bolts and nuts shall be hot-dip galvanized. All other small hardware required (bolts, nuts, washers, shims, etc.) shall be galvanized. Provide pole finishes as noted on the drawings.

26B 5 MISCELLANEOUS ELECTRICAL

26B 5-1 WIRING OF EQUIPMENT

Provide all raceways and power wiring for all applicable Divisions equipment requiring electrical connections, including, but not limited to, pumps, water heaters, and HVAC equipment, and all line-voltage control and interlock wiring not provided under other Divisions. Connect per manufacturers' wiring diagrams. Coordinate with applicable Divisions for disconnects furnished with equipment, and provide all disconnect switches as required. After installing wiring, verify that each motor load has the correct phase rotation.

Verify the actual "maximum overcurrent protection" (MOCP) device ratings and "minimum circuit ampacity" (MCA) conductor sizing for mechanical equipment from the equipment nameplate. Base electrical installations on actual required amperages, which may vary somewhat from the conductor and equipment sizes shown on the drawings; however, in no case, reduce the size of conductors indicated on the drawings without authorization from the engineer. Provide properly sized electrical wiring and equipment without extra cost to the owner. Notify the engineer of all changes required in the electrical installation due to equipment variances so that the effects on feeders, branch circuits, panelboards, fuses and circuit breakers can be checked prior to purchasing and installation. Be responsible for coordinating with applicable Divisions to verify the actual ampacities and correct sizes of all conductors and overcurrent protective devices for all equipment, and correct overload heaters for all motors, when starters are provided under Division 26.

26B 5-2 WIRING OF THERMOSTATS, TIME AND TEMPERATURE CONTROLS

Provide all raceways, power wiring, and line-voltage control and interlock wiring not provided under other Divisions, for all thermostats, temperature control devices, and controls, including, but not limited to, night-stats, water heater interlocks, time switches and override timers. See mechanical drawings for locations and temperature control diagrams. Low-voltage conductors for thermostats and temperature control system may be run exposed above finished accessible ceilings, if approved and listed for this purpose, but shall be installed in conduit within walls and where exposed in the work areas.

26B 5-3 TELEPHONE SYSTEM PROVISIONS

Provide incoming telephone service raceways as indicated on drawings or as required by the serving telephone company. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall, at the location and of the size as indicated on the drawings.

Provide flush mounted telephone outlet boxes with 1/4 -inch EMT stub-up concealed to accessible ceiling space at locations as indicated on the drawings.

26B 5-4 DATA SYSTEM PROVISIONS  
Provide flush mounted data outlet boxes with 1/4 -inch conduit stub-up concealed to accessible ceiling space at locations as indicated on the drawings.

26B 5-5 TIME SWITCHES

Time switches: electronic digital astronomical, type as indicated, with manual bypass switch, NEMA enclosure suitable for the environment installed; number and types of contacts, sequence, and voltage as indicated on the drawings, or as required, based on the time switch function and the number of branch circuits or contactors controlled. Provide wiring to photocells, contactors, relays or other control points as required. Manufacturers: Intermatic, Paragon or Torq.

26B 5-6 PHOTO CONTROL

The Photo Control Shall:  
Provide automatic switching for lighting loads using a thermal design with built in delay to ensure that the controlled lighting does not switch off due to ambient light or lightning striking the photocell.

Have a rating based on UL testing at 50% power factor for ballast loads, be UL listed, and meet all applicable agency requirements

Be stem-mounting type with all necessary mounting hardware and instructions; have a housing constructed of high impact poly-carbonate; photo control components consisting of a metal film resistor, dual temperature compensating bi metal blades, snap action contact blades, chemically treated/polymer encapsulated cadmium sulfide photocell and silver alloy contacts to ensure reliable 5 year manufacturer warranted operation. Photo control shall be 100% factory tested for function within manufacturer's specified light levels.

Be from the same manufacturer of and totally compatible with the time switches specified above.

22,000a at 240v maximum  
14,000a at 480v maximum  
as indicated on the drawings

100,000a

Fusing: provide fuse blocks and fuses in the contactor enclosures, of the ampacity and class recommended by the manufacturer to obtain a contactor minimum RMS symmetrical short circuit current rating of 100,000a. Mount fuse blocks ahead of the input to each contact, both used and spare (if any). Also provide a fuse puller and spare fuses (25-percent of total fuses or a minimum of 2 of each rating, whichever is greater) affixed to the inside of the enclosure.

Enclosures: NEMA rated for environment installed in or as indicated on the drawings.

Coil voltage: 120v AC or as indicated on the drawings.

Mechanically-held type, control interface shall be 2-wire input module with 3-wire output or as indicated on the drawings; Square D class 8903 LX or equivalent of General Electric, Siemens, Cutler Hammer or Asco.  
Electrically-held type, control interface shall be 3-wire or as indicated on the drawings; Square D class 8903 LX or equivalent of General Electric, Siemens, Cutler Hammer or Asco.

Electrically-held type, control interface shall be 2-wire or as indicated on the drawings; Square D class 8903 I, or equivalent of General Electric, Cutler Hammer, Siemens or Asco.

Accessories:

On-Off-Auto (OOA) selector switch  
Hand-Off-Auto (HOA) selector switch

Auxiliary contacts (one two form-c)

26B 5-8 SIGNALING SYSTEM

Provide a complete and functioning 24v signaling system for loading door signals, and others as indicated on the drawings. Low-voltage conductors for signaling system may be run exposed above finished ceilings, but shall be installed in conduit within walls and where exposed in the work areas.

Signal bell units shall be 4-inch, single-stroke type, Edwards Signaling & Security Systems (Edwards) no. 332-4G5, or equal, for 24v ac operation, installed on a standard single-gang box. Transformers shall be Edwards 590 series, or equal, having adequate capacity for the connected load, plus 10-percent at 24v AC, and mounted in a standard two-gang box. Exterior push button shall be Edwards 1786-C with solid brass cap.

Customer signal units shall consist of an Edwards 620-B pushbutton in a 5/8-inch id chrome plated pipe or conduit with an Edwards C-75 "cadet" two-note chime and transformer contained in a weatherproof enclosure as required, as located on the drawings.

26B 5-9 MISCELLANEOUS EQUIPMENT AND CONNECTIONS

Provide wiring of fire extinguishing system for exhaust hoods, including, but not limited to, electrical interlock of automatic fuel shut-off valves and/or provision of shunt trip breakers for shut-off of electrical equipment under hoods.

Provide all wiring and connections for refrigerated cases and boxes, including lighting, superstructure lighting, and control cable and wiring as required by refrigeration wiring diagrams.

Provide all wiring and connections to illuminated cases.

Provide all wiring and connections to equipment furnished by others, including, but not limited to, bakery equipment, deli equipment, meat room equipment, kitchen equipment, checkstand and scanners, exhaust hood fire extinguishing system, etc. Install scan system electronic communication cable in underfloor duct (cable provided by others).

Provide all raceways, wiring and related connections of devices to energy management system that are not the responsibility of Division 23.

All wiring and connections of exit door alarms.

END OF SECTION 26B

**James R. Childers  
Architect, Inc.**  
45 South 4th Street  
Fort Smith, AR 72901  
479-783-2450  
www.childersarchitect.com

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#	DATE	REVISIONS DESCRIPTION

DATE: 07-31-2020 JOB NUMBER: 18-01.10

SHEET NUMBER:  
**E4.02**

**ELECTRICAL  
SPECIFICATIONS**