FAULKNER COUNTY

Allen Dodson
COUNTY JUDGE
801 LOCUST STREET • CONWAY, AR 72034

IN THE COUNTY COURT OF FAULKNER COUNTY, ARKANSAS

COURT ORDER 24-039

IN THE MATTER OF
ACCEPTING A BID FOR
A REMODEL OF THE FAULKNER COUNTY ANIMAL SHELTER

Having opened and reviewed the submitted bids for a remodel of the Faulkner County animal shelter on September 12, 2023. The Court finds that the following bid is accepted in that it is the lowest bid and meets all bid requirements:

Company	Base Bid	Deductive Alt. #1	Deductive Alt. #2
NBMC, Inc.	$1,166,000.00	$27,000.00	$39,000.00

The Court finds that the following bids either failed to comply with the bid specifications or it was not the lowest bid:

Stephen Hay Construction LLC	$1,217.121.00	$22,404.00	$50,580.00

IT IS SO ORDERED

Allen Dodson
Faulkner County Judge
March 6, 2024

A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
GREENBRIER, AR

PROJECT #21054

SECTION 00 41 00 - BID FORM

FILED
SEP 12 2023
MARGARET DARTER
FAULKNER COUNTY CLERK
BY Amellin DC

Project: A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
GREENBRIER, AR

Project No.: 21054

Owner: FAULKNER COUNTY
801 LOCUST AVENUE
CONWAY, AR 72034

Bid from: NBMC, Inc. _____ Contracting Firm

0086400624 _____ License number

610 Hwy. 65 North _____ Address

_____ City, State, Zip

_____ Telephone number

BASE BID:

Having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and cost of the Work at the job site, and having fully inspected the site, we hereby propose and agree to perform the Work in strict accordance with the Contract Documents and addenda (acknowledge all addenda numbers: 1) for the Base Bid:

One million One hundred sixty-six thousand & 00/100 Dollars $1,166,000.00

ALTERNATE BIDS:

Alternate Bid No. 1 (deductive): State the amount to be deducted from the Base Bid to delete the floor finishes in all locations scheduled to receive flooring and provide sealed concrete floors in all locations. Rubber base as scheduled shall be provided at all locations scheduled to receive a base.

Twenty seven thousand & 00/100 Dollars -$27,000.00

Alternate Bid No. 2 (deductive): State the amount to be deducted from the Base Bid to delete the entire front façade as detailed on Sheets A6.1 and A6.2. Refer to Building Elevations on Sheet A4.1 for the finishing of the façade of the existing building.

Thirty nine thousand & 00/100 Dollars -$39,000.00

We understand the Owner reserves the right to reject this bid, but that this bid shall remain open and not be withdrawn for a period of sixty (60) days from the date above.

We estimate the time of construction to be 180 days.

Authorized signature: Grant Nabholz

Position: President

Date: 9/12/2023

END OF SECTION 00 41 00

AFFP
NOTICE

FILED
AUG 30 2023
MARGARET DARTER
FAULKNER COUNTY CLERK
BY _____ DC

Affidavit of Publication

STATE OF AR }
COUNTY OF FAULKNER } SS

Matthew Smith, being duly sworn, says:

That he is Classified Director of the Log Cabin Democrat, a daily newspaper of general circulation, printed and published in Conway, Faulkner County, AR; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

August 19, 2023
August 26, 2023

Publisher's Fee: $ 302.60

That said newspaper was regularly issued and circulated on those dates.

SIGNED:

Subscribed to and sworn to me this 26th day of August 2023.

Janet Melton, Notary Public 9/6/2032

00001713 70751048

JANET MELTON
NOTARY PUBLIC -STATE OF ARKANSAS
CRAIGHEAG COUNTY
My Commission Expires 09-06-2032
Commission No. 12389619

Sowell Architects
1315 North Street Ste. 100
CONWAY, AR 72034

NOTICE

Faulkner County Arkansas is soliciting bids from qualified bidders for the remodeling of an existing structure, located at 597 U.S. Highway 65, Greenbrier, AR, into the Faulkner County Animal Shelter. Responsive bidders shall include all fees, associated costs, taxes, and any other cost items in their bids.

Construction Documents, prepared by Sowell Architects, Inc. can be obtained at 10:00 A.M. or after, Thursday, August 17, 2023 by contacting the Architect at 1315 North Street, Suite 100, Conway, AR 72034 at 501-450-9633 or emily@sowellarchitects.com.

Sealed Bids, in written form, may be hand delivered to the Office of the County Judge at 810 Faulkner Street, Conway, Arkansas 72034 no later than 2:00 P.M., local time, Tuesday, September 12, 2023, to be considered and will be opened in the Office of the County Judge Conference Room. All bids must be accompanied by a bid security equal to five percent (5%) of the amount of the bid. Bids received after 2:00 P.M. will not be considered. The successful bidder must be licensed by the State of Arkansas and be sufficiently insured and bonded.

Faulkner County reserves the right to reject any and all bids received or any portions thereof and to waive any formalities. Faulkner County is an equal opportunity employer. Faulkner County is not responsible for lost or misguided bids.

Bids may be mailed to:
Faulkner County
Attn: Animal Shelter
801 Locust Street
Conway AR, 72034

The Faulkner County Judge's Office paid $302.60 for this publication.

Randy Higgins, Administrator
Faulkner County, Arkansas

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

SHEET INDEX

DEDUCTIVE ALTERNATES

DED. ALT. #1: FLOOR FINISHES
REMOVE ALL FINISH FLOORING
REFER TO A1.2

DED. ALT. #2: FRONT FACADE
REMOVE NEW FRONT FACADE AND CANOPY
REFER TO A4.1

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE CODES LISTED UNDER THE PROJECT INFORMATION HEADING. IT SHALL BE THE CONTRACTOR'S AND HIS EMPLOYEES RESPONSIBILITY TO BE FAMILIAR WITH ALL CODES AND ORDINANCES, CITY OR STATE, AS REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT. WHERE ANY CONFLICTS EXISTS BETWEEN FEDERAL, STATE, AND LOCAL LAWS, THE MOST STRINGENT SHALL GOVERN.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS INCLUDING BUT NOT LIMITED TO: STRUCTURE, MECHANICAL, PLUMBING, ELECTRICAL, EQUIPMENT, AND ALL OTHER EXISTING SYSTEMS AND MAKE NECESSARY PROVISIONS TO MAINTAIN THE INTEGRITY OF SAID SYSTEM PRIOR TO THE COMMENCEMENT OF DEMOLITION, IF ANY. BIND WAY SHALL ANY DOCUMENTATION RECEIVED BY THE CONTRACTOR RELIEVE HIM OF THE RESPONSIBILITY OF PERFORMING HIS OWN FIELD INVESTIGATION.
3. IF ANY OF THE CONSTRUCTION MATERIALS ARE OWNER PROVIDED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE MATERIAL TYPE, QUANTITY, AND REQUIRED INSTALLATION METHODS OF THAT MATERIAL. IF ANY ADDITIONAL COST ARISES DUE TO THE CONTRACTOR'S FAILURE TO CONFIRM THESE ITEMS IT SHALL BE AT THE CONTRACTOR'S EXPENSE.
4. ANY EXPOSED STRUCTURE BELOW THE FINISHED CEILING SHALL BE CONCEALED UNLESS NOTED OTHERWISE. PURRING SHALL MATCH ADJACENT WALL FINISHES TO PROVIDE A SEAMLESS MATERIAL TRANSITION.
5. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH OWNER PROVIDED FURNITURE, FIXTURES, & EQUIPMENT.
6. THE CONTRACTOR SHALL LOCATE BACKING PLATES BEHIND ALL WALL HANDRAILS, GRAB BARS, GUARDRAILS, ETC. AS REQUIRED.
7. ALL PENETRATIONS INTO SOUND RATED ASSEMBLIES SHALL BE SEALED WITH APPROVED RESILIENT ACOUSTIC SEALANT. ALL RECESSED ITEMS SHALL BE SEALED TO MAINTAIN INTEGRITY OF THE ACOUSTIC ASSEMBLY.
8. ALL DIMENSIONS SHOWN ARE FROM GRID LINE, OUTSIDE FACE OF MASONRY, OR OUTSIDE FACE OF STUD UNLESS NOTED OTHERWISE.
9. ALL DRAWINGS, THOUGH NOTED TO SCALE, ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL NOT SCALE THE DRAWINGS. ITEMS INCORRECTLY LOCATED BY SCALING THE DRAWINGS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
10. DRAWINGS HAVE BEEN DETAILED IN COMPLIANCE WITH THE ADEQUIES LISTED IN THE APPLICABLE CODE. SUBMISSION OF AN ALTERNATE OR SUBSTITUTED MATERIAL IS ACCEPTED AS AN EQUAL BY THE GENERAL CONTRACTOR, HE SHALL ASSUME THE RESPONSIBILITY FOR WHATEVER CONSTRUCTION MODIFICATION AND/OR ADDITIONAL COSTS ARE REQUIRED BY REASON OF THIS ACCEPTANCE.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK WITH THE ARCHITECTURAL DRAWINGS BEFORE THE INSTALLATION OF ANY MECHANICAL, PLUMBING, ELECTRICAL, OR SYSTEMS CONSTRUCTION. ANY DISCREPANCIES BETWEEN OR WITHIN THE ARCHITECTURAL AND CONSULTING ENGINEERS DRAWINGS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION BEFORE COMMENCING WITH THE WORK.
12. ANY CONSTRUCTION INSTALLED IN CONFLICT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE, AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
13. THE CONTRACTOR SHALL PROVIDE FOR THE PROPER SEQUENCE OF CONSTRUCTION, LOCATION AND SIZE OF OPENINGS. COORDINATE ALL CONSTRUCTION AS INDICATED BY THE CONTRACT DOCUMENTS, INCLUDING SHOP DRAWINGS REVIEWED BY THE ARCHITECT.
14. THE CONTRACTOR SHALL COORDINATE THE LOCATION AND TYPE OF ALL ACCESS PANELS REQUIRED FOR ACCESSING MECHANICAL, PLUMBING, ELECTRICAL AND OTHER BUILDING SYSTEMS WITH ARCHITECT.
15. ALL PIPES, DUCTS, AND CONDUITS SHALL BE SUPPORTED AND BRACED PER ALL APPLICABLE CITY AND CODE REQUIREMENTS, WHETHER OR NOT THE TYPE OF RESTRAINT OR DETAIL OF THE RESTRAINT IS SHOWN ON THE CONSTRUCTION DOCUMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HIS SUBCONTRACTORS TO BE FAMILIAR WITH ALL CODE REQUIREMENTS.
16. ALL REQUIRED PERMITS MUST BE OBTAINED FROM THE DEPARTMENT OF INSPECTIONS BEFORE THE BUILDING IS OCCUPIED.

08.11.2023

REGISTERED ARCHITECT — Sowell Architects, Inc — Licensed Number C-170 — STATE OF ARKANSAS

I HEREBY CERTIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN PREPARED BY ME, OR UNDER MY SUPERVISION. I FURTHER CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE AS REQUIRED BY LAW AND IN COMPLIANCE WITH THE ARKANSAS FIRE PREVENTION CODE FOR THE STATE OF ARKANSAS

Rik Sowell — 08.11.2023

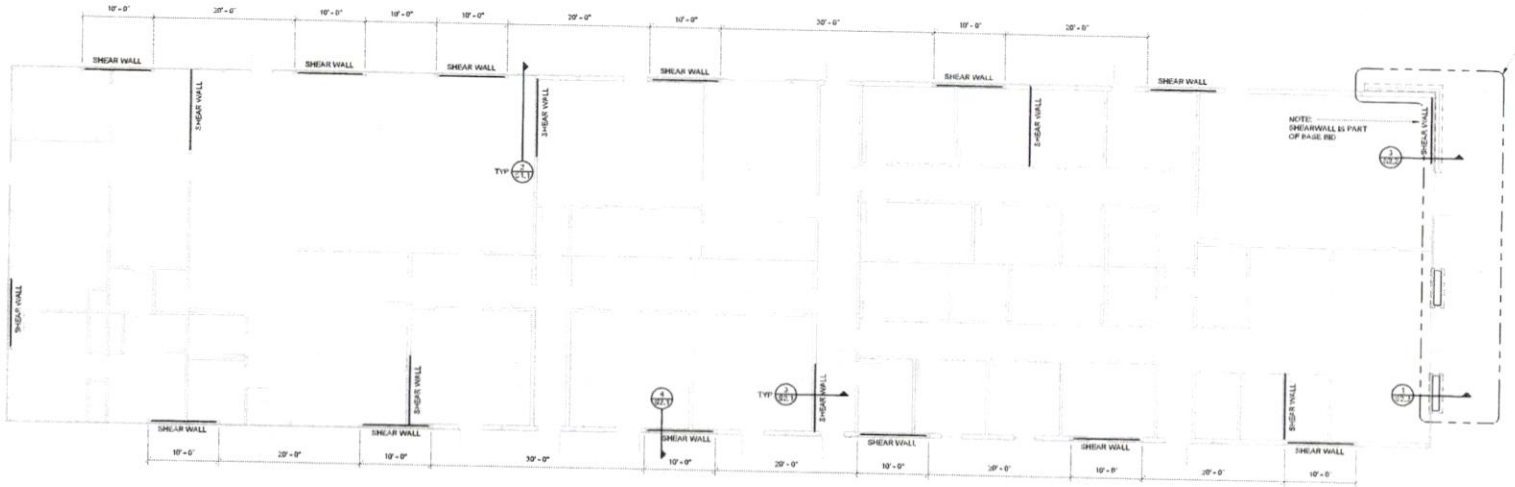
RIK SOWELL, SOWELL ARCHITECTS, — DATE

Rik SOWELL ARCHITECTS, INC.
1305 North Street
Suite 100
Conway, AR 72034
501-450-9933
rik@sowellarchitects.com

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

08.11.2023
21054

COVER SHEET
CS1.0



1 FOUNDATION AND SHEAR WALL PLAN
1/8" = 1'-0"

CAST IN PLACE CONCRETE

1. Minimum Concrete Compressive Strengths:
   A. All Concrete U.N.O. f'c = 3,000 psi at 28 days, Max s/c=0.55
2. Before concrete is placed reinforcement shall be secured against displacement within tolerances permitted in section 26.6.2 of ACI code.
3. Where lap splices are required of deformed bars and not specifically indicated on drawings, splices shall be class B splice.
4. When bars of different size are lap spliced, the splice length shall be based upon larger bar.
5. Concrete protective covering for reinforcement at surfaces not exposed directly to the ground shall be 3/4" for slabs, joists, and walls and 1 1/2" for beam stirrups and column ties or spirals. Do not "wet set 6" stones.
6. The following minimum concrete cover shall be provided:
   A. Concrete cast against and permanently exposed to earth: 3"
   B. Concrete exposed to earth or weather - No. 6 thru No. 18: 2"
   C. Concrete exposed to earth or weather - No. 5 and smaller: 1 1/2"
   D. Concrete not exposed to earth or weather
      - slabs, walls, joists No.14 and No. 18: 1 1/2"
      - slabs, walls, joists No.11 and smaller: 3/4"
7. Location and sizes of openings, sleeves, etc. required for other trades must be verified by these trades before placing concrete.
8. Contractor is responsible for "means and methods" of construction and shall provide adequate shoring to prevent collapse or damage to structural elements during construction.
9. Fine and coarse aggregates shall be evaluated and tested by the contractor for alkali aggregate reactivity in accordance with ASTM C-1260. Test results that have a measured expansion less than 0.10 percent at 16 days meet the requirements of these specifications. For expansions greater than 0.10 percent the aggregate shall be rejected or additional testing per ASTM C-1567 shall be performed by the contractor. For expansions greater than 0.20% aggregate shall be rejected.
10. Fly Ash content shall not exceed 20% of the total weight of cement plus fly ash.
11. Refer to bar splice schedule for exact splice length.

EPOXY ANCHORS

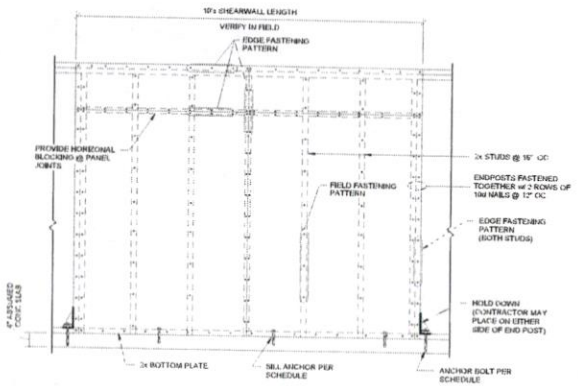
1. Where epoxy anchorage of threaded rods and rebar is approved by Engineer of Record in concrete filled cells of cmu use DeWalt AC100+ Gold or Hilti HIT HY-270.
2. Where epoxy anchorage of threaded rods and rebar is approved by Engineer of Record in concrete use DeWalt Pure 110+ or Hilti HIT RE-500.
3. Where anchorage is required into hollow or multi-wythe masonry contractor shall use Powers AC100+ Gold or Hilti HIT HY-270 w/ mesh screen.
4. Unless depth of embedment is shown on contract drawings contact Engineer of record for depth of embedment. As a minimum depth of embedment shall be indicated by manufacturer to develop full tensile strength of anchorage.
5. Install anchors per the manufacturer's installation instructions.
6. Contractor shall arrange for an anchor manufacturer's representative to provide onsite installation training for all of their anchoring products specified. The structural Engineer of record must receive documented confirmation that all of the contractor's personnel who install anchors are trained prior to the commencement of anchor installation.

WOOD FRAMING

1. Provide 15lb roofing felt or other approved moisture barrier under all wood plates bearing on masonry or concrete.
2. All trusses unless noted otherwise on drawings shall be secured to bearing plate with one simpson H10A tie or approved equal.
3. Where connections for wood members are not specifically shown on drawings provide fasteners as indicated in table 2304.9.1 of the International Building Code.
4. Where headers are not specifically shown on drawings, provide header sizes as indicated in tables 2308.9.5 and 2308.9.6 of the International Building Code.
5. Unless noted otherwise on drawings, wood framing shall comply with the following species & grade

ITEM	SPECIES	GRADE
Headers	SYP	No. 2
Floor Joists	SYP	No. 2
Rafters	SYP	No. 2
Built-up Beams	SYP	No. 2
Built-Up Columns	SYP	No. 2
Load bearing Walls	S-P-F	Stud
Columns	SYP	No. 2

6. Fasteners in preservative treated wood and fire-treated wood shall be hot dipped galvanized, stainless steel or other approved specifically designed for attachment in corrosive environments.



SHEARWALL SCHEDULE

MARK	TYPE	WALL SHEATHING	NAILING	HOLD DOWNS	HOLD DOWN ANCHOR	SILL ANCHOR	END POSTS	END POST FASTENERS
SW-1	INTERIOR	15/32" APA GR. I, EXT ONE SIDE	EDGE - 8d COMMON @ 6" OC FIELD - 8d COMMON @ 12" OC	SIMPSON HDU2-SDS2.5	SIMPSON 5/8"x7" TITEN SCREW ANCHOR @ 32" OC	SIMPSON 5/8"x7" TITEN SCREW ANCHOR @ 32" OC	2x2x4 @ #1 SO. PINE	6 x SIMPSON SDS 1/4x2.5" WOOD SCREWS
SW-2	EXTERIOR	15/32" APA GR. I, EXT INSIDE FACE	EDGE - 8d COMMON @ 6" OC FIELD - 8d COMMON @ 12" OC	SIMPSON HDU2-SDS2.5	SIMPSON 5/8"x7" TITEN SCREW ANCHOR @ 32" OC	SIMPSON 5/8"x7" TITEN SCREW ANCHOR @ 32" OC	2x2x6 @ #1 SO. PINE	6 x SIMPSON SDS 1/4x2.5" WOOD SCREWS

NOTES:
1. HORIZONTAL PANEL EDGES SHALL HAVE BLOCKING WITH 3" NOMINAL OR WIDER FRAMING, AND ALL VERTICAL PANEL EDGES SHALL OCCUR AT 2x FRAMING MEMBERS.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE THE EXACT LOCATION OF THE ANCHOR BOLTS SO AS TO NOT INTERFER WITH THE WINDOW OR DOOR JAMBS.
3. ALL SHEARWALL SILL ANCHOR BOLTS SHALL HAVE SIMPSON BP 5/8 S-SDS 1 1/2 FLAT PLATE WASHER WITH WOOD SCREWS. PROVIDE SILL ANCHORS AS SHOWN IN SCHEDULE WITH NO LESS THAN 3 SILL BOLTS IN EACH SHEARWALL SEGMENT.

2 SHEARWALL ELEVATION & SCHEDULE
NOT TO SCALE

CERTIFICATE OF AUTHORIZATION NO. 247 — Robbins Engineering PLLC — No. 1083 — ARKANSAS ENGINEER

REC
ROBBINS ENGINEERING CONSULTANTS
10018 W. MARKHAM / LITTLE ROCK, AR 72205
P 501.664.7575 / F 501.664.7474
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Rik SOWELL ARCHITECTS, INC.
1315 North Street
Suite 100
Conway, AR 72034
501.450.9633
info@sowellarchitects.com

REVISION SCHEDULE

No.	Description	Date

ADDITIONS & RENOVATIONS FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

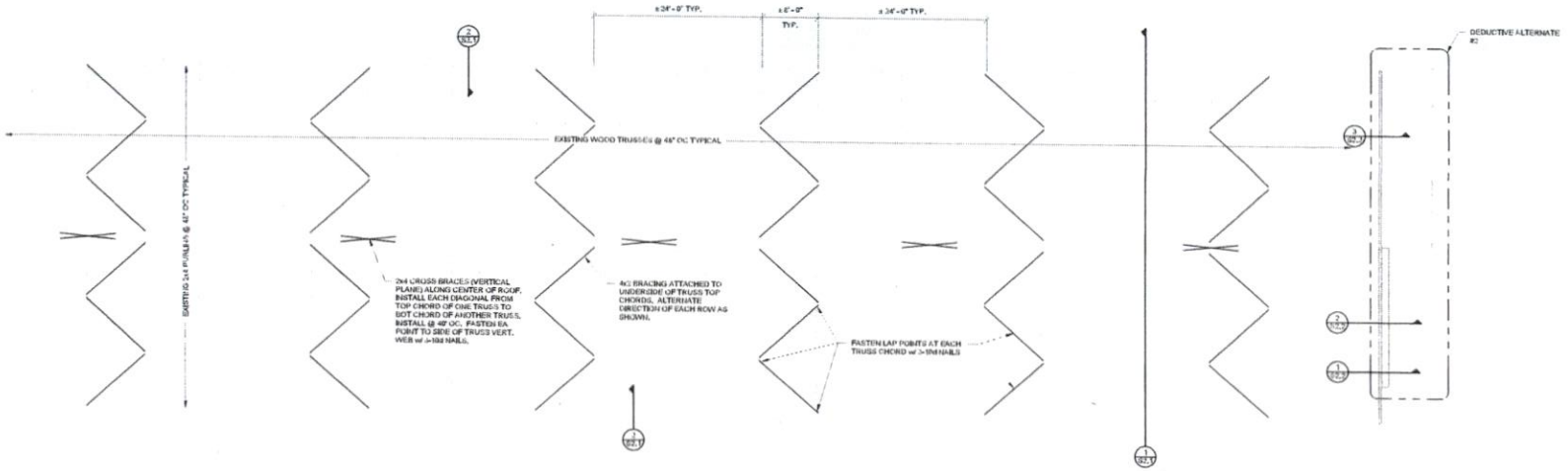
STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 12371 — CASEY DANIEL — 8/11/23

08.11.2023

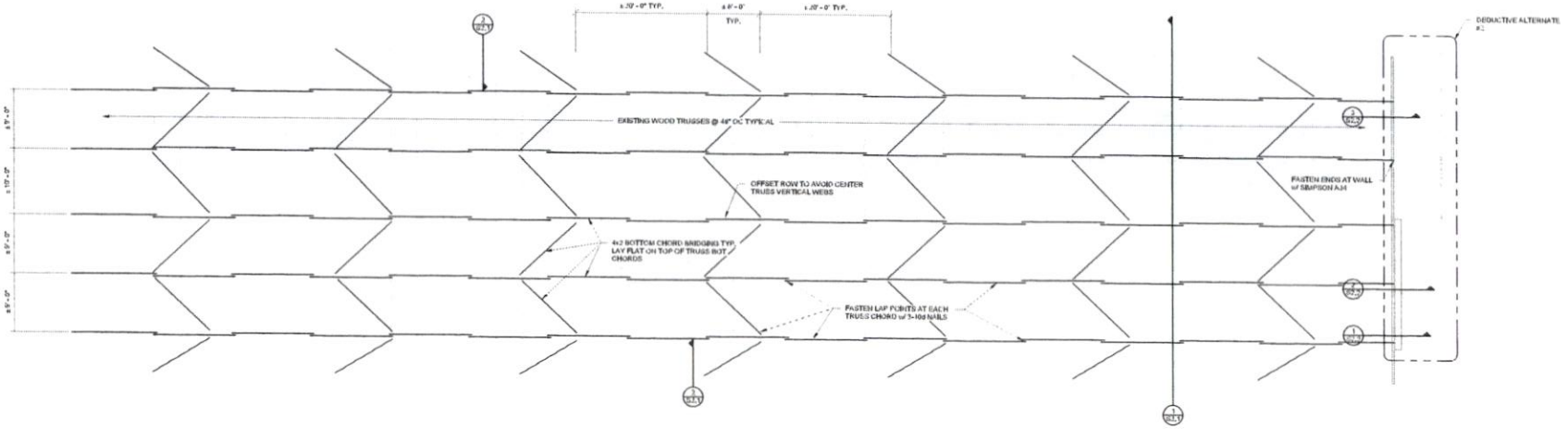
21054

FOUNDATION PLAN

S1.1



1 TYP. TRUSS TOP CHORD BRACING PLAN
1/8" = 1'-0"



2 TYP. TRUSS BOTTOM CHORD BRACING PLAN
1/8" = 1'-0"

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REVISION SCHEDULE

No.	Description	Date

ADDITIONS & RENOVATIONS FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

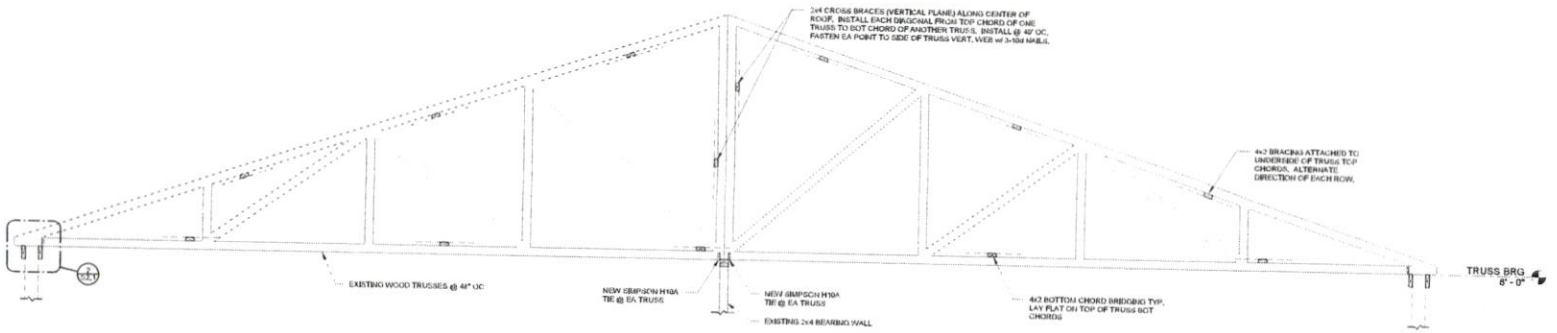
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
12371
CASEY DANIEL
8/11/23

08.11.2023

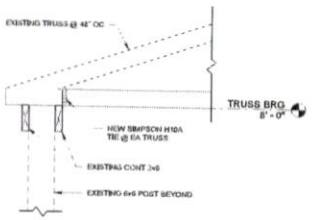
21054

ROOF FRAMING PLANS

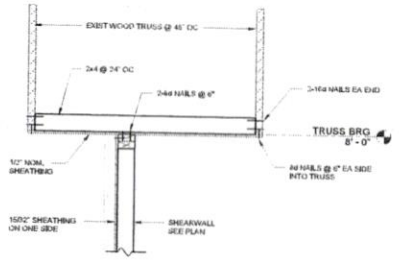
S1.2



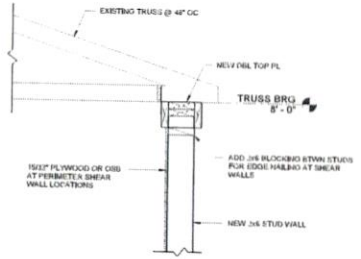
1 TYPICAL TRUSS SECTION
1/2" = 1'-0"



2 TYP. TRUSS / WALL CONNECTION
1" = 1'-0"



3 TYP. TOP OF INTERIOR SHEARWALL CONN.
1" = 1'-0"



4 TYP. EXTERIOR SHEAR WALL
1" = 1'-0"

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REVISION SCHEDULE

No.	Description	Date

ADDITIONS & RENOVATIONS FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 12371 CASEY DANIEL
4/11/23

08.11.2023

21054

TYP FRAMING DETAILS

S2.1

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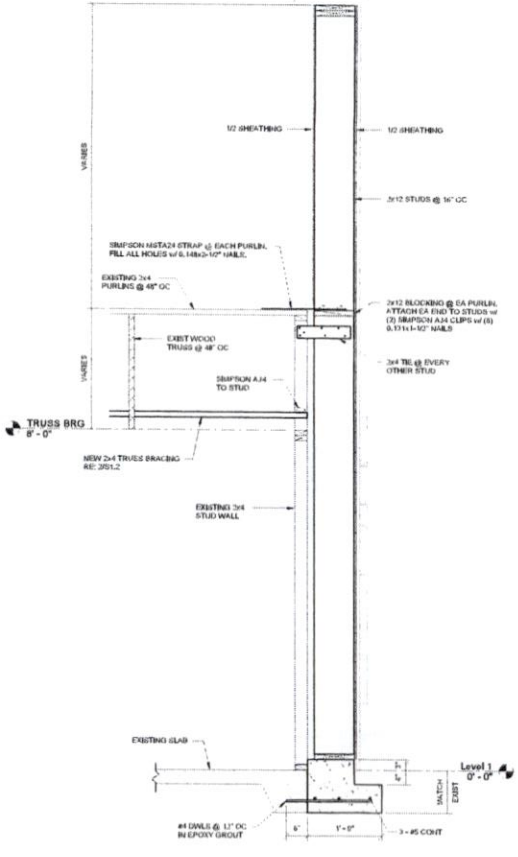
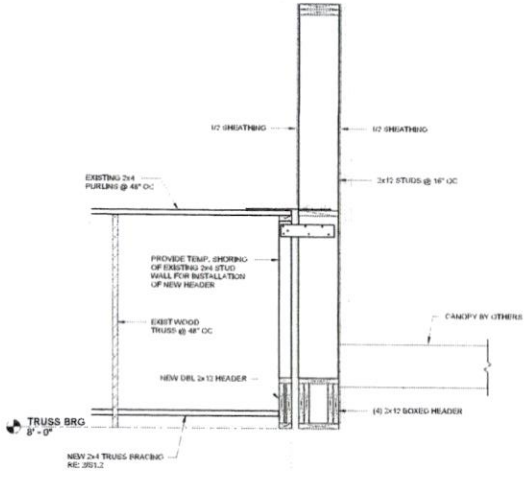
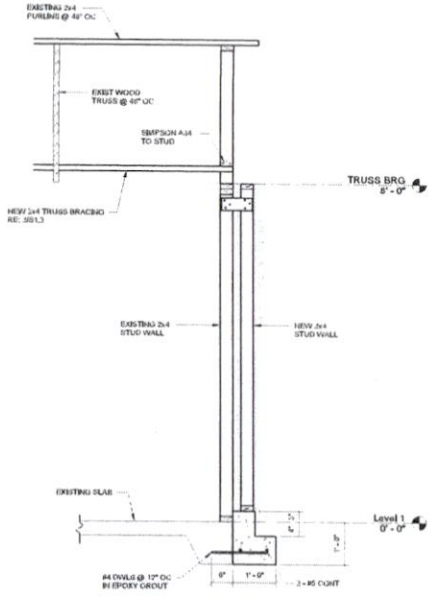


1 SECTION
3/4" = 1'-0"



2 SECTION
3/4" = 1'-0"



3 SECTION
3/4" = 1'-0"

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1315 North Street
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REVISION SCHEDULE

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ADDITIONS & RENOVATIONS FOR:

FAULKNER COUNTY ANIMAL SHELTER

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STATE OF ARKANSAS
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12371
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21054

FRAMING SECTIONS

S2.2

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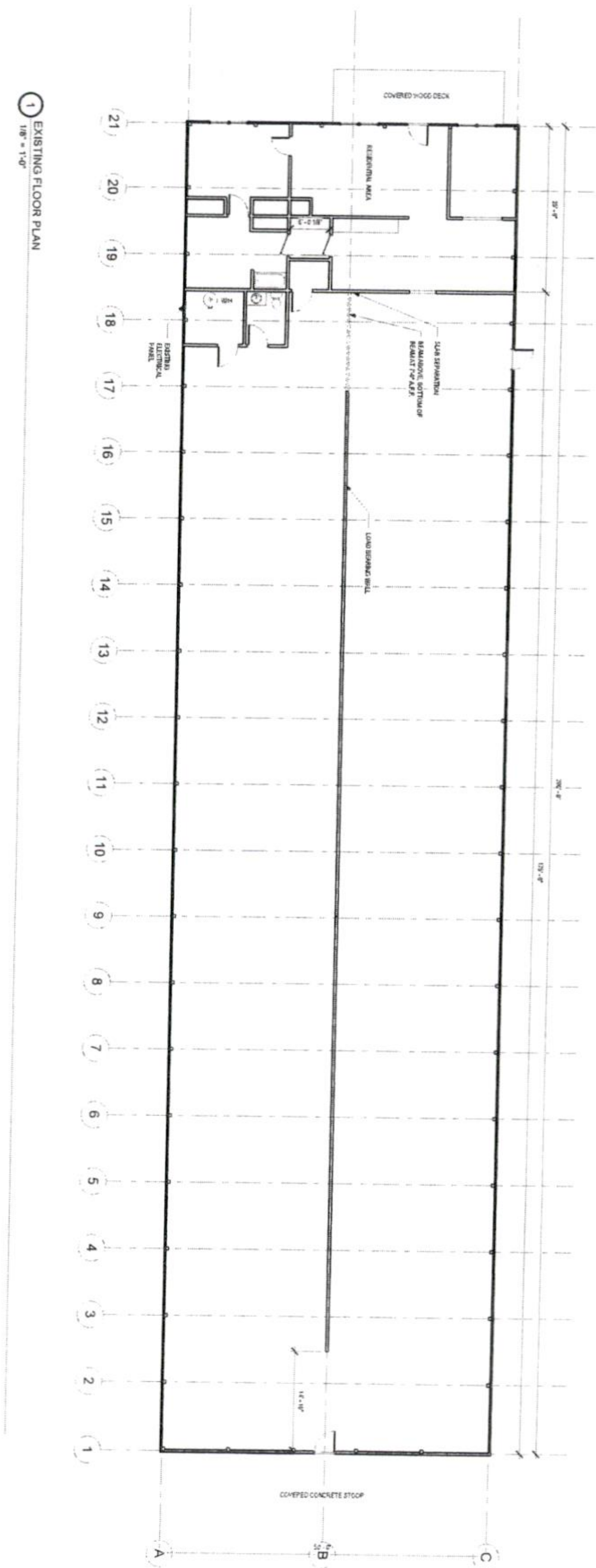


A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

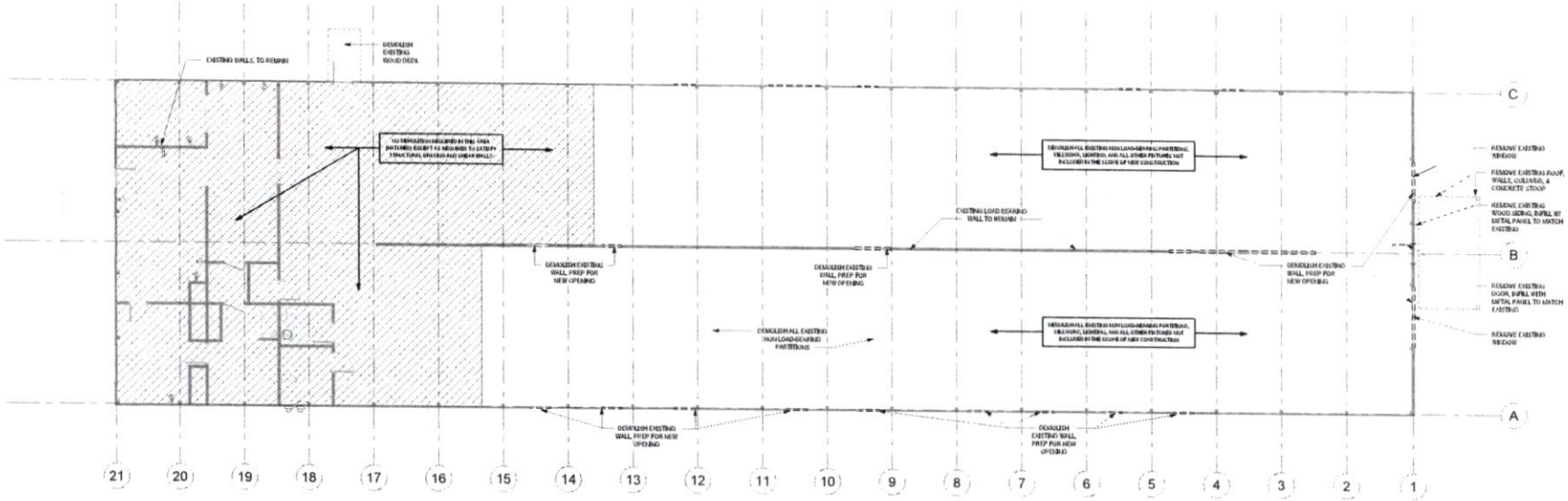
597 US-65, GREENBRIER, AR 72058

EXISTING FLOOR PLAN

08.11.2023

21064

AD1.0



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

GENERAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY THE EXTENT OF DEMOLITION. THE CONTRACTOR SHALL REPLACE ANY WALL, FLOOR, WALL, OR CEILINGS DAMAGED AS A RESULT OF DEMOLITION.
2. WHEN UTILITIES ARE REMOVED, CAP AND SEAL A MINIMUM OF 6" BELOW FINISH FLOOR OR A MINIMUM OF 6" ABOVE FINISH CEILING UNLESS NOTED OTHERWISE.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE SHORING, BRACING, AND SUPPORT SYSTEMS FOR EXISTING STRUCTURE AND TO KEEP THE EXISTING STRUCTURE INTACT AND IN A SAFE CONDITION DURING DEMOLITION AND NEW CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR MEANS AND METHODS OF DEMOLITION AND NEW CONSTRUCTION.
4. DURING DEMOLITION AND RECONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER ANY REQUIRED SAFETY BARRIERS OR BARRICADES, PROVIDE BARRICADES SO AS TO PREVENT UNAUTHORIZED INTRUSION OF PUBLIC INTO CONSTRUCTION AREAS.
5. COORDINATE DEMOLITION WITH NEW CONSTRUCTION SO THAT THE FACILITY WILL HAVE UNINTERRUPTED WATER, SEWER, ELECTRICAL, GAS AND FIRE PROTECTION SERVICE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ALL NECESSARY TEMPORARY UTILITY PROVISIONS REQUIRED.
6. REFER TO STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, AND ELECTRICAL DRAWINGS FOR NECESSARY FLOOR SLAB DEMOLITION FOR THE INSTALLATION OF NEW FOUNDATIONS, PIPING, OR CONDUITS.
7. PREPARE CONCRETE SUBSTRATE, CEMENT GROUT INFILL DEPRESSED AREAS FLUSH AND LEVEL FOR NEW FLOOR FINISH FOR SMOOTH TRANSITION TO ADJACENT FLOOR AREAS.
8. PROTECT ALL WATER PIPING AT AREAS OF DEMOLITION, EXPANSION AND REMODEL. WHERE EXISTING PIPING IS SUBJECT TO FREEZING, PROTECT PIPING SO AS NOT TO FREEZE.
9. SALVAGE ALL EXISTING EQUIPMENT FOR OWNERS REUSE. CONSULT WITH OWNER/ARCHITECT PRIOR TO REMOVING ANY EXISTING EQUIPMENT FROM THE RENOVATION AREA.
10. NOTIFY ARCHITECT IMMEDIATELY IF ANY ASBESTOS CONTAINING MATERIALS ARE ENCOUNTERED DURING DEMOLITION

Rik SOWELL ARCHITECTS, INC.
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Suite 100
Conway, AR 72034
501.450.9933

REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

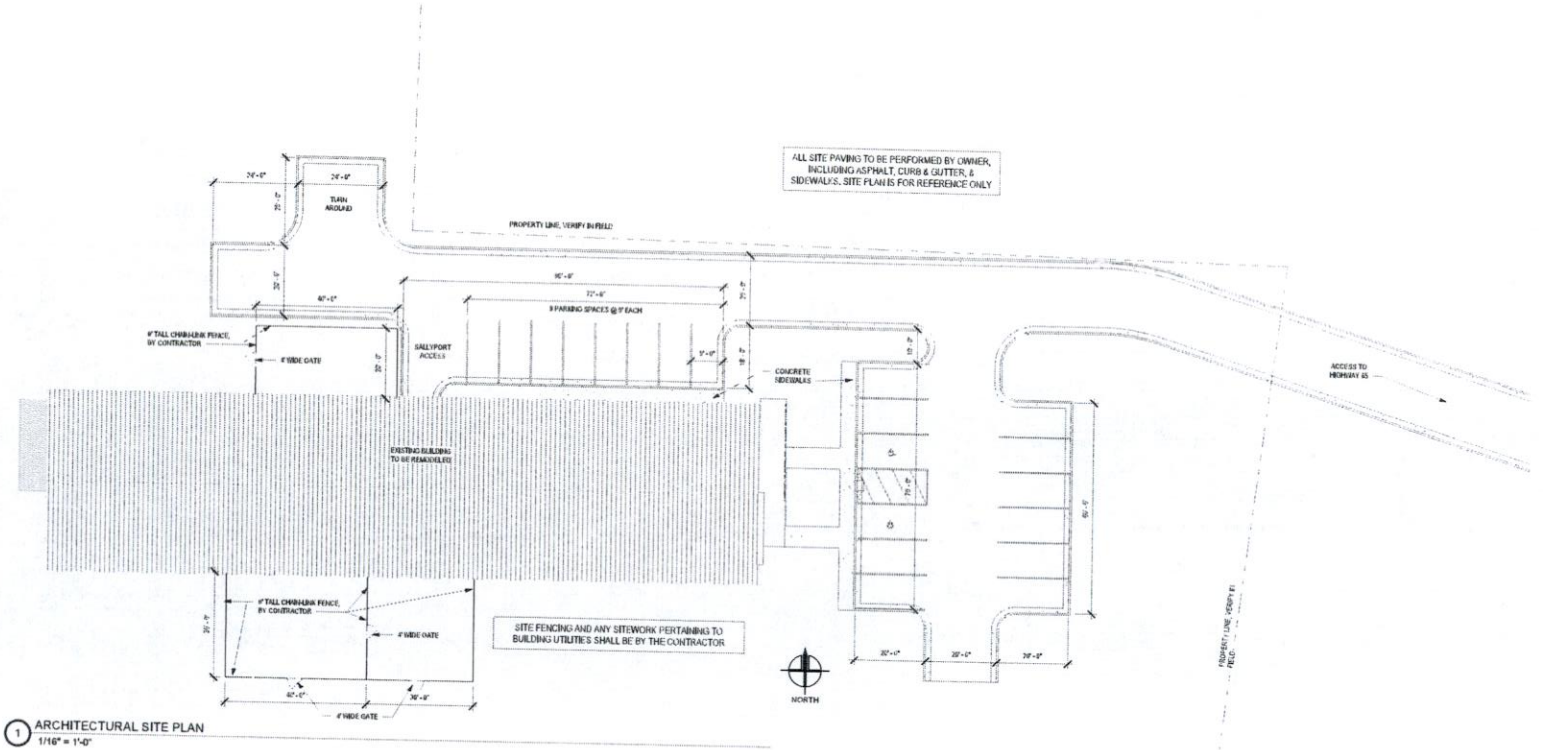
597 US-65, GREENBRIER, AR 72058

08.11.2023

21054

DEMOLITION PLAN

AD1.1



1 ARCHITECTURAL SITE PLAN
1/16" = 1'-0"

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A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

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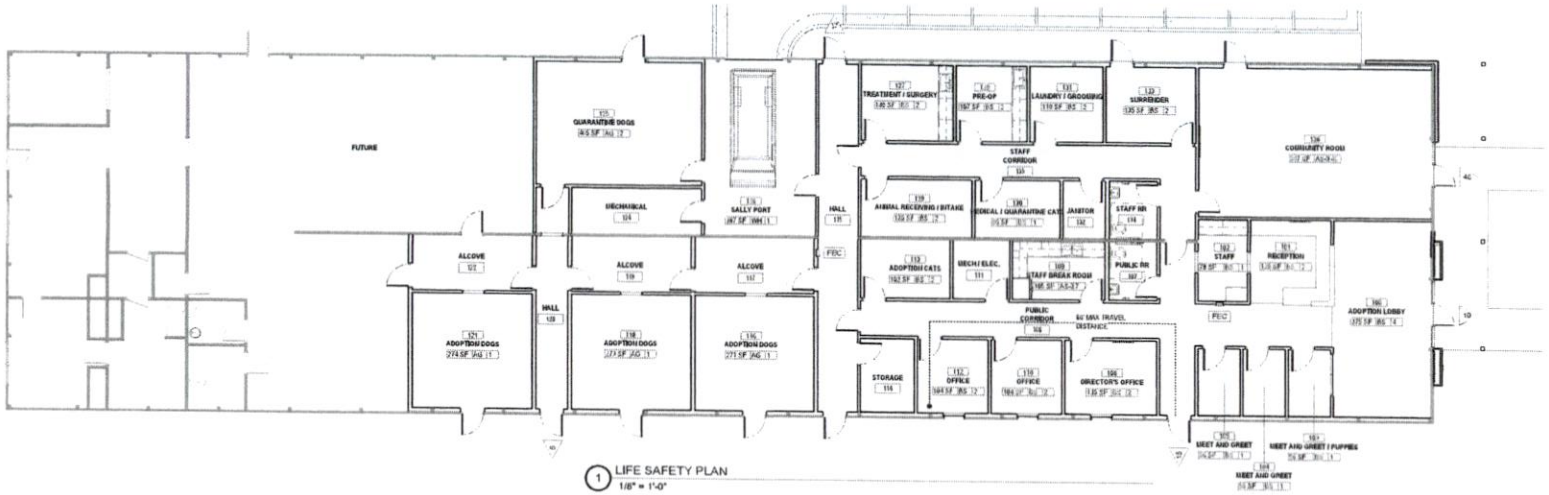
ARCHITECTURAL SITE PLAN

A0.1



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

LIFE SAFETY LEGEND

- SUMMATION OF LOADS
- OCCUPANCY TAG
- 1 HR. FIRE WALL
- TRAVEL DISTANCE
- F.E.C. FIRE EXTINGUISHER CABINET

MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT (TABLE 1004.1.1)

	FUNCTION OF SPACE	SF PER OCCUPANT
AC	ACCESSORY STORAGE AREAS, MECHANICAL EQUIPMENT ROOM	300 GROSS
AG	AGRICULTURAL BUILDING	300 GROSS
AI	AIRCRAFT HANGARS	500 GROSS
AT AT-1 AT-2 AT-3 AT-4	AIRPORT TERMINAL BAGGAGE CLAIM BAGGAGE HANDLING CONCOURSE WAITING AREAS	20 GROSS 300 GROSS 100 GROSS 15 GROSS
AS-1	ASSEMBLY: GAMING FLOORS	11 GROSS
AS-F	ASSEMBLY WITH FIXED SEATS	
AS AS-1 AS-2 AS-3	ASSEMBLY WITHOUT FIXED SEATS CONCENTRATED (CHAIRS ONLY) STANDING SPACE UNCONCENTRATED	7 NET 5 NET 15 NET
BM	BOWLING CENTERS	7 NET
BS	BUSINESS AREAS	100 GROSS
CT	COURTROOMS	40 NET
DC	DAYCARE	35 NET
DR	DORMITORIES	50 GROSS
ED ED-1 ED-2	EDUCATIONAL CLASSROOM AREA SHOP, LAB AND VOCATIONAL	20 NET 50 NET
EX	EXERCISE ROOMS	50 GROSS
HM	H-5 FABRICATION & MANUFACTURING	200 GROSS
ID	INDUSTRIAL AREAS	100 GROSS
IS IS-1 IS-2 IS-3	INSTITUTIONAL AREAS INPATIENT TREATMENT AREAS OUTPATIENT AREAS SLEEPING AREAS	240 GROSS 160 GROSS 120 GROSS
KT	KITCHENS, COMMERCIAL	200 GROSS
LB LB-1 LB-2	LIBRARY READING ROOMS STACK AREA	50 NET 100 GROSS
LR	LOCKER ROOMS	50 GROSS
MC MC-1 MC-2 MC-3	MERCANTILE AREAS ON OTHER FLOORS BASEMENT AND GRADE FLOOR STORAGE, STOCK, SHIPPING	60 GROSS 30 GROSS 300 GROSS
PS	PARKING GARAGES	200 GROSS
RS	RESIDENTIAL	200 GROSS
SR SR-1 SR-2	SKATING RINKS, SWIMMING POOLS RINK AND POOL DECKS	50 GROSS 15 GROSS
ST	STAGES AND PLATFORMS	15 NET
WH	WAREHOUSES	500 GROSS

FAULKNER COUNTY ANIMAL SHELTER
597 US-65
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FIRE DEPARTMENT
GREENBRIER FIRE DEPARTMENT
6 N BROADVIEW ST.
GREENBRIER, AR 72058
501-679-2345

WATER & UTILITIES
GREENBRIER WATER WORKS
11 WILSON FARM RD.
GREENBRIER, AR 72058
501-679-3014

LOCAL BUILDING INSPECTION DEPARTMENT
STATE OF ARKANSAS BUILDING AUTHORITY
501 WOODLANE ST.
LITTLE ROCK, AR 72201
501-682-1833

APPLICABLE CODES AND REGULATIONS
2014 ARKANSAS ENERGY CODE
2021 ARKANSAS FIRE PREVENTION CODE, VOLUMES 1, 2, 3
2006 ARKANSAS PLUMBING CODE
2006 ARKANSAS FUEL GAS CODE
2016 ARKANSAS MECHANICAL CODE
2014 NATIONAL ELECTRICAL CODE

OCCUPANCY INFORMATION
ANIMAL SHELTER
EXISTING BUILDING RENOVATION

OCCUPANCY CLASSIFICATION:	B
TOTAL OCCUPANT LOAD:	88
CONSTRUCTION TYPE:	5B
MAX ALLOWABLE AREA:	9,000
AREA INCREASE FOR SPRINKLERS	0
AREA INCREASE FOR FRONTAGE	6,750
TOTAL ALLOWABLE AREA:	15,750 SF
ACTUAL AREA - FIRST FLOOR:	10,000
TOTAL ACTUAL AREA:	**10,000**
ALLOWABLE HEIGHT:	40'
ACTUAL HEIGHT:	19'-0"
ALLOWABLE STORIES:	2
ACTUAL STORIES:	1
REQUIRED NUMBER OF EXITS:	2
PROVIDED NUMBER OF EXITS:	11
REQUIRED EXIT WIDTH:	64"
PROVIDED EXIT WIDTH:	174"
MAX TRAVEL DISTANCE:	250'

STRUCTURAL FIRE PROTECTION

PRIMARY STRUCTURAL FRAME	0
BEARING WALLS	0
NONBEARING WALLS AND PARTITIONS	0
FLOOR CONSTRUCTION	0
ROOF CONSTRUCTION	0

OTHER

2 PROJECT INFORMATION
1" = 1'-0"

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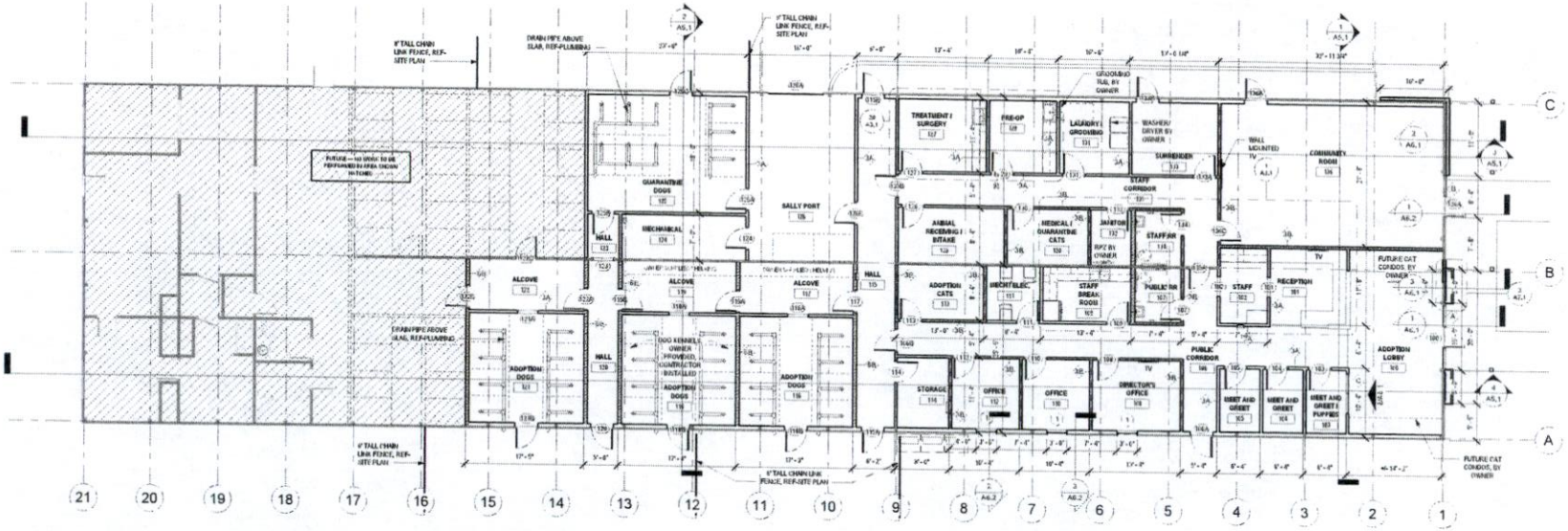
LIFE SAFETY PLAN

A1.0



1 DIMENSION FLOOR PLAN
1/8" = 1'-0"

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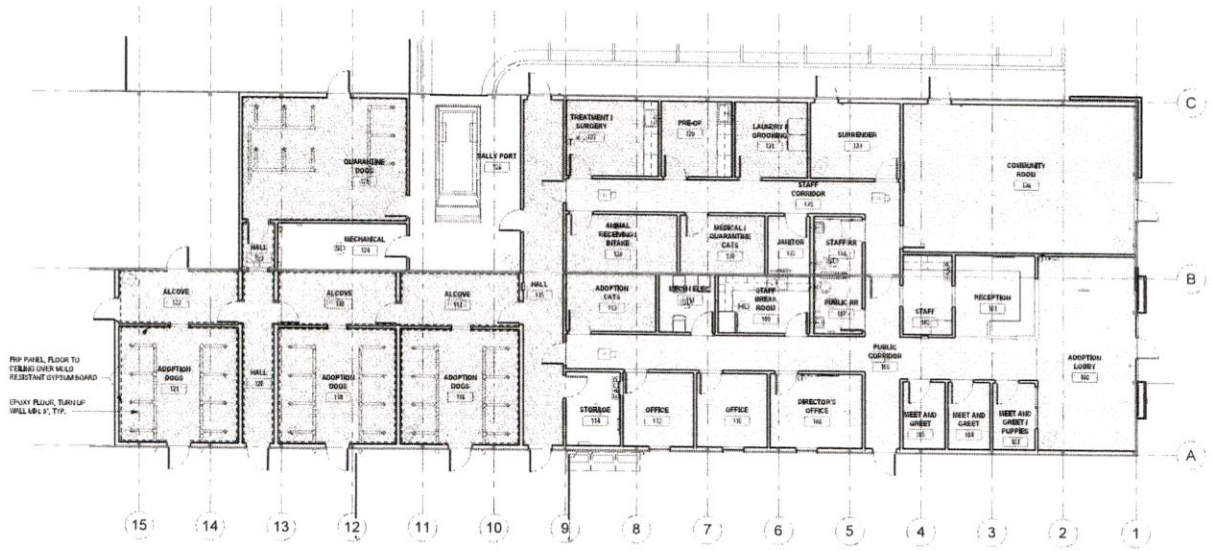
FLOOR PLAN

A1.1

2 FINISH FLOOR PLAN - DEDUCTIVE ALTERNATE #1
1/8" = 1'-0"



1 FINISH FLOOR PLAN - BASE BID
1/8" = 1'-0"

ROOM FINISH SCHEDULE

ROOM NO	ROOM NAME	BASE DED. ALT	BASE	FLOOR DED. ALT	FLOOR	WALLS	CEILING	FINISH NOTES
100	ADOPTION LOBBY	RB	RB	SC	LVT	GWB / PT	GWB	
101	RECEPTION	RB	RB	SC	LVT	GWB / PT	GWB	
102	STAFF	RB	RB	SC	LVT	GWB / PT	ACT-1	
103	MEET AND GREET / PUPPIES	RB	RB	SC	LVT	GWB / FRP	ACT-1	
104	MEET AND GREET	RB	RB	SC	LVT	GWB / FRP	ACT-1	
105	MEET AND GREET	RB	RB	SC	LVT	GWB / FRP	ACT-1	
106	PUBLIC CORRIDOR	RB	RB	SC	LVT	GWB / PT	ACT-1	
107	PUBLIC RR	RB	RB	SC	LVT	GWB / FRP	ACT-1	
108	DIRECTOR'S OFFICE	RB	RB	SC	LVT	GWB / FRP	ACT-1	
109	STAFF BREAK ROOM	RB	RB	SC	LVT	GWB / PT	ACT-1	
110	OFFICE	RB	RB	SC	LVT	GWB / PT	ACT-1	
111	MECH / ELEC.	RB	RB	SC	SC	GWB / PT	ACT-1	
112	OFFICE	RB	RB	SC	LVT	GWB / PT	ACT-1	
113	ADOPTION CATS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
114	STORAGE	RB	RB	SC	SC	GWB / PT	ACT-1	
115	HALL	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
116	ADOPTION DOGS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
117	ALCOVE	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
118	ADOPTION DOGS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
119	ALCOVE	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
120	HALL	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
121	ADOPTION DOGS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
122	ALCOVE	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
123	HALL	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
124	MECHANICAL	RB	RB	SC	SC	GWB / PT	--	
125	QUARANTINE DOGS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
126	SALLY PORT	RB	EPXY	SC	SC	GWB / FRP	--	
127	TREATMENT / SURGERY	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
128	ANIMAL RECEIVING / INTAKE	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
129	PRE-OP	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
130	MEDICAL / QUARANTINE CATS	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	
131	LAUNDRY / GROOMING	RB	EPXY	SC	EPXY	GWB / FRP	ACT-2	MOLD RESISTANT GYP. BD.
132	JANITOR	RB	RB	SC	SC	GWB / PT	ACT-1	
133	SURRENDER	RB	RB	SC	LVT	GWB / PT	ACT-1	
134	STAFF RR	RB	RB	SC	LVT	GWB / PT	ACT-1	
135	STAFF CORRIDOR	RB	RB	SC	LVT	GWB / PT	ACT-1	
136	COMMUNITY ROOM	RB	RB	SC	LVT	GWB / PT	ACT-1	

FINISH LEGEND:

WALL BASE:
- RB — RUBBER BASE
- EPXY — EPOXY BASE, TURN UP WALL MIN 6"

WALLS:
- GWB / PT — GYPSUM WALL BOARD, PAINT
- GWB / FRP — GYPSUM WALL BOARD, EPOXY PAINT
- GWB / FRP — MOLD RESISTANT GYPSUM WALL BOARD FLOOR TO CEILING FRP PANEL

CEILING:
- ACT-1 — ACOUSTICAL CEILING TILE, STANDARD
- ACT-2 — ACOUSTICAL CEILING TILE, VINYL
- GWB / PT — GYPSUM WALL BOARD, PAINT

FLOOR FINISH LEGEND:

- LVT - LUXURY VINYL TILE REF SPECS
- EPXY - EPOXY FLOORING
- SC - EXISTING CONCRETE SLAB PATCH MOLD AND FILL TRENCHED AREAS AS REQUIRED FOR NEW CONSTRUCTION

DEDUCTIVE ALTERNATE #1

BASE BID: INCLUDES FINISH FLOORING AS SHOWN ON PLAN INCLUDING LVP, EPOXY FLOORING, AND SEALED CONCRETE WITH BASE AS SPECIFIED.

DED. ALT. #1: DEDUCTIVE ALTERNATE FOR FLOORING SHALL OMIT ALL NEW FLOOR FINISHES. EXISTING CONCRETE FLOOR SHALL REMAIN. PATCH ANY HOLES IN THE EXISTING CONCRETE SLAB. THE EXISTING SLAB WILL BE THE FINISH FLOOR SURFACE. SHALL BASE AS LISTED IN FINISH SCHEDULE.

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597 US-65, GREENBRIER, AR 72058

08.11.2023

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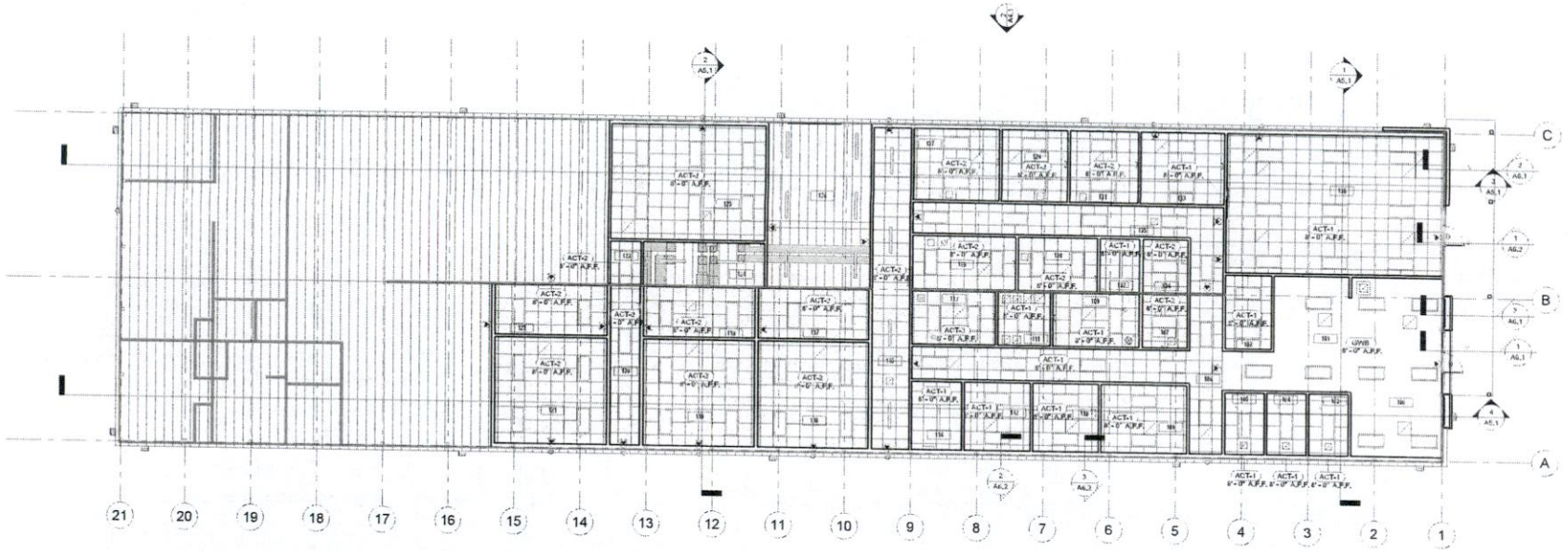
FINISH FLOOR PLAN

A1.2



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

REFLECTED CEILING LEGEND	
SYMBOL	DESCRIPTION
	ACT-1 ACOUSTICAL CEILING TILE 2'X2' SUSPENDED LAY-IN CEILING
	ACT-2 2'X2' SUSPENDED LAY-IN CEILING W/ VINYL FACE
	GWB GYPSUM WALL BOARD CEILING PAINT
	SURFACE MOUNTED 2' X 2' LED LIGHT
	6" LED CAN LIGHT
	PENDANT CYLINDER LIGHT
	EXIT LIGHT RE. ELEC.
	SURFACE MOUNTED LED LIGHT
	WALL MOUNTED FLUORESCENT FIXTURE ABOVE MIRROR
	MECHANICAL SUPPLY DIFFUSER
	MECHANICAL SUPPLY DIFFUSER AT WALL
	MECHANICAL RETURN GRILLE
	SMALL MECHANICAL SUPPLY GRILLE
	SMALL MECHANICAL RETURN GRILLE
	EXHAUST FAN

NOTE: REFER TO ELECTRICAL/MECHANICAL SHEETS FOR ALL FINAL LOCATIONS

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REFLECTED CEILING PLAN

A1.3

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

No.	Description	Date
	REMODEL SCHEMATIC	

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08.11.2023
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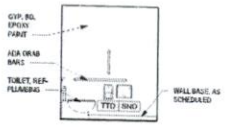
ROOF PLAN

A2.1

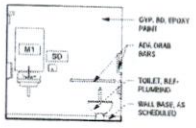
TOILET ACCESSORY SCHEDULE

KEY	FIXTURE DESCRIPTION	MANU. & MODEL #	FINISH	NOTES
18GB	18" GRAB BAR	BOBRICK B-6806.99 X 18 INCH VERTICAL	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
36GB	36" GRAB BAR	BOBRICK B-6806.99 X 36 INCH HORIZONTAL	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
42GB	42" GRAB BAR	BOBRICK B-6806.99 X 42 INCH HORIZONTAL	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
SHD	SANITARY NAPKIN DISPOSAL	BOBRICK B-254 BOBRICK B-4353 - AT 4" + DEPTH BOBRICK B-4354 - AT PARTITIONS	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
TTD	TOILET TISSUE DISPENSER	BOBRICK B-4288 - SURFACE MTD. BOBRICK B-4380 - AT 4" + DEPTH	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
PTDW	PAPER TOWEL DISPENSER WASTE RECEPTACLE COMBO	BOBRICK B-43549 - SURFACE MTD. BOBRICK B-43566 - AT 4" + DEPTH	STAINLESS STEEL SATIN FINISH	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
M1	FRAMELESS MIRROR	BOBRICK B-1556 24X36	STAINLESS STEEL	REFER TO TOILET ACCESSORY LOCATION KEY FOR MOUNTING LOCATIONS AND HEIGHTS
SD	AUTOMATIC WALL-MOUNTED FOAM SOAP DISPENSER	BOBRICK B-2112	STAINLESS STEEL	REFER TO ENLARGED PLAN AND INT. ELEVATIONS FOR MOUNTING LOCATIONS AND HEIGHTS
CH	CLOTHES HOOK	BOBRICK B-212	STAINLESS STEEL	PROVIDE ONE PER TOILET (RFU GR EXIST.) INSTALL ON BACK OF STALL DOOR OR BACK OF DOORS TO SINGLE RESTROOM
BCS	BABY CHANGING STATION	KOALA KARE KB110-SSRM	STAINLESS STEEL	REFER TO ENLARGED PLAN AND INT. ELEVATIONS FOR MOUNTING LOCATIONS AND HEIGHTS

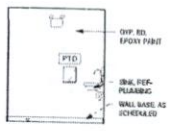
NOTE: ALL TOILET ACCESSORIES TO BE APPROVED BY OWNER PRIOR TO ORDERING



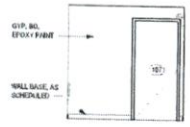
5 PUBLIC RR 107 - A
1/4" = 1'-0"



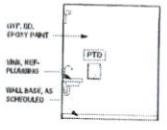
4 PUBLIC RR 107 - B
1/4" = 1'-0"



3 PUBLIC RR 107 - C
1/4" = 1'-0"

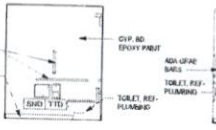


2 PUBLIC RR 107 - D
1/4" = 1'-0"

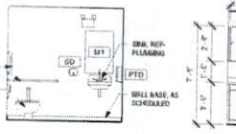


7 STAFF RR 134 - A
1/4" = 1'-0"

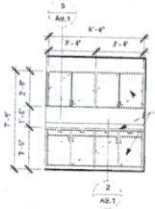
8 STAFF RR 134 - B
1/4" = 1'-0"



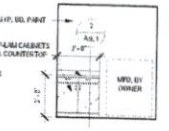
9 STAFF RR 134 - C
1/4" = 1'-0"



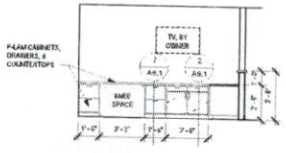
10 STAFF RR 134 - D
1/4" = 1'-0"



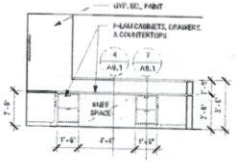
14 STAFF 102 - A
1/4" = 1'-0"



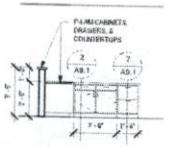
15 STAFF 102 - B
1/4" = 1'-0"



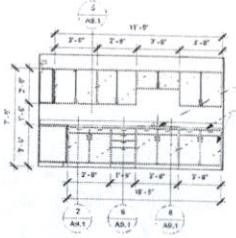
11 RECEPTION 101 - A
1/4" = 1'-0"



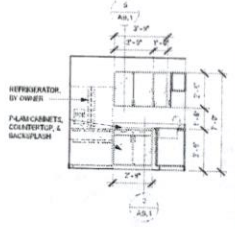
12 RECEPTION 101 - B
1/4" = 1'-0"



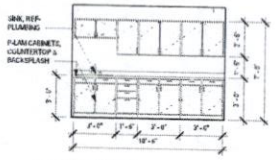
13 RECEPTION 101 - C
1/4" = 1'-0"



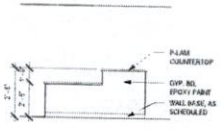
16 STAFF BREAK ROOM 109 - A
1/4" = 1'-0"



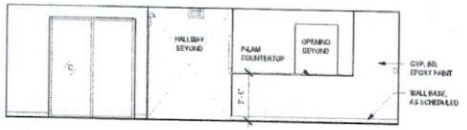
17 STAFF BREAK ROOM 109 - B
1/4" = 1'-0"



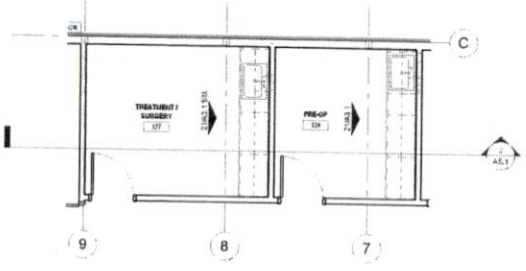
21 PRE-OP 129
1/4" = 1'-0"



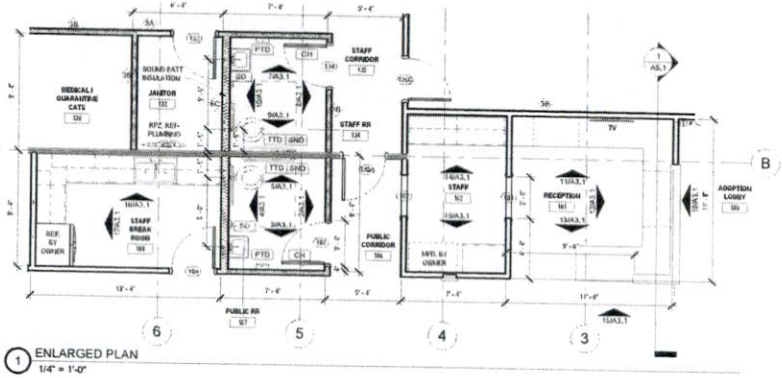
18 RECEPTION 101 - D
1/4" = 1'-0"



19 LOBBY 100 - A
1/4" = 1'-0"



20 ENLARGED PLAN AT 127 / 129
1/4" = 1'-0"



1 ENLARGED PLAN
1/4" = 1'-0"

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REVISION SCHEDULE

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A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

08.11.2023

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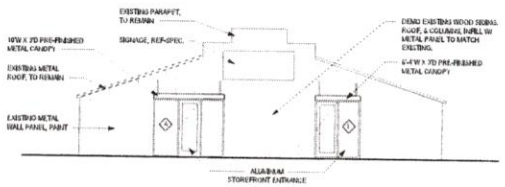
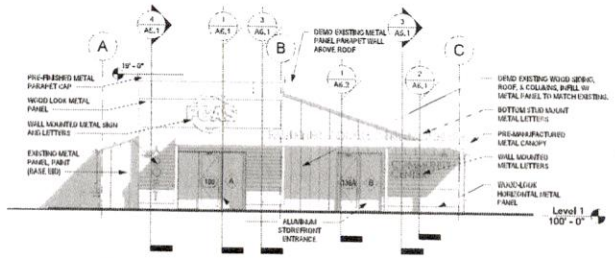
ENLARGED FLOOR PLANS AND ELEVATIONS

A3.1

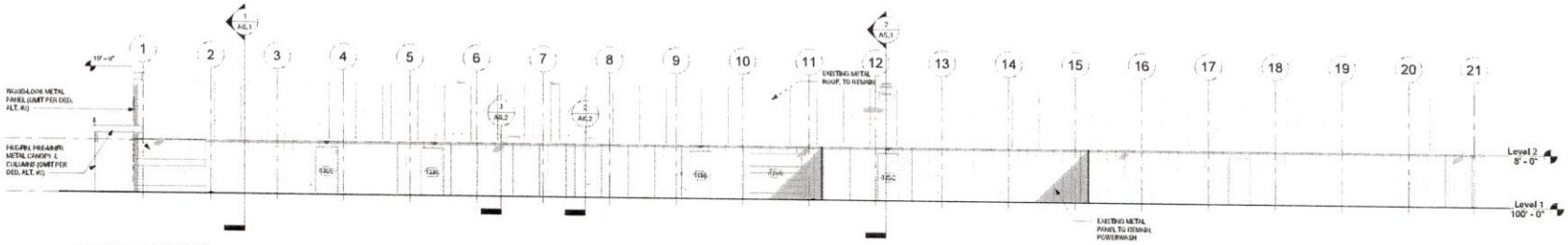


1 EAST ELEVATION - DEDUCTIVE ALTERNATE #2
1/8" = 1'-0"

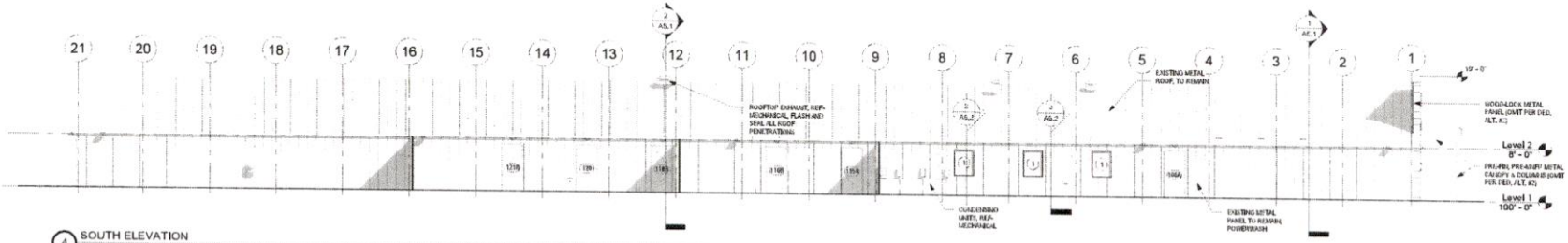
OMIT 2X12 AND 2X4 STUD WALLS W/ WOOD-LOOK METAL PANEL
OMIT COLUMN SUPPORTED CANOPY, REPLACE WITH WALL MUNI CANOPIES AS SHOWN
OMIT DEMOLITION OF EXISTING METAL PANEL PARAPET WALL AT RIDGE



3 EAST ELEVATION - BASE BID
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"



4 SOUTH ELEVATION
1/8" = 1'-0"

DEDUCTIVE ALTERNATE #2

BASE BID: INCLUDES NEW FACADE WITH EXTERIOR 2X12 AND 2X4 STUD WALLS W/ WOOD LOOK METAL PANEL AND COLUMN SUPPORTED CANOPY

DED. ALT. #1: OMIT 2X12 AND 2X4 STUD WALLS W/ WOOD-LOOK METAL PANEL, OMIT COLUMN SUPPORTED CANOPY, REPLACE WITH WALL MUNI CANOPIES AS SHOWN, OMIT DEMOLITION OF EXISTING METAL PANEL PARAPET WALL AT RIDGE

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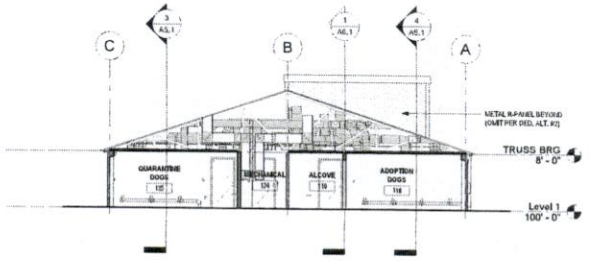
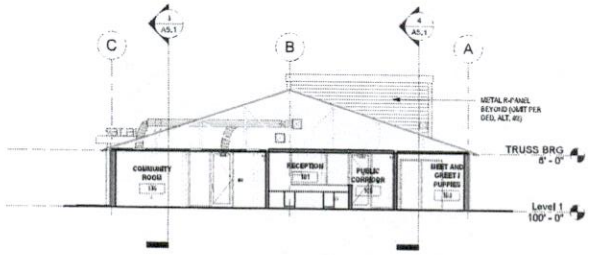
EXTERIOR ELEVATIONS

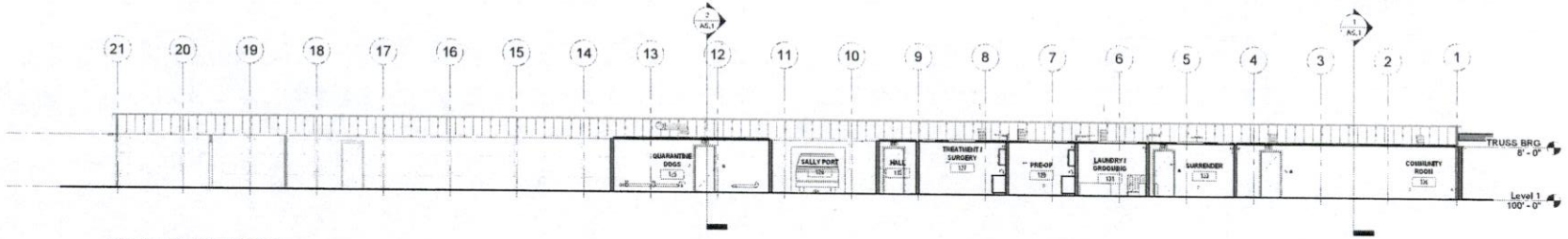
A4.1



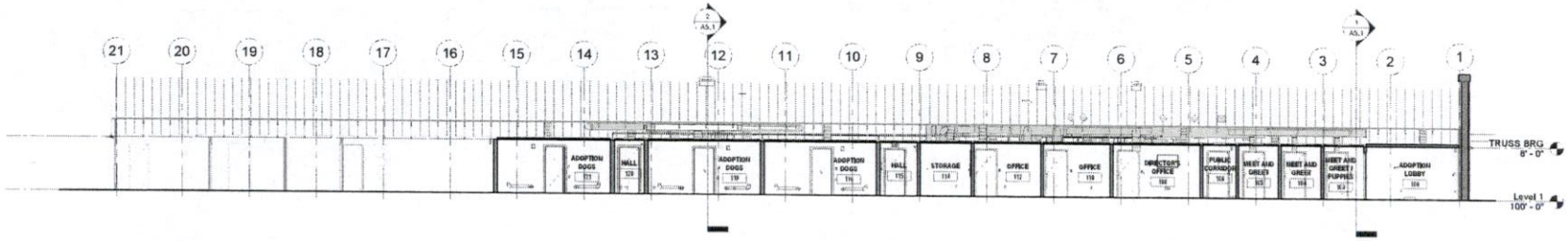
2 N/S BUILDING SECTION 2
1/8" = 1'-0"



1 N/S BUILDING SECTION 1
1/8" = 1'-0"



3 E/W BUILDING SECTION 1
1/8" = 1'-0"



4 E/W BUILDING SECTION 2
1/8" = 1'-0"

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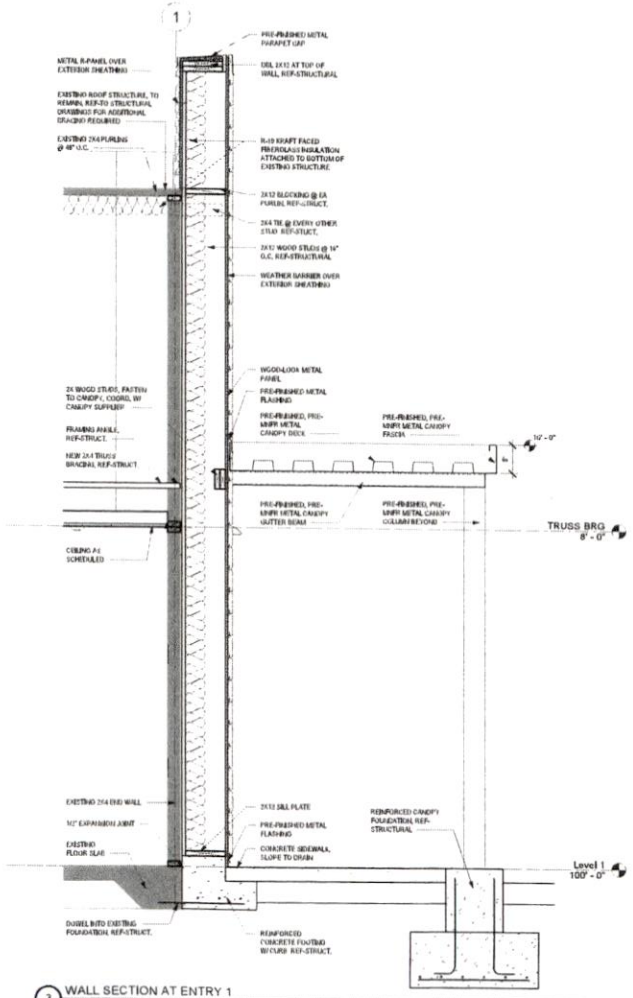
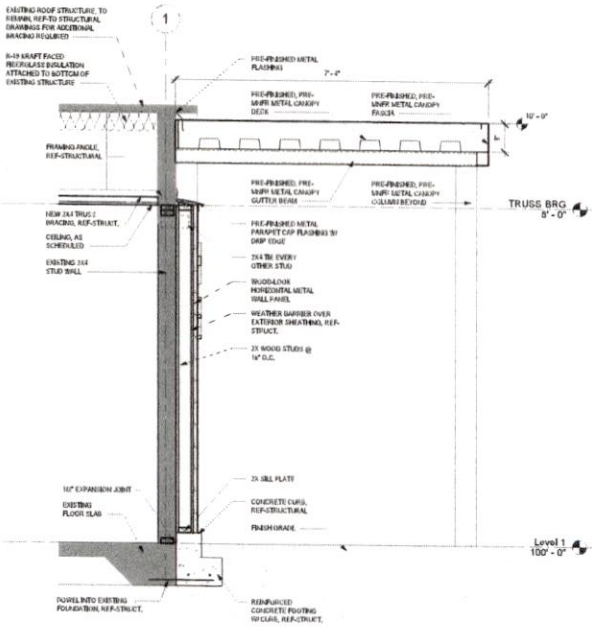
BUILDING SECTIONS

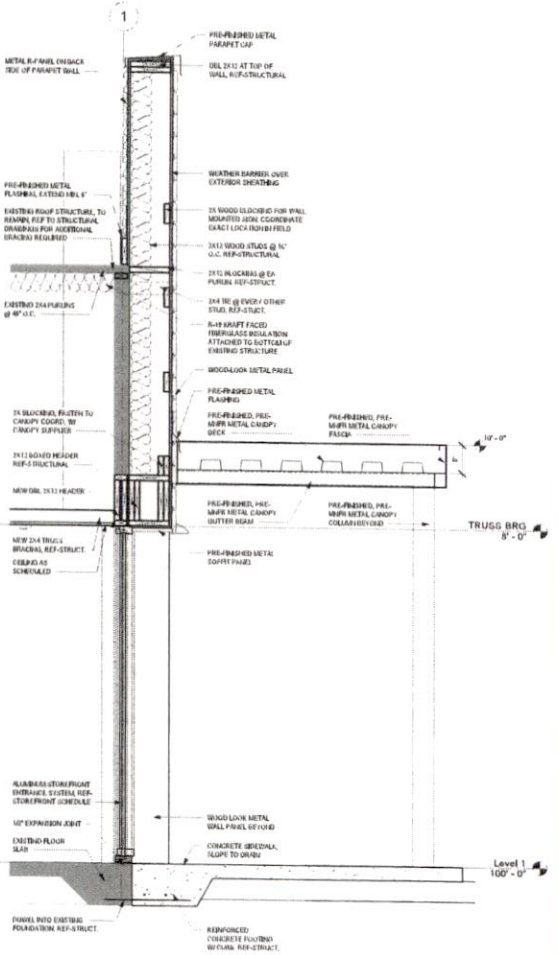
A5.1



3 WALL SECTION AT ENTRY 1
3/4" = 1'-0"



2 WALL SECTION AT ENTRY 2
3/4" = 1'-0"



1 WALL SECTION AT ENTRY
3/4" = 1'-0"

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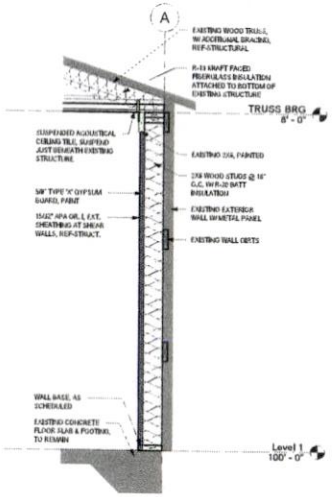
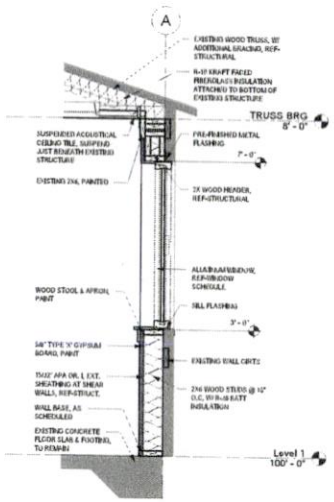
WALL SECTIONS

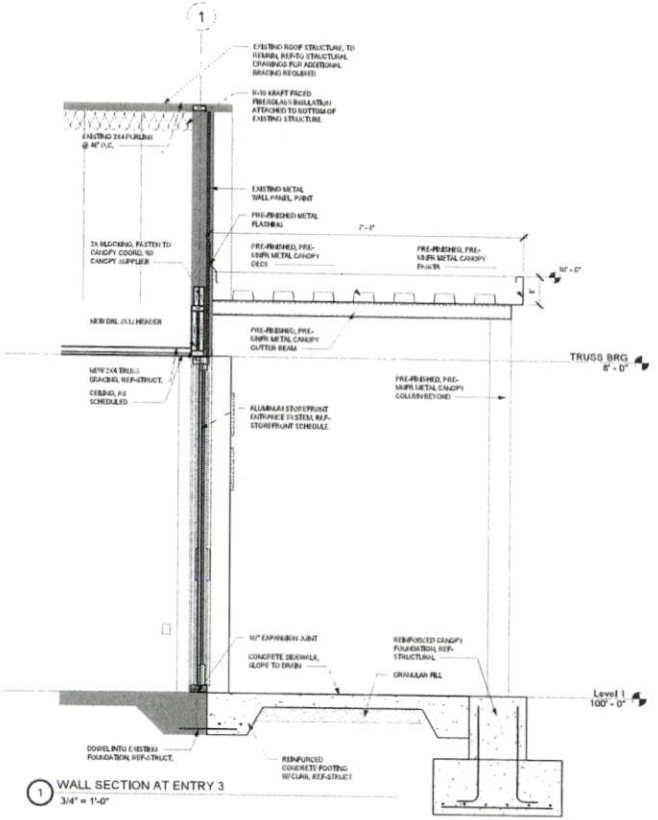
A6.1



3 WALL SECTION, TYP.
3/4" = 1'-0"



2 WALL SECTION WINDOW
3/4" = 1'-0"



1 WALL SECTION AT ENTRY 3
3/4" = 1'-0"

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A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

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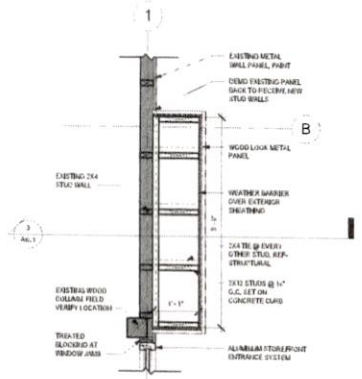
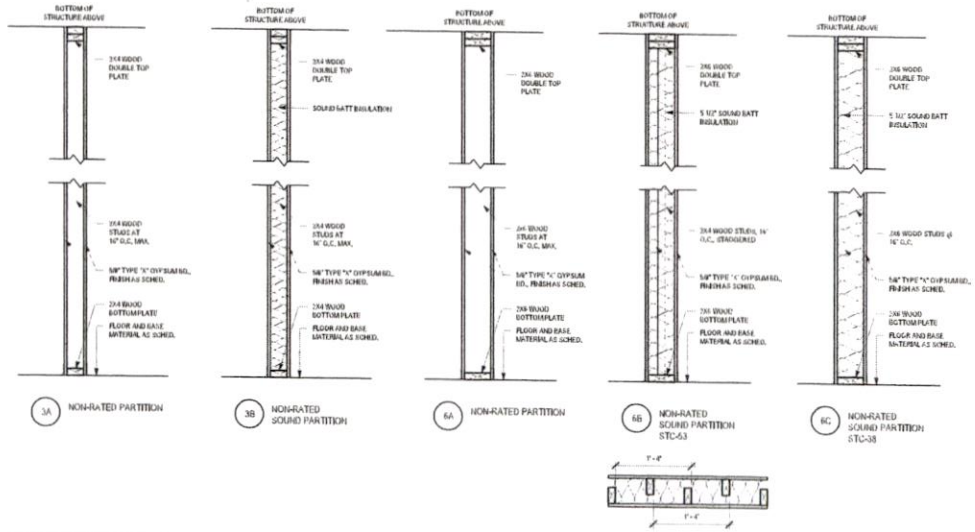
WALL SECTIONS

A6.2



2 ENLARGED PLAN AT ENTRY
3/4" = 1'-0"



1 PARTITION SCHEDULE
1" = 1'-0"

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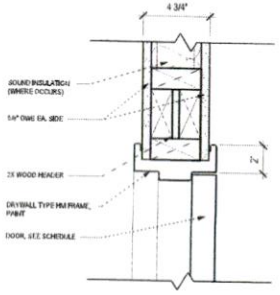
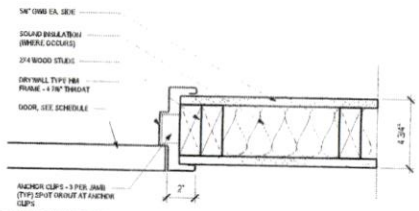
DETAILS

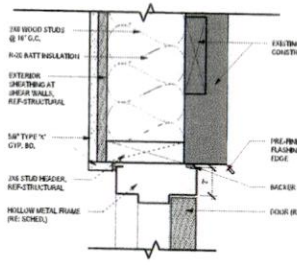
A7.1



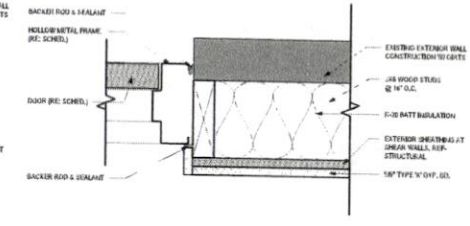
4 HOLLOW METAL DOOR HEAD
3" = 1'-0"



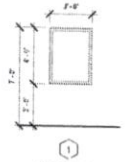
5 HOLLOW METAL DOOR JAMB
3" = 1'-0"



6 EXTERIOR DOOR HEAD
3" = 1'-0"

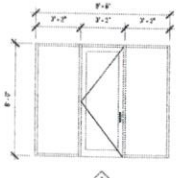


7 EXTERIOR DOOR JAMB
3" = 1'-0"

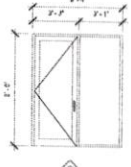


1
ALUMINUM WINDOW THERMALLY BROKEN

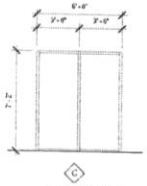
WINDOW LEGEND
1/4" = 1'-0"



A
ALUMINUM STOREFRONT ENTRANCE THERMALLY BROKEN
COORDINATE ALL DIMENSIONS W/ EXISTING CONDITIONS



B
ALUMINUM STOREFRONT ENTRANCE THERMALLY BROKEN
COORDINATE ALL DIMENSIONS W/ EXISTING CONDITIONS



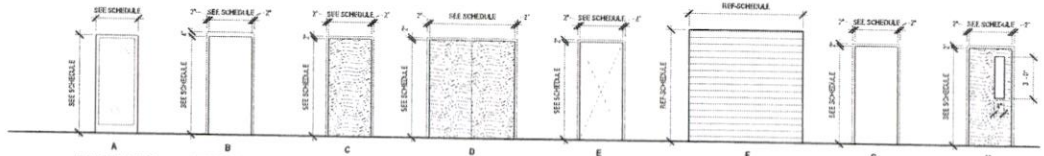
C
ALUMINUM STOREFRONT INTERIOR 1/4" TEMPERED GLASS
COORDINATE ALL DIMENSIONS W/ EXISTING CONDITIONS

STOREFRONT ELEVATIONS
1/4" = 1'-0"

TEMPER GLASS WHERE REQUIRED BY CODE

*MASTER DOOR SCHEDULE

DOOR				FRAME					
NUMBER	TYPE	WD	HGT	TYPE	HEAD	JAMB	SILL	FIRE RATING LABEL	SET NO	NOTES
100	A	3'-0"	7'-10"		—	—			1	
101	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
102	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
103	H	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
104	H	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
105	H	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
106A	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
106B	C	3'-0"	7'-0"		4/A8.1	5/A8.1			5	
107	C	3'-0"	7'-0"		4/A8.1	5/A8.1			4	
108	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
109	C	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
110	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
111	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
112	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
113	C	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
114	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
115A	B	3'-0"	7'-0"		6/A8.1	7/A8.1			5	
115B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			5	
116A	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
116B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
117	G	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
118A	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
118B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
119A	G	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
119B	G	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
120	B	3'-0"	7'-0"		6/A8.1	7/A8.1			5	
121A	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
121B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
122A	G	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
122B	G	3'-0"	7'-0"		4/A8.1	5/A8.1			7	
122C	C	3'-0"	7'-0"		4/A8.1	5/A8.1			7	
123	E	3'-0"	7'-0"		4/A8.1 SIM.	5/A8.1 SIM.			—	
124	G	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
125A	G	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
125B	G	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
125C	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
126A	F	8'-0"	7'-0"		—	—			—	
126B	G	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
127	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
128	C	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
129	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
130	C	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
131	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
132	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
133A	C	3'-0"	7'-0"		4/A8.1	5/A8.1			3	
133B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			6	
134	C	3'-0"	7'-0"		4/A8.1	5/A8.1			4	
135A	C	3'-0"	7'-0"		4/A8.1	5/A8.1			2	
135B	C	3'-0"	7'-0"		4/A8.1	5/A8.1			5	
136A	A	3'-0"	7'-10"		—	—			1	
136B	B	3'-0"	7'-0"		6/A8.1	7/A8.1			5	
136C	C	3'-0"	7'-0"		4/A8.1	5/A8.1			8	



1 DOOR TYPES
1/4" = 1'-0"

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REVISION SCHEDULE

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A REMODEL FOR:

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597 US-65, GREENBRIER, AR 72058

08.11.2023

21054

DOOR SCHEDULES

A8.1

GENERAL PLUMBING NOTES

1. ALL PLUMBING MATERIALS AND INSTALLATION SHALL COMPLY WITH THE ARKANSAS STATE PLUMBING CODE, LATEST EDITION.
2. INSTALL ALL DOMESTIC HOT AND COLD WATER PIPING AS PER STATE AND LOCAL CODES.
3. INSULATE ABOVE GRADE CONCEALED DOMESTIC HOT AND COLD WATER LINES PER SPECIFICATIONS, SECTION 15082.
4. PROVIDE MAIN DOMESTIC COLD WATER LINE BUILDING SHUT OFF VALVE AT ENTRY INTO THE BUILDING.
5. INSTALL DEEP SEAL TRAPS AT ALL DRAIN CONNECTIONS.
6. COORDINATE UNDER SLAB PIPING WITH COLUMNS AND FOOTINGS.
7. MINIMUM DEPTH OF COVER FOR WATER LINES IS 30 IN.
8. BURY YELLOW #10 THWN COPPER TRACER WIRE IN TRENCH WITH ALL UNDER GROUND PLASTIC SERVICES. LEAVE ENDS EXPOSED FOR FUTURE LOCATION.
9. VERIFY LOCATION AND SIZE OF EXISTING SITE UTILITIES WITH UTILITY AUTHORITIES PRIOR TO CONSTRUCTION.
10. ALL IMPROVEMENTS (PAVEMENTS, CURB AND GUTTER, SOD, ETC.) SHALL BE REPLACED BY GENERAL CONTRACTOR TO PRECONSTRUCTION CONDITION.
11. WHERE FIRE RATED PARTITIONS OR FLOORS OCCUR, ALL FLOOR TO FLOOR AND ROOM TO ROOM PENETRATIONS SHALL BE PROPERLY FIRE SEALED WITH U.L. LISTED AND CLASSIFIED FIRE CAULK OR FIRE SEALED BY USING AN APPROVED FIRE SEAL SLEEVE METHOD WHICH MEETS U.L. REQUIREMENTS. ALL OTHER PENETRATIONS OF RATED CHASES OR WALLS SHALL BE PROPERLY FIRE SEALED AND WHERE EXTENDING THROUGH SUCH RATED SURFACE SHALL BE A RATED FIRE STOP PENETRATION. ALL FIRE STOPPING, FIRE CAULKING AND FIRE SLEEVING OR OTHER FIRE SEALING SHALL BE ACCEPTABLE BY THE LOCAL AUTHORITIES AND SHALL BEAR THE U.L. SEAL.
12. VERIFY LOCATION, INVERT AND SIZE OF ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
13. PROVIDE CITY APPROVED REDUCED PRESSURE BACKFLOW PREVENTERS ON ALL DOMESTIC SERVICE LINES CONNECTED TO ALL DEVICES, APPURTENANCES, APPLIANCES AND APPARATUS INTENDED TO SERVE SOME SPECIAL FUNCTION, SUCH AS STERILIZATION, DISTILLATION, PROCESSING, COOLING OR STORAGE OF FOODS OR ICE. WATER PUMPS, FILTERS, SOFTENERS, TANKS AND ALL OTHER APPLIANCES AND DEVICES THAT HANDLE OR TREAT POTABLE WATER SHALL BE PROTECTED AGAINST CONTAMINATION WITH SIMILAR BACKFLOW PREVENTER.
14. ALL MECHANICAL INSTALLATIONS SHALL CONFORM TO THE LATEST ACCEPTABLE ARKANSAS STATE MECHANICAL CODE.
15. ALL WATER AND SEWER LINE MATERIALS AND INSTALLATION METHODS SHALL BE IN ACCORDANCE WITH FAULKNER COUNTY STANDARD SPECIFICATIONS FOR PUBLIC WORK CONSTRUCTION AS WELL AS THE ARKANSAS STATE PLUMBING CODE
16. HORIZONTAL BRANCHES SHALL CONNECT TO HORIZONTAL STACK OFFSETS AND TO THE BASES OF STACKS AT A POINT LOCATED NOT LESS THAN 10 PIPE DIAMETERS DOWNSTREAM FROM THE STACK.
17. CONTRACTOR SHALL PROVIDE "AS BUILT" DRAWINGS OF ALL PLUMBING AND PIPING SYSTEMS UPON COMPLETION OF THE PROJECT.
18. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS, THE BUILDING SITE, AND OTHER INFORMATION PRESENTED FOR THE CONSTRUCTION OF THIS PROJECT. IF CONTRACTOR HAS QUESTIONS REGARDING ASSEMBLIES OR LAYOUTS WITH THE PROJECT HE SHALL MAKE THEM KNOWN TO THE ENGINEER IN WRITING PRIOR TO BIDDING THE PROJECT. CLAIMS MADE SUBSEQUENT TO THE BID WILL NOT BE ACCEPTED IF IT IS DETERMINED THAT PROPER FAMILIARIZATION COULD HAVE AVOIDED SUCH CLAIM.
19. MECHANICAL CONTRACTOR SHALL COORDINATE INSTALLATION PLUMBING SITE UTILITIES WITH SITE WORK OF OTHER TRADES. IN INSTANCES WHERE COORDINATION REQUIRES DEVIATION FROM PLANS MECHANICAL CONTRACTOR SHALL NOTIFY ENGINEER OF PROPOSED CHANGES.
20. COMPLY WITH STATE OF ARKANSAS ADOPTED ADA ACCESSIBLE GUIDELINES IN REGARD TO ACCESSIBLE FEATURES
21. PROVIDE DRIP PAN FOR ENTIRE LENGTH OF PIPE WHERE PIPE MUST BE INSTALLED ABOVE ELECTRICAL EQUIPMENT.
22. DO NOT ROUTE GROUPS OF CONDUIT, PIPES, AND SLEEVES ABOVE FOOTINGS UNLESS NOTED TO DO SO. IF CONFLICT OCCURS, CONSULT ARCHITECT/ENGINEER.
23. LIMIT WIDTH OF CONDUIT, PIPES AND SLEEVES NOT TO EXCEED 3 FEET IN WIDTH AS IT PASSES UNDER WALL FOOTING. AS HIGH AS POSSIBLE, ALIGN THE ITEMS PERPENDICULAR TO THE FOOTING AS IT PASSES BELOW FOOTING.
24. PROVIDE A MINIMUM SPACING OF 2 FEET BETWEEN CONDUIT OR PIPE GROUPS AS ITEMS PASS UNDER FOOTINGS
25. DO NOT ROUTE CONDUITS, PIPE OR SLEEVES UNDER COLUMN FOOTINGS OR PAD FOOTINGS
26. MECHANICAL CONTRACTOR MUST REVIEW ALL ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES AND FLOOR DRAINS/SINKS. IF PLUMBING FIXTURES OR DRAINS ARE SHOWN ON THE ARCHITECTURAL DRAWINGS THEY MUST BE INCLUDED IN THE CONTRACT EVEN IF NOT SHOWN ON THE MECHANICAL DRAWINGS.
27. WHERE THE BUILDING SEWER IS INSTALLED WITHIN 10 FEET OF THE WATER SERVICE THE WATER SERVICE PIPE SHALL BE A MINIMUM OF 12 INCHES ABOVE THE TOP OF THE HIGHEST POINT OF THE SEWER. REQUIRED SEPARATION DISTANCE SHALL NOT APPLY WHERE A WATER SERVICE PIPE CROSSES A SEWER PIPE IS SLEEVED 10 FEET HORIZONTALLY FROM THE SEWER PIPE CENTERLINE ON BOTH SIDES OF SUCH PIPE CROSSINGS.
28. DO NOT SCALE DIRECTLY FROM THE PLUMBING DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL INFORMATION.
29. ALL PLUMBING SANITARY WASTE AND VENT PIPING INSTALLED IN FIRE RATED WALLS OR PLENUM RETURN AIR SYSTEMS SHALL BE CAST IRON. REFER TO ARCHITECTURAL PLANS FOR LIFE SAFETY INFORMATION.

PLUMBING LEGEND

———	SANITARY WASTE PIPING
——— V ———	VENT PIPING
——— CW ———	COLD WATER PIPING
——— HW ———	HOT WATER PIPING
——— HWR ———	HOT WATER RETURN PIPING
——— BV ———	BALL VALVE
——— CV ———	CHECK VALVE
⅜	WATER HAMMER ARRESTOR (SIZE PER MANUFACTURER'S RECOMMENDED FIXTURE UNIT CAPACITY)
1	REFER TO KEYED NOTES
P-1	PLUMBING FIXTURE NUMBER (REFER TO PLUMBING FIXTURE SCHEDULE)
COTG	CLEAN OUT TO GRADE
FD	FLOOR DRAIN
FS	FLOOR SINK
FPHB	FREEZE PROOF HOSE BIB
HB	HOSE BIB
ADA	ACCESSIBLE
HD	HUB DRAIN
WCO	WALL CLEAN OUT
WH	WATER HEATER

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	MANUFACTURER	MODEL	MOUNT	CONNECTION CW	CONNECTION HW	CONNECTION SS	REMARKS / ACCESSORIES
P-1	ACCESSIBLE WATER CLOSET	AMERICAN STANDARD	215AA.104	FLOOR	1/2	-	4	WHITE VITREOUS CHINA, 1.0GPF CONSUMPTION, ELONGATED BOWL, TANK TYPE TOILET. PROVIDE ANGLE SHUT-OFF, OLSONITE #10 SCC OPEN SEAT AND BOLT CAPS. INSTALL 17 IN. FROM TOP OF SEAT TO FLOOR.
P-2	ACCESSIBLE LAVATORY	AMERICAN STANDARD	0355.012	WALL	1/2	1/2	1 1/4	WHITE VITREOUS CHINA LAVATORY WITH FAUCET LEDGE AND BACKSPLASH. PROVIDE AMERICAN STANDARD RELIANT 7305.050 SINGLE LEVER, 0.5 GPM, FAUCET WITH EXTRA LONG HANDLE, BASE PLATE, GRID DRAIN, MADE #520 WALL CARRIER, HANDLEAV MOLDED DRAIN & SUPPLY INSULATION KIT. MOUNT 34 IN. A.F.F. TO TOP OF RIM. PROVIDE WATTS LMMV UNDER COUNTER THERMOSTATIC MIXING VALVE. SET WATER TEMPERATURE AT 105 DEGREES F.
P-3	ACCESSIBLE DOUBLE STAINLESS STEEL SINK	JUST MFG.	DL-ADA-1933-A-GR	COUNTER	1/2	1/2	1 1/2	DOUBLE COMPARTMENT, STAINLESS STEEL SINK (19X33 IN. 1/2 I.D.) PROVIDED BY MECHANICAL CONTRACTOR. PROVIDE JUST J-1174-KS GOOSENECK FAUCET WITH WRIST BLADES AND JUST J-35 DRAIN WITH GRUMID CUP STRAINER. CENTER, REAR DRAIN LOCATION. MECHANICAL CONTRACTOR TO PROVIDE ALL MATERIALS TO MAKE FINAL CONNECTIONS, INCLUDING TAIL PIECE AND ANGLE STOP VALVES. PROVIDE PIPE INSULATION. SINK MUST BE ADA COMPLIANT. MOUNT 34 IN. A.F.F. TO TOP OF RIM. PROVIDE WATTS LMMV THERMOSTATIC MIXING VALVE. SET WATER TEMPERATURE AT 105 DEGREES F.
P-4	STAINLESS STEEL SINK	JUST MFG.	SL-2131-A-GR	COUNTER	1/2	1/2	1 1/2	SINGLE COMPARTMENT STAINLESS STEEL SINK (16X20X9 I.D.) PROVIDE JUST J-1174-KS GOOSENECK FAUCET WITH WRIST BLADES & JUST J-35 DRAIN WITH GRUMB CUP STRAINER. PROVIDE WATTS LMMV THERMOSTATIC MIXING VALVE. SET WATER TEMPERATURE AT 105 DEGREES F.
P-5	SERVICE SINK	FIAT	TSB-100	FLOOR	1/2	1/2	3	TERRAZZO 24X24X13 SERVICE SINK. PROVIDE T-45 BRASS B-0665-BSTP CHROME PLATED FAUCET WITH INTEGRAL SERVICE STOPS, ETEMA CARTRIDGES WITH SPRING CHECKS, 10" BRACE, AND B-0963 VACUUM BREAKER, MAT K-832-AA HOSE AND BRACKET, 3 IN. GRID DRAIN AND STRAINER, 3 MOP HOLDER, AND TMG STAINLESS STEEL WALL GUARDS. MOUNT MOP HOLDER AT 60 IN. A.F.F.
P-6	GROOMING TUB & HAIR TRAP	OWNER PROVIDED	-	FLOOR	3/4	3/4	3	PROVIDED BY OWNER AND INSTALLED BY MECHANICAL CONTRACTOR. PLUMBING CONNECTIONS AND ALL ASSOCIATED TRIM BY MECHANICAL CONTRACTOR. PROVIDE T-45 BRASS B-2271-01-XP PRE-RINSE UNIT WITH B-0156 ADD-ON FAUCET, CHROME PLATED WITH CONTINUOUS PRESSURE VACUUM BREAKER, CERAMIC CARTRIDGES WITH CHECK VALVES AND BRACKET.
P-7	ICE MAKER WALL BOX	GUY GRAY	DB-1875	WALL	1/2	-	-	WALL MOUNTED ICE MAKER HOOK UP WITH ANGLE VALVE.
P-8	HOSE BIB	WOODFORD	26	WALL	3/4	3/4	-	WATER SUPPLY HOSE BIB FOR USE WITH COMMERCIAL TYPE WASHING MACHINE CONNECTION. PROVIDE VACUUM BREAKER, BACKFLOW PROTECTION AND AUTOMATIC DRAIN. FIELD VERIFY ROUGH IN DIMENSIONS. INSTALL 36" A.F.F. PROVIDE WITH METAL WHEEL HANDLE.
P-9	HOSE BIB	WOODFORD	122	WALL	3/4	3/4	-	HOT AND COLD WALL FAUCET WITH BACKFLOW PROTECTION AND INTEGRAL CHECKS. PROVIDE WITH POWDER COATED DIE CAST ALUMINUM HANDLES. FIELD VERIFY ROUGH IN DIMENSIONS. INSTALL 18" A.F.F.
P-10	FREEZE PROOF HOSE BIBB	WOODFORD	B67	WALL	3/4	-	-	FREEZE PROOF HOSE BIBB IN LOCKING BOX. PROVIDE VACUUM BREAKER AND BACKFLOW PREVENTION.
P-11	ELECTRIC WATER HEATER	RHEEM	EL052-TB	FLOOR	3/4	3/4	-	COMMERCIAL ELECTRIC WATER HEATER. 50 GALLON TANK CAPACITY. 240 VOLTS/ 25 AMP. 6000 WATTS. SET TEMPERATURE AT 115 DEGREES F. PROVIDE MANUFACTURER'S CATCH PAN AND SERVICE VALVE KIT.
P-12	WATER HAMMER ARRESTOR	MADE BELLOWS	SHOKSTOP	-	*	*	-	*SIZE WATER HAMMER ARRESTOR PER MANUFACTURER'S RECOMMENDATIONS. ALL STAINLESS STEEL CONSTRUCTION WITH WELDED WELDED BELLOWS. PROVIDE BALL VALVE FOR SHUT-OFF.
P-13	FLOOR SINK	MADE	9144	FLOOR	-	-	*	*CAST IRON FLOOR SINK WITH CAST IRON HINGED TOP. SIZE AS INDICATED ON PLANS OR MATCH WASTE LINE SIZE WHEN NOT INDICATED. PROVIDE FULL GRATE AND DEEP SEAL TRAP. PROVIDE APPROVED TRAP GUARD. PROVIDE ALUMINUM DOME STRAINER. ALUMINUM SEDIMENT BUCKET AND HEAVY DUTY TOP.
P-14	FLOOR SINK	MADE	9110	FLOOR	-	-	*	*CAST IRON FLOOR SINK WITH NICKEL BRONZE GRATE. SIZE AS INDICATED ON PLANS OR MATCH WASTE LINE SIZE WHEN NOT INDICATED. PROVIDE 3/4 GRATE AND DEEP SEAL TRAP.
P-15	LAUNDRY TRENCH	JAY R. SMITH	50-P-3615	FLOOR	-	-	4	FABRICATED 42" x 12" x 14" DEEP 304 STAINLESS STEEL LINT TROUGH WITH REMOVABLE PRIMARY AND SECONDARY STAINLESS STEEL FILTER SCREENS. PROVIDE WITH 4 INCH NO-HUB BOTTOM OUTLET AND STAINLESS STEEL DOME BOTTOM STRAINER. PROVIDE WITH ANCHOR TABS.
P-16	WALL CLEAN OUT	MADE	8550-R	WALL	-	-	*	*SIZE TO MATCH WASTE LINE, MAXIMUM TO 4 INCHES. PROVIDE MADE 8304 STAINLESS STEEL WALL ACCESS COVER.
P-17	CLEAN OUT TO GRADE	MADE	4000Z	TO GRADE	-	-	*	*SIZE TO MATCH WASTE LINE MAXIMUM TO 4 INCHES. PROVIDE HEAVY DUTY TRACTOR TYPE COVER.
P-18	HUB DRAIN	-	PVC REDUCER	ABOVE FLOOR	-	-	2	PVC REDUCER WITH TRAP. PROVIDE TRAP GUARD PROTECTION. REDUCER SHALL BE WITHIN TWO PIPE SIZES OF CONNECTED SANITARY PIPING
P-19	GARBAGE DISPOSER	IN-SINK-ERATOR	BADGER 5	UNDER COUNTER	-	-	1 1/4	1/2 HP GARBAGE DISPOSAL. PROVIDE ELECTRICAL CORD

NOTES:
1. COORDINATE COUNTER TOP FIXTURE INSTALLATION WITH MILLWORK.
2. INSTALL ACCESSIBLE PUSH VALVE TO THE ACCESSIBLE SIDE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE APPROVED TRAP GUARDS ON ALL FLOOR SINKS AND FLOOR DRAINS.

CIRCULATING PUMP SCHEDULE

MARK	MFG	MODEL	GPM	HEAD (FT)	VLT / PH / HZ	WATTS	REMARKS / ACCESSORIES
CP-1	BELL & GOSSETT	PL-36	5	8	115 / 1 / 60	1/6	1, 2, 3

ACCESSORIES:
1. BRONZE CONSTRUCTION FOR HOT WATER RECIRCULATION.
2. PROVIDE AQUASTAT.
3. PLUMBING CONTRACTOR TO PROVIDE TC-1 AUTOMATIC TIMER.

NOTES:
REFER TO SHEET P1.1 FOR GENERAL NOTES, LEGEND & SCHEDULES.
REFER TO SHEET P2.1 FOR PLUMBING PLAN & KEYED NOTES.
REFER TO SHEET P3.1 FOR PLUMBING DETAILS.
REFER TO SHEET P4.1 FOR PLUMBING RISER.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS
STEVEN M. McCONNELL
REGISTERED PROFESSIONAL ENGINEER
No. 11840
8-11-2023

08.11.2023

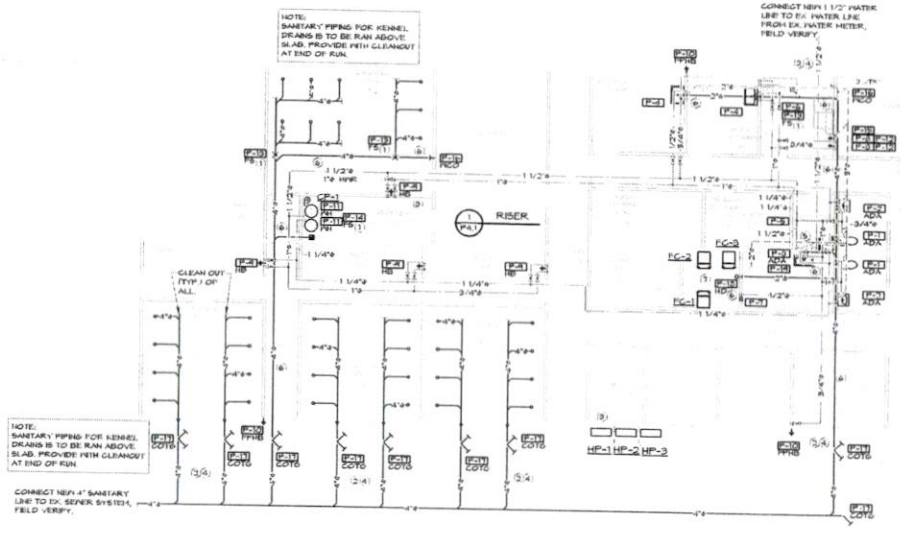
21054

GENERAL NOTES, LEGEND & SCHEDULES

P1.1

PLUMBING KEYED NOTES

1. INSTALL AN APPROVED TRAP GUARD PRODUCT THAT CONFORMS TO NSF-14, CSA B602-RR AND CSA B79-M.
2. COORDINATE UNDERSLAB PIPING WITH STRUCTURAL FOOTINGS. REFER TO STRUCTURAL PLANS FOR LOCATIONS AND SIZES OF FOOTINGS.
3. MECHANICAL CONTRACTOR SHALL NOT INSTALL ANY WATER LINES ABOVE ELECTRICAL PANELS. REFER TO ELECTRICAL PLANS FOR PANEL LOCATIONS.
4. IDENTIFY OUTDOOR UNDERGROUND LINES WITH CONTINUOUS STRIP OF PLASTIC UTILITY MARKER TAPE. SHOULD STATE AT REGULAR INTERVALS: "CAUTION (STATE) UTILITY) PIPE BELOW". INSTALL TAPE ONE FOOT DIRECTLY ABOVE PIPE BEFORE BACKFILLING TO GRADE.
5. MECHANICAL CONTRACTOR TO PROVIDE REDUCED PRESSURE BACKFLOW PREVENTER (RPZ) AND PRESSURE REDUCING VALVE (IF REQUIRED) AT THE DOMESTIC WATER SERVICE ENTRANCE IN BUILDING. THERE SHALL BE NO TEES OR TEES PRIOR TO THE RPZ. PROVIDE WATTS MODEL LF909 OR APPROVED EQUAL RPZ. REFER TO 2/P3.1 FOR DETAIL.
6. SAW CUT EXISTING SLAB AS NEEDED FOR NEW SANITARY. COORDINATE ALL REPAIRS WITH GENERAL CONTRACTOR.
7. ROUTE CONDENSATE TO THE NEAREST DRAIN.



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

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A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER
No. 11640
STEVEN M. McCONNELL
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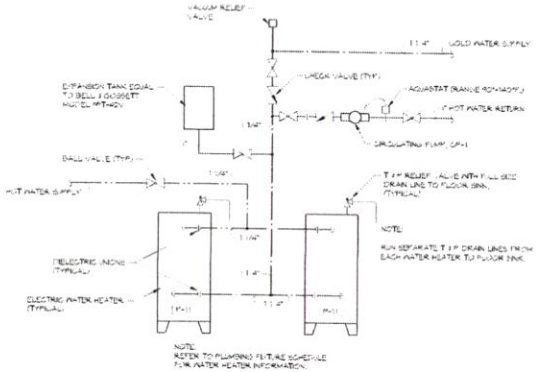
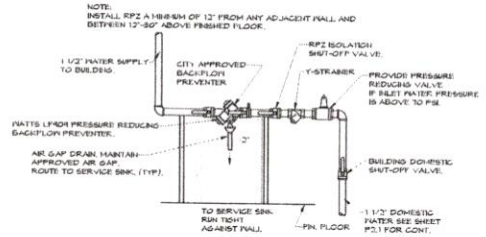
PLUMBING PLAN & KEYED NOTES

P2.1



1 WATER HEATER DETAIL
NTS



2 DOMESTIC RPZ DETAIL
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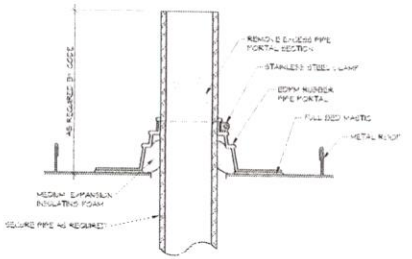
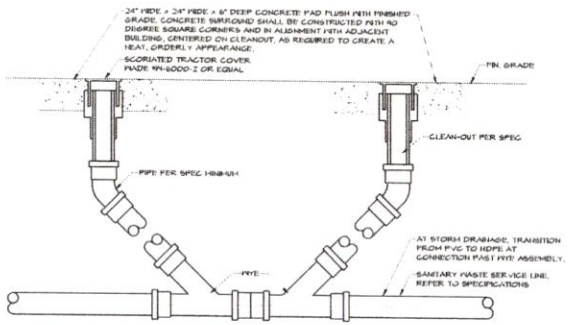
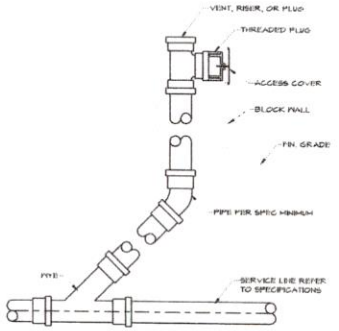


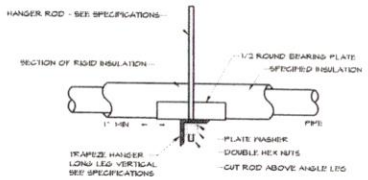
3 VENT THRU ROOF DETAIL
NTS



4 DOUBLE CLEAN OUT TO GRADE
NTS

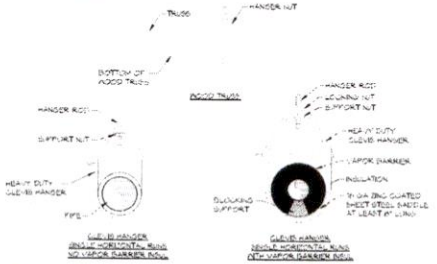


5 WALL CLEAN OUT DETAIL
NTS

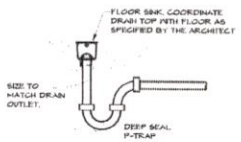


6 TYP. PIPE HANGER DETAIL-TRAPEZE
NTS

HANGER ROD SCHEDULE			
PIPE SIZE	ROD SIZE	PIPE SIZE	ROD SIZE
3/4" TO 2"	3/8" DIA.	4" THRU 6"	5/8" DIA.
2 1/2" TO 3"	1/2" DIA.	8" THRU 12"	7/8" DIA.



7 TYP. CLEVIS PIPE HANGER DETAIL
NTS



9 FLOOR SINK DETAIL
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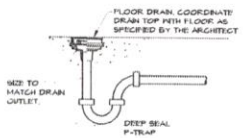

8 FLOOR DRAIN DETAIL
NTS

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REVISION SCHEDULE

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597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER
No. 11640
STEVEN M. McCONNELL
8-11-2023

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PLUMBING DETAILS

P3.1

1 RISER
NTS

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-

PLUMBING RISERS

P4.1

GENERAL HVAC NOTES

1. COORDINATE GRILLE LOCATIONS WITH LIGHT FIXTURES, SPRINKLERS AND CEILING GRID.
2. INDICATED DUCT SIZES ARE NET FREE AREA.
3. ADJUST ALL AIR QUANTITIES AS SHOWN ON THE PLANS AFTER COMPLETION OF THE JOB.
4. INSULATE THE SUPPLY GRILLE TOPS, RETURN AIR GRILLE PLENUMS AND EXHAUST AIR PLENUMS WITH 2 IN., 3/4 LB DENSITY FOIL BACKED INSULATION.
5. FIRE AND/OR SMOKE DAMPERS ARE INDICATED ON MECHANICAL DRAWINGS. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY LOCATIONS AND FIRE RATING REQUIREMENTS WHERE ANY DUCT PASSES THROUGH A PARTITION. REFER TO ARCHITECTURAL PLANS FOR LOCATION OF ALL FIRE AND SMOKE PARTITIONS. VERIFY REQUIRED DAMPER ASSEMBLY IN ALL DUCTS PENETRATING THESE WALLS PER ALL STATE AND LOCAL CODES.
6. EXTERNALLY INSULATE ALL ROUND SUPPLY AND RETURN DUCT. INTERNALLY INSULATE ALL RECTANGULAR SUPPLY AND RETURN DUCT PER MECHANICAL CODE. ATTACH THE INTERNAL INSULATION TO THE DUCT WITH APPROVED ADHESIVE AND WELDED FASTENERS.
7. MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCTWORK WITH FIELD CONDITIONS AND PROVIDE ALL OFFSETS, BENDS, TRANSITIONS AND SPECIAL FITTINGS FOR A COMPLETE INSTALLATION OF THE SYSTEMS.
8. USE FLANGED AND GASKETED DUCT CONSTRUCTION FOR RECTANGULAR DUCT CONVEYING AIR AT STATIC PRESSURES ABOVE 2 IN. P.G. USE LOCKED SEAM SPIRAL DUCT CONSTRUCTION FOR ROUND DUCT CONVEYING AIR AT STATIC PRESSURES ABOVE 2 IN. P.G. ALL HIGH PRESSURE DUCT CONSTRUCTION SHALL ADHERE TO SMACNA DUCT CONSTRUCTION STANDARDS (LATEST EDITION) FOR DUCT CLASSIFICATION UP TO 5 IN. P.G.
9. INTERIOR OF ALL DUCT PLENUMS VISIBLE THROUGH GRILLE SHALL BE PAINTED MATTE BLACK PRIOR TO INSTALLATION.
10. INTER-LOCK EXHAUST FANS WITH LIGHT SWITCHES. REFER TO ELECTRICAL PLANS.
11. PAINT ALL SUPPLY AND RETURN AIR GRILLES NOT SPECIFIED AS PRE-FINISHED, TO ARCHITECT'S SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
12. MAINTAIN 10 FT. MINIMUM CLEARANCE BETWEEN FRESH AIR INTAKES AND ALL EXHAUST OUTLETS, GAS FLUES AND PLUMBING VENTS.
13. INSTALL VOLUME CONTROL DAMPERS IN SUPPLY, RETURN, EXHAUST AND FRESH AIR BRANCH DUCT RUNS.
14. RECIRCULATING AIR SYSTEMS WITH A FAN CAPACITY GREATER THAN 2,000 NOMINAL CFM SHALL AUTOMATICALLY SHUT DOWN BY MEANS OF AN APPROVED SMOKE DETECTOR PLACED IN THE RETURN AIR STREAM PRIOR TO ANY EXHAUSTING FROM THE BUILDING OR MIXING WITH FRESH AIR MAKEUP. ALL CONTROLS SHALL BE LISTED. UPON ACTIVATION OF THE SAFETY CONTROL, THE SYSTEM SHALL NOT RESTART UNTIL THE SAFETY CONTROL IS MANUALLY RESET.
15. ALL MECHANICAL INSTALLATIONS SHALL CONFORM TO THE LATEST ACCEPTABLE MECHANICAL CODE.
16. SEAL ALL DUCT SEAMS WITH HARDCAST IRON GRIP 601 SEALANT SYSTEM OR AN APPROVED EQUAL. DUCT TAPE, WHETHER LISTED OR NOT (ML) NOT BE ACCEPTED.
17. FABRICATE AND INSTALL ALL GALVANIZED DUCT SYSTEMS TO SMACNA DUCT CONSTRUCTION STANDARDS, LATEST EDITION, AND MECHANICAL CODE.
18. MECHANICAL CONTRACTOR SHALL REFER TO THE FOOD SERVICE DRAWINGS AND PROVIDE ALL REQUIRED MECHANICAL FOOD SERVICE EQUIPMENT CONNECTIONS.
19. FABRICATE AND INSTALL AUXILIARY CONDENSATE DRAIN PAN UNDER ENTIRE AIR HANDLER WITH CONDENSATE PAN SWITCH INTERLOCKED WITH AIR HANDLER FOR SHUT DOWN WHEN CONDENSATE OVER FLOW IS SENSED.
20. EVERY ATTIC OR FURRED SPACE IN WHICH MECHANICAL EQUIPMENT IS INSTALLED SHALL BE ACCESSIBLE BY AN OPENING AND PASSAGEWAY AS LARGE AS THE LARGEST PIECE OF THE EQUIPMENT AND IN NO CASE LESS THAN 22 X 36 INCHES CONTINUOUS FROM THE OPENING TO THE EQUIPMENT AND ITS CONTROLS. THE OPENING TO THE PASSAGEWAY SHALL BE LOCATED NOT MORE THAN 20 FT. FROM THE EQUIPMENT MEASURED ALONG THE CENTERLINE OF SUCH PASSAGEWAY. EVERY PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE SOLID CONTINUOUS FLOORING NOT LESS THAN 24 IN WIDE FROM THE EQUIPMENT. ON THE CONTROL SIDE AND OTHER SIDES WHERE ACCESS IS NECESSARY FOR SERVICING THE EQUIPMENT, A LEVEL PLATFORM EXTENDING A MINIMUM 30 IN. FROM THE EDGE OF THE EQUIPMENT WITH A 36 IN. HIGH CLEAR WORKING SPACE SHALL BE PROVIDED. TOP OR BOTTOM SERVICE EQUIPMENT SHALL HAVE A FULL CLEARANCE ABOVE OR BELOW THE UNIT FOR COMPONENT REMOVAL.
21. SMOKE DETECTOR PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR.
22. SUPPLY AIR SYSTEMS AND RETURN AIR SYSTEMS INSTALLED IN AN ATTIC, VENTILATED CRAWL SPACE OR OTHER NON-CONDITIONED AREA SHALL BE INSULATED.
23. SPRINKLER CONTRACTOR TO BE RESPONSIBLE FOR ROUTING ALL SPRINKLER PIPING TO AVOID ALL UNCONDITIONED SPACES
24. DO NOT SCALE DIRECTLY FROM THE HVAC DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL INFORMATION.
25. MECHANICAL CONTRACTOR SHALL INSTALL ALL EQUIPMENT, FANS AND APPLIANCES A MINIMUM OF 10 FEET FROM A ROOF EDGE OR OPEN SIDE WHERE SUCH EDGE OR OPEN SIDE IS GREATER THAN 30 INCHES ABOVE A FLOOR, ROOF OR GRADE BELOW. GUARD RAILS A MINIMUM OF 42 INCHES ABOVE THE ELEVATED SURFACE SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR AND EXTENDED A MINIMUM OF 30 INCHES BEYOND EACH END OF SUCH EQUIPMENT, FAN OR APPLIANCE WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS ARE LOCATED WITHIN THE REQUIRED 10 FOOT CLEARANCE REQUIREMENT, THE GUARD SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21 INCH DIAMETER SPHERE AND COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE LATEST ACCEPTED INTERNATIONAL BUILDING CODE.
26. EVERY APPLIANCE LOCATED ON A ROOF OF A BUILDING SHALL BE INSTALLED ON A SUBSTANTIAL LEVEL PLATFORM WHENEVER THE ROOF HAS A SLOPE 4:12 OR GREATER, A LEVEL PARKING PLATFORM NOT LESS THAN 30 IN. DEEP SHALL BE PROVIDED IN FRONT OF THE ENTIRE FIREBOX AND CONTROL SIDES OF THE APPLIANCE. ALL SIDES OF ANY PARKING PLATFORM FACING ANY PORTION OF THE ROOF EDGE BELOW THE PLATFORM SHALL BE PROTECTED BY SUBSTANTIAL RAILING 42 IN. HIGH WITH VERTICAL RAILS NOT MORE THAN 21 IN. APART. EXCEPT THAT PARAPETS AT LEAST 24 IN. HIGH MAY BE UTILIZED IN LIEU OF RAILS OR GUARDS. REQUIRED PARKING PLATFORMS AND RAILINGS MAY BE OMITTED WHEN ACCESS TO THE EQUIPMENT IS THROUGH A REQUIRED ROOF SCUTTLE AND ALL OF THE FOLLOWING PROVISIONS ARE MET:

A. THE REQUIRED SCUTTLE IS LOCATED IMMEDIATELY ADJACENT TO THE CONTROL SIDE OF THE EQUIPMENT UNIT.
B. ALL CONTROLS, FILTERS, BURNERS, FANS, AND MOTORS ARE ACCESSIBLE FOR SERVICE AND REPAIR WITHIN 2 FT. OF THE EDGE OF THE EQUIPMENT PLATFORM ON THE SCUTTLE SIDE.
C. THE EQUIPMENT PLATFORM IS NOT MORE THAN 30 IN. ABOVE THE HIGH SIDE OF THE SCUTTLE OPENING.
D. A SUBSTANTIAL WORKING PLATFORM NOT LESS THAN 30 IN. BY 30 IN. SHALL BE PROVIDED DIRECTLY BELOW THE SCUTTLE AT A POINT NOT LESS THAN 30 IN. OR MORE THAN 32 IN. BELOW THE HIGH SIDE OF THE SCUTTLE OPENING.
E. SCUTTLES LOCATED ON OTHER THAN THE ROOF INCLINE SIDE OF THE EQUIPMENT UNIT SHALL HAVE THEIR LIDS OR TRAP DOORS HINGED ON THE LOW SIDE OF THE SCUTTLE.

HVAC KEYED NOTES

(1) SMOKE DETECTORS TO BE INSTALLED IN THE SUPPLY AND RETURN AIR DUCTS AND INTERLOCKED WITH AIR HANDLER FAN FOR SHUT-OFF PER N.F.P.A. 90 A 4 B ON ALL AIR HANDLERS GREATER THAN 2000 C.F.M. SUPPLY AIR DUCT SMOKE DETECTOR SHALL BE INSTALLED ON SUPPLY SIDE OF AIR HANDLING SYSTEM DOWN STREAM OF ANY AIR FILTERS AND PRIOR TO ANY BRANCH DUCT CONNECTIONS. EXCEPTION: THE SMOKE DETECTOR IN THE SUPPLY AIR STREAM MAY BE OMITTED IN SYSTEMS 2000 C.F.M. OR LESS. CAPACITY. RECIRCULATING AIR SYSTEMS WITH FAN CAPACITY LESS THAN 2000 C.F.M., BUT SERVING AREAS USED FOR ASSEMBLY PURPOSES SHALL HAVE AUTOMATIC SMOKE DETECTION SHUTDOWN. SMOKE DETECTORS SHALL BE PROVIDED, INSTALLED AND WIRED BY (MECHANICAL CONTRACTOR) (FIRE ALARM CONTRACTOR). MECHANICAL CONTRACTOR SHALL WIRE SMOKE DETECTOR TO THE FAN SHUT OFF CONTACTS. MECHANICAL CONTRACTOR SHALL PROVIDE ALL ACCESSORIES REQUIRED TO MAKE THE FAN SHUT OFF CONNECTION. LOCATE SMOKE DETECTORS IN RETURN AIR DUCT PRIOR TO THE INTRODUCTION OF THE OUTSIDE AIR. (MECHANICAL CONTRACTOR SHALL PROVIDE SMOKE DETECTORS COMPATIBLE WITH THE BUILDING'S EXISTING FIRE ALARM SYSTEM.)

(2) MAINTAIN A MINIMUM OF 10 FT. CLEARANCE BETWEEN ALL EXHAUST OUTLETS, FLUES, PLUMBING VENTS AND ANY FRESH AIR INTAKES. IF 10 FT. CLEARANCE CAN NOT BE MAINTAINED EXHAUST OUTLET, FLUE, OR VENT MUST TERMINATE AT A POINT AT LEAST 3m IN. ABOVE HIGHEST FRESH AIR INTAKE WITHIN 10 FT. LIMIT.

(3) LOCATE THERMOSTAT, CO2 SENSOR OR HUMIDISTAT AS INDICATED WITH THE CENTER OF THE THERMOSTAT AT 48 IN. ABOVE FINISHED FLOOR. SEAL ALL THERMOSTAT CONDUITS AT TOP AND BOTTOM OF CONDUIT. PROVIDE INSULATED BACKING FOR MOUNTING THERMOSTATS.

(4) MECHANICAL CONTRACTOR SHALL INSTALL ALL EQUIPMENT, FANS AND APPLIANCES A MINIMUM OF 10 FEET FROM A ROOF EDGE OR OPEN SIDE WHERE SUCH EDGE OR OPEN SIDE IS GREATER THAN 30 INCHES ABOVE A FLOOR, ROOF OR GRADE BELOW. GUARD RAILS A MINIMUM OF 42 INCHES THE ELEVATED SURFACE SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR AND EXTENDED A MINIMUM OF 30 INCHES BEYOND EACH END OF SUCH EQUIPMENT, FAN OR APPLIANCE WHERE APPLIANCES, EQUIPMENT, FANS OR OTHER COMPONENTS ARE LOCATED WITHIN THE REQUIRED 10 FOOT CLEARANCE REQUIREMENT, THE GUARD SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF A 21 INCH DIAMETER SPHERE AND COMPLY WITH THE LOADING REQUIREMENTS FOR GUARDS SPECIFIED IN THE LATEST ACCEPTED INTERNATIONAL BUILDING CODE.

MECHANICAL LEGEND

- SUPPLY DUCT SECTION
- RETURN OR EXHAUST DUCT SECTION
- CEILING SUPPLY GRILLE
- CEILING RETURN GRILLE
- CEILING EXHAUST GRILLE
- SIDEWALL SUPPLY OR RETURN GRILLE
- (1) SEE KEYED NOTES
- SUPPLY, RETURN, OR EXHAUST DUCT
- SUPPLY, RETURN, OR EXHAUST DUCT
- EXISTING SUPPLY, RETURN, OR EXHAUST DUCT
- VOLUME DAMPER
- ROUND DUCT FIRE DAMPER (NUMBER DENOTES FIRE RATING OF WALL. EXAMPLE: 1FD = ONE HR. RATED WALL)
- FLEX DUCT CONNECTION MAXIMUM OF 5 FT
- SMOKE DETECTOR
- (T) THERMOSTAT. MOUNT AT 48" A.F.F. TO TOP (NUMBER DENOTES FURNACE OR AIR HANDLER UNIT)

NOTES:
REFER TO SHEET M2.1 FOR HVAC PLANS.
REFER TO SHEET M3.1 FOR HVAC DETAILS.
REFER TO SHEET M5.1 FOR HVAC SCHEDULES.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11840 STEVEN M. McCONNELL

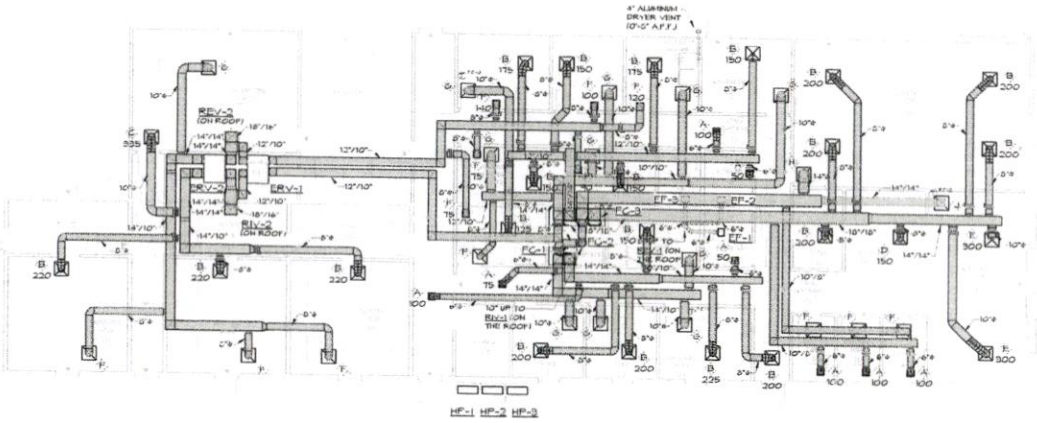
8-11-2023

08.11.2023

21054

HVAC NOTES & LEGEND

M1.1



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

NORTH

NOTES:
REFER TO SHEET M1.1 FOR HVAC LEGEND, GENERAL AND KEYED NOTES.
REFER TO SHEET M3.1 FOR HVAC DETAILS.
REFER TO SHEET M5.1 FOR HVAC SCHEDULES.

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REVISION SCHEDULE

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A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11840
STEVEN M. McCONNELL

8-11-2023

08.11.2023

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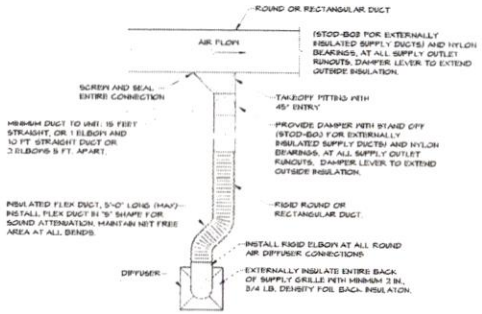
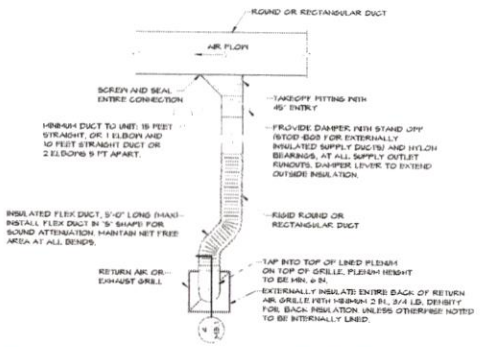
HVAC PLAN

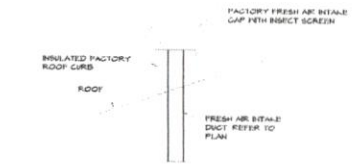
M2.1



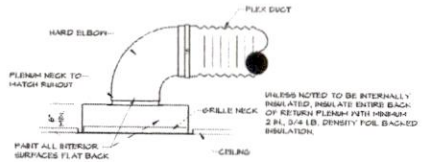
1 SUPPLY DUCT CONNECTION DETAIL
NTS



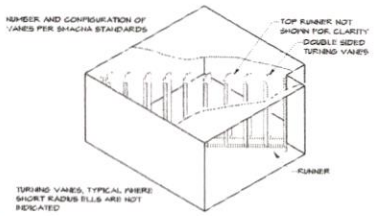
2 RETURN DUCT CONNECTION DETAIL
NTS



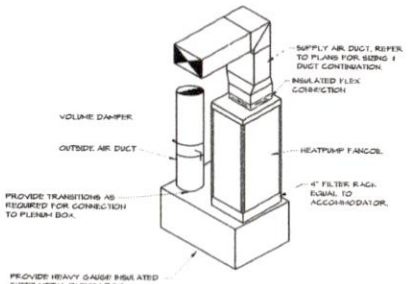
3 ROOF CAP DETAIL
NTS



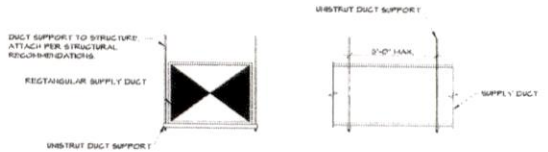
4 RETURN GRILLE CONNECTION SECTION
NTS



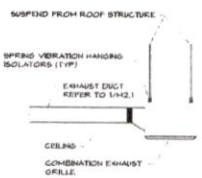
5 TURNING VANE DETAIL
NTS



6 VERTICAL AHU DETAIL
NTS



7 DUCT SUPPORT DETAIL
NTS



8 EXHAUST FAN CEILING GRILLE DETAIL
NTS

NOTES:
REFER TO SHEET M1.1 FOR HVAC LEGEND, GENERAL AND KEYED NOTES.
REFER TO SHEET M2.1 FOR HVAC PLANS
REFER TO SHEET M5.1 FOR HVAC SCHEDULES.

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REVISION SCHEDULE		
No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11840
STEVEN M. McCONNELL
8-11-2023

08.11.2023
21054

HVAC DETAILS
M3.1

SPLIT SYSTEM SCHEDULE

MARK		MFG.	UNIT MODEL NUMBERS		MOUNTING STYLE	SEER	TON(S)	CFM (Lo-Med-Hi)	COOLING		HEATING MBH	UNIT WEIGHTS		ELECTRICAL (SINGLE POINT CONNECTION)			ACCESSORIES
INDOOR	OUTDOOR		OUTDOOR	INDOOR					TMBH	SMBH		OUTDOOR	INDOOR	M.C.A.	M.O.P.	VOLT / PH / HZ	
FC-1	HP-1	SAMSUNG	CH036ADJ	CH036ZDK	VERTICAL DUCTED	14	3	588-1043-1200	36	27	40	144	126	28.4	40	208-230 / 1 / 60	1, 2, 3
FC-2	HP-2	SAMSUNG	CH054ADK	CH054ZDK	VERTICAL DUCTED	17	5	1040-1500-2000	54	41	60	212	163	42	70	208-230 / 1 / 60	1, 2, 3
FC-3	HP-3	SAMSUNG	CH036ADJ	CH036ZDK	VERTICAL DUCTED	14	3	588-1043-1200	36	27	40	144	126	28.4	40	208-230 / 1 / 60	1, 2, 3

REMARKS/ACCESSORIES
1. PROVIDE WIRED CONTROLLER
2. EZ-FILTER RACK, 2" MERV 13 FILTER
3. 10-YEAR COMPRESSOR, 10-YEAR PARTS

ROOF CAP SCHEDULE

MARK	MFG.	MODEL	CFM	THROAT AREA (SQ FT.)	TYPE	REMARKS / ACCESSORIES
REV-1	COOK	PR-S	225	1.30	EXHAUST	1, 2, 3, 4
REV-2	COOK	PR-16	1500	3.06	EXHAUST	1, 2, 3, 4
RIV-1	COOK	PR-S	350	1.30	INTAKE	1, 2, 3, 4
RIV-2	COOK	PR-16	1800	3.06	INTAKE	1, 2, 3, 4

REMARKS/ACCESSORIES
1. PROVIDE ROOF CURB
2. ALUMINUM CONSTRUCTION
3. PROVIDE GIRD CAP
4. PROVIDE BIRD SCREEN

EXHAUST FAN SCHEDULE

MARK	MFG.	MODEL	MOUNTING STYLE TYPE	CONFIGURATION	DRIVE	CFM	ESP, IN. WC	H.P./WATTS	VOLT/PH/HZ	SONE	RPM	UNIT WEIGHT (LBS.)	REMARKS / ACCESSORIES
EF-1	COOK	GC-146	GEB.BG	CENTRIFUGAL CABINET FAN	DIRECT	75	0.375	34 W	115 / 1 / 60	2	240	12	1, 2, 3, 4, 5, 6
EF-2	COOK	GC-146	GEB.BG	CENTRIFUGAL CABINET FAN	DIRECT	75	0.375	34 W	115 / 1 / 60	2	642	12	1, 2, 3, 4, 5, 6
EF-3	COOK	GC-146	GEB.BG	CENTRIFUGAL CABINET FAN	DIRECT	75	0.375	34 W	115 / 1 / 60	2	840	12	1, 2, 3, 4, 5, 6

REMARKS/ACCESSORIES
1. PROVIDE DISCONNECT
2. PROVIDE FACTORY INSTALLED FAN SPEED CONTROLLER
3. PROVIDE BACKDRAFT DAMPER
4. PROVIDE ISOLATOR KIT
5. PROVIDE INTERLOCK WITH LIGHT/SWITCH
6. PROVIDE STANDARD GRILLE.

AIR DISTRIBUTION SCHEDULE

MARK	CFM	NECK SIZE	MFG.	MODEL	TYPE	FINISH	FRAME	REMARKS/ ACCESSORIES
A	50-100	12" x 12" / 6"Ø	TITUS	TMS-AA	4 WAY LOUVERED SUPPLY	PAINT	LAY-IN	1, 3, 4
B	105-225	24" x 24" / 8"Ø	TITUS	TMS-AA	4 WAY LOUVERED SUPPLY	PAINT	LAY-IN	1, 3
C	230-335	24" x 24" / 10"Ø	TITUS	TMS-AA	4 WAY LOUVERED SUPPLY	PAINT	LAY-IN	1, 3
D	105-225	24" x 24" / 8"Ø	TITUS	TMS-AA	4 WAY LOUVERED SUPPLY	PAINT	LAY-IN	1, 3
E	230-335	24" x 24" / 10"Ø	TITUS	TMS-AA	4 WAY LOUVERED SUPPLY	PAINT	LAY-IN	1, 3, 4
F	0-240	23" x 23" / 8"Ø	TITUS	350FL	LOUVERED RETURN	PAINT	LAY-IN	1, 3, 4
G	250-890	22" x 22" / 10"Ø	TITUS	350FL	LOUVERED RETURN	PAINT	LAY-IN	1, 3
H	950-1200	22" x 22" / 14"Ø	TITUS	350FL	LOUVERED RETURN	PAINT	LAY-IN	1, 3
J	250-950	22" x 22" / 10"Ø	TITUS	350FL	LOUVERED RETURN	PAINT	LAY-IN	1, 3

REMARKS/ACCESSORIES
1. OPPOSED BLADE DAMPERS.
2. PROVIDE DOUBLE DIRECTIONAL BLADES.
3. ALUMINUM CONSTRUCTION.
4. PROVIDE MATCHING FACTORY PLASTER FRAME FOR SURFACE MOUNT GRILLE.

ENERGY RECOVERY VENTILATOR SCHEDULE

MARK	MFG.	MODEL	AIRFLOW					SUPPLY AIR		EXHAUST AIR		RECOVERED COOLING			RECOVERED HEATING			ELECTRICAL			REMARKS / ACCESSORIES
			SUPP. CFM	EX. CFM	SUPP. MOTOR POWER (QTY.)	EX. MOTOR POWER (QTY.)	ESP SUPP./EX.	SUMMER (DB/WB)	WINTER (DB/WB)	SUMMER (DB/WB)	WINTER (DB/WB)	TMBH	EAT °F (DB/WB)	LAT °F (DB/WB)	TMBH	EAT °F (DB/WB)	LAT °F	MCA	MOP	VOLT/PH/HZ	
ERV-1	ALDES	E1100L-F1	600	600	245 W (2)	245 W (2)	.5 / .5	81.4° / 64°	55.6° / 47.4°	49° / 13.3°	30° / 30°	34.8	144.3° / 71.3°	81.4° / 64°	63.4	15.3° / 15.3°	59.6°	14.1	20	120 / 1 / 60	1
ERV-2	ALDES	E1100L-FHI	1000	1000	240 W (2)	240 W (2)	.5 / .5	82.1° / 70.2°	54° / 45.6°	42.9° / 11.9°	31.4° / 31.4°	16	144.3° / 71.3°	82.4° / 70.2°	34.4	19.8° / 19.2°	54°	6.7	15	120 / 1 / 60	1

REMARKS/ACCESSORIES
1. SET ERV3 ON 16" HIGH WOODEN PLATFORM TO ELEVATE OFF HIGH ROOF FLOOR.

NOTES:
REFER TO SHEET M1.1 FOR HVAC LEGEND, GENERAL AND KEYED NOTES.
REFER TO SHEET M2.1 FOR HVAC PLANS.
REFER TO SHEET M3.1 FOR HVAC DETAILS.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER
No. 11640
STEVEN M. McCONNELL
8-11-2023

08.11.2023

21054

HVAC SCHEDULES

M5.1

GENERAL ELECTRICAL SITE NOTES(THIS SHEET ONLY)

1. THE SECONDARY DITCH, SECONDARY CONDUITS WITH 3 PULL ROPE, SECONDARY CONDUCTORS, ARE TO BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE LONG SWEEP GALVANIZED RIGID STEEL ELBOWS FOR THE SECONDARY. PROVIDE ALL TRENCHING, BACKFILLING, SAWCUTTING AND PATCHING OF HARD SURFACES, ECT FOR CONDUITS.
2. SECONDARY CONDUITS SHALL BE INSTALLED A MINIMUM OF 30" BELOW GRADE USING 24" RIGID ELBOWS.
3. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COSTS OF INSTALLATION AND CONNECTING THE ELECTRICAL SERVICE CONDUITS. COORDINATE CONNECTION TO EXISTING OVERHEAD LINES WITH ENTERGY ATTN. ZAC VANN.
4. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COSTS OF INSTALLATION AND CONNECTING COMMUNICATIONS SERVICE CONDUITS.

KEYED ELECTRICAL SITE NOTES(THIS SHEET ONLY)

(1) ELECTRICAL SECONDARY, REFER TO GENERAL NOTE 1, AND 2 FOR INSTALLATION. REFER TO RISER DIAGRAM FOR CONDUIT AND WIRE SIZES.

(2) IDENTIFY OUTDOOR UNDERGROUND LINES WITH CONTINUOUS STRIP OF PLASTIC UTILITY MARKER. TAPE SHOULD STATE AT REGULAR INTERVALS: "CAUTION (STATE UTILITY) PIPE BELOW". INSTALL TAPE ONE FOOT DIRECTLY ABOVE PIPE BEFORE BACKFILLING TO GRADE.

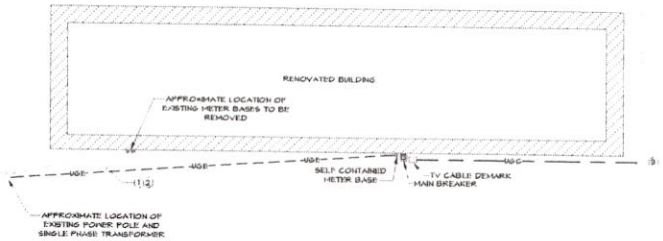
(3) PROVIDE 2-2" CONDUITS FROM SERVER ROOM TO UTILITY EASMENT FOR FIBER/DATE UTILITY

ELECTRICAL SITE PLAN LEGEND

---UGE--- UNDERGROUND ELECTRIC

UTILITY CONTACTS:

ENTERGY ZAC VANN 1-800-ENTERGY



1 ELECTRICAL SITE PLAN

1" = 20'-0"

NORTH

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEETS E2.1 - E2.5 FOR ELECTRICAL PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11853
TYLER L. WHITE
8/11/2023

08.11.2023

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ELECTRICAL SITE PLAN

ES1.0

LEGEND

- DUPLEX RECEPTACLE (NEMA 5-20R) OR-DOUBLE DUPLEX, TAMPER RESISTANT, COMMERCIAL SPECIFICATION GRADE.
- 220 VOLT RECEPTACLE (NUMBER DENOTES AMPS)
- DUPLEX RECEPTACLE GROUND FAULT NEMA 5-20R, TAMPER RESISTANT, COMMERCIAL SPECIFICATION GRADE.
- TELEVISION CABLE OUTLET VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH THE OWNER PRIOR TO ROUGH-IN. REQUIRES RECEPTACLE, ONE RG6 COAXIAL CABLE AND 2 NETWORK CABLES IN SEPARATE 3/4" CONDUIT TO DATA ROOM, PROVIDE 3 GANG BACK BOX ARLINGTON #TVBS507.
- WIREMOLD TYPE "RFB6E-OG" FLOOR BOX WITH TWO DUPLEX RECEPTACLE, AND TWO COMMUNICATION BRACKETS TO MATCH OWNER'S DATA EQUIPMENT. INSTALL ONE 1" CONDUIT FOR POWER AND ONE 1" CONDUIT FOR DATA. INCLUDE ONE BRASS COVER, TYPE BCT FLUSH COVER, AT EACH LOCATION. SET BOX HEIGHT WITH FLOOR TYPE, COVER IS TO BE FLUSH IN FLOOR. (FOR BARE/POLISHED CONCRETE FLOOR PROVIDE RFB6E CONCRETE EDGE BARRIER KIT). PROVIDE A MINIMUM OF TWO DATA CABLES AT EACH LOCATION. IF FEEDING MULTIPLE COMPUTERS PROVIDE TWO DATA CABLES FOR EACH COMPUTER COORDINATE WITH ARCHITECT.
- WIRELESS INTERNET EQUIPMENT FURNISHED AND INSTALLED BY THE OWNER, FURNISH AND INSTALL TWO DATA CABLES.
- DATA: REQUIRES 4" SQUARE OUTLET BOX, APPROPRIATE PLASTER RING, AND 1" C. STUBBED TO AN ACCESSIBLE LOCATION ABOVE A REMOVABLE CEILING TILE. MINIMUM OF TWO DATA CABLES AT EACH LOCATION SHOWN UNLESS OTHERWISE NOTED.
- FLUSH MOUNTED JUNCTION BOX. VERIFY MOUNTING HEIGHT WITH MILLWORK DETAILS AND/OR THE OWNER'S REPRESENTATIVE. AT EQUIPMENT LOCATIONS VERIFY THE EXACT LOCATION WITH THE EQUIPMENT INSTALLER PRIOR TO ROUGH-IN.
- FUSED/NON-FUSED DISCONNECT-FUSE ALL EQUIPMENT PER MANUFACTURER RECOMMENDATION FOR THE ACTUAL EQUIPMENT FURNISHED. FURNISH NEMA-4X IN THE KITCHEN. MOUNT DISCONNECT FOR HVAC CONDENSER UNITS WITH TOP OF SWITCH AT 36" A.F.F.
- MOTOR - VERIFY THE SIZE WITH ACTUAL EQUIPMENT FURNISHED. NUMBER REPRESENTS HORSE POWER RATING.
- MOTOR RATED SWITCH USED FOR EQUIPMENT DISCONNECTING MEANS. SINGLE PHASE PROVIDE WITH THERMAL OVERLOAD SIZED PER MOTOR LOAD.
- SINGLE POLE SWITCH FOR GARBAGE DISPOSER, WIRE RECEPTACLE TO SWITCHED UPPER HALF.
- SWITCH TYPE 1221 ("3" INDICATES 3-WAY SWITCH, "D" INDICATES DIMMER COORDINATE WITH FIXTURE/LAMP TYPE AND CIRCUIT WATTAGE.
- WALL MOUNTED DUAL TECHNOLOGY MOTION SENSOR SWITCH WIRE PER MANUFACTURERS RECOMMENDATION PROVIDE CONTACTORS TO CONTROL EXHAUST FAN WITH LIGHTS
- WALL MOUNTED PASSIVE INFRARED COMBINATION MOTION SENSOR SWITCH AND SINGLE POLE WALLBOX SLIDE DIMMER, WIRE PER MANUFACTURERS RECOMMENDATION. PROVIDE CONTACTORS TO CONTROL EXHAUST FAN WITH LIGHTS. LEVITON OSD10 OR EQUAL
- "OS" - CEILING MOUNTED DUAL TECHNOLOGY MOTION SENSOR PROVIDE AND INSTALL THE APPROPRIATE POWER PACK. COORDINATE SWITCHING WITH ACTUAL MOTION SENSOR USED. COORDINATE LOCATION AND NUMBER WITH ACTUAL MOTION SENSOR USED. WIRE PER MANUFACTURERS RECOMMENDATION. PROVIDE OCCUPANCY SENSOR WHICH IS THE CORRECT TYPE FOR THE SPACE. PROVIDE CONTACTORS TO CONTROL EXHAUST FAN WITH LIGHTS.
- "OS" - WALL MOUNTED DUAL TECHNOLOGY MOTION SENSOR PROVIDE AND INSTALL THE APPROPRIATE POWER PACK. COORDINATE SWITCHING WITH ACTUAL MOTION SENSOR USED. COORDINATE LOCATION AND NUMBER WITH ACTUAL MOTION SENSOR USED. WIRE PER MANUFACTURERS RECOMMENDATION. PROVIDE OCCUPANCY SENSOR WHICH IS THE CORRECT TYPE FOR THE SPACE
- EXIT LIGHT - ARROW DENOTES INCLUSION OF ARROW ON LENS. CONTRACTOR TO COORDINATE PROPER MOUNTING DETAILS.
- TIME CLOCK. INTERMATIC #ET8215C FOR LIGHTING CONTROL APPLICATIONS. INTERMATIC #T2005 FOR CIRCULATION PUMPS
- LIGHTING CONTACTOR-SQUARE D #8903
- PHOTO-ELECTRIC CELL: EQUAL TO INTERMATIC NO. K4136M
- THERMOSTAT, MOUNT @ 48" A.F.F. TO CENTER OF BOX (NUMBER DENOTES HVAC UNIT)
- ELECTRICAL PANEL
- DRY TYPE TRANSFORMER-480/120-208 VOLTS. PROVIDE VIBRATION-ISOLATION MOUNTING PADS
- BRANCH CIRCUIT HOMERUN. PANEL AND CIRCUIT NUMBER INDICATED.
- "KNOX" BOX TO BE KNOX SERIES 4500 WITH "BEST" LOCK SYSTEM. FURNISH RECESSED BOX WITH MOUNTING FRAME. INCLUDED A KEY SWITCH FOR EMERGENCY SHUTDOWN OF THE MAIN ELECTRICAL SERVICE.
- FIRE ALARM CONTROL PANEL MOUNTED 50" A.F.F.
- FIRE ALARM ANNUNCIATOR PANEL MOUNTED 52" A.F.F.
- MANUAL PULL STATION MOUNTED MINIMUM OF 42", MAXIMUM OF 48" A.F.F.
- PHOTOELECTRIC SMOKE DETECTOR. CEILING MOUNTED
- HEAT DETECTOR. CEILING MOUNTED
- CEILING FIRE ALARM VISUAL STROBE LIGHT-WP DENOTES WEATHER RESISTANT. REQUIRES 4" SQUARE BOX WITH ¾" CONDUIT STUBBED ABOVE ACCESSIBLE CEILING. NUMBER DENOTES CANDELA RATING
- WALL MOUNT FIRE ALARM HORN/STROBE LIGHT-WP DENOTES WEATHER RESISTANT. REQUIRES 4" SQUARE BOX WITH ¾" CONDUIT STUBBED ABOVE ACCESSIBLE CEILING. NUMBER DENOTES CANDELA RATING.
- CEILING FIRE ALARM HORN/STROBE LIGHT-WP DENOTES WEATHER RESISTANT. REQUIRES 4" SQUARE BOX WITH ¾" CONDUIT STUBBED ABOVE ACCESSIBLE CEILING. NUMBER DENOTES CANDELA RATING.
- INSTALL FLUSH MOUNTED BOX FOR SECURITY CAMERA. PROVIDE 3/4" CONDUIT TO ABOVE AN ACCESSIBLE CEILING. COORDINATE SIZE OF BOX WITH CAMERA CONTRACTOR PRIOR TO INSTALLATION

DETAIL NUMBER / SHEET NUMBER

SUBSCRIPTS:
- C = COORDINATE LOCATION WITH MILLWORK-MOUNTING HEIGHTS VARY. REFER TO THE ARCHITECTURAL MILLWORK DRAWINGS.
- K = LOCATED IN KNEE SPACE. COORDINATE LOCATION WITH MILLWORK-MOUNTING HEIGHTS VARY. REFER TO THE ARCHITECTURAL MILLWORK DRAWINGS.
- GFI = GROUND FAULT CIRCUIT INTERRUPTER
- WP = WEATHER RESISTANT RECEPTACLES ARE "GFI", WITH METAL WEATHER RESISTANT "WHILE-IN-USE" COVERS
- MW = MICROWAVE OVEN
- EM = FIXTURE CONTAINS EMERGENCY BATTERY PACK.
- NL = UNSWITCHED EMERGENCY FIXTURE.
- EC = ELECTRICAL CONTRACTOR
- AFF = ABOVE FINISHED FLOOR
- AFG = ABOVE FINISHED GRADE
- EWC = ELECTRIC WATER COOLER
- EWH = ELECTRIC WATER HEATER
- NTS = NOT TO SCALE

GENERAL ELECTRICAL NOTES-ALL SHEETS
THESE NOTES ARE ONLY A SUPPLEMENT TO THE SPECIFICATIONS

1. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR A COMPLETE WORKING INSTALLATION.
2. THIS CONTRACTOR IS TO COMPLY WITH THE STATE ADOPTED ADA ACCESSIBLE GUIDELINES IN REGARD TO ACCESSIBLE FEATURES.
3. AT ALL MILLWORK LOCATIONS COORDINATE THE ELECTRICAL INSTALLATION WITH THE ARCHITECTURAL DRAWINGS.
4. PROVIDE FIRE RATED CAULKING WHERE CONDUIT OR OTHER ELECTRICAL ITEMS PASS THOUGH FIRE-RATED WALLS, CEILINGS AND FLOORS.
5. INSTALL ALL CONDUIT STRAIGHT AND PARALLEL WITH THE BUILDING LINES. ALL CONDUIT IS CONCEALED IN PUBLIC PLACES.
6. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL PERMIT AND FEE COSTS AND SHALL INCLUDE THESE COSTS IN THE BID PRICE FOR THIS PROJECT.
7. THE ENTIRE ELECTRICAL INSTALLATION SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES AND ORDINANCES. IF A CONFLICT IS FOUND BETWEEN APPLICABLE CODES, THE MORE STRINGENT SHALL APPLY. THE CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL APPLICABLE MUNICIPAL CODES AND ORDINANCES.
8. THE SUBMISSION OF A PROPOSAL WILL BE CONSIDERED EVIDENCE THAT THE CONTRACTOR HAS FAMILIARIZED THEMSELVES WITH THE DRAWINGS, SPECIFICATION BOOK, THE BUILDING SITE AND OTHER INFORMATION PRESENTED FOR THE CONSTRUCTION OF THIS PROJECT. CLAIMS MADE SUBSEQUENT TO THE PROPOSAL FOR MATERIALS AND LABOR BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED IF THEY COULD HAVE BEEN FORESEEN HAD A COMPLETE AND THOROUGH EXAMINATION BEEN MADE.
9. DO NOT SCALE DIRECTLY FROM THE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR DIMENSIONAL INFORMATION.
10. THE CONTRACTOR SHALL GUARANTEE ALL WORK FOR WHICH MATERIALS ARE FURNISHED, FABRICATED OR FIELD ERECTED. THIS CONTRACTOR GUARANTEE SHALL EXIST FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL OWNER ACCEPTANCE OF THE WORK AND SHALL APPLY TO ALL DEFECTS IN MATERIALS AND/OR WORKMANSHIP OF ANY KIND.
11. WHERE JOB CONDITIONS REQUIRE CHANGES FROM THE CONTRACT DOCUMENTS THAT DO NOT CHANGE THE SCOPE OR NATURE OF THE WORK REQUIRED, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT ADDITIONAL COST TO THE OWNER. NO OTHER CHANGES WILL BE MADE WITH OUT THE EXPRESSED WRITTEN CONSENT OF THE OWNER.
12. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE WITH ALL OTHER TRADES TO INSURE THAT ALL CIRCUITS AND DEVICES ARE OF A PROPER SIZE FOR ACTUAL EQUIPMENT FURNISHED. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT WHICH CAUSES CHANGES TO ANY SYSTEM AS DESIGNED ON THESE DRAWINGS. FAILURE ON THE PART OF THE CONTRACTOR TO NOTIFY THE ENGINEER OR ARCHITECT OF SUCH CONFLICTS PLACES THE SUBSEQUENT CHANGES UPON THE CONTRACTOR.
13. THE ELECTRICAL CONTRACTOR IS TO PROVIDE, AT YET TO BE DECIDED LOCATIONS, TEN (10) CONDUIT STUB-UPS, WHICH ARE TO INCLUDE 4" OUTLET BOXES, PLASTER RINGS, COVER PLATES, AND CONDUIT TO ABOVE THE CEILING. TWENTY FIVE ONE GANG AND TWENTY FIVE TWO GANG. IN ADDITION, PROVIDE FIFTY (10) SINGLE GANG STUB-UPS WHICH ARE TO INCLUDE 4" OUTLET BOXES, PLASTER RINGS, COVER PLATES, INCLUDING ONE RECEPTACLE OR SWITCH WITH 50 FEET OF CIRCUIT WIRING PER SINGLE GANG STUB-UP. COMBINED TOTAL NUMBER OF STUB-UPS REQUIRED IS TWENTY (20)
14. ALLOW FOR THE ADDITION OF 5 (FIVE) NEW EXIT LIGHTS WITH WIRING TO UNSWITCHED LIGHTING CIRCUIT.
15. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING SYSTEMS

A. POWER AND LIGHTING
   1. ALL DEVICE PLATES ARE TO BE NYLON. COORDINATE COLOR OF DEVICES WITH THE ARCHITECT
   2. ALL 20A 120V AND 250V NON-LOCKING TYPE RECEPTACLES, UNLESS OTHERWISE NOTED, SHALL BE TAMPER RESISTANT TYPE PER NEC 406.12.
   3. WHERE DEVICES ARE SHOWN NEXT TO EACH OTHER, THEY ARE INTENDED TO BE GANGED. FIELD VERIFY ACTUAL SPACE AVAILABLE AND NOTIFY THE ARCHITECT WHERE THERE ARE SPACE CONFLICTS.
   4. LOW VOLTAGE WIRING IS TO BE ENCASED IN CONDUIT IN AREAS WITH NO CEILING.
   5. RECEPTACLES FOR EQUIPMENT SUCH AS ELECTRIC WATER COOLERS SHALL BE LOCATED IN THE WALL AT A LOCATION WHICH IS CONCEALED BY THE EQUIPMENT CABINET.
   6. ALL EMPTY CONDUITS ARE TO CONTAIN A NYLON PULL STRING. EMPTY CONDUITS 2" AND LARGER ARE TO BE SWABBED OUT AND LEFT WITH A NYLON PULL ROPE FOR THE USE OF THE OWNER.
   7. COORDINATE THE EXACT LOCATION OF ALL FLOOR BOXES WITH THE ARCHITECT AND THE ARCHITECTURAL DRAWINGS.
   8. COVER PLATES FOR EXTERIOR RECEPTACLES ARE TO BE METAL, WEATHER PROOF WHILE IN USE
   9. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL DRIVER AND LAMP COMBINATIONS THAT WILL PROVIDE THE OWNER WITH A FIVE YEAR WARRANTY ON THE DRIVER.
   10. COORDINATE WITH THE GENERAL CONTRACTOR AND THE INSULATION CONTRACTOR TO HOLD THE BATT INSULATION AWAY FROM ALL LAY-IN FIXTURES. CLEARANCE SHOULD BE 3" ON ALL SIDES, AND TOTALLY CLEAR ON THE TOP
   11. GENERAL CONTRACTOR PROVIDES AND INSTALLS KNOX BOX AT MAIN FRONT ENTRY. THE ELECTRICAL CONTRACTOR PROVIDES AND INSTALLS A KEYED SWITCH AT THE MAIN FRONT ENTRY FOR THE EMERGENCY SHUT DOWN SHUNT TRIP. PROVIDE BREAKER LOCK FOR SHUNT TRIP CONTROL POWER CIRCUIT
   12. ROOM NUMBERS USED IN THE PANEL SCHEDULES ARE TO REFLECT ROOM NUMBERS BY THE OWNER. ARCHITECT WILL PROVIDE CROSS OVER LIST DURING THE PROJECT
   13. OCCUPANCY SENSORS ARE TO BE LAID OUT BY THE LIGHTING REPRESENTATIVE FURNISHING THE EQUIPMENT. HSA WILL PROVIDE AUTO CAD DRAWINGS AS NECESSARY. ELECTRICAL CONTRACTOR RESPONSIBLE FOR LOCATION DETAILS AND MOUNTING. SENSORS SHOWN ARE FOR REFERENCE ONLY
   14. FURNISH 2-4" CONDUITS SLEEVES THOUGH FIRE WALLS UNLESS OTHERWISE NOTED. SEAL PER RATING OF THE WALL.
   15. WHERE INDIRECT (SUSPENDED) LIGHTING IS USED, THE ELECTRICAL CONTRACTOR SHALL CONTRACT WITH THE CEILING CONTRACTOR TO PROVIDE THE NECESSARY TIES TO THE STRUCTURE ABOVE AT EACH POINT OF ATTACHMENT OF THE FIXTURE HANGERS.
   16. WIRE SIZES.

WIRE SIZE 120V

A. #12 LESS THAN 75 FEET
B. #10 BETWEEN 75-150 FEET
C. #8 BETWEEN 150-250 FEET
D. #6 BETWEEN 250-375 FEET

B. FIRE ALARM:
   1. ALL FIRE ALARM OUTLET BOXES ARE TO BE PAINTED RED.
   2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING BREAKER LOCK FOR LOCKING FIRE ALARM PANEL BREAKER IN THE "ON" POSITION.
   3. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING A PLAN BOX NEXT TO THE FIRE ALARM CONTROL PANEL. COORDINATE EXACT SIZE AND LOCATION OF BOX WITH THE CITY FIRE MARSHAL PRIOR TO INSTALLATION. IT SHOULD BE LARGE ENOUGH FOR A SET OF SPRINKLER PLANS ALSO
   4. INSTALL FIRE ALARM SYSTEM PER N.F.P.A. AND ALL STATE AND LOCAL ORDINANCES.

GENERAL ELECTRICAL NOTES
(CONTINUED)

   6. COORDINATE THE OVERALL FIRE ALARM SYSTEM WITH THE FIRE MARSHAL, FURNISHING ALL DEVICES AND SYSTEMS NECESSARY FOR A COMPLETE ACCEPTABLE SYSTEM. NO EXTRA CHARGES WILL BE ALLOWED, OUTSIDE OF THE CONTRACT PRICE. THE FIRE ALARM CONTRACTOR IS TO SUBMIT PLANS TO THE FIRE MARSHAL FOR FINAL APPROVAL PRIOR TO BEGINNING CONSTRUCTION.
   7. DUCT DETECTORS ARE SUPPLIED AND INSTALLED BY THE FIRE ALARM CONTRACTOR. IT IS THE RESPONSIBILITY OF THE FIRE ALARM CONTRACTOR TO FURNISH ALL WIRING NECESSARY TO CONNECT THESE DEVICES TO THE FIRE ALARM SYSTEM. PROVIDE WITH REMOTE INDICATOR OR SEPARATELY ZONED. COORDINATE QUANTITY AND LOCATION WITH THE MECHANICAL DRAWINGS.

C. CONDUIT AND CABLE SYSTEM FOR DATA AND TELEPHONE WIRING.
   1. CONDUIT FOR DATA AND TELEPHONE SYSTEM, TO INCLUDE SLEEVES IN FIRE WALLS.
   2. DATA OUTLETS IN THE FLOOR REQUIRE 1" CONDUIT FROM EACH ONE TO A POINT ABOVE AN ACCESSIBLE CEILING. NO DAISY CHAINING OF DATA OUTLETS/CONDUITS IS ALLOWED.
   3. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT TO THE PROPERTY LINE FOR INCOMING SERVICES, AS WELL AS COORDINATION WITH THE UTILITIES FOR TIMELY INSTALLATION AND ANY FEES REQUIRED.
   4. CABLE IS NOT TO BE INSTALLED EXPOSED. VERIFY WITH MECHANICAL PLANS FOR PLENUM SPACES CABLE IN THESE AREAS IS PLENUM RATED.
   5. ELECTRICAL CONTRACTOR IS TO PROVIDE, INSTALL AND TERMINATE ALL DATA/TELEPHONE WIRING. REFER TO SPECIFICATIONS FOR EXACT REQUIREMENTS.

E. UNDERGROUND CONDUITS AND SLEEVES AS NECESSARY FOR DISTRIBUTION:
   1. DO NOT ROUTE GROUPS OF CONDUITS OR SLEEVES ABOVE FOOTINGS UNLESS NOTED TO DO SO. IF CONFLICT OCCURS, CONSULT ARCHITECT AND ENGINEER.
   2. DO NOT ROUTE CONDUIT OR SLEEVES BELOW BEARING WALLS WHEN RUNNING PARALLEL WITH WALLS.
   3. LIMIT WIDTH OF CONDUIT AND SLEEVES NOT TO EXCEED 3'-0" IN WIDTH AS IT PASSES UNDER WALL FOOTING. ALIGN ITEMS PERPENDICULAR TO THE FOOTINGS AS IT PASSES BELOW THE FOOTING.
   4. PROVIDE A MINIMUM SPACING OF 2'-0" BETWEEN CONDUIT GROUPS AS THEY PASS UNDER FOOTINGS.
   5. DO NOT ROUTE CONDUITS OR SLEEVES UNDER COLUMN FOOTINGS OR PAD FOOTINGS.

F. GROUNDING SYSTEM
   1. ALL CONDUITS ARE TO CONTAIN A GREEN GROUNDING CONDUCTOR, SIZED PER THE N.E.C.
   2. GROUND BUILDING STEEL AS INDICATED ON DRAWINGS.

G. EQUIPMENT REQUIREMENTS:
   1. VERIFY EXACT FUSE SIZE AND EQUIPMENT REQUIREMENTS WITH THE ACTUAL EQUIPMENT FURNISHED BY THE OTHER CONTRACTORS.
   2. ALL HOT WATER CIRCULATION PUMPS ARE TO BE CONTROLLED VIA 7 DAY TIME CLOCKS PROVIDED BY THE MECHANICAL CONTRACTOR.
   3. FINAL EQUIPMENT CONNECTIONS: THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS REQUIRED TO MAKE FINAL ELECTRICAL CONNECTIONS TO ALL EQUIPMENT FURNISHED ON THIS PROJECT. VERIFY ALL REQUIREMENTS, CONDUCTOR SIZES, OVERCURRENT PROTECTION, PHASES, VOLTAGES, MOTOR ROTATION, ETC., WITH THE EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. PROVIDE FUSED DISCONNECT IF REQUIRED BY MANUFACTURER. FURNISH HARD WIRING FOR ALL WATER HEATERS AND CIRCULATION PUMPS.
   4. THE ELECTRICAL CONTRACTOR IS TO PROVIDE ALL CONTACTORS, MAGNETIC STARTERS, AND MISCELLANEOUS WIRING NECESSARY TO CONTROL EXHAUST FANS AND OTHER AUTOMATICALLY OPERATED EQUIPMENT. THE CONTROLS CONTRACTOR IS TO FURNISH ONE RELAY PER ITEM AS COMPATIBLE WITH THEIR CONTROL SYSTEM.

H. HVAC CONTROL:
   1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT FROM EACH HVAC UNIT TO ITS RESPECTIVE THERMOSTAT, HUMIDISTAT, AND/OR SENSOR, AS REQUIRED. COORDINATE EXACT LOCATIONS WITH MECHANICAL CONTRACTOR AND ARCHITECT PRIOR TO ROUGH-IN.
   2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONDUIT AND WIRING NECESSARY FOR LINE VOLTAGE CONTROL SYSTEMS.
   3. ALL LOW VOLTAGE CONTROL WIRING SHALL BE ENCLOSED IN CONDUIT IN SPACES WITH NO CEILING
   4. COORDINATE ALL HVAC WIRING WITH THE MECHANICAL DRAWINGS AND THE MECHANICAL CONTRACTOR.
   5. THE ELECTRICAL CONTRACTOR IS TO PROVIDE A MAGNETIC STARTER FOR EACH EXHAUST FAN. THIS STARTER IS CONTROLLED BY THE LIGHTING/MOTION SENSOR SYSTEM
   6. THE ELECTRICAL CONTRACTOR IS TO PROVIDE AND INSTALL ALL LINE VOLTAGE THERMOSTATS

WARNING

MAXIMUM AVAILABLE FAULT CURRENT
X,XXX
(SYMMETRICAL RMS AMPERES)
DATE: XX/XX/XX

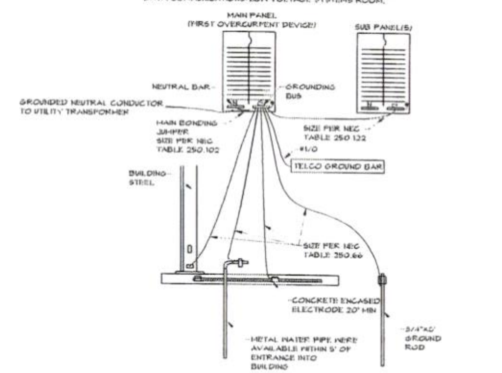
WARNING

NOMINAL SYSTEM VOLTAGE:
120/240V
MAXIMUM AVAILABLE FAULT CURRENT:
X,XXX
(SYMMETRICAL RMS AMPERES)
OVERCURRENT PROTECTIVE DEVICE CLEARING TIME:
XX SECONDS
DATE: XX/XX/XX

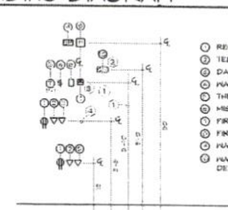
NOTES:
1. LABEL SHALL BE ATTACHED TO ELETRICAL SERVICE EQUIPMENT PER NEC 110.24
2. PROVIDE DURABLE WEATHERPROOF LABEL.
3. LABEL IS SHOWN TO SCALE.
4. ELECTRICAL CONTRACTOR SHALL COORDINATE AVAILABLE FAULT CURRENT WITH UTILITY AND COMPLETE LABEL ACCORDINGLY

1 FAULT CURRENT LABEL
N.T.S.

1. ALL GROUNDING BUS TO BE SOLIDLY CONNECTED TO ENCLOSURE.
2. USE EXOTHERMIC WELDS FOR CONNECTION TO BUILDING STEEL AND REBAR.
3. PROVIDE SYSTEM BONDING JUMPER IN TRANSFORMERS SIZED PER NEC TABLE 250.102
4. FURNISH TELCO GROUND BAR. COPPER: 4" X 20" X 1/4" WITH PREDRILLED 1/4" - 20 HOLES AND INSULATED STANDOFF MOUNTS. PROVIDE ONE PER DATA/COMMUNICATIONS/LOW VOLTAGE SYSTEMS ROOM.



2 GROUNDING DIAGRAM
N.T.S.



- (1) RECEPTACLE
- (2) TELEPHONE OUTLET
- (3) DATA OUTLET
- (4) WALL SWITCH
- (5) THERMOSTAT, SENSOR
- (6) MISCELLANEOUS, INTERCOM, ETC.
- (7) FIRE ALARM PULL STATION
- (8) FIRE ALARM STROBE/HORN
- (9) WALL MOUNTED SPEAKER
- (10) WALL MOUNTED CARBON MONOXIDE DETECTOR

MOUNTING HEIGHT KEYED NOTE:

1. 4'-0" MAXIMUM TO TOP OF DEVICE UNLESS LOCATED ABOVE OBSTRUCTION (OR NOTED OTHERWISE) THEN MAXIMUM 4" ABOVE THE OBSTRUCTION. COORDINATE WITH MILLWORK.
2. MOUNT NEAR RETURN AIR GRILLE
3. THE HEIGHT OF THE MANUAL FIRE ALARM BOXES SHALL BE A MINIMUM OF 42" AND A MAXIMUM OF 48" MEASURED VERTICALLY, FROM THE FLOOR LEVEL TO THE ACTIVATING HANDLE OR LEVER OF THE BOX
4. ABOVE COUNTER MOUNTED DEVICES. INSTALL DEVICES ABOVE BACKSPLASH AND COORDINATED WITH MILLWORK. DATA/TELEPHONE DEVICES SHOWN ADJACENT TO ABOVE COUNTER RECEPTACLES TO BE TO BE MOUNTED AT SAME HEIGHT

NOTE:
1. ALL DEVICES SHOWN MAY NOT BE USED
2. DETAIL INDICATES TYPICAL MOUNTING HEIGHTS ONLY.
3. DEVICES SHALL BE INSTALLED PLUMB, SQUARE AND TRUE.
4. ALL DEVICES INSTALLED AT A SINGLE LOCATION SHALL BE ALIGNED U.N.O.
5. COORDINATE ALL MOUNTING HEIGHTS WITH ARCHITECT

3 MOUNTING HEIGHT DETAIL
N.T.S.

NOTES:
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS
REFER TO SHEETS E2.1 - E2.5 FOR ELECTRICAL PLANS
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS

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REVISION SCHEDULE		
No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11853 TREY L. WHITE
8/11/2023

08.11.2023
21054

ELECTRICAL LEGEND, NOTES & DETAILS

E1.1

GENERAL ELECTRICAL DEMO NOTES

1. ELECTRICAL DEVICES WITH DASHED LINES TO BE DEMOLISHED: DISCONNECT AND REMOVE CONDUIT AND WIRE BACK TO NEAREST CONCEALED JUNCTION BOX. MAINTAIN CONTINUITY TO REMAINING DEVICES ON CIRCUIT.
2. ALL EXISTING POWER AND LOW VOLTAGE SURFACE MOUNTED RACEWAY AND CONDUIT IS TO BE REMOVED IN ALL SPACES.
3. FOR ALL UNUSED CIRCUITS, REMOVE CONDUIT AND WIRE, LABEL BREAKER AS SPARE.
4. ALL EXISTING FIRE ALARM DEVICES AND PANELS ARE TO BE REMOVED.
5. FIELD VERIFY EXISTING CONDITIONS.
6. ALL DEVICES AND COVER PLATES SHALL BE REMOVED THROUGHOUT THE ENTIRE BUILDING. NEW DEVICES AND
7. COVER PLATES SHALL BE INSTALLED.REMOVE POWER TO ALL EXISTING EQUIPMENT TO BE DEMOLISHED, COORDINATE WITH ALL TRADES.
8. REMOVE ALL EXISTING DATA CABLING THROUGHOUT THE BUILDING AS CONSTRUCTION PHASES ALLOW, COORDINATE WITH OWNER. ALL DATA CABLING THROUGHOUT THE BUILDING IS TO BE REPLACED.
9. ALL EXISTING ELECTRICAL INFRASTRUCTURE TO BE REMOVED AND DISCARDED.
10. ALL INTERIOR AND EXTERIOR WALL MOUNTED LIGHTING SHALL BE REMOVED.
11. REMOVE EXISTING ELECTRIC SERVICE UNDERGROUND AND PREPARE FOR CONNECTION TO NEW ELECTRIC SERVICE ENTRANCE RATED EQUIPMENT.
12. ALL LOCATIONS OF EXISTING EQUIPMENT ARE APPROXIMATE.

SUBSCRIPTS

RE = REMOVE EXISTING
ER = EXISTING TO REMAIN

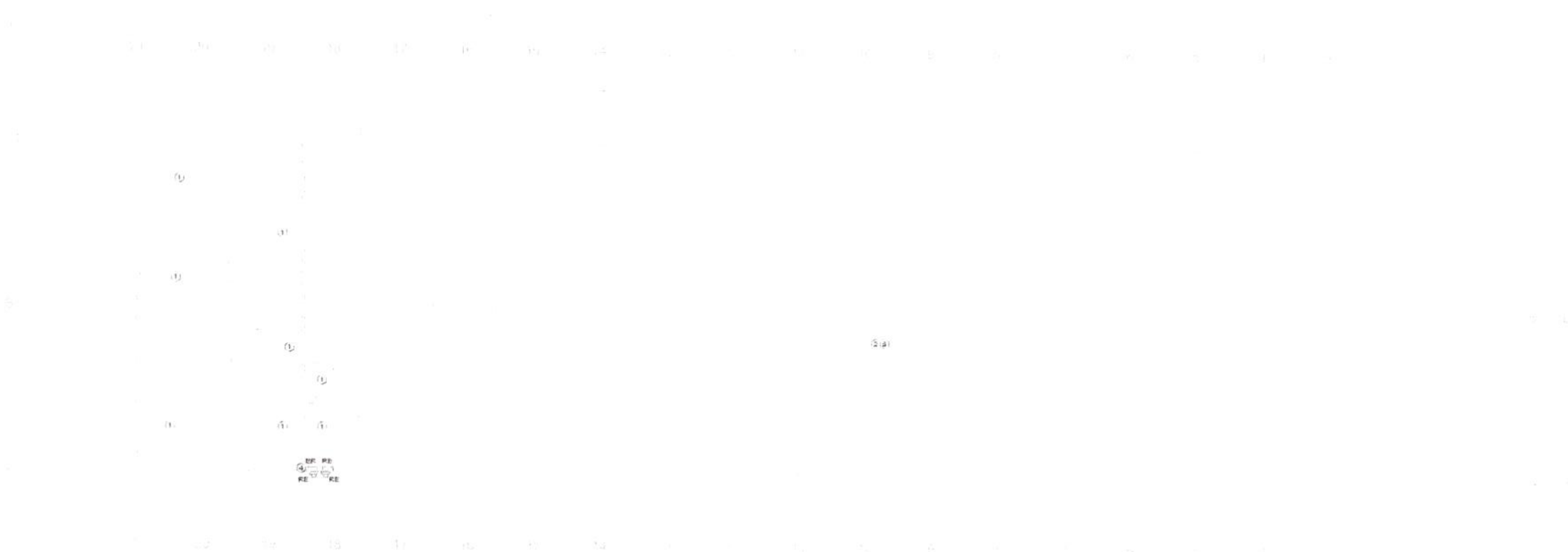
KEYED ELECTRICAL DEMOLITION NOTES (THIS SHEET ONLY)

(1) DEMO EXISTING DEVICES IN WALLS THAT ARE BEING REMOVED. REMOVE ALL WIRE BACK TO JUNCTION POINT MAINTAIN CONTINUITY TO REMAINING DEVICES FIELD VERIFY EXISTING CONDITIONS.

(2) REMOVE ALL SURFACE MOUNTED DEVICES AND CONDUIT IN SPACE

(3) EXISTING HVAC EQUIPMENT TO BE DEMOLISHED . ELECTRICAL CONTRACTOR TO REMOVE ALL ASSOCIATED WIRING AS REQUIRED.

(4) PANEL TO REMAIN AND BE RELOCATED. REMOVE ALL CONNECTED DEVICES, WIRES, BREAKERS, AND CONDUITS. REFER TO SHEET E2.2 FOR NEW LOCATION



1 ELECTRICAL DEMO PLAN
1/8" = 1'-0"

NORTH

NOTES
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEETS E2.1 - E2.5 FOR ELECTRICAL PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES.
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS.

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HSA JOB # 23-044

Rik SOWELL ARCHITECTS, INC.

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

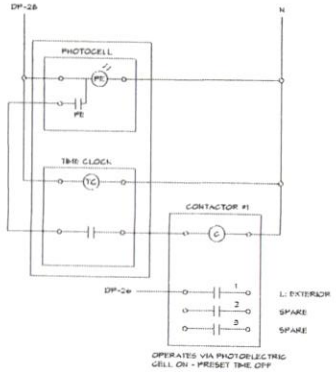
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11853 TREY L. WHITE

08.11.2023
21054

ELECTRICAL DEMO PLAN
E2.0

LIGHTING FIXTURE SCHEDULE

MARK	VOLT	WATTS	LAMP NO.	LAMP TYPE	MOUNTING BRKT	MOUNTING PEND	MOUNTING REC.	MOUNTING SURF.	MANUFACTURER	CATALOG NO.	REMARKS
A1	UNV	93 VA	-	LED			X		COLUMBIA LIGHTING	CBT24-A-LSCS-EDD	2' X 4' LED FLAT PANEL SET AT 3600 LUMENS, 4000K
A2	UNV	82 VA	-	LED			X		COLUMBIA LIGHTING	CBT24-A-LSCS-EDD	2' X 4' LED FLAT PANEL SET AT 4900 LUMENS, 4000K
A3	UNV	83 VA	-	LED			X		COLUMBIA LIGHTING	CBT24-A-LSCS-EDD	2' X 4' LED FLAT PANEL SET AT 5400 LUMENS, 4000K
B	UNV	44 VA	-	LED			X		COLUMBIA LIGHTING	CBL4-LSCS	4' STRIP FIXTURE, SET AT 5300 LUMENS, 4000K
D	UNV	40 VA	-	LED				X	ENO LIGHTING	PGH12-40M-HK	LED GLASS WALL PACK, 5500 LUMENS, 4000K
E	UNV	12 VA	-	LED				X	COMPASS LIGHTING	CUNZ-PC	LED EMERGENCY EGRESS LIGHT FIXTURE
EM	UNV	2 VA	-	LED				X	COMPASS LIGHTING	CUQHL	LED EMERGENCY BUGEYE FIXTURE
EXIT	UNV	5 VA	-	LED				X	COMPASS LIGHTING	CERG	EXIT SIGN - SEE PLANS FOR NUMBER OF SIDES AND CHEVRONS
G	UNV	40 VA	-	LED				X	BEACON LIGHTING	LSQ1-40-WCT4NV-X	LED CANOPY LIGHT, 4500 LUMENS, 4000K



OPERATES VIA PHOTOELECTRIC CELL ON - PRESET TIME OFF

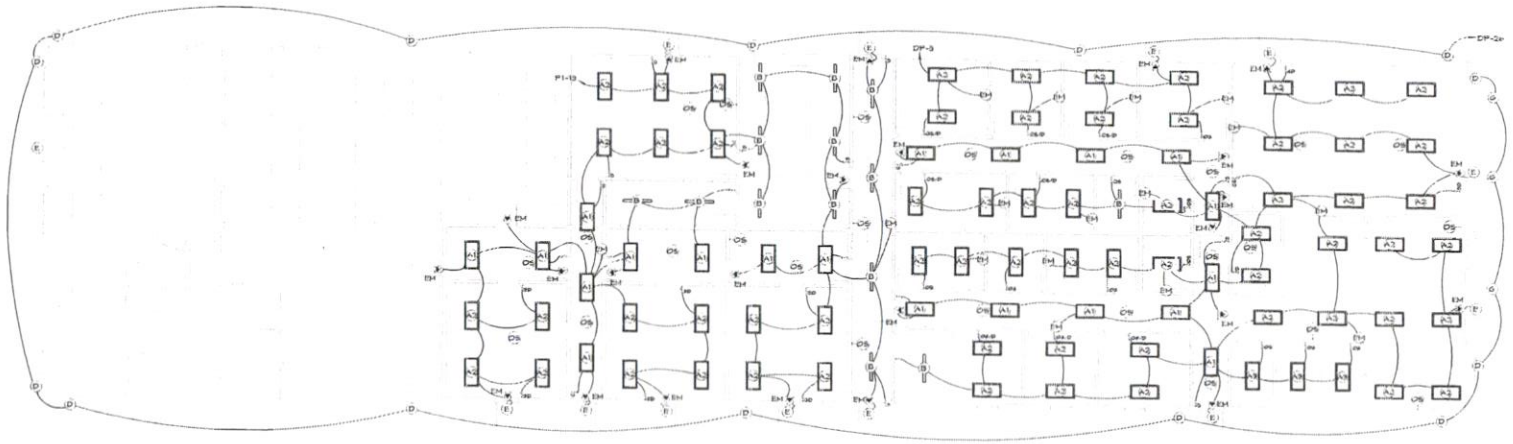
NOTES:
1. PHOTOELECTRIC CELL SHALL BE INTERMATIC #K4121BH, WITH ADJUSTABLE SENSITIVITY, OR EQUAL. THE CONTRACTOR SHALL ADJUST DURING NIGHT HOURS TO ENSURE PROPER OPERATION.
2. PROVIDE ALL ACCESSORIES AND HARDWARE FOR A WORKING INSTALLATION.
9. MOUNT PHOTOELECTRIC CELL FACING NORTH. AVOID ALL ARTIFICIAL LIGHT SOURCES.

LIGHTING CONTACTOR SCHEDULE

	MARK	EQUIPMENT SERVED	CIRCUITS	COIL VOLTAGE	CONTROLLED BY	TYPE	AMP	ENCLOSURE	ACCESSORIES
*	LC1	EXTERIOR LIGHTS	DP-2a	120	TIME CLOCK + PE CELL	MECH HELD	30	NEMA 1	HOA

HOA - HAND-OFF-AUTO SWITCH; OVER RIDES OTHER CONTROLS.
* COORDINATE PRESET "TIME-ON" & "TIME OFF" WITH THE OWNER

2 LIGHTING CONTACTOR DETAIL
N.T.S.



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

NORTH

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

08.11.2023

21054

LIGHTING PLAN

E2.1

GENERAL POWER NOTES

1. MOUNT ALL RECEPTACLES AT 32" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED

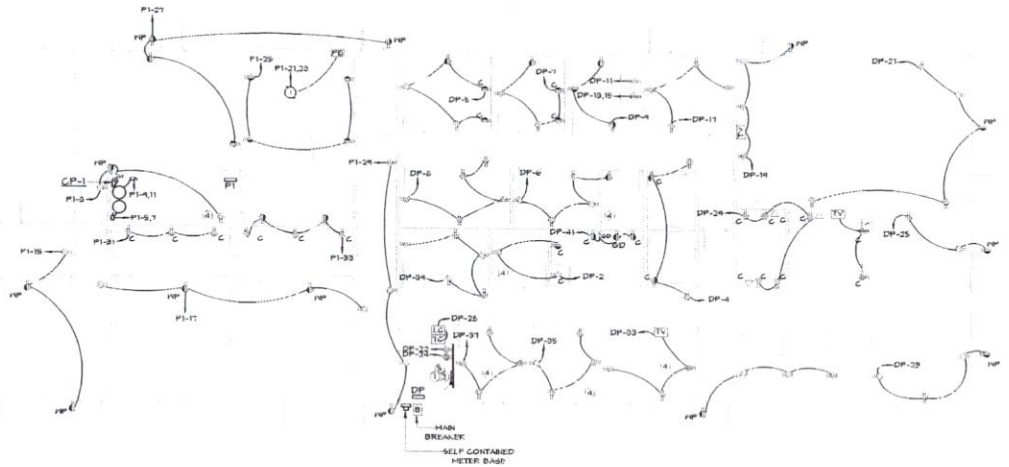
KEYED POWER NOTES

(1) PROVIDE 1/4" x 20" x 4' GROUNDING BAR. INSTALL A #1/0 COPPER GROUND WIRE FROM GROUND BAR TO ELECTRICAL SERVICE GROUNDING ELECTRODE. LEAVE 5' TAIL.

(2) 3/4" FIRE RATED PLYWOOD BACKBOARD TYPICAL ALL WALLS IN SPACE. B.O. BAND AT 24" A.F.F.

(5) CONNECT TO THE ELECTRICAL SERVICE GROUNDING ELECTRODE VIA A #6 COPPER GROUND CONDUCTOR. TYPICAL.

(14) RECEPTACLES IN ROOM TO BE MOUNTED 18" ABOVE FINISHED FLOOR



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

NORTH

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES.
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

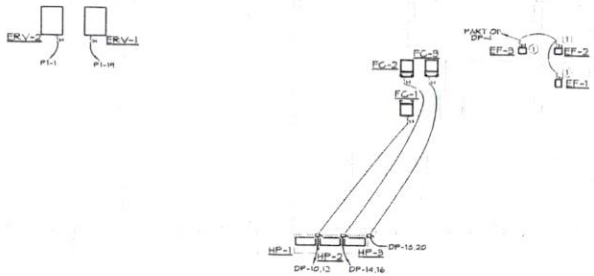
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11853
TREY L. WHITE
8/11/2023

08.11.2023
21054

POWER PLAN
E2.2

MECHANICAL POWER KEYED NOTES

1. EXHAUST FAN TO BE CONTROLLED WITH LIGHTS IN ROOM



1 MECHANICAL POWER PLAN
1/8" = 1'-0"

NORTH

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:
FAULKNER COUNTY ANIMAL SHELTER
597 US-65, GREENBRIER, AR 72058

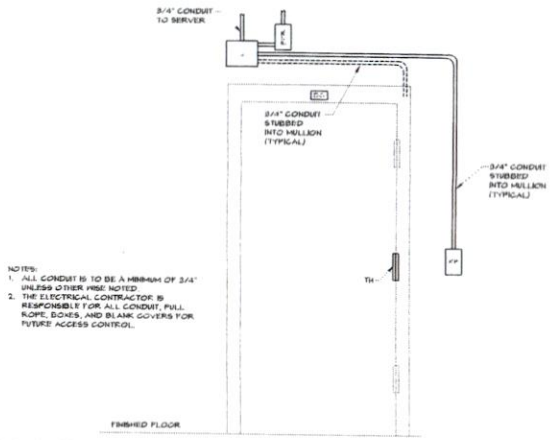
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11853
STEVE L. WHITE
6/11/2023

08.11.2023

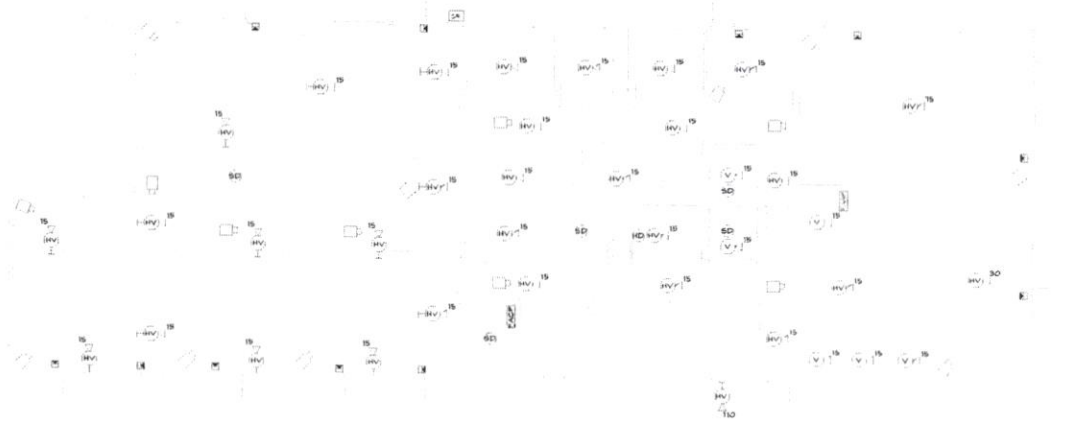
21054

MECHANICAL POWER PLAN

E2.3

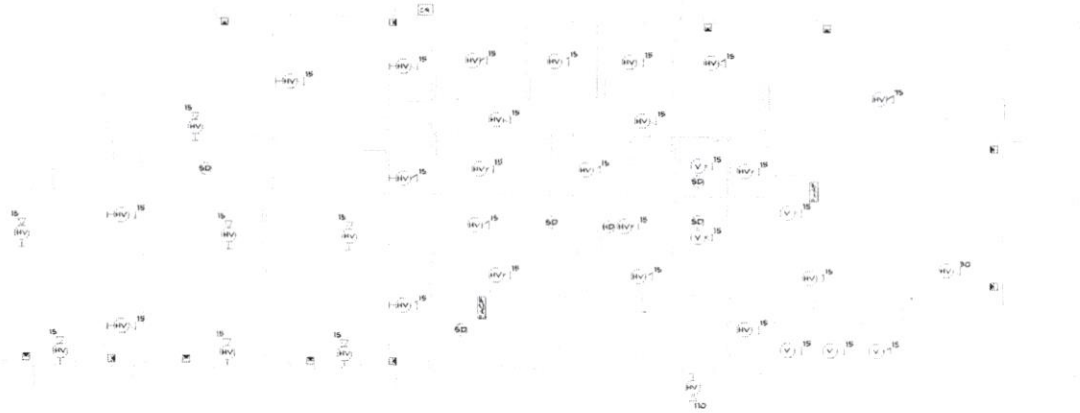


2 ACCESS CONTROL DETAIL
N.T.S.



3 SPECIAL SYSTEMS PLAN - ADD ALTERNATE
1/8" = 1'-0"

NORTH



1 SPECIAL SYSTEMS PLAN - BASE BID
1/8" = 1'-0"

NORTH

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES.
REFER TO SHEET E61.0 FOR ELECTRICAL SITE PLANS.

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REVISION SCHEDULE		
No.	Description	Date

A REMODEL FOR:
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597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11853
RICKY L. WHITE
6/11/2023

08.11.2023

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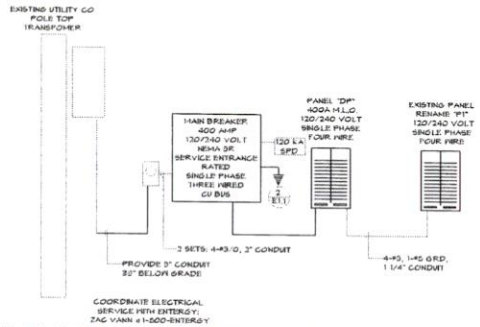
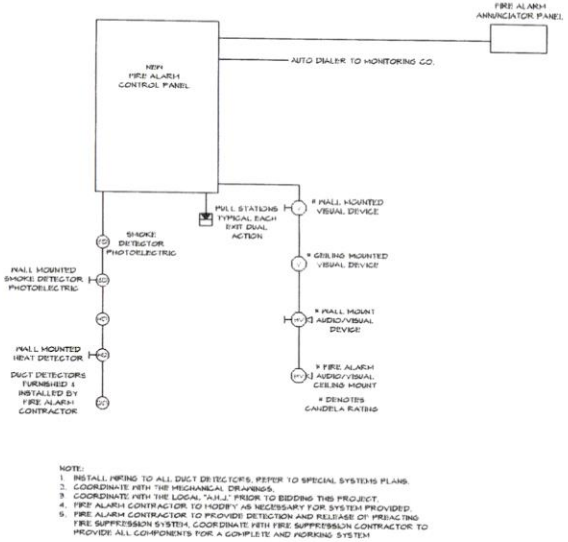
SPECIAL SYSTEMS PLAN

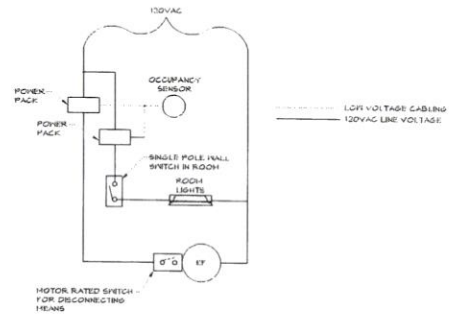
E2.4



1 ELECTRICAL RISER DIAGRAM
N.T.S.



2 FIRE ALARM SYSTEM RISER DIAGRAM
N.T.S.



3 EXHAUST FAN & OCC SENSOR CONTROL DETAIL
N.T.S.

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEETS E2.1 - E2.5 FOR ELECTRICAL PLANS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E5.1 FOR ELECTRICAL SCHEDULES.
REFER TO SHEET ES1.0 FOR ELECTRICAL SITE PLANS.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:

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597 US-65, GREENBRIER, AR 72058

STATE OF ARKANSAS
TRACY L. WHITE
REGISTERED PROFESSIONAL ENGINEER
No. 11853
8/11/2023

08.11.2023

21054

ELECTRICAL DETAILS

E3.1

PANEL SCHEDULE

Panel Name: DP

Amp Rating: 400 A
Mains: MLO
MCB Rating: -
Volts/Phase/Wire: 120/240 Single / 1 / 3

Manufacturer: SQUARE D
Panel Type: NQ
Mounting: Surface
Remarks: CU BUS

Fault Rating: 10 kAIC
Fed From:
Location:

Circuit Description	COND SIZE	WIRE SIZE	GRD SIZE	# OF Wires	Poles	TRIP	CKT	A		B		CKT	TRIP	Poles	# OF Wires	GRD SIZE	WIRE SIZE	COND SIZE	Circuit Description
L: LOBBY AND OFFICES	3/4	12	12	3	1	20	1	1116	540			2	20	1	3	12	12	3/4	R: BREAK ROOM
L: TREATMENT/LAUNDRY/SURRENDER	3/4	12	12	3	1	20	3			371	720	4	20	1	3	12	12	3/4	R: PUBLIC RESTROOMS
R: TREATMENT/SURGERY	3/4	12	12	3	1	20	5	900	900			6	20	1	3	12	12	3/4	R: CAT QUARANTINE
R: PRE-OP	3/4	12	12	3	1	20	7			900	900	8	20	1	3	12	12	3/4	R: ANIMAL INTAKE
R: LAUNDRY/BROOMS&O	3/4	12	12	3	1	20	9	540	2750			10	40	2	4	10	8	3/4	HP-1/PC-1
CLOTHES WASHER	3/4	12	12	3	1	30	11			1300	2190	12	--	--	--	--	--	--	--
CLOTHES DRYER	3/4	10	10	4	2	30	13	2250	4260			14	10	2	4	8	4	3/4	HP-2/PC-2
--	--	--	--	--	--	--	15			2250	4260	16	--	--	--	--	--	--	--
R: SURRENDER	3/4	12	12	3	1	20	17	720	2750			18	40	2	4	10	8	3/4	HP-3/PC-3
R: COMMUNITY ROOM	3/4	10	10	3	1	20	19			1020	2750	20	--	--	--	--	--	--	--
R: COMMUNITY ROOM	3/4	10	10	3	1	20	21	900	360			22	20	1	3	12	12	3/4	R: DATA
R: LOBBY	3/4	10	10	3	1	20	23			720	360	24	20	1	3	12	12	3/4	R: DATA
R: LOBBY	3/4	10	10	3	1	20	25	540	578			26	20	1	3	6	6	3/4	L: EXTERIOR
R: RECEPTION	3/4	12	12	3	1	20	27			1020	600	28	20	1	3	12	12	3/4	LC1
R: STAFF	3/4	12	12	3	1	20	29	1080	11063			30	125	2	4	*	*	*	P1
R: MEET AND GREET	3/4	12	12	3	1	20	31			720	8854	32	--	--	--	--	--	--	--
R: DIRECTORS OFFICE	3/4	12	12	3	1	20	33	1020	0			34	20	1	--	--	--	--	Spare
R: OFFICE 110	3/4	12	12	3	1	20	35			400	0	36	20	1	--	--	--	--	Spare
R: OFFICE 112	3/4	12	12	3	1	20	37	400	0			38	20	1	--	--	--	--	Spare
R: CAT ADOPTION	3/4	12	12	3	1	20	39			400	0	40	20	1	--	--	--	--	Spare
R: BREAK ROOM	3/4	12	12	3	1	20	41	1980	0			42	20	1	--	--	--	--	Spare
								Total Load:	35411 VA		31208 VA								
								Total Amps:	295 A		260 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	3944 VA	125.00%	4930 VA		
Receptacle	28320 VA	67.66%	19160 VA	Total Conn. Load:	66425 VA
HVAC	19153 VA	100.00%	19153 VA	Total Est. Demand:	58451 VA
Motor	960 VA	100.00%	960 VA	Total Conn. Current:	278 A
Other	13625 VA	100.00%	13625 VA	Total Est. Demand Current:	244 A
Kitchen	0 VA	0.00%	0 VA		

Notes:
*REFER TO RISER DIAGRAM FOR SIZE

PANEL SCHEDULE

Panel Name: P1

Amp Rating: 125 A
Mains: MLO
MCB Rating: *
Volts/Phase/Wire: 120/240 Single / 1 / 3

Manufacturer: SQUARE D
Panel Type: NQ
Mounting: Surface
Remarks: CU BUS

Fault Rating: SERIES
Fed From: DP
Location:

Circuit Description	COND SIZE	WIRE SIZE	GRD SIZE	# OF Wires	Poles	TRIP	CKT	A		B		CKT	TRIP	Poles	# OF Wires	GRD SIZE	WIRE SIZE	COND SIZE	Circuit Description
ERV-1	3/4	12	12	3	1	15	1	4	0			2	20	1	--	--	--	--	Spare
R: MECHANICAL ROOM	3/4	12	12	3	1	20	3			586	0	4	20	1	--	--	--	--	Spare
WATER HEATER	3/4	10	10	4	2	35	5	3000	0			6	20	1	--	--	--	--	Spare
--	--	--	--	--	--	--	7			3000	0	8	20	1	--	--	--	--	Spare
WATER HEATER	3/4	10	10	4	2	35	9	3000	0			10	20	1	--	--	--	--	Spare
--	--	--	--	--	--	--	11			3000	0	13	20	1	--	--	--	--	Spare
L: KENNELS/QUARANTINE AREAS	3/4	12	12	3	1	20	15	1514	0			14	20	1	--	--	--	--	Spare
R: KENNELS 121	3/4	12	12	3	1	20	17			540	0	16	20	1	--	--	--	--	Spare
R: KENNELS 116/115	3/4	12	12	3	1	20	17	720	0			18	20	1	--	--	--	--	Spare
ERV-2	3/4	12	12	3	1	20	19			4	0	20	20	1	--	--	--	--	Spare
OVERHEAD DOOR	3/4	12	12	4	3	30	21	480	0			22	20	1	--	--	--	--	Spare
--	--	--	--	--	--	--	23			450	0	24	20	1	--	--	--	--	Spare
R: SALLY PORT	3/4	12	12	3	1	20	25	720	0			26	20	1	--	--	--	--	Spare
R: EXTERIOR	3/4	12	12	3	1	20	27			720	0	28	20	1	--	--	--	--	Spare
R: HALL	3/4	12	12	3	1	20	29	720	0			30	20	1	--	--	--	--	Spare
R: ALCOVE 119	3/4	12	12	3	1	20	31			540	--	32	--	1	--	--	--	--	Space
R: ALCOVE 117	3/4	12	12	3	1	20	33	400	--			34	--	1	--	--	--	--	Space
Spare	--	--	--	--	1	20	35			0	--	36	--	1	--	--	--	--	Space
Spare	--	--	--	--	1	20	37	0	--			38	--	1	--	--	--	--	Space
Spare	--	--	--	--	1	20	39			0	--	40	--	1	--	--	--	--	Space
Spare	--	--	--	--	1	20	41	0	--			42	--	1	--	--	--	--	Space
								Total Load:	11063 VA		8654 VA								
								Total Amps:	92 A		74 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	1452 VA	125.00%	1815 VA		
Receptacle	5400 VA	100.00%	5400 VA	Total Conn. Load:	19416 VA
HVAC	17 VA	100.00%	17 VA	Total Est. Demand:	20374 VA
Motor	960 VA	100.00%	960 VA	Total Conn. Current:	83 A
Other	13089 VA	100.00%	13089 VA	Total Est. Demand Current:	84 A
Kitchen	0 VA	0.00%	0 VA		

Notes:

NOTES:
REFER TO SHEET E1.1 FOR ELECTRICAL LEGEND AND NOTES.
REFER TO SHEET E2.0 FOR ELECTRICAL DEMO PLANS.
REFER TO SHEETS E2.1 - E2.5 FOR ELECTRICAL PLANS.
REFER TO SHEET E3.1 FOR ELECTRICAL DETAILS.
REFER TO SHEET E4.1 FOR ELECTRICAL RISER DIAGRAMS.
REFER TO SHEET E51.0 FOR ELECTRICAL SITE PLANS.

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REVISION SCHEDULE

No.	Description	Date

A REMODEL FOR:

FAULKNER COUNTY ANIMAL SHELTER

597 US-65, GREENBRIER, AR 72058

ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11853
TREVOR L. WHITE
6/11/2023

06.11.2023

21054

ELECTRICAL SCHEDULES

E3.2

SOWELL
ARCHITECTS, INC.

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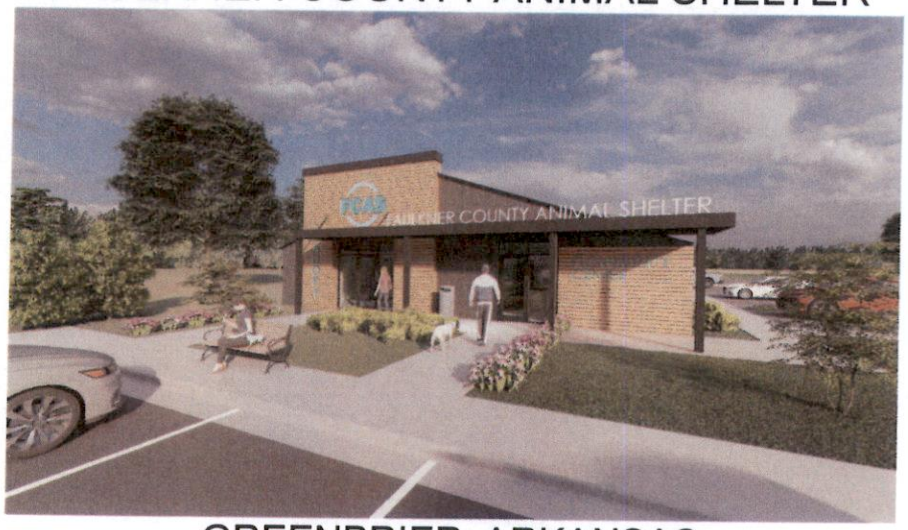
PROJECT MANUAL

Date: August 11, 2023
Project Number: 21054

A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER



GREENBRIER, ARKANSAS

REGISTERED ARCHITECT
Sowell Architects, Inc.
License Number C-179
STATE OF ARKANSAS

ARCHITECT:
Sowell Architects, Inc.
1315 North Street, Suite 100
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MECHANICAL/ELECTRICAL ENGINEER:
H.S.A. Engineering
1105 Bob Courtway Dr.
Conway, AR 72032

STRUCTURAL ENGINEER:
Robbins Engineering Consultants
10018 W Markham St.
Little Rock, AR 72205

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DIVISION 10 – SPECIALTIES

DIVISION 22 – PLUMBING

DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

DIVISION 26 – ELECTRICAL

DIVISION 27 – COMMUNICATIONS

DIVISION 31 – EARTHWORK

DIVISION 32 – EXTERIOR IMPROVEMENTS

DIVISION 33 – UTILITIES

END OF SECTION 00 01 10

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SECTION 00 11 16 – INVITATION TO BID

Project: A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
597 U.S. HIGHWAY 65
GREENBRIER, AR

Arch. Proj. No.: 21054

Owner: FAULKNER COUNTY
801 LOCUST AVENUE
CONWAY, AR 72034

Architect: SOWELL ARCHITECTS, INC.
1315 NORTH STREET, SUITE 100
CONWAY, AR 72034
501/450-9633 (TELEPHONE)
emily@sowellarchitects.com

Sealed bids for the above project may be hand-delivered to the office of the County Judge at 810 Faulkner Street, Conway, AR 72034, or mailed to 801 Locust Avenue, Conway, AR 72034, at and until 2:00 PM CST, **Tuesday, September 12, 2023**, and will be publicly opened. Bids received after the designated time, either by hand delivery or by mail, will *not* be considered. A bid security will be required in the form of a Bid Bond or certified check equal to five percent (5%) of the Base Bid amount. A surety bond shall be written on AIA Document A310 Bid Bond, or other acceptable form that contains the same information. The Owner will require a Performance and Payment Bond. The amount is to be included in the Base Bid.

A digital set of the construction documents may be obtained from the office of the Architect beginning at 2:00 PM, **Thursday, August 17, 2023**, upon receipt of a non-refundable payment of $50.00 payable to the Architect.

No partial sets of drawings or specifications will be issued.

The bidding documents will be furnished to established plan rooms without charge.

Faulkner County reserves the right to reject all bids, to accept in whole or in part, or to waive any informalities in the bids received.

END OF SECTION 00 11 16

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SECTION 00 21 13 – INSTRUCTIONS TO BIDDERS

1. *AIA Document A701, Instructions to Bidders, 2018 Edition* is hereby made a part of the Contract Documents to the same extent as if written out in full, except as amended or supplemented herein.

2. Subparagraph 3.4.1: Delete the sentence and substitute "Addenda will be mailed, delivered, faxed or E-mailed to all Bidders and established plan rooms which have received a complete set of Bidding Documents. It is the Bidder's responsibility to distribute the Addenda to the subbidders."

3. Subparagraph 3.4.3: Change the words "four days" to "two days".

4. Paragraph Article 8: Add to the end of the sentence "or other appropriate AIA Form of Agreement."

END OF SECTION 00 21 13

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SECTION 00 41 00 - BID FORM

Project: A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
GREENBRIER, AR

Project No.: 21054

Owner: FAULKNER COUNTY
801 LOCUST AVENUE
CONWAY, AR 72034

Bid from: _____ Contracting Firm

_____ License number

_____ Address

_____ City, State, Zip

_____ Telephone number

BASE BID:

Having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and cost of the Work at the job site, and having fully inspected the site, we hereby propose and agree to perform the Work in strict accordance with the Contract Documents and addenda (acknowledge all addenda numbers: _____) for the Base Bid:

_____ **Dollars** **$**_____

ALTERNATE BIDS:

Alternate Bid No. 1 (deductive): State the amount to be deducted from the Base Bid to delete the floor finishes in all locations scheduled to receive flooring and provide sealed concrete floors in all locations. Rubber base as scheduled shall be provided at all locations scheduled to receive a base.

_____ Dollars -$_____

Alternate Bid No. 2 (deductive): State the amount to be deducted from the Base Bid to delete the entire front façade as detailed on Sheets A6.1 and A6.2. Refer to Building Elevations on Sheet A4.1 for the finishing of the façade of the existing building.

_____ Dollars -$_____

We understand the Owner reserves the right to reject this bid, but that this bid shall remain open and not be withdrawn for a period of sixty (60) days from the date above.

We estimate the time of construction to be _____.

Authorized signature: _____

Position: _____

Date: _____

END OF SECTION 00 41 00

SECTION 00 72 00 - GENERAL CONDITIONS

1. *AIA Document A201, General Conditions of the Contract for Construction, 2007 Edition* are hereby made a part of the Contract Documents to the same extent as if written out in full, except as amended or supplemented herein.

END OF SECTION 00 72 00

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SECTION 00 73 00 – SUPPLEMENTARY CONDITIONS

1. The following supplements shall modify, delete and/or add to *AIA Document A201, General Conditions of the Contract for Construction.*

2. Add subparagraph 1.1.8: "The word ***provide*** shall mean to furnish and install, complete in place, operating, tested and approved.

3. Add subparagraph 1.1.9: "The word ***product(s)*** refers to the materials, systems and equipment provided by the Contractor."

4. Delete the second sentence in subparagraph 1.2.1. Substitute the following: "The Architect shall identify those contract Documents which are a part of the Agreement."

5. Subparagraph 3.4.2: Add the sentence "Any person whose work is unsatisfactory to the Owner or Architect shall be removed from the Work upon receipt of written notice from the Architect."

6. Add subparagraph 3.4.3: "All Contractors and Subcontractors engaged in the Work shall conform to the labor laws of the State of Arkansas, and the various acts mandatory and supplementary thereto, and all other laws, ordinances and legal requirements applicable thereto."

7. Add subparagraph 3.9.2: "The superintendent and assistants shall be satisfactory to the Architect, and shall not be changed without the consent of the Architect, unless the superintendent or assistant cease to be in the employ of the Contractor."

8. Subparagraph 4.5.1: Change the words "shall be subject to arbitration upon the written demand of either party" to "shall be subject to arbitration if both parties agree to arbitration."

9. Add subparagraph 4.5.8: "Arbitration proceedings shall be in accordance with applicable laws of the State of Arkansas."

10. Add subparagraph 5.2.5: "Where any provision of Article 5 conflicts with Act 477 of the State of Arkansas as amended, the provisions of Act 477 and amendments thereto shall govern."

11. Add subparagraph 7.5.1: "Contractor shall furnish and pay for an executed Performance Bond on *AIA Document A311* and labor and Material Payment Bond on *AIA Document A311* in the amount of 100% of the Contract Sum."

12. Delete subparagraph 9.3.1 and substitute the following: "On or before the twenty-fifth day of each calendar month, the Contractor shall submit to the Architect an itemized Application for Payment, *AIA Document G702*, supported by data substantiating the Contractor's right to payment submitted on *AIA Document G703* and attached thereto. The Contractor shall submit an original and two copies of these forms and one legible copy of each invoice or statement supporting requests for payment of materials or equipment stored on the jobsite or in an approved bonded warehouse."

"Until the work is 50% complete, the Owner will pay 90% of the amount due the Contractor on account of progress payments. At the time the Work is 50% complete and thereafter, and upon receipt by the Architect of a properly executed *AIA Document G707A Consent of Surety to Reduction In or Partial Release of Retainage,* the Architect will authorize all remaining partial payments to be paid in full. No retainage will be withheld on material and/or equipment stored on the jobsite or in an approved bonded warehouse."

13. Add the following clauses to subparagraph 11.1.2:

11.1.2.1: The Contractor shall purchase and maintain Workers Compensation Insurance providing Statutory Workers Compensation Benefits as well as Employers Liability Coverage of at least $100,000 Limit of Liability per accident. The following endorsements providing extensions of coverage shall be attached forming a part of said Workers Compensation policy:

A. Broad Form All States Endorsement
B. Maritime or Jones Act coverage where applicable.
C. United States Longshoremen's & Harbor Workers coverage, if applicable.
D. Stopgap Liability if designated project is located in monopolistic state (Nevada, North Dakota, Ohio, Washington, West Virginia and Wyoming).

11.1.2.2: The Contractor shall purchase and maintain Commercial General Liability insurance providing at lease the following coverages and limits of liability:

A. Premises and Operations	Bodily Injury - $1,000,000 each occurrence, $2,000,000 annual aggregate. Property Damage - $1,000,000 each occurrence, $2,000,000 annual aggregate.
B. Independent Contractors	Same
C. Completed Operations & Products	Same
D. X-Explosion, C-Collapse, U-Underground Property Damage when applicable	Included
E. Contractual Liability/Blanket coverage	Same
F. Personal Injury Coverage	Same

The Owner and Architect shall be named as Additional Insured.

11.1.2.3: The Contractor shall purchase and maintain Business Auto Liability or Comprehensive Auto Liability policy providing coverage for all owned, non-owned and leased autos. Limit of Liability required shall be at least $1,000,000 Combined Single Limit.

11.1.2.4: The Contractor shall purchase and maintain an Umbrella Liability policy providing coverage over and above required underlying Employers Liability Commercial General Liability and Business Auto Liability coverages. Limits of Liability shall be at least $1,000,000 per occurrence. The Owner and Architect shall be named Additional Insured.

11.1.2.5: The Contractor shall purchase and maintain Property Insurance (Builder's Risk, Installation Floater, Boiler & Machinery coverage when applicable (including the peril of testing) providing special form coverage as a minimum for all materials, including labor, destined to be a part of the Work or already part of the Work. The Owner, Architect, Contractor and all Subcontractors shall be Named Insured covering their respective interests of the Work.

11.1.2.6: Miscellaneous requirements:

A. All required insurance coverages and bonds shall be provided by an insurance company with at least a "best" financial rating of (A-) or better and licensed to do business in the state of the designated project.

B. Certificates of Insurance shall be filed in duplicate with the Architect and approved by the Owner prior to commencement of the Work. The certificates shall reflect coverages, limits of liability, and wording at least as broad as described herein. Use the ACORD Certificate of Insurance form.

C. The Contractor shall not commence work under this contract or allow any subcontractor or anyone directly or indirectly employed by any one of them to commence work until all insurance required herein has been obtained, and two duly executed certificated of such insurance have been filed with the Architect and approved by the Owner, and the Contractor has complied with bonding requirements and a work order has been issued. Each certificate and policy shall contain a provision that coverages afforded under the policies will not be canceled or altered until at least sixty days prior written notice has been given to the Owner.

D. The insurance carrier shall issue an endorsement specifically permitting the waiver or rights provision in *AIA Document A201*, Article 11.3.6.

14. Delete subparagraph 11.2.1 in its entirety and substitute the following: "The Contractor shall be responsible for purchasing and maintaining liability insurance for the protection of the Owner against claims arising from operations under the Contract."

15. Delete subparagraph 11.3.1 in its entirety and substitute the following: "The Contractor shall purchase and maintain property insurance for the entire Work to the full insurable value thereof. The policy shall be with a company against which the Owner has no reasonable objection. This insurance shall be the property special form or broader coverage for physical loss or damage and shall include the interests of the Owner, Contractor and Subcontractors. If not covered under special form insurance or otherwise provided for, the Contractor shall effect and maintain similar property insurance on portions of the work stored off-site or in-transit when such portions of the Work are to be included in an Application for Payment per subparagraph 9.3.2."

16. Add the following to subparagraph 11.3.3:

11.3.1.1: "The form of policy for this coverage shall be completed value."

11.3.1.2: "If by the terms of this insurance any mandatory deductibles are required, or if the Contractor should elect, with the concurrence of the Owner, to increase the mandatory deductible amounts or purchase this insurance with voluntary deductible amounts, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim."

17. Delete subparagraph 11.3.4 in its entirety.

18. Delete subparagraph 11.3.5 in its entirety.

END OF SECTION 00 73 00

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SECTION 01 11 00 - SUMMARY OF WORK

1.1 GENERAL

A. The Project consists of an approximate 6,700 square foot remodel of an existing 10,000 square foot building into an animal shelter to serve Faulkner County, Arkansas.

1. Project Location: 597 U.S. Highway 65 in Greenbrier, Arkansas.
2. Owner: Faulkner County, 801 Locust Avenue, Conway, AR 72034.

B. Contract Documents, dated August 11. 2023 were prepared for the Project by Sowell Architects, Inc., 1315 North Street, Suite 100, Conway, Arkansas 72034.

C. The Work consists of the remodeling of a one-story wood construction building containing office space, community room, kennels, medical facilities, and public spaces for adoption of pets.

1. The Work includes stud framing, drywall, insulation, storefront, doors, hardware, flooring, millwork, painting, mechanical and electrical systems, concrete foundation, minimal site work and more.

D. The Work will be constructed under a single prime contract.

E. The Work will be conducted in a single phase.

F. Contractor Use of Premises: The Contractor shall have complete use of the site to the extent it does not interfere with ongoing operations.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 11 00

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SECTION 01 21 00 – ALLOWANCES

1.1 GENERAL

A. Types of allowances required include the following:

1. The Contractor shall include in the Contract Sum an allowance for interior and exterior signage in the amount of $20,000. Details will follow. All applicable taxes, labor, installation costs, overhead, profit and other expenses shall be included in the allowance. The electrical power for signs as described in the electrical drawings shall be included in the base bid.

2. Contingency allowance: The Contractor shall include in the Contract Sum a contingency amount of $100,000. Overhead and profit will not be allowed if use of the contingency allowance is necessary.

B. Selection and Purchase: At the earliest practical date after award of the Contract, advise the Owner of the date when selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

C. Contingency Allowance: Use contingency allowance only as directed by Architect.

1. Related costs for products and equipment ordered under the contingency allowance, including delivery, installation, taxes, insurance, and similar costs, are not part of the Contract Sum.

2. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Examine products covered by an allowance promptly upon delivery for damage or defects.

B. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

END OF SECTION 01 21 00

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SECTION 01 26 00 – MODIFICATION PROCEDURES

1.1 GENERAL

A. Minor Changes in the Work: The Architect will issue instructions authorizing minor changes in the Work on AIA Form G710.

B. Owner-Initiated Change Order Proposal Requests: The Architect will issue a description of proposed changes in the Work that require adjustment to the Contract Sum or Time on AIA Form G709. The description may include supplemental or revised Drawings and Specifications.

1. Proposal requests are for information only. Do not consider them an instruction to stop work or to execute the proposed change.
2. Within 10 days of receipt, submit an estimate of cost necessary to execute the change for the Owner's review.

    a. Include an itemized list of products required and unit costs, with the total amount of purchases.
    b. Indicate taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Indicate the effect the change will have on the Contract Time.

C. Contractor-Initiated Proposals: When unforeseen conditions require modifications, the Contractor may submit a request for a change to the Architect.

1. Describe the proposed change. Indicate reasons for the change and the effect of the change on the Contract Sum and Time.
2. Include an itemized list of products required and unit costs, with the total amount of purchases.
3. Indicate taxes, delivery charges, equipment rental, and amounts of trade discounts.

D. Allowance Adjustment: Base Change Order Proposals on the difference between the purchase amount and the allowance, multiplied by the measurement of work-in-place. Allow for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs only where indicated as part of the allowance.
2. Prepare explanations and documentation to substantiate margins claimed.
3. Submit substantiation of a change in work claimed in the Change Orders related to unit-cost allowances.

E. Submit claims for increased costs because of a change in the allowance, whether for purchase order amount or handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of authorization to proceed. The Owner will reject claims submitted later than 21 days.

1. Do not include indirect expense in cost amount unless the Work has changed from that described in Contract Documents.
2. No change to indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

F. Construction Change Directive: When Owner and Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714 instructing the Contractor to proceed with a change.

1. The Construction Change Directive contains a description of the change and designates the method to be followed to determine change in the Contract Sum or Time.

G. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completing the change, submit an itemized account and supporting data to substantiate Contract adjustments.

H. Change Order Procedures: Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order on AIA Form G701.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 26 00

SECTION 01 29 00 – PAYMENT PROCEDURES

1.1 GENERAL

A. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.

B. Schedule of Values: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

   a. Contractor's Construction Schedule.
   b. Application for Payment forms, including Continuation Sheets.
   c. List of subcontractors.
   d. List of products.
   e. List of principal suppliers and fabricators.
   f. Schedule of submittals.

2. Submit the Schedule of Values at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.

C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Include the following Project identification:

   a. Project name and location.
   b. Name of Architect.
   c. Project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

   a. Related Specification Section or Division.
   b. Description of Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.
   h. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
4. Provide a separate line item for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

5. Provide separate line items for initial cost of the materials, for each subsequent stage of completion, and for total installed value.
6. Show line items for indirect costs and margins on costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

    a. Temporary facilities and items that are not direct cost of work-in-place may be shown as separate line items or distributed as general overhead expense.

7. Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives change the Contract Sum.

D. Applications for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

E. Payment-Application Times: Payment dates are indicated in the Agreement. The period covered by each application is the period indicated in the Agreement.

F. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.

G. Application Preparation: Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

H. Transmittal: Submit executed digital copy of each Application for Payment to the Architect within 24 hours. Includeng waivers of lien and similar attachments.

1. Applications for Payment shall be reviewed, marked up and returned digitally. Paper copies are not required.

I. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of lien from every entity who may file a lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Submit each Application for Payment with Contractor's waiver of lien for the period of construction covered by the application.

    a. Submit final Applications for Payment with final waivers from every entity involved with performance of the Work covered by the application who may file a lien.

4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.

J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Submittal Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. Copies of building permits.
8. Copies of licenses from governing authorities.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.

K. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

1. Administrative actions and submittals that shall precede or coincide with this application include the following:

a. Occupancy permits.
b. Warranties and maintenance agreements.
c. Test/adjust/balance records.
d. Maintenance instructions.
e. Meter readings.
f. Changeover information related to Owner's occupancy.
g. Final cleaning.
h. Application for reduction of retainage and consent of surety.

L. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Transmittal of Project construction records to the Owner.
4. Certified property survey.
5. Proof that taxes, fees, and similar obligations were paid.
6. Removal of temporary facilities and services.
7. Change of door locks to Owner's access.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 29 00

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SECTION 01 31 13 – PROJECT COORDINATION

1.1 GENERAL

A. This Section includes requirements for coordinating construction operations including, but not necessarily limited to, the following:

1. Administrative and supervisory personnel.
2. Cleaning and protection.

1.2 COORDINATION

A. Coordinate construction to assure efficient and orderly installation of each part of the Work. Coordinate operations that depend on each other for proper installation, connection, and operation.

1. Schedule operations in the sequence required to obtain the best results where installation of one part depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to assure maximum accessibility for maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required procedures with other activities to avoid conflicts and assure orderly progress. Such activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Delivery and processing of submittals.
3. Progress meetings.
4. Project closeout activities.

D. Conservation: Coordinate construction to assure that operations are carried out with consideration for conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not incorporated in, the Work.

E. Staff Names: Within 15 days of commencement of construction, submit a list of the Contractor's staff assignments, including the superintendent and other personnel at the Project Site. Identify individuals and their responsibilities. List their addresses and telephone numbers.

1.3 PRODUCTS (Not Applicable)

1.4 EXECUTION

A. Inspection of Conditions: Require Installers of major components to inspect substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.

B. Coordinate temporary enclosures with inspections and tests to minimize the need to uncover completed construction.

C. Clean and protect construction in progress and adjoining materials, during handling and installation. Apply protective covering to assure protection from damage.

D. Clean and maintain completed construction as necessary through the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

E. Limiting Exposures: Supervise construction to assure that no part is subject to harmful, dangerous, or damaging exposure. Such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Water or ice.
5. Solvents and chemicals.
6. Abrasion.
7. Soiling, staining, and corrosion.
8. Combustion.

END OF SECTION 01 31 13

SECTION 01 33 00 – SUBMITTAL PROCEDURES

1.1 GENERAL

A. Submittal Procedures: Coordinate submittal preparation with construction, fabrication, other submittals, and activities that require sequential operations. Transmit in advance of construction operations to avoid delay.

1. Coordinate submittals for related operations to avoid delay because of the need to review submittals concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.
2. Processing: Allow 2 weeks for initial review. Allow more time if the Architect must delay processing to permit coordination. Allow 2 weeks for reprocessing.

    a. No extension of Contract Time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

3. Submittal Transmittal: Package each submittal appropriately. Transmit with a transmittal form. The Architect will not accept submittals from sources other than the Contractor. **The contractor is encouraged to transmit electronic submittals when appropriate. They will be marked up electronically and returned in the same format. The Architect will not print copies.**

B. Contractor's Construction Schedule: Prepare a horizontal bar-chart-type, contractor's construction schedule.

1. Submit within 30 days of the date established for "Commencement of the Work."
2. Coordinate with the Schedule of Values, list of subcontracts, Submittal Schedule, payment requests, and other schedules.
3. Indicate completion in advance of Substantial Completion. Indicate Substantial Completion to allow time for the Architect's procedures necessary for certification of Substantial Completion.
4. Work Stages: Indicate important stages for each portion of the Work.
5. Schedule Distribution: Distribute copies of the Contractor's Construction Schedule to the Architect, Owner, subcontractors, and parties required to comply with submittal dates. Post copies in the field office.

    a. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their Work and are no longer involved in construction activities.
    b. Updating: Revise the schedule after each meeting or activity where revisions have been made. Issue the updated schedule concurrently with the report of each meeting.

C. Shop Drawings: Submit newly prepared information drawn to scale. Indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

6. Sheet Size: Except for templates and full-size Drawings, submit one correctable, reproducible print and one blue- or black-line print. The Architect will return the reproducible print.

    a. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

D. Product Data: Collect Product Data into a single submittal for each element of construction. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, mark copies to indicate applicable information.

1. Include the following information:

    a. Manufacturer's printed recommendations.
    b. Compliance with trade association standards.
    c. Compliance with recognized testing agency standards.
    d. Application of testing agency labels and seals.
    e. Notation of dimensions verified by field measurement.
    f. Notation of coordination requirements.

2. Submittals: Submit minimum 5 copies. The Architect will retain one and return the others marked with action taken.

    a. Unless noncompliance with Contract Documents is observed, the submittal serves as the final submittal.

3. Distribution: Furnish copies to installers, subcontractors, suppliers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until a copy of Product Data is in the Installer's possession.

    a. Do not use unmarked Product Data for construction.

E. Samples: Submit full-size Samples cured and finished as specified and identical with the material proposed.

1. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 3 sets. One set will be returned marked with the action taken. Maintain sets of Samples, at the Project Site, for quality comparison.

    a. Unless noncompliance with Contract Documents is observed, the submittal may serve as the final submittal.
    b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

2. Distribution of Samples: Distribute additional sets to subcontractors, manufacturers, and others as required for performance of the Work. Show distribution on transmittal forms.

F. Quality Assurance Submittals: Submit quality-control submittals, including design data, certifications, manufacturer's instructions, and manufacturer's field reports required under other Sections of the Specifications.

1. Certifications: Where certification that a product or installation complies with specified requirements is required, submit a notarized certification from the manufacturer certifying compliance.

a. Signature: Certification shall be signed by an officer authorized to sign documents on behalf of the company.

l. Architect's Action: Except for submittals for the record or information, where action and return are required, the Architect will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

1. Action Stamp: The Architect will stamp each submittal with an action stamp. The Architect will mark the stamp appropriately to indicate the action taken.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 33 00

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SECTION 01 42 19 – REFERENCE STANDARDS

1.1 GENERAL

A. Definitions: Basic contract definitions are included in the Conditions of the Contract.

B. "Indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. "Directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

D. "Approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

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

I. "Installer" is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
2. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter."

J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

L. Specification Format: These Specifications are organized into Divisions and Sections based on the 16-division format and CSI/CSC's "MasterFormat" numbering system.

M. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

N. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

O. Publication Dates: Comply with standards in effect as of the date of the Contract Documents.

P. Copies of Standards: Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

Q. Abbreviations and Names: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

R. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 42 19

SECTION 01 45 00 – QUALITY CONTROL

1.1 GENERAL

A. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Architect.

B. Contractor Responsibilities: Unless they are the responsibility of another entity, Contractor shall provide inspections and tests specified elsewhere and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.

1. Where inspections and tests are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform these services. Costs for these services are included in the Contract Sum.
2. Where inspections and tests are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.

a. Where the Owner engages an agency to test or inspect part of the Work and the Contractor is required to engage an entity to test or inspect the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless the Owner agrees in writing.

C. Retesting: The Contractor is responsible for retesting where results of inspections and tests prove unsatisfactory and indicate noncompliance with requirements.

1. The cost of retesting is the Contractor's responsibility where tests performed indicated noncompliance with requirements.

D. Auxiliary Services: Cooperate with agencies performing inspections and tests. Provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include the following:

1. Providing access to the Work.
2. Furnishing incidental labor and facilities to assist inspections and tests.
3. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
4. Providing facilities for storage and curing of test samples.
5. Delivering samples to testing laboratories.
6. Providing preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Providing security and protection of samples and test equipment.

E. Duties of the Testing Agency: The testing agency shall cooperate with the Architect and the Contractor in performing its duties. The agency shall provide qualified personnel to perform inspections and tests.

1. The agency shall notify the Architect and the Contractor of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency shall not release, revoke, alter, or enlarge requirements or approve or accept any portion of the Work.
3. The agency shall not perform duties of the Contractor.

F. Coordination: Coordinate activities to accommodate services with a minimum of delay. Avoid removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling inspections, tests, taking samples, and similar activities.

G. Submittals: The testing agency shall submit a certified written report, in duplicate, of each inspection and test to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection or test through the Contractor.

1. Submit additional copies of each report to the governing authority, when the authority so directs.
2. Report Data: Reports of each inspection, test, or similar service include, but are not limited to, the following:

a. Date of issue.
b. Project title and number.
c. Name, address, and telephone number of testing agency.
d. Dates and locations of samples and tests or inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and an interpretation of test results.
j. Ambient conditions at the time of sample taking and testing.
k. Comments or professional opinion on whether inspected or tested Work complies with requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

H. Qualifications for Service Agencies: Engage inspection and testing service agencies that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each agency shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Repair and Protection: Upon completion of inspection, testing, and sample taking, repair damaged construction. Restore substrates and finishes. Comply with Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for inspection and testing.

END OF SECTION 01 45 00

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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

1.1 GENERAL

A. Summary: This Section specifies construction facilities and temporary controls including temporary utilities, support facilities, and security and protection facilities.

B. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.
6. Hot Springs Village Property Owner's Association and committees.

C. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

D. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.2 PRODUCTS

A. Materials: Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

1. Lumber and Plywood: Comply with Division 6 Section "Rough Carpentry." Provide UL-labeled, fire-treated lumber and plywood for temporary offices and sheds. Provide exterior, Grade B-B high-density concrete form overlay plywood for signs. Provide 5/8-inch- (16-mm-) thick exterior plywood for other uses.
2. Tarpaulins: Waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
3. Water: Potable water approved by local health authorities.
4. Open-Mesh Fencing: 0.120-inch- (3-mm-) thick, galvanized 2-inch (50-mm) chainlink fabric fencing 6 feet (2 m) high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches (38 mm) I.D. for line posts and 2-1/2 inches (64 mm) I.D. for corner posts.

B. Equipment: Provide new equipment or undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

1. Water Hoses: 3/4-inch (19-mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet (30 m) long. Provide adjustable shutoff nozzles at hose discharge.

2. Electrical Outlets: Properly configured, NEMA-polarized outlets. Provide outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
3. Electrical Power Cords: Grounded extension cords. Use hard-service cords where exposed to abrasion and traffic.
4. Lamps and Light Fixtures: General service incandescent lamps. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
5. Heating Units: Temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
6. Fire Extinguishers: Hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

    a. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

1.3 EXECUTION

A. Installation, General: Use qualified personnel to install temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

1. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
2. Conditions of Use: Keep temporary facilities clean and neat in appearance. Operate safely and efficiently. Relocate as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

B. Temporary Utility Installation: Engage the local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect. Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders.
5. Temporary Water Service: Install temporary water service adequate for construction. Maintain service until permanent water service is in use.
6. Temporary Electric Power: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity and power characteristics. Include meters, transformers, over-load protected disconnects, automatic ground-fault interrupters and main distribution switchgear.

a. Power Distribution: Install wiring overhead and rise vertically where least exposed to damage.
b. Temporary Lighting: Provide temporary lighting with local switching to fulfill security requirements and illumination for construction operations and traffic conditions.

7. Temporary Heat: Provide temporary heat for curing or drying of completed installations or for protection of installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations. Coordinate ventilation requirements to produce ambient condition required and minimize consumption of energy.
8. Temporary Telephones: Provide temporary telephone service for personnel engaged in construction. The superintendent's cell phone is acceptable. At each telephone, or in the field office, post a list of important telephone numbers.
9. Sanitary Facilities: Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers.

    a. Toilets: Install self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

10. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

    a. Filter out soil, construction debris, chemicals, and similar contaminants that might clog sewers or pollute waterways.
    b. Connect temporary sewers to the municipal system, as directed by sewer department officials. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

C. Support Facilities Installation: Locate field offices, storage sheds, and other construction and support facilities for easy access. Maintain facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

1. Field Offices: Provide temporary office of size to accommodate personnel at the Project Site. Provide office on foundation adequate for normal loading.
2. Temporary Enclosures: Provide temporary enclosures for protection of construction from exposure, foul weather, other construction operations, and similar activities. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions.

    a. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
    b. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

3. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees.
4. Project Signs: Install project identification and other signs where indicated to inform the public and persons seeking entrance to the Project. Support on framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs. Engage an experienced sign painter to apply graphics. Comply with details indicated.
5. Waste Collection and Disposal: Collect waste daily. Comply with requirements of NFPA 241. Enforce requirements strictly. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

    a. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C).

D. Security and Protection Facilities Installation: Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion.

1. Temporary Fire Protection: Until permanent facilities supply fire-protection needs, install and maintain temporary fire-protection facilities of types needed to protect against controllable fire losses. Comply with NFPA 10 and NFPA 241.

    a. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell. Maintain unobstructed access to fire extinguishers.
    b. Store combustible materials in containers in fire-safe locations.
    c. Prohibit smoking in hazardous fire-exposure areas.
    d. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

2. Barricades, Warning Signs, and Lights: Comply with code requirements for erection of barricades. Paint with appropriate colors, graphics, and warning signs. Where appropriate and needed, provide lighting, including flashing red or amber lights.
3. Security Enclosure and Lockup: Install temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, and theft. Provide a secure lockup where materials and equipment are of value and must be stored.
4. Environmental Protection: Operate temporary facilities and conduct construction in ways that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making equipment to hours that will minimize complaints.

E. Operation: Enforce discipline in use of temporary facilities. Limit availability to intended uses to minimize waste and abuse.

F. Maintenance: Maintain facilities in operating condition until removal. Protect from damage by freezing temperatures and similar elements. Maintain temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid damage.

G. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect during excavation.

H. Termination and Removal: Remove each temporary facility when the need has ended, when replaced by a permanent facility, or no later than Substantial Completion. Complete or restore

permanent construction delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during the construction period.

    a. Replace air filters and clean inside of ductwork and housings.
    b. Replace worn parts and parts subject to unusual operating conditions.
    c. Replace burned out lamps.

END OF SECTION 01 50 00

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SECTION 01 60 00 – MATERIALS AND EQUIPMENT

1.1 GENERAL

A. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock.

1. "Named Products" are items identified by the manufacturer's product name, including make or model number or designation, shown or listed in the manufacturer's published product literature.

B. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

D. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected.

E. Nameplates: Except for required labels and operating data, do not attach manufacturer's nameplates or trademarks on surfaces exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

F. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage and to prevent overcrowding construction spaces. Coordinate with installation to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
2. Deliver products in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
3. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

4. Store products to facilitate inspection and measurement of quantity or counting of units. Store heavy materials away from the structure in a manner that will not endanger the supporting construction.
5. Store products subject to damage by the elements aboveground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.2 PRODUCTS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

1.3 EXECUTION

A. Comply with manufacturer's instructions for installation of products. Anchor each product securely in place, accurately located and aligned with other Work. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 60 00

SECTION 01 63 00 – SUBSTITUTIONS

1.1 GENERAL

A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed after award of the Contract are considered requests for substitutions. The following are not requests for substitutions:

1. Substitutions requested during the bidding period and accepted by Addendum prior to award of the Contract.
2. Revisions to the Contract Documents requested by the Owner.
3. Specified options included in the Contract Documents.
4. Contractor's compliance with regulations issued by governing authorities.

B. Substitution Request Submittal: The Architect will consider requests for substitution received within 60 days after commencement of the Work.

1. Submit 3 copies of each request for substitution. Submit requests according to procedures required for change-order proposals.
2. Identify the product or method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide documentation showing compliance with the requirements for substitutions and the following information:

a. Coordination information, including a list of changes needed to other Work that will be necessary to accommodate the substitution.
b. A comparison of the substitution with the Work specified, including performance, weight, size, durability, and visual effect.
c. Product Data, including Drawings and descriptions of products and installation procedures.
d. Samples, where applicable or requested.
e. A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the substitution on Contract Time.
f. Cost information, including a proposal of the net change, if any in the Contract Sum.
g. Certification that the substitution conforms to the Contract Documents and is appropriate for the applications indicated.

4. Architect's Action: If necessary, the Architect will request additional information within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection within 2 weeks of receipt of the request.

a. Use the product specified if the Architect cannot make a decision within the time allocated.

1.2 PRODUCTS

A. Conditions: The Architect will receive and consider a request for substitution when one or more of the following conditions are satisfied. Otherwise, the Architect will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.

2. Changes are in keeping with the intent of the Contract Documents.
3. The specified product cannot be provided within the Contract Time. The Architect will not consider the request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
4. The request is related to an "or-equal" clause.
5. The substitution offers the Owner a substantial advantage, in cost, time, or other considerations, after deducting compensation to the Architect for redesign and increased cost of other construction.
6. The specified product cannot receive approval by a governing authority, and the substitution can be approved.

B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction not complying with the Contract Documents do not constitute an acceptable request for substitution, nor do they constitute approval.

1.3 EXECUTION (Not Applicable)

END OF SECTION 01 63 00

SECTION 01 73 00 – CLOSEOUT SUBMITTALS

1.1 GENERAL

A. Record Drawings: Maintain a set of prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown.

1. Mark sets with red pencil.

H. Record Specifications: Maintain one copy of the Project Manual, including addenda. Mark to show variations in Work performed in comparison with the text of the Specifications and modifications

1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

I. Maintenance Manuals: Organize operation and maintenance data into sets of manageable size. Bind in individual, heavy-duty, binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following information:

1. Emergency instructions.
2. Copies of warranties.
3. Wiring diagrams.
4. Shop Drawings and Product Data.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires maintenance to provide instruction in proper operation and maintenance. Include a detailed review of the following items:

1. Maintenance manuals.
2. Warranties and bonds.
3. Maintenance agreements and similar continuing commitments.

END OF SECTION 01 73 00

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SECTION 01 78 36 – WARRANTIES

1.1 GENERAL

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
2. Where the Contract Documents require a special warranty, or similar commitment, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

H. Submit written warranties to the Architect prior to the date certified for Substantial Completion.

I. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.

1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. List of Warranties: As follows:

B. Schedule: Provide warranties on products and installations as specified in the following Sections:

END OF SECTION 01 78 36

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Sections:

1. Section 02200 "EARTHWORK" for drainage fill under slabs-on-grade.

1.2 ACTION SUBMITTALS

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

B. Design Mixtures: For each concrete mixture.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Floor surface flatness and levelness measurements.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency,qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150, Type I/II. May supplement with the following:

a. Fly Ash: ASTM C 618, Class F or C.

B. Normal-Weight Aggregates: ASTM C 33, graded.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 FIBER REINFORCEMENT

A. Synthetic Micro-Fiber: Monofilament or fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III.

2.6 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick.

2.7 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.8 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.9 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

D. Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: Refer to Structural Drawings
2. Maximum Water-Cementitious Materials Ratio: Refer to Structural Drawings
3. Slump Limit: [4 inches (100 mm)] [5 inches (125 mm)] [8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture] <Insert dimension>, plus or minus 1 inch (25 mm).
4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch (38-mm) nominal maximum aggregate size.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch (25-mm) nominal maximum aggregate size.
6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306.1.

D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until

producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.

1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

3.11 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 03 30 00

SECTION 05 50 00 – METAL FABRICATIONS AND MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 SUMMARY: Metal fabrications and miscellaneous metal work, complete, including:

A. Pit Ladder.

B. Steel supports for work of other trades, including supports for elevator guide rails and machine beams.

C. Miscellaneous metal steel attachments, anchors, plates, angles, etc.

D. Anchors angles, bolts, expansion shields for items in this section only, and other accessories shown in details and or required for the complete installation of all work.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS:

A. Cast-In-Place Concrete; Section 03300.

B. Unit Masonry Assemblies; Section 04200.

1.3 SUBMITTALS: Comply with Section 01300.

A. Product Data: Submit for products used in miscellaneous metal fabrications, including paint products and grout.

B. Shop Drawings: Submit shop drawings for the fabrication and erection of all assemblies of metal fabrications and miscellaneous metal work. Include plans, elevations, sections, and details of fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.

1.4 PROJECT CONDITIONS:

A. Field Measurements:

1. Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

2. Where field measurements cannot be made without delaying work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS:

A. Steel Plates, Rods, Shapes and Bars: ASTM A 36.

2.3 FASTENERS:

A. Steel Bolts and Nuts: ASTM A 307, Grade A. High strength bolts; ASTM A 325. Hot-dip galvanize all items in accordance with ASTM A 153.

B. Expansion Bolts Wedge Anchors: Ramset "Trubolt" or Hilti "Kwik Bolt".

C. Adhesive Anchors: Hilti "HIT HY150", injection adhesive anchor.

D. Expansion Shields: F.S. FF-S-325

E. Anchor Bolts: Furnish and deliver to site, anchor bolts and other items to be embedded in concrete. Provide necessary shop details and diagrams for concrete forms and, if required, provide templates to insure proper and accurate locations and setting of anchor bolts.

F. Toggle Bolts: Tumble-wing type F.S. FF-B-588 type, class and style as required.

G. Lock Washers: F.S. FF-W-84, helical spring type carbon steel.

H. Plain Washers: Round, ASME B18.22.1.

I. Wood Screws: Flat head, ASME B18.6.1.

J. Machine Screws: ASME B18.6.3.

2.4 WELDING RODS AND ELECTRODES: Select in accordance with AWS specifications for metal alloy to be welded.

2.5 MISCELLANEOUS ITEMS: Furnish bent or otherwise custom fabricated angles, bolts, plates, z-clips, anchors, hangers, dowels and other miscellaneous steel shapes as required for framing and supporting work and for anchoring or securing work to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Section 06100.

2.6 PAINT:

A. Shop Paint: Lead free, alkyd primer; Tnemec 10-99, Southern Coatings Enviro-Guard 1-2900, or approved equal, meeting performance requirements of F.S. TT-P-86, and passing ASTM B 117 after 500 hours.

Primer selected must be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Section 09910.

B. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in galvanized steel work, complying with SSPC- Paint 20.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

2.7 NON-SHRINK NONMETALLIC GROUT: Master Builders "Masterflow 713", Euclid "Euco N.S. Grout", L & M "Crystex", or U. S. Grout "Five Star Grout", Sonneborn "Sonogrout", or W. R. Meadows "Sealtight 588 Grout".

2.8 FABRICATION, GENERAL:

A. Shop Assembly: Preassemble items in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces.

B. Workmanship: Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.

C. Cut, drill and punch metals cleanly and accurately. Remove burrs and ease exposed edges to a radius of approximately 1/32" unless otherwise shown.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Weld corners and seams continuously, complying with AWS recommendations.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

G. Cut reinforce, drill and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

H. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

I. Shop Painting:

1. Shop paint miscellaneous metal work, except concealed metal work, members or portion of members to be embedded in concrete or masonry, surfaces and edges to be field welded, anodized aluminum, and galvanized surfaces, unless otherwise specified.

2. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 or SSPC SP-3.

3. Remove oil, grease and similar contaminants in accordance with SSPC SP-1.

4. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at rate to provide uniform dry film thickness of 2.0 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges, and exposed surfaces.

J. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

K. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use. Cut reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items. Locate joints where least conspicuous.

2.10 MISCELLANEOUS METAL FABRICATIONS:

A. Ladders: Steel bars, rods, treads, and shapes of sizes and designs indicated.

B. Steel Supports: Provide structural steel lintels, channels, braces, angles, etc., as indicated and assemble as detailed. Secure all connections to provide rigid supports for all items required including supports not specifically specified in other sections.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to site.

B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.2 INSTALLATION:

A. Fastening To In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

B. Cutting, Fitting, Placement: Perform cutting, drilling and fitting required for installation. Set metal fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true, and free of rack; measured from established lines and levels.

C. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

D. Setting Loose Plates:

1. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom of surface of bearing plates.

2. Set loose leveling and bearing plates on wedges, or other adjustable devices. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with edge of bearing plate before packing with grout.

E. Ladders: Securely anchor to floor and walls.

3.3 TOUCH-UP SHOP PAINTING: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Use galvanizing repair paint on damaged galvanized surfaces.

END OF SECTION 05 50 00

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SECTION 06 10 00 – MISCELLANEOUS CARPENTRY

1.1 GENERAL (NOT USED)

1.2 PRODUCTS

A. Lumber, General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.

1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

B. Wood-Preservative-Treated Materials: Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
b. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m).

C. Dimension Lumber: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.

1. Interior Partitions: Provide Standard, Stud, or No. 3 grade and any of the following species:

a. Species: Eastern softwoods; NELMA.
b. Species: Northern species; NLGA.
c. Species: Mixed southern pine; SPIB.
d. Species: Western woods; WCLIB or WWPA.

2. Other Framing: Provide Construction or No. 2 grade and any of the following species:

a. Species: Spruce-pine-fir; NELMA or NLGA.
b. Species: Southern pine; SPIB.
c. Species: Douglas fir-larch; NLGA, WCLIB, or WWPA.
d. Species: Hem-fir; NLGA, WCLIB, or WWPA.
e. Species: Douglas fir south; WWPA.

D. Concealed Boards: Provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Species and Grade: Eastern softwoods, No. 3 Common per NELMA rules.
2. Species and Grade: Northern species, No. 3 Common or Standard per NLGA rules.
3. Species and Grade: Mixed southern pine, No. 2 per SPIB rules.
4. Species and Grade: Western woods, Standard per WCLIB rules or No. 3 Common per WWPA rules.

1.3 EXECUTION

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

B. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

C. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

D. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

END OF SECTION 06 10 00

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.
3. Underlayment.
4. Sheathing joint and penetration treatment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.
2. Fire-retardant-treated plywood.
3. Foam-plastic sheathing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 WOOD PANEL PRODUCTS

A. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

B. Oriented Strand Board: DOC PS 2.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction, Use Category UC3b for exterior construction.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat all plywood unless otherwise indicated.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
3. Design Value Adjustment Factors: Treated lumber plywood shall be tested according ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings.

2.5 WALL SHEATHING

A. Plywood Wall Sheathing: Exterior Exposure 1 sheathing.

B. Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing.

C. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.

1. Type and Thickness: Regular, 5/8 inch (13 mm) & Type X, 5/8 inch (15.9 mm) thickness and type in locations as indicated on drawings.

D. Cementitious Backer Units: ASTM C 1325, Type A.

1. Thickness: 5/8 inch (12.7 mm).

2.6 ROOF SHEATHING

A. Plywood Roof Sheathing: Exterior Exposure 1 sheathing.

B. Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.8 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail to wood framing.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch (3 mm) apart at edges and ends.

2. Underlayment:

a. Nail to subflooring.
b. Space panels 1/32 inch (0.8 mm) apart at edges and ends.
c. Fill and sand edge joints of underlayment receiving resilient flooring immediately before installing flooring.

3.3 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to wood framing with nails or screws.
2. Fasten gypsum sheathing to cold-formed metal framing with screws.
3. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
4. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Seal sheathing joints according to sheathing manufacturer's written instructions.

1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.4 CEMENTITIOUS BACKER UNIT INSTALLATION

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

END OF SECTION 06 16 00

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SECTION 06 40 23 – INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior standing and running trim.
2. Wood cabinets.
3. Plastic-laminate cabinets.
4. Plastic-laminate countertops.

B. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips unless concealed within other construction before woodwork installation.

1.2 SUBMITTALS

A. Product Data: For cabinet hardware and accessories.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

C. Samples:
1. Plastic-laminates, for each type, color, pattern, and surface finish.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of woodwork.

B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards."

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood Species and Cut for Transparent Finish: Red oak, plain sawn or sliced.

B. Wood Species for Opaque Finish: Eastern white pine, sugar pine, or western white pine.

C. Wood Products:

1. Hardboard: AHA A135.4.
2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
3. Particleboard: ANSI A208.1, Grade M-2.
4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

D. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural woodwork, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, minimum 100 degrees of opening.

C. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

D. Catches: Magnetic catches, BHMA A156.9, B03141.

E. Drawer Slides: BHMA A156.9, B05091.
1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.

F. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.

G. Door Locks: BHMA A156.11, E07121.

H. Drawer Locks: BHMA A156.11, E07041.

I. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base; match Architect's sample.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

2.4 FABRICATION

A. General: Complete fabrication to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

1. Interior Woodwork Grade: Custom.

B. Interior Standing and Running Trim:

1. For transparent-finished trim items wider than available lumber, use veneered construction. Do not glue for width.
2. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
3. Assemble casings in plant except where limitations of access to place of installation require field assembly.

C. Wood Cabinets for Transparent Finish:

1. AWI Type of Cabinet Construction: Flush overlay.
2. WI Door and Drawer Front Style: Flush overlay.
3. Grain Direction: Vertically for drawer fronts, doors, and fixed panels.
4. Matching of Veneer Leaves: Book match.
5. Veneer Matching within Panel Face: Running match.
6. Semiexposed Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.
7. Drawer Sides and Backs: Thermoset decorative panels.
8. Drawer Bottoms: Thermoset decorative panels.
9. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

D. Plastic-Laminate Cabinets:

1. AWI Type of Cabinet Construction: Flush overlay.
2. WI Door and Drawer Front Style: Flush overlay.
3. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate as follows:

    a. Horizontal Surfaces Other Than Tops: Grade HGS.
    b. Postformed Surfaces: Grade HGP.
    c. Vertical Surfaces: Grade HGS.
    d. Edges: Grade HGS.

4. Materials for Semiexposed Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
5. Drawer Sides and Backs: Thermoset decorative panels.
6. Drawer Bottoms: Thermoset decorative panels.
7. Colors, Patterns, and Finishes: As selected by Architect from laminate manufacturer's full range.
8. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

E. Plastic-Laminate Countertops:

1. High-Pressure Decorative Laminate Grade: HGS.
2. Colors, Patterns, and Finishes: As selected by Architect from laminate manufacturer's full range.
3. Edge Treatment: Same as laminate cladding on horizontal surfaces.
4. Core Material at Sinks: Medium-density fiberboard made with exterior glue or exterior-grade plywood.

3.1 INSTALLATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas. Examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

B. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

C. Install woodwork level, plumb, true, and straight to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm). Shim as required with concealed shims.

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails [or finishing screws] for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.[Scarf running joints and stagger in adjacent and related members.] Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.

G. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.

1. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood framing, blocking, or hanging strips.

H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

END OF SECTION 06 40 23

SECTION 07 21 00 - BUILDING INSULATION

1.1 GENERAL

A. Submittals: Product Data for each type of insulation product specified.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated as determined by testing identical products per ASTM E 84, ASTM E 119, or ASTM E 136 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1.2 PRODUCTS

A. General: Provide insulating materials that comply with requirements and with referenced standards.

1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.

B. Kraft-Faced Batt Insulation: ASTM C 665, Type II, Class C; faced on one side with kraft vapor retarder.

1. Mineral Fiber type: Fibers manufactured from glass, slag wool or rock wool.

C. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

D. Sound Batt Insulation: Unfaced fiber glass batts designed to fit snugly into stud cavities.

1.3 EXECUTION

A. Installation, General: Comply with insulation manufacturer's written instructions applicable to products and application indicated.

1. Install insulation that is undamaged, dry, unsoiled, and has not been exposed at any time to ice and snow.
2. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
3. Apply single layer of insulation to produce thickness indicated.

C. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

END OF SECTION 07 21 00

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SECTION 07 25 00 – WEATHER BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Building wrap.
2. Flexible flashing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.

1. Products: Subject to compliance with requirements, provide one of the following:

a. DuPont (E. I. du Pont de Nemours and Company); Tyvek CommercialWrap.
b. Ludlow Coated Products; Barricade Building Wrap.
c. Pactiv, Inc.; GreenGuard Classic Wrap Ultra Wrap .
d. Raven Industries Inc.; Fortress Pro Weather Protective Barrier.

2. Water-Vapor Permeance: Not less than 50 g through 1 sq. m of surface in 24 hours per ASTM E 96/E 96M, Desiccant Method (Procedure A).

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Self-adhesive butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

1. Products: Subject to compliance with requirements, provide one of the following:

a. DuPont (E. I. du Pont de Nemours and Company); DuPont Flashing Tape.
b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Vycor Butyl Self Adhered Flashing.
c. Protecto Wrap Company; BT-25 XL.
d. Raven Industries Inc.; Fortress Flashshield.
e. Advanced Building Products Inc.; Wind-o-wrap.
f. Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
g. Fiberweb, Clark Hammerbeam Corp.; Aquaflash 500.
h. Fortifiber Building Systems Group; [Fortiflash 25] [Fortiflash 40].
i. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; [Vycor Plus Self-Adhered Flashing] [Vycor V40 Self-Adhered Flashing].
j. MFM Building Products Corp.; Window Wrap.
k. Polyguard Products, Inc.; [Polyguard JT-20 Tape] [Polyguard JT-30 Tape].
l. Sandell Manufacturing Co., Inc.; Presto-Seal.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover sheathing with water-resistive barrier as follows:

1. Cut back barrier 1/2 inch (13 mm) on each side of the break in supporting members at expansion- or control-joint locations.
2. Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap unless otherwise indicated.

B. Building Wrap: Comply with manufacturer's written instructions.

1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

3.2 FLEXIBLE FLASHING INSTALLATION

A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.

1. Lap seams and junctures with other materials at least 4 inches (100 mm) except that at flashing flanges of other construction, laps need not exceed flange width.
2. Lap flashing over water-resistive barrier at bottom and sides of openings.
3. Lap water-resistive barrier over flashing at heads of openings.

END OF SECTION 07 25 00

SECTION 07 46 19 – STEEL SIDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Steel siding.

1.2 SUBMITTALS

A. Submit under provisions of Section 01 33 00 – Submittal Procedures.

B. Product Data:
   1. Manufacturer's data sheets on each product to be used.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.

B. Protect from damage due to weather, excessive temperature, and construction operations.

C. Handling: Handle materials to avoid damage.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.6 WARRANTY

A. Manufacturer's standard limited warranty unless indicated otherwise.
   1. Residential Steel Siding Products: Limited life time warranty.
      a. Warranties apply to pre-painted products only.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: MAC Metal.

B. Requests for substitutions will be considered in accordance with the provisions of Section 01 63 00 - Substitutions.

2.2 PERFORMANCE REQUIREMENTS - FINISHES

A. Steel Finishing: Proprietary Textural Paint Technology. UV resistant.
1. Standards Compliance:
a. Fire Resistance: ASTM E84, Class A.
b. Air Leakage: ASTME283 compliant.

2.3 STEEL SIDING

A. Performance and Design Requirements:
1. Steel Siding: CS Type B, 24 gauge, 0.34 inch (8.6 mm) thick galvanized steel coil complying with ASTM A653, and ASTM G60.
a. Factory formed with a nailing flange to interlock securely with successive courses.
b. Clapboard: Furnished in lengths, and packed in pieces.
1) Exposure Dimension: 6 inch (152 mm), 12 ft (3658 mm) long.
c. Accessories: Manufacturer's standard.

B. Basis of Design: MAC Metal Harrywood.
1. Finish: Textural Paint technology.
a. Stain and scratch resistant.
b. Color: As determined by the Architect from manufacture's offered color range.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly constructed and prepared.

B. Verify weather barrier installation is complete and ready for the installation of aluminum siding.

C. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions approved submittals and in proper relationship with adjacent construction.

3.4 ADJUSTING AND CLEANING

A. Clean dirt from surface of installed products, using mild soap and water.

B. After completing installation, remove from project site excess materials and debris resulting from installation of vinyl products.

3.5 CLEANING AND PROTECTION

A. Clean products in accordance with the manufacturer's recommendations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 46 19

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SECTION 07 92 00 - JOINT SEALANTS

1.1 GENERAL (not used)

1.2 PRODUCTS

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions, as demonstrated by testing and field experience.

B. Colors: Provide color indicated of exposed joint sealants or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

C. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated complying with ASTM C 920 requirements.

1. Multi-Part, Neutral-Curing Silicone Sealant: Type M; Grade NS; Class 25; Uses T, NT, M, G, A, and O with the additional capability to withstand 50 percent movement in both extension and compression for a total of 100 percent movement when tested per ASTM C 719 and still comply with other requirements of ASTM C 920.
2. One-Part, Neutral-Curing Silicone Sealant: Type S, Grade NS, Class 25, and as follows:

    a. Uses T, NT, M, G, A, and O.
    b. Additional capability, when tested per ASTM C 719, to withstand the following percentage changes in joint width as measured at time of application and still comply with other requirements of ASTM C 920:

        1) 50 percent movement in both extension and compression for a total of 100 percent movement.

3. One-Part, High-Modulus, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, M, G, A, and O.
4. One-Part, Acid-Curing Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and O.
5. One-Part, Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and O; formulated with fungicide; intended for sealing interior joints with nonporous substrates exposed to high humidity and temperature extremes.
6. One-Part, Neutral-Curing Silicone Sealant for Use T: Type S; Grade NS; Class 25; Uses T, M, and O with the additional capability, when tested per ASTM C 719, to withstand the following percentage changes in joint width as measured at time of application and still comply with other requirements of ASTM C 920:

    a. 50 percent movement in both extension and compression for a total of 100 percent movement.

7. Multi-Part, Nonsag Urethane Sealant for Use NT: Type M, Grade NS, Class 25, and as follows:

    a. Uses T, NT, M, G, A, and O.

8. Multi-Part, Nonsag Urethane Sealant for Use T: Type M, Grade NS, Class 25, and as follows:

a. Uses T, M, G, A, and O.

9. Multi-Part, Pourable Urethane Sealant for Use T: Type M, Grade P, Class 25, and as follows:

   a. Uses T, M, G, A, and O.

10. One-Part, Nonsag Urethane Sealant for Use NT: Type S; Grade NS; Class 25; and Uses NT, M, A, and O.
11. One-Part, Nonsag Urethane Sealant for Use T: Type S, Grade NS, Class 25, and as follows:

    a. Uses T, NT, M, G, A, and O.

12. One-Part, Pourable Urethane Sealant for Use T: Type S, Grade P, Class 25, and as follows:

    a. Uses T, M, G, A, and O.

D. Acrylic-Emulsion Sealant: One-part, nonsag, mildew-resistant, paintable, acrylic-emulsion sealant complying with ASTM C 834.

E. Sealant Backings, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

1. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonwaxing, nonextruding strips of plastic foam of material indicated below, and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

   a. Open-cell polyurethane foam.
   b. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
   c. Proprietary, reticulated, closed-cell polymeric foam, nonoutgassing, with a density of 2.5 pcf and tensile strength of 35 psi per ASTM D 1623, and with water absorption less than 0.02 gram/cubic centimeter per ASTM C 1083.
   d. Any material indicated above.

2. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to -26 deg F (-32 deg C).
3. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back of joint.

F. Primer: As recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

1.3 EXECUTION

A. General: Comply with joint sealant manufacturer's instructions applicable to products and applications indicated.

B. Sealant Installation Standard: Comply with ASTM C 1193.

END OF SECTION 07 92 00

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SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.

B. Related Sections:

1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
2. Division 08 Section "Flush Wood Doors".
3. Division 08 Section "Door Hardware".
4. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ANSI/BHMA A156.15 - Hardware Preparation in Steel Doors and Frames.
11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.
7. Details of moldings, removable stops, and glazing.
8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
3. Smoke Control Door Assemblies: Comply with NFPA 105.

    a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having

jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CECO Door Products.

2. Curries Company.
3. Steelcraft.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Glazing: Comply with requirements in Division 08 Section "Glazing."

2.3 STANDARD HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.

B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard polystyrene. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 2.8 or better.
3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Level/Model: Level 3 and Physical Performance Extra Heavy Duty, Minimum 14 gauge steel.
3. Core Construction: Manufacturer's standard Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 ENERGY EFFICIENCY HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design specified, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Energy Efficient Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.

1. Design: Flush panel.
2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".

a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
b. Thermal properties to rate at a fully operable minimum U-Factor 0.29 and R-Value 3.4, including insulated door, thermal-break frame and threshold.

1) Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.36 and R-Value 2.7, including insulated door, kerf type frame, and threshold.

3. Level/Model: Level 2 and Physical Performance Level A (Heavy Duty), Minimum 18 gauge (0.042 inch - 1.1-mm) thick steel, Model 2.
4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Manufacturers Basis of Design:

1. CECO Door Products Trio-E/Trio Series.
2. Curries Company 777 Trio-E/Trio Series.

2.5 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames, with the exception of knock down types, with "closed and tight" miter seams continuously welded on face, finished smooth with no visible seam unless otherwise indicated.
3. Frames for Level 3 Steel Doors (up to 48 inches in width): Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
4. Frames for Level 3 Steel Doors (48 inches and up in width): Minimum 12 gauge (0.081-inch -2.7-mm) thick steel sheet.
5. Frames for Level 2 Steel Doors: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
6. Manufacturers Basis of Design:

    a. CECO Door Products SQ/SU/SR Series.
    b. Curries Company M/G Series.

C. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames, with the exception of slip-on drywall types, with "closed and tight" miter seams continuously welded on face, finished smooth with no visible seam unless otherwise indicated.
3. Frames for Level 2 Steel Doors: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
4. Frames for Level 3 Steel Doors (up to 48 inches in width): Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.]
5. Frames for Level 3 Steel Doors (48 inches and up in width): Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.]
6. Frames for Wood Doors: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
7. Frames for Borrowed Lights: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
8. Manufacturers Basis of Design:

    a. CECO Door Products BQ/BU/DQ/DU/BR/DR Series (Drywall Profile).
    b. CECO Door Products SQ/SU/SR Series (Masonry Profile).
    c. Curries Company C/CM/CG Series (Drywall Profile).
    d. Curries Company M/G Series (Masonry Profile).

D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engauge stud and not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
4. Windstorm Opening Anchors: Types as tested and required for indicated wall types to meet specified wind load design criteria.
5. FEMA 361 Storm Shelter Anchors: Masonry T-shaped, wire masonry type, or existing opening type anchors.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.7 HOLLOW METAL PANELS

A. Provide hollow metal panels of same materials, construction, and finish as specified for adjoining hollow metal work.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.9 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
3. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

    a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.

8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

    b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.

10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 16 Sections.

2.10 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 08 11 13

SECTION 08 14 16 – FLUSH WOOD DOORS

1.1 GENERAL

A. Submittals: In addition to product data, submit the following:

1. Shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for veneer matching and factory finishing and other pertinent data. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
2. Samples of actual materials in small sections for each face material and finish.

B. Quality Standard: Comply with the following standard:

1. NWWDA Quality Standard: I.S.1-A, "Architectural Wood Flush Doors," of the National Wood Window and Door Association.
2. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute.

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide doors by one of the following:

1. Algoma Hardwoods Inc.
2. Eggers Industries, Architectural Door Division.
3. Fenestra Corporation.
4. Mohawk Flush Doors, Inc.
5. Weyerhauser Co.

B. Interior Solid Core Doors for Transparent Finish: As follows:

1. Faces: White Oak, plain sliced.
2. Grade: Premium.
3. Construction: 7 plies or 5 plies.
4. Core: Particleboard core.
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.

C. Veneer Matching: Provide doors with the following veneer matching:

1. Book matching.

D. Pairs and Sets: Provide pair matching and set matching.

E. Fabricate flush wood doors to comply with following requirements:

1. In sizes indicated for job-site fitting.
2. Factory fit doors to comply with clearance requirements of referenced quality standard. Comply with requirements of NFPA 80 for fire-resistance-rated doors.

3. Factory machine doors for hardware that is not surface applied.
4. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.

    a. Light Openings: Trim openings with moldings of material and profile indicated.

5. Provide metal flashing at top of outswinging units.

F. Shop prime exposed portions of doors for paint finish with one coat of wood primer specified in Division 9 Section "Painting."

G. Shop-seal faces and edges of doors for transparent finish with stain (if required), other required pretreatments, and first coat of finish as specified in Division 9 Section "Painting."

1.3 EXECUTION

A. Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.

B. Align and fit doors in frames with uniform clearances and bevels. Machine doors for hardware. Seal cut surfaces after fitting and machining.

END OF SECTION 08 14 16

SECTION 08 33 23 – OVERHEAD COILING DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Overhead coiling service doors.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Support framing and framed opening.

1.3 REFERENCES

A. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors And Rolling Doors: Determination Of Structural Performance Under Uniform Static Air Pressure Difference.

B. NFRC 102 - Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems.

C. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.

D. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

E. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

F. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

G. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

H. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

J. NEMA MG 1 - Motors and Generators.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Overhead coiling service doors:
   1. Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components in conformance with ASTM E 330.
   2. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.

B. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Details of construction and fabrication.
4. Installation instructions.

C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.

D.

E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.

G. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

H. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION

A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

1.10 WARRANTY

A. Warranty: Manufacturer's limited door system warranty for 2 years for all parts and components.

B. PowderGuard Finish

C.

1. PowderGuard Max: Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Max Finish warranty for 5 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com, or equal.

B. Requests for substitutions will be considered in accordance with provisions of Substitution Section.

2.2 OVERHEAD COILING SERVICE DOORS

A. Heavy Duty Industrial Doors: Overhead Door Corporation, Model 620 Stormtite Service Doors.
   1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
      a. Flat profile type F-265 for doors up to 18 feet 4 inches (5.59 m) wide, fabricated of:
         1) 22 gauge galvanized steel.
         2)
   2. Slats and Hood Finish:
      a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.
         1) Powder Coat:
            (a) PowderGuard Premium powder coat color as selected by the Architect.
         2) Non-galvanized exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.
   3. Weatherseals:

a. Vinyl bottom seal, exterior guide and internal hood seals.
b. Interior guide weatherseal.
c. Lintel weatherseal.

4. Bottom Bar:
   a. Extruded aluminum for doors up to 15 feet 4 inches (4.67 m) wide.
5. Guides: Three structural steel angles.
6. Brackets:
   a. Hot rolled prime painted steel to support counterbalance, curtain and hood.
7. Finish; Bottom Bar, Guides, Headplate and Brackets:
   a. Finish: PowderGuard Premium powder coat color as selected by the Architect.
8. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
9. Hood: Provide with internal hood baffle weatherseal.
   a. 24 gauge galvanized steel with intermediate supports as required.
10. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
    a. Sensing Edge Protection:
       1) Pneumatic sensing edge.
    b. Operator Controls:
       1) Key operation with open, close, and stop controls.
       2) Controls for interior location.
       3) Controls surface mounted.
    c. Special Operation:
       1) Vehicle detector operation.
    d. Motor Voltage: 115/230 single phase, 60 Hz.
11. Windload Design:
    a. Standard windload shall be 20 PSF.
12. Locking:
    a. Interior slide bolt lock for electric operation with interlock switch.
13. Wall Mounting Condition:
    a. Face-of-wall mounting.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

G. Install perimeter trim and closures.

H. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Protect installed products until completion of project.

END OF SECTION 08 33 23

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SECTION 08 41 00 – ENTRANCES AND STOREFRONTS

1.1 GENERAL

A. System Description: Provide aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes air infiltration and water penetration exceeding specified limits; and framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.

B. Dead Loads: Provide entrance- and storefront-system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load. Provide a minimum 1/8-inch (3.18-mm) clearance between members and top of glazing or other fixed part immediately below. Provide a minimum 1/16-inch (1.59-mm) clearance between members and operable windows and doors.

C. Air Infiltration: Provide entrance and storefront systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. (0.3 L/s/sq. m) of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq. ft. (75.2 Pa).

D. Water Penetration: Provide entrance and storefront systems that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward-acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 6.24 lbf/sq. ft. (299 Pa).

E. Thermal Movements: Provide entrance and storefront systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

F. Condensation Resistance: Provide storefront systems with condensation resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.1.

G. Average Thermal Conductance: Provide storefront systems with average U-values of not more than 0.63 Btu/sq. ft. x h x deg F (3.57 W/sq. m x K) when tested according to AAMA 1503.1.

H. Submittals: Product Data for each product specified and the following:

1. Shop Drawings: Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.

    a. For entrance systems, include hardware schedule and indicate operating hardware types, quantities, and locations.

2. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of entrance and storefront systems with requirements based on comprehensive testing of current systems.

I. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing entrance and storefront systems similar to those required for this Project and who is acceptable to manufacturer.

J. Product Options: Drawings indicate size, profiles, and dimensional requirements of entrance and storefront systems and are based on the specific systems indicated. Other manufacturers' systems with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."

K. Welding Standards: Comply with applicable provisions of AWS D1.2, "Structural Welding Code--Aluminum."

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide products equal to the following:

1. Kawneer Company, Inc.

B. Materials: Provide storefront system equal to Kawneer VG Tri-Fab 451 Center Plane. Provide materials as follows :

1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
b. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221 (ASTM B 221M).
c. Extruded Structural Pipe and Tubes: ASTM B 429.
d. Bars, Rods, and Wire: ASTM B 211 (ASTM B 211M).
e. Welding Rods and Bare Electrodes: AWS A5.10.

2. Steel Reinforcement: Complying with ASTM A 36 (ASTM A 36M) for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 (ASTM A 570M) for hot-rolled sheet and strip.
3. Glazing as specified in Division 8 Section "Glazing."
4. Glazing Gaskets: Manufacturer's standard pressure-glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.
5. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.
6. Sealants and joint fillers for joints at perimeter of entrance and storefront systems as specified in Division 7 Section "Joint Sealants."
7. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

C. Components: As follows:

1. Doors: Provide manufacturer's standard 1-3/4-inch- (44.5-mm-) thick glazed doors with minimum 0.125-inch- (3.2-mm-) thick, extruded tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deep penetration and fillet

welded or that incorporate concealed tie-rods. Provide manufacturer's standard snap-on extruded-aluminum glazing stops and preformed gaskets. Provide unit equal to Kawneer Series 350 medium stile.

2. Brackets and Reinforcements: Provide manufacturer's standard brackets and reinforcements that are compatible with adjacent materials. Provide nonstaining, nonferrous shims for aligning system components.
3. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

    a. Reinforce members as required to retain fastener threads.
    b. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

4. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing, compatible with adjacent materials, and of type recommended by manufacturer.
5. Weather Stripping: Manufacturer's standard replaceable weather stripping.

D. Hardware:

1. Exterior Doors: Provide heavy-duty hardware units indicated in sizes, number, and type recommended by manufacturer for entrances indicated. Finish exposed parts to match door finish, unless otherwise indicated. Provide single acting top and bottom offset pivots, concealed vertical rod exit devices (equal to Dor-O-Matic 1490), closer with hold-open device (equal to LCN 4041), pulls (equal to Kawneer Style CO-9), manufacturer's standard threshhold for the appropriate use. Cylinder lock by finish hardware supplier.

E. Fabrication: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

1. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
2. Prepare components to receive concealed fasteners and anchor and connection devices.
3. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
4. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
5. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
6. Storefront: Fabricate framing in profiles indicated (equal to Kawneer Tri-Fab 451) Provide subframes and reinforcing of types indicated or, if not indicated, as required for a complete system. Factory assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation.
7. Entrances: Fabricate door framing in profiles indicated. Reinforce as required to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units as required for installing hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.

a. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations, provide sliding weather stripping retained in adjustable strip mortised into door edge.

F. Aluminum Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

1. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018mm or thicker) complying with AAMA 611.

a. Color: Clear.

1.3 EXECUTION

A. Installation, General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."

E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.

F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

G. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.

H. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.

I. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:

1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm). Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).

3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch (3 mm).

J. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.

K. Remove excess sealant and glazing compounds, and dirt from surfaces.

END OF SECTION 08 41 00

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SECTION 08 71 00 – DOOR HARDWARE

1.1 GENERAL

A. Submit final hardware schedule organized by "hardware sets," to indicate specifically the product to be furnished for each item required on each door.

1. Furnish templates to each fabricator of doors and frames as required for hardware preparation.

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by manufacturers for various products listed below. An asterisk (*) following manufacturer's name designates manufacturer whose products are indicated in Hardware Schedule. Such products are listed in the schedule by specific reference to manufacturer's catalog numbers. Except as otherwise indicated, products of equivalent quality, design, and function by other listed manufacturers may be used, subject to approval of Architect.

1. Butts and Hinges: Ives*, Hager, Stanley.
2. Cylinders and Locks: Best, Sargent, Schlage*, Yale.
3. Exit/Panic Devices: Precision, Sargent, Von Duprin*, Yale.
4. Push/Pull Units: Baldwin, Hager, Ives*, Triangle Brass, Rockwood.
5. Overhead Closers: LCN*, Sargent, Yale.
6. Kick, Mop, and Armor Plates: Baldwin, Hager, Ives*, Triangle Brass.
7. Door Stripping and Seals: Hager, National Guard, Reese, Zero*.
8. Thresholds: Hager, National Guard, Reese, Zero*.
9. Sweeps: Hager, National Guard, Reese, Zero*.

B. Finish and base material designations are indicated in accordance with ANSI BHMA A156.18 or the nearest traditional U.S. commercial finish.

1. Where base material and quality of finish are not otherwise indicated, provide at least the commercially recognized quality specified in ANSI/BHMA A156 series standards applicable to each particular type of hardware.

C. Hinges and Pivots: Provide full-mortise butt, size, weight, and quantity in accordance with requirements established for door size, weight, and frequency of use.

1. Pins: Stainless steel, except steel pins with steel hinges; nonremovable for exterior and public interior exposure; nonrising for nonsecurity exposure; flat button with matching plugs.
2. Ball-Bearing: Swaged, inner leaf beveled, square corners.
3. Plain-Bearing: Swaged, inner leaf beveled, rounded corners; except provide ball-bearing for doors equipped with closers.

D. Locks, Latches, and Bolts: Key to existing masterkey system with properly sized key control system.

1. Strikes: Wrought box strikes with extended lip for latch bolts, except open strike plates may be used in wood frames. Provide dust-proof strikes for foot bolts.

E. Equip exit devices with dogging devices where door has closer.

F. Locks: Equip locks with 6-pin tumbler cylinders.

1. Bored: Standard duty cylindrical.
2. Mortise: Heavy duty locksets with latch bolt, lever handles, and UL listed and labeled.

G. Push/Pull Units: Manufacturer's standard type scheduled, through-bolted for matched pairs.

H. Overhead Closers: Where parallel-arm closers are indicated, provide units one size larger than recommended for standard-arm units.

I. Holders, Stops, and Bumpers: Provide grey rubber exposed resilient parts.

1. Finish exposed metal to match hardware, except finish floor plates to match finish of thresholds.
2. Size and mount units indicated or, if not indicated, to comply with manufacturer's recommendations for the exposure condition. Reinforce the substrate as recommended.

J. Silencers: Provide silencers in metal door frames, unless not permitted for fire rating, or weatherstripping is provided; 3 per single-door frame, 4 per double-door frame.

K. Miscellaneous Door Hardware: Provide plates, trim, letter box, viewers, knockers, bells, and similar units as indicated.

L. Edge Trim: Fabricate units 1/16 inch to 1/2 inch smaller than actual door dimension. Install with self-tapping screws.

1. Provide .050-inch-thick (18 gage) stainless steel with beveled edges and No. 4 polish for kick plates, armor plates, and edge protection stripping (regardless of finish or other hardware).

M. Armor, Kick, and Mop Plates: Fabricate protection plates not more than 1-1/2 inches less than door width on stop side and not more than 1/2 inch less than door width on pull side, x the height indicated.

1. Material: Stainless steel, 0.050 inch (U.S. 18 gage).

N. Weatherstripping: Provide type, size, and profile indicated, continuous at head and jamb edges of each exterior door opening. Provide noncorrosive fasteners. Also provide on interior doors where indicated for noise reduction.

O. Thresholds: Extruded aluminum of type, design, and profile indicated, complete with replaceable resilient vinyl wiper-type insert and noncorrosive fasteners.

1.3 EXECUTION

A. Hardware Mounting Locations: As recommended by the Door and Hardware Institute, unless indicated otherwise.

B. Install each hardware item to comply with manufacturer's instructions and recommendations.

C. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant. Remove excess sealant and clean adjacent surfaces.

D. Hardware Adjustment: Return to Project one month after Owner's occupancy, and adjust hardware to proper operation and function. Instruct Owner's personnel in proper maintenance and adjustment.

E. Hardware supplier shall meet with the Owner's representative to determine keying of locks.

F. The finish, in general, is to be US26D Dull Chromium. If unit is not available in this finish, match as closely as possible.

G. Hardware Schedule: Provide hardware for each door as in the following list of hardware sets:

HARDWARE SCHEDULE

A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

1. Hardware sets indicate quantity, item, manufacturer and product designation, size, and finish or color, as applicable.

B. Manufacturer's Index:

IVE	Ives
SCH	Schlage
IVE	Ives
ZER	Zero
G-J	Glynn-Johnson
IVE	Ives

C. Hardware Set No. 1: Exterior aluminum storefront
1. Cylinders to fit door manufacturer's locking device
2. Balance of hardware furnished by aluminum entrance supplier

D. Hardware Set No. 2: non-rated door with lock with push button (office, sto, etc)

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	lockset	SCH	ND50PD RHO
3.	1	stop	IVE	WS406/407 or FS436/437 as required

E. Hardware Set No. 3: non-rated door with passage set, no lock

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	passage set	SCH	ND10PD RHO
3.	1	stop	IVE	WS406/407 or FS436/437 as required

F. Hardware Set No. 4: privacy lock (private toilet)

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	privacy lock	SCH	ND40S RHO
3.	1	stop	IVE	WS406/407 or FS436/437 as required

G. Hardware Set No. 5: single exterior exit

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	closer	LCN	4040XP
3.	1	exit device	SAR	MD8800, 713ET
4.	1	threshold	ZER	655A
5.	1	sweep	ZER	39A

6.	1	weatherstrip	ZER	188S

H. Hardware Set No. 6: single exterior, not an exit

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	closer	LCN	4040XP
3.	1	lockset	SCH	ND50PD RHO
4.	1	deadbolt	SCH	B660 E0151 (thumbturn inside room)
5.	1	threshold	ZER	655A
6.	1	sweep	ZER	39A
7.	1	weatherstrip	ZER	188S

I. Hardware Set No. 7: single interior to unfinished space

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	closer	LCN	4040XP
3.	1	lockset	SCH	ND50PD RHO
4.	1	threshold	ZER	655A
5.	1	sweep	ZER	39A
6.	1	weatherstrip	ZER	188S

J. Hardware Set No. 8: single interior to community room

1.	3	hinges	IVE	5BB1 4-1/2 x 4-1/2
2.	1	closer	LCN	4040XP
3.	1	lockset	SCH	ND50PD RHO
4.	1	deadbolt	SCH	B660 E0151 (thumbturn inside staff corridor)
5.	1	stop	IVE	WS406/407 or FS436/437 as required

END OF SECTION 08 71 00

SECTION 08 80 00 – GLAZING

1.1 GENERAL

A. System Performance Requirements: Provide glazing systems capable of withstanding normal thermal movement, wind loading, and impact loading, without failure including loss or glass breakage attributable to: defective manufacture, fabrication, and installation; deterioration of glazing materials; and other defects in construction.

1. Glass Design: Provide glass lites in the thicknesses and strengths (annealed or heat-treated) to meet or exceed the following criteria based on analysis of Project loads and in-service conditions:

a. Minimum glass thickness, nominally, of lites in exterior walls is 6.0 mm (0.23 inch).
b. Minimum glass thicknesses of lites composed of annealed or heat-treated glass are selected so the worst-case probability of failure does not exceed the following:

1) 8 lites per 1000 for lites set vertically or not over 15 degrees off vertical and under wind action.

B. Submittals: In addition to product data, submit 12-inch-square samples of each type of glass indicated, except for clear monolithic glass products.

C. Product certificates signed by glazing materials manufacturers certifying that their products comply with specified requirements.

D. Glazing Publications: Comply with published recommendations of glass product manufacturers, "FGMA Glazing Manual," and publications of AAMA, LSGA, and SIGMA as applicable to products indicated, except where more stringent requirements are indicated.

E. Fire-Resistive Glazing Products: Products identical to those tested per ASTM E 152 for doors and ASTM E 163 for window assemblies; both labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

F. Insulating Glass Certification Program: Provide insulating glass units permanently marked with appropriate certification label of inspecting and testing agency indicated below:

1. Insulating Glass Certification Council (IGCC).

G. Related Sections: Section 01352 – Sustainable Design Requirements for regional materials, regionally extracted and manufactured materials specified.

1.2 PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Class as indicated below, and Quality q3:

1. Class 1 (clear) unless otherwise indicated.
2. Class 2 (tinted, heat-absorbing, and light-reducing) where indicated.
3. Refer to coated glass product requirements for tint color and performance characteristics of coated tinted glass for monolithic glazing.
4. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass.

B. Ultraclear Float Glass: ASTM C 1036, Type 1, Quality Q-3, Class 1, complying with other requirements specified and with visible light transmission not less than 91 percent and low U-factor less than 0.33.

C. Heat-Treated Float Glass Products: As follows:

1. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A, Type I, Class 1, Quality q3, kind as indicated below:

   a. Kind FT.

2. Uncoated, Tinted, Heat-Treated Float Glass: ASTM C 1048, Condition A, Type I, Class 2, Quality q3, with tint color and performance characteristics for 6.0-mm-thick (0.23-inch-thick) glass matching those indicated for annealed primary tinted float glass; kind as indicated below:

   a. Kind FT.

D. Sealed Insulating Glass Units: Preassembled units complying with ASTM E 774 and with other requirements indicated. **The basis of design is Solarban 70XL Solar Control Low E Glass (2nd surface) + Clear by Vitro Architectural Glass (formerly PPG) or equal product. Tinted color to be determined by Architect.**

1. For properties of individual glass lites making up units, refer to requirements specified elsewhere in this Section applicable to glass products comprising lites of insulating glass units.
2. Provide heat-treated, coated float glass of kind indicated or, if not otherwise indicated, Kind HS where recommended by manufacturer to comply with system performance requirements specified and Kind FT where safety glass is designated or required.
3. U-values are expressed as Btu/hour x sq. ft. x deg F.

E. Elastomeric Glazing Sealants: Products complying with ASTM C 920 requirements indicated on each Elastomeric Glazing Sealant Product Data Sheet at the end of this Section, in colors indicated, compatible with other materials they will contact.

F. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape, with or without spacer rod as recommended by tape and glass manufacturers for application indicated, and complying with AAMA 800.

G. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, and complying with AAMA 800 for product 810.5.

H. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542, black.

I. Dense Compression Gaskets: Molded or extruded, gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

1. Neoprene, ASTM C 864.
2. EPDM, ASTM C 864.
3. Silicone, ASTM C 1115.
4. Thermoplastic polyolefin rubber, ASTM C 1115.
5. Any material indicated above.

J. Soft Compression Gaskets: Extruded or molded closed-cell, integral-skinned gaskets of material indicated below, complying with ASTM C 509, Type II, black, and of profile and hardness required to maintain watertight seal:

1. Neoprene.
2. EPDM.
3. Silicone.
4. Thermoplastic polyolefin rubber.
5. Any material indicated above.

K. Miscellaneous Glazing Materials: Products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation.

L. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing publications as required to comply with system performance requirements.

1. Clean cut or flat grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with indoor and outdoor faces.

1.3 EXECUTION

A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in "FGMA Glazing Manual."

B. Protect glass from edge damage during handling and installation.

C. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

D. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

E. Lock Strip Gasket Glazing: Comply with ASTM C 716 and gasket manufacturer's printed recommendations. Provide supplementary wet seal and weep system unless otherwise indicated.

F. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter.

G. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.

H. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
GREENBRIER, AR
END OF SECTION 08 80 00

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SECTION 09 21 16 – GYPSUM BOARD ASSEMBLIES

1.1 GENERAL

A. Fire-Test-Response Characteristics: Where fire-resistance-rated gypsum board assemblies are indicated, provide gypsum board assemblies that are identical to assemblies tested for fire resistance according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Framing and Furring:

a. Clark Steel Framing, Inc.
b. Consolidated Systems, Inc.
c. Dale Industries, Inc.
d. Dietrich Industries, Inc.
e. Marino/Ware (formerly Marino Industries Corp.).
f. National Gypsum Co.; Gold Bond Building Products Division.
g. Unimast, Inc.

2. Grid Suspension Assemblies:

a. Armstrong World Industries, Inc.
b. Chicago Metallic Corp.
c. USG Interiors, Inc.

3. Gypsum Board and Related Products:

a. Domtar Gypsum.
b. Georgia-Pacific Corp.
c. National Gypsum Co.; Gold Bond Building Products Division.
d. United States Gypsum Co.

B. Steel Framing Components for Suspended and Furred Ceilings: Provide components complying with ASTM C 754 for conditions indicated.

1. Wire Ties: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.062 inch (1.6 mm) thick.
2. Wire Hangers: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.162-inch (4.1-mm) diameter.
3. Channels: Cold-rolled steel, 0.0598-inch (1.5-mm) minimum thickness of base metal and 7/16-inch- (11.1-mm-) wide flanges, and as follows:

a. Carrying Channels: 1-1/2 inches (38.1 mm) deep, 475 lb/1000 feet (70 kg/100 m), unless otherwise indicated.
b. Finish: Rust-inhibitive paint, unless otherwise indicated.
c. Finish: ASTM A 653, G 60 (ASTM A 653M, Z 180) hot-dip galvanized coating for framing for exterior soffits and where indicated.

4. Grid Suspension System for Interior Ceilings: ASTM C 645, manufacturer's standard direct-hung system.

C. Steel Framing for Walls and Partitions: Provide steel framing members complying with the following requirements:

1. Protective Coating: ASTM A 653, G 40 (ASTM A 653M, Z 90) hot-dip galvanized coating for framing members attached to and within 10 feet (3 m) of exterior walls.
2. Steel Studs and Runners: ASTM C 645, in depth indicated and with 0.0179-inch (0.45-mm) minimum base metal thickness, unless otherwise indicated.

a. Provide 0.0329-inch (0.84-mm) minimum base metal thickness for head runner, sill runner, jamb, and cripple studs at door and other openings.
b. Provide 0.0329-inch (0.84-mm) minimum base metal thickness in locations to receive cementitious backer units.

D. Fasteners for Metal Framing: Type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

E. Gypsum Board Products: Types indicated in maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.

1. Gypsum Wallboard: ASTM C 36, in thickness indicated.

a. Type: Regular for vertical surfaces, unless otherwise indicated.
b. Type: Type X where required for fire-resistance-rated assemblies.
c. Type: Sag-resistant type for ceiling surfaces.
d. Type: Proprietary type as required for specific fire-resistance-rated assemblies.
e. Edges: Tapered.

2. Gypsum Board Base Layer(s) for Multilayer Applications: ASTM C 36, in thickness indicated.

a. Type: Type X where indicated or required for fire-resistance-rated assemblies.
b. Type: Sag-resistant type for ceiling surfaces, unless otherwise indicated.

3. Water-Resistant Gypsum Backing Board: ASTM C 630, in thickness indicated.

a. Type: Regular, unless otherwise indicated.

4. Glass-Mat, Water-Resistant Gypsum Backing Board: ASTM C 1178, of thickness indicated.

a. Type: Regular, unless otherwise indicated.

F. Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C 1047, formed metal complying with the following requirement:

1. Steel sheet zinc coated by hot-dip process or rolled zinc.

G. Accessories for Exterior Installations: Cornerbead, edge trim, and control joints formed from steel sheet zinc coated by hot-dip process or rolled zinc complying with ASTM C 1047.

H. Joint Treatment Materials: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

1. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.

2. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

   a. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer.
   b. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer.
   c. For topping compound, use sandable formulation.

3. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.

   a. Ready-Mixed Formulation: Factory-mixed product.
   b. Job-Mixed Formulation: Powder product for mixing with water at Project site.

      1) Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
      2) Topping compound formulated for fill (second) and finish (third) coats.
      3) All-purpose compound formulated for both taping and topping compounds.

I. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

J. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

K. Miscellaneous Materials: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.

1. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.
2. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot-grouting hollow metal door frames.
3. Fastening Adhesive for Wood: ASTM C 557.
4. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.
5. Steel drill screws complying with ASTM C 1002 for the following applications:

   a. Fastening gypsum board to steel members less than 0.033 inch (0.84 mm) thick.
   b. Fastening gypsum board to wood members.
   c. Fastening gypsum board to gypsum board.

6. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
7. Steel drill screws of size and type recommended by unit manufacturer for fastening cementitious backer units.

8. Gypsum Board Nails: ASTM C 514.
9. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
10. Foam Gaskets: Closed-cell vinyl foam adhesive-backed strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit metal stud size indicated.
11. Sound-Attenuation Blankets: Unfaced mineral-fiber blanket insulation to comply with ASTM C 665 for Type I.

1.3 EXECUTION

A. Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.

1. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
2. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement.

a. Where building structure abuts ceiling perimeter or penetrates ceiling.
b. Where partition framing and wall furring abut structure, except at floor.

B. Installing Steel Framing for Suspended and Furred Ceilings: As follows:

1. Sway-brace suspended steel framing with hangers used for support.
2. Install suspended steel framing components in sizes and at spacings indicated, but not less than that required by the referenced steel framing installation standard.
3. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
4. For exterior soffits, install cross-bracing and additional framing to resist wind uplift according to details on Drawings.

C. Installing Steel Framing for Walls and Partitions: Install steel studs and furring at spacings indicated.

1. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
2. Cut studs 1/2 inch (13 mm) short of full height to provide perimeter relief.
3. Frame door openings to comply with GA-219, and with applicable published recommendations of gypsum board manufacturer, unless otherwise indicated.
4. Frame openings other than door openings to comply with details indicated or, if none indicated, as required for door openings. Install framing below sills of openings to match framing required above door heads.

D. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

1. Install sound-attenuation blankets, where indicated, prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.
2. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

3. Spot grout hollow metal door frames for solid-core wood doors, hollow metal doors, and doors over 32 inches (813 mm) wide. Apply spot grout at each jamb anchor clip and immediately insert gypsum panels into frames.
4. Form control and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
5. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

    a. Space screws a maximum of 16" o.c. for vertical applications.

6. Install water-resistant gypsum backing board panels at all toilet rooms. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or penetrations.
7. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:

    a. Fasten with screws.

8. Multilayer Fastening Methods: Apply base layers of gypsum panels and face layer to base layers as follows:

    a. Fasten both base layers and face layers separately to supports with screws.

E. Installing Trim Accessories: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.

1. Install cornerbead at external corners.
2. Install edge trim where edge of gypsum panels would otherwise be exposed. Provide edge trim type with face flange formed to receive joint compound, except where other types are indicated.

    a. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
    b. Install L-bead where edge trim can only be installed after gypsum panels are installed.
    c. Install control joints according to ASTM C 840 and manufacturer's recommendations and in specific locations approved by Architect for visual effect. Use 1/2" drywall reveal equal to Frey Reveal Moldings.

F. Finishing Gypsum Board Assemblies: Treat gypsum board joints, interior angles, flanges of cornerbead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.

1. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
2. Apply joint tape over gypsum board joints and to flanges of trim accessories as recommended by trim accessory manufacturer.
3. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.

    a. Level 4 for gypsum board surfaces, unless otherwise indicated.

4. For Level 4 gypsum board finish, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration.

5. Finish water-resistant gypsum backing board to comply with ASTM C 840 and gypsum board manufacturer's directions.

G. Applying Texture Finishes: By paint contractor.

END OF SECTION 09 21 16

SECTION 09 51 13 – ACOUSTICAL PANEL CEILINGS

1.1 GENERAL

A. Submittals: In addition to product data for each type of acoustical panel and suspension system required, submit the following:

1. 6-inch- (150-mm-) square samples of each acoustical panel type, pattern, and color.
2. Set of 12-inch- (300-mm-) long samples of exposed suspension system members, including moldings, for each color and system type required.

B. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Fire-response tests are performed by a testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
2. Surface-burning characteristics of acoustical panels comply with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84.

C. Related Sections: Section 01352 – Sustainable Design Requirements for recycled content of materials, regional materials, regionally extracted and manufactured materials specified.

1.2 PRODUCTS

A. Acoustical Panel Products: Basis of design is Rockfon Pacific. Subject to compliance with requirements, other proiducts which may be provided include:

1. Cortega; Armstrong World Industries, Inc.
2. Baroque; The Celotex Corporation.
3. Radar; USG Interiors, Inc.

B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring Noise Reduction Coefficient (NRC): Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches [400 mm] away from the test surface) per ASTM E 795.

C. Nodular, Cast, or Molded, Mineral-Base Acoustical Panels: Type III, Form 1 acoustical panels per ASTM E 1264, with painted finish, complying with pattern and other requirements indicated below:

1. Pattern: Panels matching pattern indicated by reference to manufacturer's standard product designations.
2. Color/Light Reflectance Coefficient: White/LR 0.80.
3. Noise Reduction Coefficient: NRC 0.55.
4. Ceiling Sound Transmission Class: CSTC 35.
5. Edge Detail: Square.
6. Thickness: 5/8 inch.
7. Size: As indicated.

D. Solid Vinyl –Surface Products: Provide manufacturer's standard vinyl-covered gypsum board panel.

1. Color/Light Reflectance Coefficient: White/LR 0.80.
2. Edge Detail: Square.
3. Thickness: 5/8 inch.
4. Size: As indicated.

E. Suspension System Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

F. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated Carbon Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so that its stress at 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than the yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

G. Sheet-Metal Edge Moldings and Trim: Type and profile indicated, or if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.

H. Non-Fire-Resistance-Rated, Direct-Hung Suspension Systems: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements:

1. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from prepainted or electrolytic zinc-coated, cold-rolled steel sheet, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges; other characteristics as follows:

a. Structural Classification: Intermediate-duty system.
b. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
c. Cap Material and Finish: Steel sheet painted to match color of acoustical unit.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Armstrong World Industries, Inc.
b. Chicago Metallic Corporation.
c. USG Interiors, Inc.

1.3 EXECUTION

A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."

1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.

B. Suspend ceiling hangers as follows:

1. Secure wire hangers to ceiling suspension members and to supports above. Connect hangers either directly to structures or to inserts, eye screws, or other devices that are secure, that are appropriate for substrate, and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
2. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise shown; and provide hangers not more than 8 inches (200 mm) from ends of each member.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide neat, precise fit.

F. Install vinyl-covered gypsum board panels in in all areas to have cleanable ceiling such as kitchen and toilet rooms.

END OF SECTION 09 51 13

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SECTION 09 65 13 – RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Resilient wall base.
2. Resilient flooring accessories.
3. Resilient carpet accessories.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 9 Section "Resilient Tile Flooring."

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of product specified.

C. Samples for initial selection purposes of manufacturer's standard sample sets in form of pieces cut from each type of product specified showing full range of colors and patterns available.

1.4 QUALITY ASSURANCE

A. Single-Source Responsibility for Products: Obtain each type and color of product specified from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to Project site in original manufacturer's unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

B. Store products in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C).

C. Move products into spaces where they will be installed at least 48 hours in advance of installation.

1.6 PROJECT CONDITIONS

A. Maintain a minimum temperature of 70 deg F (21 deg C) in spaces to receive products specified in this Section for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F (13 deg C).

B. Do not install products until they are at the same temperature as that of the space where they are to be installed.

C. Close spaces to traffic during installation of products specified in this Section.

1.7 SEQUENCING AND SCHEDULING

A. Sequence installing products specified in this Section with other construction to minimize possibility of damage and soiling during remainder of construction period.

1.8 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage, and identified with labels clearly describing contents.

1. Furnish not less than 10 linear feet (3 linear meters) for each 500 linear feet (150 linear meters) or fraction thereof of each different type and color of resilient wall base installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, those specified in each Product Data Sheet at end of this Section.

2.2 RESILIENT WALL BASE

A. Rubber Wall Base: Products complying with FS SS-W-40, Type I, and requirements specified in the Rubber Wall Base Product Data Sheet at end of this Section.

2.3 RESILIENT ACCESSORIES

A. Rubber Accessories: Products complying with requirements specified in Rubber Accessory Product Data Sheet at end of this Section.

2.4 INSTALLATION ACCESSORIES

A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.

B. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated.

C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient flooring product and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where installation of products specified in this Section will occur, with Installer present, to verify that substrates and conditions are satisfactory for installation and comply with manufacturer's requirements and those specified in this Section.

3.2 PREPARATION

A. General: Comply with manufacturer's installation specifications for preparing substrates indicated to receive products indicated.

B. Use trowelable leveling and patching compounds per manufacturers directions to fill cracks, holes, and depressions in substrates.

C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

D. Broom or vacuum clean substrates to be covered immediately before installing products specified in this Section. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

E. Apply concrete slab primer, if recommended by flooring manufacturer, prior to applying adhesive. Apply according to manufacturer's directions.

3.3 INSTALLATION

A. General: Install products specified in this Section using methods indicated according to manufacturer's installation directions.

B. Apply resilient wall base to walls, columns, pilasters, casework, and other permanent fixtures in rooms and areas where base is required. Install wall base in lengths as long as practicable. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

1. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
2. Install exterior corners before installing straight pieces.
3. Form inside corners on job from straight pieces of maximum lengths possible by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce snug fit to substrate.

C. Place resilient accessories so they are butted to adjacent materials of type indicated and bond to substrates with adhesive. Install reducer strips at edges of flooring that otherwise would be exposed.

D. Apply resilient accessories to stairs as indicated and according to manufacturer's installation instructions.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing installation:

1. Remove visible adhesive and other surface blemishes using cleaner recommended by manufacturers of resilient product involved.
2. Sweep or vacuum floor thoroughly.
3. Do not wash floor until after time period recommended by manufacturer.
4. Damp-mop resilient accessories to remove black marks and soil.

B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by manufacturer of resilient product involved.

C. Clean products specified in this Section not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products using method recommended by manufacturer.

PRODUCT DATA SHEET - RUBBER WALL BASE

A. Style: Cove.
B. Minimum Nominal Thickness: 1/8 inch (3 mm).
C. Height: 4 inches (100 mm).
D. Lengths: Coils in lengths standard with manufacturer but not less than 100 feet (30 m).
E. Exterior Corners: Premolded.
F. Color and Pattern: As selected by Architect from manufacturer's full range of colors produced for rubber accessories complying with requirements indicated.
G. Products: Flexco, Roppe or equal.

PRODUCT DATA SHEET - RUBBER ACCESSORY

A. Product Description: Carpet edge for glue down applications, reducer strip for resilient flooring, tile/carpet joiner, nosings at stairs, other accessories as required.
B. Profile and Dimensions: As selected by Architect.
C. Color: As selected by Architect from manufacturer's full range of colors produced for rubber accessories complying with requirements indicated. Match color of rubber base when used in same vicinity.
D. Products: Flexco, Roppe or equal.

END OF SECTION 09 65 13

SECTION 09 65 19 – RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid vinyl floor tile.

1.2 ACTION SUBMITTALS

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

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

C. Samples: Full-size units of each color and pattern of floor tile required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive floor tile.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 SOLID VINYL FLOOR TILE (LVT)

A. Basis-of-Design Product: Architect retains the option to select an alternate floor tile of equal quality. Subject to compliance with requirements, provide J&J Classics II or comparable product by one of the following:

1. Tarkett.
2. Patcraft.
3. Mannington.
4. Or other approved manufacturer/product.

B. Tile Standard: ASTM F 1700.

1. Class: Class III, printed film vinyl plank.
2. Type: Type B, embossed surface.

C. Wear Thickness Layer: 20 mils.

D. Size: 9 by 48 inches.

E. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.

C. FloorScore Compliance: Resilient tile flooring shall comply with requirements of FloorScore Standard.

1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by floor covering manufacturer. Proceed with installation only after substrates pass testing.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Cover floor tile until Substantial Completion.

END OF SECTION 09 65 19

SECTION 09 67 16 – SEAMLESS EPOXY QUARTZ AND MARBLE-CHIP FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fluid applied epoxy quartz and marble-chip flooring and cove base.

1.2 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Selection Samples: For each finish product specified, submit two samples 4 by 4 inches (102 mm by 102 mm) in size illustrating color, chip size and variation, and matrix color.

D. Verification Samples: For each finish product specified, submit two samples 4 by 4 inches (102 mm by 102 mm) in size in color, chip size and variation, and matrix color, representing actual product scheduled.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications:

B. Installer Qualifications: Installation shall be performed by an applicator approved by the manufacturer of the floor surfacing materials. The Contractor shall furnish a certified installer certificate.

C. Pre-Application Meeting: Convene a pre-application meeting two weeks before the start of application of the floor coating system. Require attendance of parties directly affecting work of this section, including the Contractor and Applicator. Review the surface preparation, application, cleaning, protection and coordination with other work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store materials in accordance with the manufacturer's instructions.
1. Store materials in dry, enclosed area with adequate protection from moisture.
2. Keep containers sealed until ready for use.

C. Storage Temperature: Store between 65 degrees F (18 degrees C) and 90 degrees F (32 degrees C).

1.5 PROJECT CONDITIONS

A. Roof shall be completed and building enclosed prior to flooring commencement.

B. Maintain temperature range of between 65 degrees F (18 degrees C) and 90 degrees F (32 degrees C) 24 hours before, during, and 72 hours after installation of flooring.

C. Ventilate area where flooring is being installed. Post and enforce NO SMOKING or OPEN FLAME signs until flooring has cured.

D. Provide uniform lighting of 50 fc in area of installation.

E. Restrict traffic from area where flooring is being installed or is curing.

1.6 WARRANTY

A. Provide ten year warranty under provisions of Warranty Section.

B. Warranty: Include coverage for delamination (separating of layers) of floor and cove base materials and degradation of surface finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Everlast Epoxy Systems Inc, which is located at: 637 NW State Road 47 ; Lake City, FL 32025; Tel: 386-719-9979; Fax: 386-719-6982; Email: info@everlastepoxy.com ; Web: www.everlastepoxy.com

B. Substitutions: Permitted for equal products.

2.2 MATERIALS

A. Everlast Floor: A 100 percent solids epoxy, marble-chip and quartz aggregate that is a troweled in place, evenly textured, slip-resistant finish of between 1/8 inch (3 mm) and 3/16 inch (4.8 mm) thickness.
   1. System shall not require primer (unless needed due to the substrate), bond coat, grout or sealer components for application.
   2. System shall comply with the USDA guidelines for use in federally inspected facilities.

B. Everlast Glaze: The finish of Everlast Floor can range anywhere from glass smooth to a sandpaper-like finish. The texture can be adjusted during or long after by applying multiple coats of glaze (for a smoother finish) or by broadcasting anti-skid into the glaze (for a coarser finish).

The specified finish is:

- Standard finish – Everlast Floor with 1 coat of Everlast Glaze and no anti-skid. This finish is easy to clean with a mop or any other cleaning method and still has some slip-resistance. It is recommended areas that need to be consistently cleaned and is not always wet.

Acceptable Manufacturer and Product: Seamless flooring material shall be Everlast Epoxy Systems Inc's Everlast Floor, as manufactured by Everlast Epoxy Systems Inc of Lake City, FL. Or equal product.

1. Material shall include select silica quartz and marble-chip aggregate fillers.
2. Floor system shall be a 100 percent solid, unpigmented epoxy resin system.
3. Base: A three-component, integral troweled base and cove consisting of

Everlast Epoxy Systems Inc's Everlast Floor resin and hardener, silica quartz and marble-chip aggregates as used in the floor, and finely graded silica aggregate, 6 inches (152 mm) height or as scheduled.

4. Everlast Glaze: Everlast Epoxy Systems Inc's Everlast Glaze, a high performance, chemical resistant, two-component, clear sealer.
5. Color as selected by Architect from manufacturers standard color range.

PART 4 EXECUTION

4.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
   1. Verify that substrate is ready to receive work, and that sub-floor surface is clean, dry, and free of substances which could affect bond.
   2. Concrete hydrostatic, capillary or moisture pressure must be no greater than 3.0 lbs./1000 sf/24 hours. Substrates in contact with the ground must have a properly installed, functioning and effective vapor barrier to help prevent potential problems resulting from hydrostatic, capillary or moisture vapor emission. Concrete must contain less than 3% moisture when tested per ASTM D1864.
   3. Maintain minimum concrete surface temperature between 55° and 85° F., and relative humidity below 80% for a minimum of 48 hours before, during , and after installation, or until cured. Surface temperature must be 5° F. Above dew point.
   4. Beginning work constitutes acceptance of substrate.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

4.2 PREPARATION

A. Substrate Requirements:
   1. Contractor to provide positive drainage at floor drains.
   2. Floor drains shall be set no higher than 1/8 inch (4 mm) above slab.
   3. Floor sinks shall be set in accordance with local codes and regulations.
   4. Gaps between wall sheathing and substrate shall be filled prior to flooring commencement per flooring manufacturer's requirements.
   5. FRP and any other wall finish should terminate with a J-mould or other trim at least 6 inches (152 mm) above finish floor.
   6. The substrate shall be clean, dry and sound. Remove dust, laitance, grease, curing compounds, waxes, foreign particles and any previously applied potentially incompatible coatings by scarifying, chipping, wire brushing, acid etching, or pressure washing. If pressure washing or any other liquid method is used for preparation, substrate should be fully rinsed, squeeze-dry mopped and allowed to completely dry.
   7. Concrete: New concrete must cure for at least 28 days at 70°F (21°C), and have been free from water for at least 7 days. Older floors should be scarified and thoroughly cleaned. If badly cracked, crumbling, punky or deeply contaminated with oil or fat, a new concrete topping of proper thickness and strength should be installed. Swollen areas should be chipped out and any cracks, spalls, joints or other depressions filled with our underlayment. The concrete should be at least 2500 psi. Concrete hydrostatic, capillary or moisture pressure must be no greater than 3.0 lbs./1000 sf/24 hours.
   8. Wood Floors: Plywood floors shall consist of 2 layers of at least 5/8 inch (16

mm) material with offsetting joints, and screwed (nailing not acceptable) into 16 inches (406 mm) o.c. joists Alternatively, install 1/2 inch (12 mm) concrete backer board, using a quality sub-floor adhesive and deck screws. Seams in the plywood or concrete backer board shall be treated with fiber tape and a blend of Everlast Floor resin and cove base additive. All wood floors are to be treated with a blend of 90% Everlast Glaze and 10% Xylene, and allowed to cure for 12 hours prior to installing Everlast Floor.

9. Vinyl Tile and Sheet Flooring: Thoroughly clean to eliminate wax buildup. Loose tiles and adhesive shall be removed and areas patched with flooring manufacturer's underlayment. Sheet flooring and adhesive shall be completely removed.
10. Quarry / Ceramic Tile: Tile and grout shall be thoroughly cleaned. Loose tile shall be removed and filled in with underlayment. Surface of the tile shall be scratched with a diamond grinder to remove the glaze.
11. Steel Decks: Clean free from oil, grease, rust and loose scale. The deck shall be wiped with denatured alcohol. Allow deck to dry before application of flooring.
12. Radiant Heating System: Everlast Floor can be installed over a radiant heating system if the following 3 conditions are met:

a)The wires are not exposed directly to the floor material. They must be covered by the substrate.
b)The radiant heat system is not more than 140F at the source.
c)Moisture vapor transmission reading must be 3lbs or less.
Everlast Floor should not be used over hydronic (liquid) systems.

More detailed floor preparation guidelines can be found at www.everlastepoxy.com/how-to

4.3 INSTALLATION - FLOORING

A. Apply flooring in accordance with manufacturer's instructions. Apply to a minimum thickness of 1/8 inch (3 mm). Finish to smooth level surface sloped to drains.

B. Provide base and cove at vertical surfaces.

C. Apply Everlast Glaze (and anti-skid, if required).

Review more detailed Everlast Floor installation instructions at www.everlastepoxy.com/how-to

4.4 TOLERANCES

A. Maximum Variation from Flat Surface: 1/8 inch in 10 feet (3 mm in 3 m).

4.5 PROTECTION

A. Protect finished installation during construction.

B. Do not permit traffic over finished floor surfaces for 42 hours.

4.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 09 67 16

SECTION 09 90 00 – PAINTING

1.1 GENERAL

A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Related Seections: Section 01352 – Sustainable Design Requirements for VOC requirements.

C. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

E. Submittals: For each paint system specified, provide the following:

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
3. Sustainable Design Submittal: Product data for paints, including statement of VOC content.

F. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated. After color selection, the Architect will furnish color chips for surfaces to be coated.

G. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

H. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.

I. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers in clean condition, free of foreign materials and residue. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

J. Project Conditions: Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.2 PRODUCTS

A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers.

C. Colors: Provide color selections made by the Architect.

D. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24). These requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat paints, Coatings and Primers: VOC content of not more than 50 g/L.
2. Nonflat paints, Coatings and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.
5. Shellacs, Clear: VOC not more than 730 g/L.
6. Shellacs, Pigmented: VOC not more than 550 g/L.
7. Flat Topcoat Paints: VOC not more than 50 g/L.
8. Nonflat Topcoat Paints: VOC not more than 150 g/L.
9. Primers, Sealers and Undercoaters: VOC not more than 200 g/L.
10. Dry-Fog Coatings: VOC not more than 400 g/L.
11. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.
12. Pre-Treatment Wash Primers: VOC not more than 420 g/L.

1.3 EXECUTION

A. Examine substrates, areas, and conditions under which painting will be performed for compliance with paint application requirements. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates.

C. Preparation: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

D. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

E. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

1. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

   a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
   b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
   c. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

2. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

   a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

3. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

F. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
2. Use only thinners approved by paint manufacturer and only within recommended limits.

G. Application: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in items are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
7. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
8. Sand lightly between each succeeding enamel or varnish coat.

H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
3. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

K. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

L. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

N. Field Quality Control: The Owner reserves the right to engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.

1. The testing agency will perform appropriate tests as required by the Owner.
2. If tests show material being used does not comply with specified requirements, the Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

O. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

P. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

Q. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

R. Paint Schedules: Provide the paint systems as indicated on the paint schedule following the end of this section for the various substrates indicated.

EXTERIOR PAINT SCHEDULE

A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer.

a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

1)	Devoe:	13101 Mirrolac Rust Penetrating Metal Primer.
2)	Fuller:	621-04 Blox-Rust Alkyd Metal Primer.
3)	Glidden:	5205 Glid-Guard Tank & Structural Primer, Red.
4)	Moore:	IronClad Retardo Rust-Inhibitive Paint #163.
5)	PPG:	6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
6)	P & L:	S 4551 Tech-Gard High Performance Rust-Inhibitor Primer.
7)	S-W:	Kem Kromik Metal Primer B50N2/B50W1.

b. First and Second Coats: Full-gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils (0.076 mm).

1)	Devoe:	70XX Mirrolac Interior/Exterior Alkyd-Urethane Gloss Enamel.
2)	Fuller:	312-XX Heavy-Duty Industrial Maintenance Enamel.
3)	Glidden:	4500 Series Glid-Guard Alkyd Industrial Enamel.
4)	Moore:	Impervo Enamel #133.
5)	PPG:	6-282 Speedhide Interior/Exterior Gloss-Oil Enamel.
6)	P & L:	S 4500 Series Tech-Gard Maintenance Gloss Enamel.
7)	S-W:	Industrial Enamel B-54 Series.

INTERIOR PAINT SCHEDULE

A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a primer.

a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

1)	Devoe:	50801 Wonder-Tones Interior Vinyl Latex Primer-Sealer.
2)	Fuller:	220-20 Pro-Tech Latex Wall Primer Sealer, White.
3)	Glidden:	5111 Spred Ultra Latex Primer-Sealer.
4)	Moore:	Regal First Coat Interior Latex Primer & Underbody #216.
5)	PPG:	17-10 Quick-Drying Interior Latex Primer-Sealer.
6)	P & L:	Z/F 1004 Suprime "1" 100 Percent Acrylic Multi-Purpose Primer.

b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

1)	Devoe:	39XX Wonder-Tones Semi-Gloss Interior Latex Enamel.
2)	Fuller:	214-XX AA Enamel Interior Acrylic Latex Semi-Gloss Enamel.
3)	Glidden:	8200 Series Spred Ultra Latex Semi-Gloss Enamel.
4)	Moore:	Moore's Regal AquaGlo Vinyl-Acrylic Latex Enamel #333.
5)	PPG:	88-110 Satinhide Interior Enamel Wall & Trim Lo-Lustre Semi-Gloss Latex.
6)	P & L:	Z/F 4100 Series Accolade Interior Semi-Gloss.

2. Epoxy Finish: 2 finish coats over a primer.

a. Primer: As recommended by paint supplier for product used.

b. First and Second Coats: Epoxy enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 4 mils.

1)	S-W:	Water-based catalyzed epoxy.

B. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces:

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a wood undercoater.

a. Undercoat: Alkyd- or acrylic-latex-based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

1)	Devoe:	51701 Wonder-Prime All-Purpose Latex Primer Sealer & Vapor Barrier.
2)	Fuller:	220-07 Interior Alkyd Enamel Undercoat.

3)	Glidden:	UH 400 Ultra-Hide Alkyd Interior Enamel Undercoater.
4)	Moore:	Moore's Alkyd Enamel Underbody #217.
5)	PPG:	6-755 Speedhide Interior Water-Based Undercoater.
6)	P & L:	Z/F 1001 Suprime "1" 100 Percent Acrylic Multi-Purpose Primer.

b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

1)	Devoe:	39XX Wonder-Tones Semi-Gloss Interior Latex Enamel.
2)	Fuller:	214-XX AA Enamel Interior Acrylic Latex Semi-Gloss Enamel.
3)	Glidden:	8200 Series Spred Ultra Latex Semi-Gloss Enamel.
4)	Moore:	Moore's Regal AquaGlo Vinyl-Acrylic Latex Enamel #333.
5)	PPG:	88-110 Satinhide Interior Enamel Wall & Trim Lo-Lustre Semi-Gloss Latex.
6)	P & L:	Z/F 4100 Series Accolade Interior Semi-Gloss.

C. Stained Woodwork: Provide the following stained finishes over new, interior woodwork:

1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sealer coat and an alkyd-based, interior wood stain. Wipe wood filler before applying stain.

a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.

1)	Devoe:	None required.
2)	Fuller:	680-00 Pen-Chrome Paste Wood Filler.
3)	Glidden:	Glidden Paste Wood Filler.
4)	Moore:	Benwood Paste Wood Filler #238.
5)	PPG:	None required.
6)	P & L:	None required.
7)	S-W:	Sher-Wood Fast-Dry Filler.

b. Stain Coat: Alkyd-based, interior wood stain applied at spreading rate recommended by the manufacturer.

1)	Devoe:	96XX WoodWorks Alkyd Interior Stain.
2)	Fuller:	640-XX Pen-Chrome Interior Oil Base Wood Stain.
3)	Glidden:	1600 Series Woodmaster Oil Wood Stain.
4)	Moore:	Benwood Penetrating Stain #234.
5)	PPG:	77-302 Rez Interior Semi-Transparent Stain.
6)	P & L:	S-Series Tonetic Wood Stain.
7)	S-W:	Oil Stain A-48 Series.

c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.

1)	Devoe:	4900 WoodWorks Quick-Dry Clear Sealer.
2)	Fuller:	None recommended.
3)	Glidden:	5035 Ultra-Hide Quick-Dry Sanding Sealer, Clear.
4)	Moore:	Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413.
5)	PPG:	77-30 Rez Interior Quick-Drying Sealer and Finish.
6)	P & L:	H-40 Sanding Sealer.
7)	S-W:	ProMar Varnish Sanding Sealer B26V3.

d. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.

1)	Devoe:	4600 WoodWorks Alkyd Satin Varnish.
2)	Fuller:	653-01 EPA Compliant Clear Polyurethane Satin Finish.
3)	Glidden:	82 Satin Sheen Woodmaster Polyurethane Clear Finishes Varnish.
4)	Moore:	Benwood Satin Finish Varnish #404.
5)	PPG:	77-7 Rez Varnish, Interior Satin Oil Clear.
6)	P & L:	H24 38 Clear Finish Gloss.
7)	S-W:	Oil Base Varnish, Gloss A66V91.

D. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss, Alkyd-Enamel Finish: One finish coat over an enamel undercoater and a primer.

a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

1)	Devoe:	13101 Mirrolac Rust Penetrating Metal Primer.
2)	Fuller:	621-04 Blox-Rust Alkyd Metal Primer.
3)	Glidden:	5207 Glid-Guard Tank & Structural Primer, White.
4)	Moore:	IronClad Retardo Rust-Inhibitive Paint #163.
5)	PPG:	6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
6)	P & L:	S 4551 Tech-Gard High Performance Rust Inhibitor Primer.
7)	S-W:	Kem Kromik Metal Primer B50N2/B50W1.

b. Undercoat: Alkyd, interior enamel undercoat or semigloss, interior, alkyd-enamel finish coat, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

1)	Devoe:	26XX Velour Interior Alkyd Semi-Gloss Enamel.
2)	Fuller:	220-07 Interior Alkyd Enamel Undercoat.
3)	Glidden:	UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.

4)	Moore:	Moore's Alkyd Enamel Underbody #217.
5)	PPG:	6-6 Speedhide Interior Quick-Drying Enamel Undercoater.
6)	P & L:	S/D 1011 Suprime "11" Interior Alkyd Wood Primer.
7)	S-W:	ProMar 200 Interior Alkyd Semi-Gloss Enamel B34W200.

c. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils (0.036 mm).

1)	Devoe:	26XX Velour Interior Alkyd Semi-Gloss Enamel.
2)	Fuller:	110-XX Fullerglo Alkyd Semi-Gloss Enamel.
3)	Glidden:	UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.
4)	Moore:	Satin Impervo #235.
5)	PPG:	27 Line Wallhide Low Odor Interior Enamel Wall and Trim Semi-Gloss Oil.
6)	P & L:	S/D 5700 Cellu-Tone Alkyd Satin Enamel.
7)	S-W:	Classic 99 Interior/Exterior Semi-Gloss Alkyd Enamel A-40 Series.

END OF SECTION 09 90 00

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SECTION 10 28 13 – TOILET ACCESSORIES

1.1 GENERAL

A. Submittals: Manufacturer's product data for each toilet accessory item specified, including details of construction relative to materials, dimensions, gages, profiles, mounting methods, specified options, and finishes.

1.2 PRODUCTS

A. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following (or equal):

1. A & J Washroom Accessories.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.

B. Materials, General: Fabricate toilet accessory items from the following materials and according to requirements specified for individual accessory items:

1. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness, unless otherwise indicated.
2. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.
3. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum thickness, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
4. Galvanized Steel Sheet: ASTM A 527, G60.
5. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
6. Mirror Glass: Nominal 6.0-mm (0.23-inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.
7. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
8. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.
9. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide a minimum of six keys to Owner's representative.

C. Stainless Steel Grab Bars (GB): Provide grab bars with wall thickness not less than .050 inch (18 gage). Provide one @36" behind water closet, one @ 42" on side wall and one @ 18" in all handicapped toilet stalls and as follows:

1. Mounting: Concealed, manufacturer's standard flanges and anchorages.
2. Clearance: 1-1/2-inch clearance between wall surface and inside face of bar.
3. Gripping Surfaces: Smooth, satin finish.
4. Medium-Duty Size: Outside diameter of 1-1/4 inches.

D. Fabrication: Only a maximum 1-1/2-inch diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a waterproof, printed label or a stamped nameplate, indicating manufacturer's name and product model number.

E. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

F. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

G. Refer to the Toilet Accessory Schedule in the drawings for products specific to this project.

1.3 EXECUTION

A. Installation: Install toilet accessory units according to manufacturers' printed installation instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.

1. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
2. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.
3. Secure mirrors to walls in concealed, tamper-proof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved.

END OF SECTION 10 28 13

SECTION 10 44 16 – FIRE EXTINGUISHERS

1.1 GENERAL

A. Submittals: Submit the following:

1. Product Data: Include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.

2. Samples for Initial Selection: Manufacturer's color charts showing full range of colors, textures, and patterns available for each finish indicated or exposed to view.

B. UL-Listed Products: Fire extinguishers shall be UL listed with UL listing mark for type, rating, and classification of extinguisher.

1.2 PRODUCTS

A. Fire Extinguishers: Provide fire extinguishers for each cabinet and for other locations indicated.

1. Multipurpose Dry Chemical Type: UL-rated 1-A:10-B:C, 5-lb nominal capacity, in enameled steel container.

B. Mounting Brackets: Provide brackets of sizes required for type and capacity of extinguisher indicated, in plated finish.

C. Cabinet Construction: Box with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

1. Cabinet Type (equal to JL Ambassador): Suitable for containing the following:

a. Fire extinguisher.

2. Cabinet Mounting: Suitable for the mounting indicated:

a. Semirecessed: Partially recessed in walls of shallow depth. The rolled edge return trim shall be a maximum of 2 ½".

D. Door Material and Construction: Manufacturer's standard of material indicated, coordinated with cabinet types and trim styles selected.

1. Enameled Steel: Hollow construction with tubular stiles and rails.
2. Door Glazing: Fully tempered float glass complying with ASTM C 1048, Condition A, Type I, Quality q3, Kind FT, and Class as follows:

a. Class 1 (clear).

E. Door Style: Manufacturer's standard design.

1. Full-Glass Panel: Float glass, 1/8 inch thick.

F. Door Hardware: Provide door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide lever handle with cam-action latch, or exposed

or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 degrees.

G. Cabinet Finishes: Comply with NAAMM "Metal Finishes Manual." Protect exposed finishes from damage by application of temporary strippable covering prior to shipment.

H. Steel Cabinet Finishes: Solvent-clean surfaces to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust from uncoated steel.

1. Baked-Enamel Finish: Immediately after cleaning and pretreatment, apply a two-coat baked-enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's instructions for application and baking to achieve a minimum dry film thickness of 2.0 mils.

a. Color and Gloss: As selected from manufacturer's standard choices for color and gloss. Paint the following:

1) Exterior of cabinet except for surfaces indicated to receive another finish.
2) Interior of cabinet.

1.3 EXECUTION

A. Installation: Follow manufacturer's printed instructions.

B. Install at heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

1. Prepare wall recesses for cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.
2. Fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb.

C. Install a total of two units. See plans for locations.

END OF SECTION 10 44 16

SECTION 10 73 26 – WALKWAY COVERINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work in this section includes furnishing and installing extruded aluminum post-supported walkway canopies.

Related Items and Considerations:

1. Concrete for canopy footings. Footing block-outs for post-supported units to be installed as part of the concrete work.

2. Flashing may be needed where units abut building walls.

3. Ensure adequate wall condition to carry canopy loads where required.

4. Consider water drainage away from canopy where necessary.

B. Field Measurement: Confirm the dimensions prior to preparation of shop drawings when possible.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of walkway covering.

B. Shop Drawings: Submit shop drawings showing structural component locations/positions, material dimensions and details of construction and assembly.

PART 2 - PRODUCTS

2.1 WALKWAY CANOPY

A. Manufacturer: Provide post-supported all-extruded walkway pre-engineered canopy by Mapes Canopies, Lincoln, Nebraska or approved substitute.

B. Materials: Decking, beams, posts and fascia shall be extruded aluminum alloy 6063-T6, in profile and thickness shown in current Mapes brochures.

C. Finishes: Shall be selected from manufacturer's standard factory options.

D. Fabrication: Support columns and gutter beams shall be designed such that the columns will be notched to create a saddle that will receive and secure the gutter beams. Post and beams shall be mechanically assembled utilizing 3/16" fasteners with a minimum shear stress of 350 pounds. Pre-welded or factory-welded connections are not acceptable. Decking shall be designed with interlocking extruded aluminum members with mechanical fasteners field applied to provide structural integrity for the completed assembly. Concealed drainage: Water shall

drain from covered surfaces into integral gutter beam and be directed to ground level discharge via one or more designated support posts.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Inspection: Confirm that surrounding area is ready for the canopy installation.

B. Installer shall confirm dimensions and elevations to be as drawn on shop drawings.

C. Erection shall be performed by an approved installer and scheduled after all concrete, masonry and roofing in the area is completed.

D. Installation: Shall be in strict accordance with manufacturer's shop drawings. Particular attention shall be given to protecting the finish during handling and erection.

E. After completing installation, entire system shall be left in clean condition.

END OF SECTION 10 73 26

SECTION 31 00 00 – EARTHWORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Excavation, filling, and backfilling for structures, pavement, and out parcels.

B. Trenching and backfilling for utilities.

C. Dewatering.

D. Boring under crossings.

1.2 RELATED SECTIONS

A. Section 02100 – Site Demolition.

B. Section 02110 – Site Clearing.

C. Section 02486 – Turf & Seed

1.3 RELATED DOCUMENTS

A. Geotechnical Engineering Study (soils report) and contract documents.

B. Order of Precedence.

C. The "Foundation" section in the "General Notes" section of the Structural Drawings specified requirements for earthwork preparation and placement of fill. The "Foundation" provisions of the Structural Drawings shall take precedence over the provisions of this section whenever duplication or conflict occurs.

1.4 REFERENCE STANDARD

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced with the text by the basic designation only.

B. American Society for Testing and Materials (ASTM) Latest Edition.

1. ASTM D422 – Standard Test Methods for Particle Size Analysis of Soil.
2. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3(600).
3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
4. ASTM D2216 – Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

5. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
6. ASTM D2488 – Standard Description and Identification of Soils (Visual-Manual Procedures).
7. ASTM D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
8. ASTM D3017 – Standard Test Methods for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
9. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

C. American Association of State Highway and Transportation Officials (AASHTO)

1.5 AASHTO T 88 – Particle Size Analysis of Soils

A. State Department of Transportation (DOT): Latest Edition.

1. Standard Specifications for Construction and Materials.

B. National Fire Protection Association (NFPA).

1. NFPA 70 – National Electrical Code.

C. American Water Works Association (AWWA).

1. AWWA C200 – Standard For Steel Water Pipe – 6 In. (150 Mm) and Larger.
2. AWWA C206 – Field Welding of Steel Water Pipe.

1.6 QUALITY ASSURANCE

A. An independent testing laboratory, selected and paid for by the Contractor, will be retained to perform construction testing on site.

1. The independent testing laboratory shall prepare test reports that indicate test location, elevation data, and test results. Owner, Civil Engineering Consultant, and Contractor shall be provided with copies of reports within 96 hours of time that test was performed. In event that test performed fails to meet Specifications, the independent testing laboratory shall notify Owner and Contractor immediately.
2. Cost related to retesting due to failures shall be paid for by the Contractor at no additional expense to Owner. Contractor shall provide free access to site for testing activities.
3. Quality assurance testing will be conducted in accordance with Paragraph "Field Testing" in Part 3 hereinafter.

1.7 DEFINITIONS

A. Satisfactory Soils: ASTM D2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel large than allowed for fill or backfill materials as specified hereinafter or as shown on the Drawings. Satisfactory soil shall contain no debris, waste, frozen materials, vegetation, and other deleterious matter.

B. Unsatisfactory Material: Materials which do not comply with the requirements for satisfactory materials are unsatisfactory including materials classified in ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material.
2. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

1.8 SUBMITTALS

A. Submit 30-pound sample of each type of off-site fill material that is to be used at the site in airtight containers to the independent testing laboratory or submit gradation and certification of aggregate material that is to be used at the site to the independent testing laboratory for review.

B. Submit certification that all material obtained from off-site sources complies with specification requirements.

C. Submit name of each material supplier and specific type and source of each material. Change in source throughout project requires approval of Owner.

D. If fabrics or geogrids are to be used, design shall be submitted for approval to Owner.

E. Submit Dewatering Plans upon request by Owner.

F. Shop drawings or details pertaining to excavating and filling are not required unless otherwise shown on the Drawings or it contrary procedures to Construction Documents are proposed.

G. Shop drawings or details pertaining to site utilities are not required unless required by regulatory authorities or unless uses of materials, methods, equipment, or procedures that are contrary to the Drawings or Specifications are proposed. Do not perform work until Owner has accepted required shop drawings.

H. Contact utility companies and determine if additional easements will be required to complete project. Provide written confirmation of the status of all easements to Owner at time of Preconstruction Conference or no later than 90 days prior to project possession date.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fill and Backfill. Satisfactory soil materials excavated from the site.

B. Imported Fill Material: Satisfactory borrow material provided from offsite borrow areas when sufficient satisfactory soil materials are not available from required excavations.

C. Trench Backfill: ASTM D2321 unless otherwise specified or shown on the Drawings.

D. Bedding: Aggregate Type as indicated on the plans or naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

E. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D448; course-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

F. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

G. Topsoil: Topsoil shall consist of stripping material excavated from the site Topsoil shall consist of organic surficial soil found in depth of not more than 6-inches. Topsoil shall be as further defined in Section 02486 – Turf & Seed.

H. Stabilization fabrics and geogrids: As specified in section 312700.

I. Filter and drainage fabrics: As specified in Section 312800.

J. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M288 and the following, measured per test methods referenced.

1. Survivability: Class 2; AASHTO M288.
2. Grab Tensile Strength: 157 lbf; ASTM D4632.
3. Sewn Seam Strength: 142 lbf; ASTM D4632.
4. Tear Strength: 56 lbf; ASTM D4533.
5. Puncture Strength: 56 lbf; ASTM D4833.
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D4751.
7. Permittivity: 0.2 per second minimum; ASTM D4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

K. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M288.
2. Grab Tensile Strength: 247 lbf; ASTM D4632.
3. Sewn Seam Strength: 222 lbf; ASTM D4632.
4. Tear Strength: 90 lbf; ASTM D4533.
5. Puncture Strength: 90 lbf; ASTM D4833.
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D4751.
7. Permittivity: 0.02 per second minimum; ASTM D4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

L. Steel Casing Pipe: Comply with AWWA C200 minimum grade B, side, and wall thickness as indicated on the Drawings.

M. Trench Utility Locator Tape: Heavy Duty 6" wide underground warning tape. Tape shall be made from polyethylene material, 3.5 mils thick, with a minimum tensile strength of 1,750 psi. Place the tape at one-half the minimum depth of cover for the utility line or a maximum of 3 feet

whichever is the less, but never above the top of subgrade. Color of tape shall be determined by as follows:

1. Natural Gas or Propane- Yellow.
2. Electric- Red.
3. Telephone – Orange.
4. Water – Blue.
5. Sanitary Sewer – Green.

N. Controlled Low-Strength Material

1. Controlled Low-Strength Material: Low-density. Self-compacting, flowable concrete material as follows:

   a. Portland Cement: ASTM C150, Type II.
   b. Fly Ash: ASTM C618, Class C or F.
   c. Normal-Weight Aggregate: ASTM C33, 3/4 inch nominal maximum aggregate size.
   d. Forming Agent: ASTM C869.
   e. Water: ASTM C94/C94M.
   f. Air-Entraining Admixture: ASTM C260.

2. Produce low-density, controlled low-strength material with the following physical properties:

   a. As-Cast Unit Weight 36 to 42 lb/cu. Ft. at point of placement, when tested according to ASTM C138/C138M.
   b. Compressive Strength: 140 psi when tested according to ASTM C495.

3. Produce conventional-weight, controlled low-strength material with 80-psi compressive strength when tested according to ASTM C495.

O. Geofoam

1. Extruded-Polystyrene Board Insulation: ASTM C578, Type IV, 160 lb/cu. ft.
2. Molded-Polystyrene Board Insulation: ASTM C578, Type I, 0.90 lb/cu. ft.

   a. Manufacture molded polystyrene with an inorganic mineral registered with the EPA and suitable or application as a termite deterrent.

3. Geofoam Connectors: Geofoam manufacturer's multibarbed galvanized steel sheet connectors.

2.2 EQUIPMENT

A. Transport off-site materials to project using well-maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

2.3 SOURCE QUALITY CONTROL

A. Laboratory testing of materials proposed for use in the project shall be by the Independent Testing Laboratory at no cost to Contractor. The Contractor shall provide samples of material obtained off-site.

B. In areas to receive pavement, California Bearing Ratio (CBR) or Limerock Bearing Ratio (LBR) tests shall be performed for each type of material that is imported from off-site. CBR or LBR value shall be equal to or above pavement design subgrade CBR or LBR value indicated on Construction Drawings.

C. Following tests shall be performed on each type of on-site or imported or soil material used as compacted fill:

1. Moisture and Density Relationship: ASTM D698 or ASTM D1557.
2. Mechanical Analysis: AASHTO T88 or ASTM D422.

PART 3 – EXECUTION

A. Identify required lines, levels, contours, datum, elevations, and grades necessary for construction as shown on the drawings.

B. Notify utility companies to remove or relocate public utilities that are in conflict with proposed improvements.

C. Protect plant life, lawns, fences, existing structures, sidewalks paving, and curbs, unless otherwise noted on the drawings from excavating equipment and vehicular traffic.

D. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

E. Remove from site, material encountered in grading operations that, in opinion of Owner or the Owner's Independent Testing Laboratory (ITL) is unsuitable or undesirable for backfilling, subgrade, or foundation purposes. Dispose of in manner satisfactory to Owner. Backfill areas with layers of suitable material and compact as specified herein.

F. Prior to placing fill in low areas, such as previously exiting creeks, ponds, or lakes, perform following procedures:

1. Drain water out by gravity with ditch having flow line lower than lowest elevation in low area. If drainage cannot be performed by gravity ditch, use adequate pump to obtain the same results.
2. After drainage of low area is complete, remove muck, mud, debris, and other unsuitable material by using acceptable equipment and methods that will keep natural soils underlying low area dry and undisturbed.
3. All muck, mud, and other materials removed from low areas shall be dried on-site by spreading in thin layers for observation by the ITL. Material shall be inspected and, if found to be suitable for use as fill material shall be incorporated into lowest elevation of site filling operation, but not under building subgrade or within 10'-0" of perimeter of building subgrade or paving subgrade. If, after observation by the ITL, material is found to be unsuitable material shall be removed from site.

G. Locate and identify utilities that have previously been installed and protect from damage.

H. Locate and identify existing utilities that are to remain and protect from damage.

I. Maintain in operating condition existing utilities, previously installed utilities, and drainage systems encountered in utility installation. Repair surface or subsurface improvements shown on the Drawings.

J. Verify location, size, elevation, and other pertinent data required making connections to existing utilities and drainage systems as indicated on the Drawings.

K. Over excavate and properly prepare areas of subgrade that are not capable of supporting proposed systems. Stabilize these areas by using acceptable geotextile fabrics or aggregate material placed and compacted as specified in Section 312700.

3.2 DEWATERING

A. General:

1. Provide dewatering systems as required for excavations.
2. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom or sides. Design system to prevent differential hydrostatic head, which would result in floating out soil particles in a manner, termed as a "quick" or "boiling" condition. System shall not be dependent solely upon sumps or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation's stability.
3. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow work to be installed in a dry condition.
4. Control, by acceptable means, all water regardless of source. Contractor shall be responsible for disposal of water.
5. Confine discharging piping or ditches to available easement or to additional easement obtained by Contractor. Provide necessary permits or easement.
6. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary, lower water level in advance of excavation utilizing wells, wellpoints, jet educators, or similar positive methods. The water level as measured by piezometers shall be maintained a minimum of 3 feet below prevailing excavation level.
7. Commence dewatering prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.
8. Open pumping with sumps and ditches will be allowed provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.
9. Install wells or wellpoints, if required, with suitable screens and filters so that continuous pumping of fines does not occur. Arrange discharge to facilitate collection of samples by the Owner. During normal pumping and upon development of wells, levels of fine sand or silt in discharge water shall not exceed 5 ppm. Install sand tester on discharge of each pump during testing to verify that levels are not exceeded.
10. Control grading around excavations to prevent surface water from flowing into excavation area.
11. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.

B. Design:

1. Designate and obtain the services of a qualified dewatering specialist to provide dewatering plan as may be necessary to complete the Work.
2. Contractor shall be responsible for the accuracy of the drawings, design data, and operational records required.
3. Contractor shall be responsible for the design, installation, operation maintenance, and any failure of any component of the system.

C. Damages:

1. Contractor shall be responsible for and shall repair any damage to work in place, other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation. Contractor responsibility shall also include, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.
2. Remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.

D. Maintaining Excavation Dewatering Condition:

1. Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted.
2. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.
3. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.
4. System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance and replacement of system components, and any other work required to maintain excavation in dewatered condition.

E. System Removal: Upon completion of the work, remove dewatering equipment from the site, including related temporary electrical service.

F. Wells shall be removed or cut off a minimum of 3 feet below final ground surface, capped, and abandoned in accordance with regulations by agencies having jurisdiction.

3.3 TOPSOIL EXCAVATION

A. Cut heavy growths of grass from areas before stripping and remove cuttings with remainder of cleared vegetative material.

B. Strip topsoil to a depth of not less than 6 inches from areas that are to be filled, excavated, landscaped, or re-graded to such depth that it prevents intermingling with underlying subsoil or questionable material.

C. Stockpile topsoil in storage piles in areas shown on the Drawings or where directed by Owner. Construct storage piles to freely drain surface water. Cover storage piles as required to prevent windblown dust. Dispose of unsuitable topsoil as specified for waster material, unless otherwise specified by Owner. Remove excess topsoil from site unless specifically note otherwise on the Drawings.

3.4 GENERAL EXCAVATION

A. Classification of Excavation: The Contractor shall assure himself by site investigation or other necessary means that he is familiar with the type, quantity, quality, and character of excavation work to be performed. Excavation shall be considered unclassified excavation, except as indicated in the Contract Documents.

B. When performing grading operations during periods of wet weather, provide adequate dewatering, drainage and ground water management to control moisture of soils.

C. Shore, brace, and drain excavations as necessary to maintain excavation as safe, secure, and free of water at all times.

D. Excavate building areas to line and grade as shown on the Drawings being careful not to over excavate beyond elevations needed for building subgrades.

E. Place suitable excavated material into project fill areas.

F. Unsuitable excavated material shall be disposed of in manner and location that is acceptable to Owner and local governing agencies.

G. Perform excavation using capable, well-maintained equipment and methods acceptable to owner and local governing agencies.

3.7 SUBGRADE PREPARATION

A. Scarification and Compaction: Areas exposed by excavation or stripping and on which subgrade preparations are to be performed shall be scarified to minimum depth of 8 inches and compacted as specified hereinafter.

B. Proofrolling: Subgrades shall be proofrolled to detect areas of insufficient compaction. Proofrolling shall be accomplished by making minimum of 2 complete passes with fully-loaded tandem-axle dump truck with a maximum weight of 20 tons, or approved equal, in each of 2 perpendicular directions while under the supervision and direction of the independent testing laboratory. Document and explain proofrolling inspection procedures and results in the laboratory inspection report. Areas of failure shall be excavated and recompacted as specified herein. Continual failure areas shall be stabilized in accordance with Section 312700 at no additional cost to Owner. Subgrade exposed longer than 48 hours or on which precipitation has occurred shall be re-proofrolled.

3.8 FILLING

A. Fill areas to contours and elevations shown on the Drawings with unfrozen materials.

B. Place fills in continuous lifts specified herein.

C. Fill within proposed building subgrade and paving subgrade shall not contain rock or stone greater than 6 inches in any dimension.

D. Unless otherwise specified for rock fill, rock or stone less than 6-inches in largest dimension may be used in fill below structures, paving, and graded areas, up to 24 inches below surface of proposed subgrade or finish grade of graded areas when mixed with suitable material. Rock or stone less than 2 inches is largest dimension may be used in fill within the upper 24 inches of proposed subgrade or finish grade of graded areas when mixed with suitable material.

E. Fill materials used in preparation of subgrade shall be placed in lifts or layers not to exceed 8 inches loose measure and compacted as specified hereinafter.

F. Material imported from off-site or fill material removed from onsite cut areas shall have CBR or LBR value equal to or above pavement design subgrade CBR or LBR value indicated in the Geotechnical Investigation Report.

G. Building area subgrade pad shall be that portion of site directly beneath and 10 feet beyond building and appurtenances, including limits of future building expansion areas as shown on the Drawings.

H. Prepare building area subgrade pad in strict accordance with "Foundation" section in the "General Notes" section of Structural Drawings.

I. Unless specifically stated otherwise in "Foundation Subsurface Preparation" on the Drawings, the following table stipulates maximum allowable values for plasticity index (PI) and liquid limit (LL) of suitable materials to be used as fill in specified areas:

Location	PI	LL
Building Area (below upper four feet)	20	50
Building Area (upper four feet)	12	40
Paving Area (below upper two feet)	20	50
Paving Area (upper two feet)	15	40

References to depth are to proposed subgrade elevations

3.9 ROCK FILL

A. Rock fill include on-site excavated material classified as rock excavation as specified in Section 312100. Rock fill may be utilized in fill up to 48 inches below top of subgrade or finish grade of graded areas unless otherwise permitted in higher elevations by the ITL. Rock fill shall consist of rock having a maximum dimension not greater than 12 inches in any dimension. Rock fill shall be placed in successive horizontal layers of loose material having a thickness of approximately the maximum size of the larger rock in the lift, but not greater than 12 inches. Each layer of material shall be spread uniformly, completely saturated, and compacted. Shot rock shall not be dumped into place, but shall be distributed in horizontal lifts by blading and dozing in such a manner as to ensure proper placement into final position in the embankment. Voids shall be filled with finer material include shot rock fines and limited soil fines during the spreading operation. Successive layers shall not be placed until all voids of the current lift are filled and the lift is compacted. Each successive layer of material shall adequately bond to the material on which it is placed. Compaction shall be accomplished with vibratory compactors, heavy rubber-tired rollers, or steel-wheeled rollers. Compaction shall be by uniform passes of compaction equipment

in sufficient number of passes, but not less than two passes, such that no further consolidation is evident as determined by the ITL.

3.10 PIPE BEDDING

A. Excavate trenches for pipe or conduit to 4 inches below bottom of pipe and to the width as specified herein. Place 4 inches of bedding material, compact in bottom of trench, and shape to conform to lover portion of pipe barrel.

B. Place geotextile fabric as specified on the Drawings and in accordance with section 312700.

3.11 TRENCH BACKFILLING

A. Materials used for trench backfill shall comply with requirements as specified herein.

B. Backfill and compact in accordance with fill and compaction requirements in accordance with ASTM D2321 unless otherwise shown on the Drawings.

C. Do not backfill trenches until required tests are performed and utility systems comply with and are accepted by applicable governing authorities.

D. Backfill trenches to contours and elevations shown on the Drawings.

E. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

3.12 BORINGS AND CASINGS UNDER ROADS, HIGHWAYS, AND RAILROAD CROSSINGS

A. When indicated by the Drawings, street, road, highway, or railroad crossings for utility mains installed by jacking and boring method shall be in accordance with area specifications and governing authorities.

B. Excavation of approach pits and trenches within right-of-way of street, road, highway, or railroad shall be of sufficient distance from paving or railroad tracks to permit traffic to pass without interference. Tamp backfill for approach pits and trenches within right-of-way in layers not greater than 6-inches thick for entire length and depth of trench or pit. Compact backfill to 98 percent of maximum density in accordance with ASTM D698, (or 95 percent of maximum density, in accordance with ASTM D1557) obtained at optimum moisture as determined by AASHTO T180. Mechanical tampers may be used after cover of 6 inches has been obtained over top of barrel of pipe.

C. Accomplish boring operation using commercial-type boring rig. Bore hole to proper alignment and grade. Bore hold shall be within 2 inches of same diameter as largest outside joint diameter of pipe installed. Install pipe in hole immediately after bore has been made and in no instance shall hole be left unattended while open.

D. In event subsurface operations result in failure or damage to pavement or railroad tracks within 1 year of construction, make necessary repairs to pavement or railroad tracks. If paving cracks on either side of pipe line or is otherwise disturbed or broken due to construction operations, repair or replace disturbed or broken area.

E. Clean, prime, and line interior and exterior of casing pipe with two coats of asphalt coating in accordance with and governing authorities.

F. Butt weld steel casing. Welds shall be full penetration single butt-welds in accordance with AWWA C206.

G. Install casing and utility pipe with end seals, vent pipe, and other special equipment in accordance with area specifications and governing authorities.

3.13 COMPACTION

A. Compact as follows:

1. Percent of Maximum Laboratory Density

Location	ASTM D698	ASTM D1557
Subgrade & Fill Below Structures and Pavement	98	95
Subgrade & Fill in All other Areas	95	92

B. Maintain moisture content of not less than 1 percent below and not more than 3 percent above optimum moisture content of fill materials to attain required compaction density.

C. Exercise proper caution when compacting immediately over top of pipes or conduits. Water jetting or flooding is not permitted as method of compaction.

D. Corrective Measures for Non-Complying Compaction: Remove and recompact deficient areas until proper compaction is obtained. Continual failure areas shall be stabilized in accordance with section 312700 at no additional cost to Owner.

3.14 MAINTENANCE OF SUBGRADE

A. Verify finished subgrades to ensure proper elevation and conditions for construction above subgrade.

B. Protect subgrade from excessive wheel loading during construction, including concrete trucks, dump trucks, and other construction equipment.

C. Remove areas of finished subgrade found to have insufficient compaction density to depth necessary and replace in manner that will comply with compaction requirements by use of material with CBR and LBR equal to or better than that specified on the drawings. Surface of subgrade after compaction shall be firm, uniform, smooth, stable, and true to grade and cross-section.

D. Construct temporary ditches and perform such grading as necessary to maintain positive drainage away from subgrade at all times.

3.15 BORROW AND SPOIL SITES

A. Comply with NPDES and local erosion control permitting requirements for any and all on-site and off-site, disturbed spoil and borrow areas. Upon completion of spoil or borrow operations, clean up spoil or borrow areas in a neat and reasonable manner to the satisfaction of Owner or off-site property owner, if applicable.

3.16 FINISH GRADING

A. Check grading of building subgrades by string line from grade stakes (blue tops) set at not more than 50-foot centers. Allowable tolerance shall be plus or minus 0.10 feet from plan grade. Provide engineering and field staking as necessary for verification of lines, grades, and elevations.

B. Grade areas where finish grade elevations or contours are indicated on the Drawings, other than paved areas and buildings, including excavated areas, filled and transition areas, and landscaped areas. Graded areas shall be uniform and smooth, free from rock, debris, or irregular surface changes. Ground surfaces shall vary uniformly between indicated elevations. Grade finished ditches to allow for proper drainage without ponding and in manner that will minimize erosion potential. For topsoil, sodding, and seeding requirements refer to Section 02486.

C. Correct settled and eroded areas within 1 year after date of completion at no additional expense to Owner. Bring grades to proper elevation.

3.17 FIELD TESTING

A. Field density tests for in-place materials will be performed by the Owner's Independent Testing Laboratory (ITL) as follows:

1. Building Subgrade Areas, Including 10'-0" Outside of Exterior Building Lines: In cut areas, not less than 1 compaction test for every 2,500 sq. ft. In fill areas, same rate of testing for each 8-inch lift, measured loose.
2. Areas of Construction Exclusive of Building Subgrade Areas: In cut areas, not less than 1 compaction test for every 10,000 sq. ft. In fill areas, same rate of testing for each 8-inch lift, measured loose.
3. Utility Trench Backfill: Intervals not exceeding 200-feet of trench for first and every other 8-inch lift of compacted trench backfill.
4. Test Method: In-place nuclear density, ASTM D2922 (Method B-Direct Transmission).

B. Corrective Measures for Non-Complying Compaction: Remove and recompact deficient areas until proper compaction is obtained at no additional expense to Owner. Adjust moisture content as necessary to conform to the requirements of this section.

C. Field testing, frequency, and methods may vary as determined by and between the Owner and the ITL.

END OF SECTION 31 00 00

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SECTION 31 10 00 – SITE CLEARING

1.1 GENERAL

A. Traffic: 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.

B. Protection: Provide temporary fences, barricades, coverings, or other protection to preserve existing items indicated to remain and to prevent injury or damage to persons or property. Provide protection for adjacent properties as required.

C. Restore damaged work to condition existing prior to start of Work.

D. Protect existing trees and vegetation that are indicated to remain from physical damage. Do not store materials or equipment within tree drip line.

E. Existing Services: Locations indicated are approximate; determine exact location before commencing Work. Coordinate with local utility service requirements and comply with their instructions.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. Site Clearing: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions as indicated or that interfere with new construction. Removal includes digging out stumps and roots, together with subsequent off-site disposal.

B. Strip and stockpile topsoil that will be reused in the Work.

C. Fill depressions and voids resulting from site-clearing operations. Using satisfactory soil materials, place in maximum 6-inch-deep horizontal layers and compact each layer to density of surrounding original ground.

D. Grade ground surface to conform to required contours and to provide surface drainage.

E. Dispose of waste materials, including trash, debris, and excess topsoil, off Owner's property.

F. Burning waste materials on site is not permitted.

END OF SECTION 31 10 00

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SECTION 31 23 16 – EXCAVATION, BACKFILL AND COMPACTION FOR PAVEMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Excavation to line, grade, and configuration as shown on Construction Drawings for proposed and future pavement areas.

B. Fill to line, grade, and configuration as shown on Construction Drawings for proposed and future pavement areas.

C. Compacting fill materials is acceptable manner as specified herein.

1.2 RELATED SECTIONS

A. Section 02200 – Earthwork

B. Section 02300 – Aggregate Material

C. Section 02350 – Base Course

D. Section 02400 – Asphaltic Concrete Paving – Parking Lot (Marshall Mix Design)

E. Section 02450 – Portland Cement Concrete Paving

F. Section 02500 – Curbs and Sidewalks

G. Construction Drawings

1.3 REFERENCE STANDARDS

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced with the text by the basic designation only.

B. American Society for Testing and Materials (ASTM) Latest Edition

1. ASTM D422 – Standard Test Methods for Particle Size Analysis of Soil.
2. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3)
3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)
4. ASTM D2216-Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
5. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
6. ASTM D2488 – Standard Description and Identification of Soils (Visual-Manual Procedures).
7. ASTM D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

8. ASTM D3017 – Standard Test Methods for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
9. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

C. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO T 88 – Particle Size Analysis of Soils

D. State Department of Transportation (DOT): Latest Edition

1. Standard Specifications for Construction Materials

E. National Fire Protection Association (NFPA)

1. NFPA 70 – National Electrical Code

F. American Water Works Association (AWWA)

1. AWWA C200-Standard for Steel Water Pipe – 6 In. And Larger
2. AWWA C206-Field Welding of Steel Water Pipe

1.4 QUALITY ASSURANCE

A. Independent Testing Laboratory, selected and paid by Contractor, will be retained to perform construction testing on filling operations and subgrade analysis as specified in Section 02200 and as specified herein.

B. Testing shall be in accordance with Section 312000, Article 3.17, "Field Testing".

1.5 SUBMITTALS

A. Shop drawings or details pertaining to excavating and filling for pavement are not required unless otherwise required by the Construction Documents or if contrary procedure to Construction Documents are proposed.

B. Submit 30-pound sample of each type of off-site fill material that is to be used in backfilling in air-tight container to independent testing laboratory or submit gradation and certification of aggregate material that is to be used to independent testing laboratory for review.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fill material from on-site as specified in Section 02200 and approved by Owner.

B. Fill material from off-site as specified in Section 02200 and approved by Owner.

C. Aggregate material as indicated on the plans and specified in Section 02300.

D. Acceptable geotextile fabrics and geogrids as specified in Section 312700.

2.2 Equipment

A. Transport off-site materials to project using well-maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3-EXECUTION

3.1 PREPARATION

A. Identify lines, elevations, and grades necessary to construct pavements, curb, curb and gutter, bases, sidewalks, and roadways as shown on Construction Drawings.

B. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

C. Locate and identify site utilities that have previously been installed and protect from damage.

D. Locate and identify existing utilities that are to remain and protect from damage.

E. Over-excavate and properly prepare areas of subgrade that are not capable of supporting proposed systems. Stabilize these areas by using acceptable geotextile fabrics or aggregate material placed and compacted as specified in Section 312700.

3.2 EXCAVATION

A. Excavate roadway and pavement areas to line and grade as shown on Construction Drawings.

B. Place suitable material into project fill areas as specified in Section 02200.

C. Unsuitable excavated material is to be disposed of in manner and location that is acceptable to Owner and local governing agencies.

D. Perform excavation using capable, well-maintained equipment and methods acceptable to Owner and local governing agencies.

3.3 FILLING AND SUBGRADE PREPARATION

A. Areas exposed by excavation or stripping and on which subgrade preparations for paving are to be performed, including future pavement areas, shall be scarified to minimum depth of 8-inches and compacted to not less than 98 percent of maximum density, in accordance with ASTM D698 (or 95 percent of maximum density, in accordance with ASTM D1557) at moisture content of not less than 1 percent below and not more than 3 percent above optimum moisture content. Proofroll these areas to detect areas of insufficient compaction. Accomplish proofrolling by making minimum of 2 complete passes with fully-loaded tandem-axle dump truck with a maximum load weight of 20 tons, or approved equal, in each of 2 perpendicular directions until acceptable.

Excavate and recompact areas of failure as specified herein. Continual failure areas shall be stabilized in accordance with Section 312700 at no additional cost to Owner.

B. Place fill materials used in preparation of the subgrade in lifts or layers not to exceed 8-inches loose measure and compacted to minimum density of not less than 98 percent of maximum density, in accordance with ASTM D698, (or 95 percent of maximum density, in accordance with ASTM D1557) at moisture content of not less than 1 percent below and not more than 3 percent above optimum moisture content.

C. Following table stipulates maximum allowable values for plasticity index (PI) and liquid limit (LL) of suitable fill materials to be used in specified areas, unless specifically stated otherwise on Construction Drawings:

	PI	LL
*Paving Area, below upper two feet	20	50
*Paving Area, upper two feet	15	40

(*References to depth are to proposed subgrade elevations)

D. Material imported from off-site or fill material removed from onsite cut areas shall have CBR or LBR value equal to or above pavement design subgrade CBR or LBR value indicated in the Geotechnical Investigation Report.

3.4 COMPACTION

A. Maintain optimum moisture content of fill materials as specified herein to attain required compaction density.

B. Test materials in accordance with Section 02200, Article 3.17, "Field Testing".

C. Corrective measures for non-complying compaction: Remove and recompact deficient areas until proper compaction is obtained at no additional expense to Owner.

D. Construction temporary ditches and/or perform such grading as necessary to maintain positive drainage away from subgrade at all times.

3.5 MAINTENANCE OF SUBGRADE

A. Verify finished subgrades to ensure proper elevation and conditions for construction above subgrade.

B. Protect subgrade from excessive wheel loading during construction including concrete trucks, dump trucks, and other construction equipment.

C. Remove areas of finished subgrade found to have insufficient compaction density to depth necessary and replace in manner that will comply with compaction requirements by use of material equal to or better than best subgrade material on site. Surface of subgrade after compaction shall be hard, uniform, smooth, stable, and true to grade and cross-section.

3.6 FINISH GRADING

A. Finish grading shall be in accordance with Section 02200 and as specified herein.

B. Check grading of paving areas by string line from grade stakes (blue tops) set at not more than 50-foot centers. Tolerances of 0.10-foot, more or less, will be permitted. Contractor is to provide engineering and field staking necessary for verification of lines, grades, and elevations.

3.7 FIELD QUALITY CONTROL

A. Testing shall be in accordance with Section 02200, Article 3.17, "Field Testing".

END OF SECTION 31 23 16

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SECTION 31 25 00 – EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes construction of temporary measures to control soil erosion and sediment transport within the construction limits.

1.02 REFERENCES

A. "Stormwater Management for Construction Activities", Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92-005, September, 1992.

B. "Erosion and Sediment Control Handbook", published by McGraw-Hill Book Company.

C. American Society for Testing and Materials (ASTM):

1. ASTM D 488, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

1.03 SUBMITTALS

A. Submit product data and specifications for approval as required by the Engineer prior to use.

1.04 QUALITY ASSURANCE

A. Comply with the requirements of governmental authorities having jurisdiction.

1.05 PROJECT REQUIREMENTS

A. Verify that required permits have been obtained prior to commencement of work in areas requiring erosion control measures.

B. The use of temporary control measures shall be coordinated with the permanent erosion control features specified elsewhere to the extent practical, to assure effective and continuous erosion control.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Mulch: Hay, straw, wood chips, or other suitable material reasonably clean of noxious weeds and deleterious material.

B. Grasses: Rye grass, cereal grasses, or other quick-growing species suitable to the area and as a temporary cover, which will not compete with the grasses specified for permanent cover.

C. Silt Fencing: "Envirofence" by Mirafi, "Propex Silt Stop" by Amoco, or equivalents. Posts shall be as shown on the Drawings.

D. Check Dams: Shall be constructed of locally available sound crushed stone; size conforming with ASTM D 448, size number 1 or baled straw as indicated on the Drawings.

PART 3 - EXECUTION

3.01 GENERAL

A. All Work under this contract shall be performed in such a manner that objectionable erosion shall not be created in water courses through or adjacent to the project area.

B. The Contractor shall be responsible for the selection of appropriate temporary erosion control measures to suit the intended construction methods.

C. Notify the Engineer and Owner in the event of conflict between these specification requirements and pollution control laws, rules or regulations of other federal, state, or local agencies.

3.02 EROSION AND SEDIMENT CONTROL

A. The Engineer shall have the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and fill operations and to direct the Contractor to provide immediate, permanent or temporary sediment control measures to minimize damage to adjacent property and to minimize effects on adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment.

B. Incorporate all permanent erosion control features (including seeding) into the project at the earliest practical time. Temporary control measures shall be those that are needed prior to installation of permanent control features; or that is needed temporarily to control erosion that develops during normal construction activities, but are not associated with permanent control features on the project.

C. Where erosion is likely to be a problem, clearing and grubbing operation should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter, if the project conditions permit; otherwise temporary erosion control measures may be required between successive construction stages.

3.03 INSTALLATION AND MAINTENANCE OF SILT FENCING

A. Install in accordance with details shown on the Drawings and as specified in paragraphs B through E below. In slope areas greater than 30 percent slope, install two parallel silt fences.

B. Install posts at a maximum spacing of ten (10) feet, and to depth of approximately 18 inches, or as otherwise approved by the Engineer and Owner.

C. Excavate six-inch wide by six-inch deep trench along line of posts and upslope from barrier.

D. Fasten fabric to upstream side of posts using heavy-duty wire staples (at least one-inch long), tie wires or hog rings. Eight inches of the fabric shall extend into the trench.

E. Backfill trench and compact soil over the fabric.

F. Remove sediment deposits when deposits reach approximately one-half the height of the barrier. Sediment shall be placed in areas approved by the Engineer and spread uniformly over the ground surface.

G. Replace fabric when it has deteriorated, is torn, loose or no longer effectively performs. Use fabric reinforcement as necessary to prevent tearing.

H. Replace any silt fence, which has been overtopped with two new parallel fences.

3.04 APPLICATION OF TEMPORARY GRASS AND MULCH

A. Comply with Section 02930.

B. Temporary seeding shall be applied to areas lacking vegetation if no construction activities will be performed in the area for more than 30 days. Temporary seed mixtures shall be applied to such areas within 14 days of temporarily suspending work in the area.

3.05 CONSTRUCTION AND MAINTENANCE OF CHECK DAMS

A. Construct across creeks and ditches within the project limits.

B. Inspect after each rainfall event. Make required repairs if the check dams have deteriorated to the extent that their effectiveness is reduced.

C. Remove sediment deposits when deposits reach approximately one-half the height of the dams. Sediments shall be placed in areas approved by the Engineer and spread uniformly over the ground surface.

D. Check dams shall be removed after completion of construction activities. Coarse aggregate shall be deposited on-site where approved by the Engineer.

3.06 INSTALLATION AND MAINTENANCE OF OTHER EROSION CONTROL MEASURES

A. Install according to manufacturer's recommendations and standard local practice.

B. Maintenance of the installations shall be performed as required for proper erosion and sediment control until the Work is accepted by the Owner.

3.07 REMOVAL OF SILT FENCING

A. Silt fencing shall be removed when approved by the Engineer and Owner, after a sufficient stand of grass has been established on all disturbed areas.

B. Any sediment deposits remaining after silt fence is removed shall be dressed to conform with the existing grade, prepared, and seeded.

END OF SECTION 31 25 00

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SECTION 31 31 16 - TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Soil treatment for termite control.
2. Application below grade and at interior and exterior foundation perimeter.

1.3 SUBMITTALS

A. Division 1 - Submittal Procedures: Procedures for submittals.

1. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, and intended application rate.
2. Assurance/Control Submittals:

a. Certificates:

1) Manufacturer's certificate that Products meet or exceed specified requirements.
2) Certification that Products comply with EPA regulations for termiticides.
3) Certification that Products conform to requirements of local authority having jurisdiction.

B. Section 01780 - Closeout Submittals: Procedures for closeout submittals.

1. Project Record Documents: Accurately record moisture content of soil before treatment, date and rate of application, areas of application, diary of meter readings and corresponding soil coverage.
2. Warranty: Submit manufacturer warranty with forms completed in United States Postal Service name and registered with manufacturer.

1.4 WARRANTY

A. Section 01740 – Warranties: Procedures for closeout submittals.

B. Special Warranty:

1. Submit written warranty signed by soil treatment applicator and Contractor certifying that applied chemical toxicant treatment will prevent infestation of subterranean termites.

a. State that application was made at concentration, rates, and methods as specified.
b. State that if subterranean termite activity is discovered during warranty period, Contractor will retreat soil and repair damage caused by termite infestation at no additional cost to United States Postal Service.

2. Cover against invasion or propagation of subterranean termites, damage to building or building contents caused by termites; repairs to building or building contents so caused.
3. Provide for inspection of Work annually; report in writing to designated U.S. Postal Service personnel.
4. Warranty Period: 5 years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. EPA and local authority having jurisdiction approved chemical toxicant; water based emulsion, uniform composition, with synthetic dye to permit visual identification of treated soil, bearing Federal registration number of the EPA.

1. Do not use fuel oil as diluent.

B. Specially formulated to prevent infestation by termites.

C. Solution containing one of the following chemical elements and concentrations:

1. Chloropyrifos: 1.0 percent in water emulsion.

2. Permathrin: 0.5 percent in water emulsion.

a. Dragnet FT, by FMC Corporation.
b. Torpedo, by ICI Americas Corporation.

2.2 MIX DILUTION

A. Dilute and mix toxicant chemical to manufacturer's published instructions.

PART 3 - EXECUTION

3.1 APPLICATION

A. Apply toxicant within 12 hours before installation of vapor retardant under slab-on-grade.

B. Apply toxicant to soil at the following rates, using metered applicator:

1. Under Floor Slabs-On-Grade:

a. Soil or Unwashed Gravel: 1 gallon per 10 square feet.
b. Washed Gravel or Other Course Absorbent Material: 1-1/2 gallons per 10 square feet.

2. Both Sides of Foundation Wall:

a. Concrete: 4 gallons per 10 lineal feet, to depth of 12 inches.
b. Masonry: 4 gallons per 10 lineal feet for each foot of foundation depth.

3. 2 gallons per lineal foot at foundation penetrations.

C. Exterior Foundation: 4 gallons per 10 lineal feet of trench along outside edge of building.

1. Dig trench 6 inches to 8 inches wide along outside of foundation to minimum depth of 12 inches and apply toxicant.
2. Mix toxicant with soil as it is being backfilled.

D. Apply toxicant as a coarse spray; provide uniform distribution.

E. Post signs in areas of application to warn workers that toxicant has been applied to soil. Remove signs after areas are covered by other construction.

F. Reapply toxicant to areas disturbed by subsequent excavation, landscape grading, or other construction activities occurring after initial toxicant application.

END OF SECTION 31 31 16

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SECTION 32 11 00 – BASE COURSES

PART 1 – GENERAL

1.1 SUMMARY

A. Aggregate base for asphaltic concrete and Portland cement concrete paving including sand/shell base and hot-mix sand asphalt base.

B. Related Sections

1. Earthwork

1.2 REFERENCES

A. Asphalt Institute

B. Arkansas Highway and Transportation Department Standard Specifications

1.3 QUALITY ASSURANCE

A. An independent testing laboratory, selected and paid by Owner, will be retained to perform construction testing of in-place base course of compliance with requirements for thickness, compaction, density, and tolerances. Paving base course tolerances shall be verified by rod and level readings on not more than 50-foot centers to be not more than 0.05-feet above design elevation which will allow for paving thickness as shown on Construction Drawings. Contractor shall provide instruments and suitable benchmark.

1.4 SUBMITTALS

A. Submit materials certificate to the independent testing laboratory that is signed by materials producer and Contractor, certifying that materials comply with, or exceed, requirements specified herein or on the Construction Drawing.

B. Submit certification of base course materials and placement as specified in Parts 2 and 3 hereinafter.

1.5 WEATHER LIMITATIONS

A. Do not place aggregate when base surface temperature is less than 40 degrees F, nor when air temperature is below 45 degrees F. Do not place aggregate when surface is wet or frozen. Do not place aggregate when weather conditions are unfavorable otherwise.

PART 2 – PRODUCTS

2.1 BASE COURSE MATERIAL

A. Aggregate Base Course: Aggregate base course shall consist of a well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction. Base course may consist of a granular base (crushed slag, stone, or gravel, etc). sand/shell base material, or a hot-mix sand asphalt base.

B. Base course shall be as shown on the drawings, or when not shown shall be as specified herein.

C. Aggregate base material requirements from State or other local highway agency specifications may be used for aggregate base course for roads, streets, or similar use pavements if the following conditions are met:

1. Percentage of material by weight passing the No. 200 sieve will not exceed 10.
2. Portion of the material passing the No. 40 sieve must have a liquid limit not greater than 25 and a plasticity index not greater than 5.

D. Aggregate shall consist of clean, sound, durable particles of crushed stone, crushed slag, crushed gravel, angular sand, or other approved material. Aggregate shall be free of lumps of clay, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.

1. Coarse aggregates shall be angular particles of uniform density.
2. Fine aggregates shall be angular particles of uniform density. Fine aggregate shall consist of screenings, angular sand, crushed recycled concrete fines, or other finely divided mineral matter processed or naturally combined with the coarse aggregate.

E. Gradation: The specified gradation requirements shall apply to the completed base course. The aggregates shall have a maximum size of 2 inches and shall be continuously well graded within the following limits:

GRADATION OF AGGREGATES
Percentage by Weight Passing Square-Mesh Sieve

Sieve Designation	No. 1	No. 2	No. 3
2 inch	100	---	---
1-1/2 inch	70-100	100	---
1 inch	45-80	60-100	100
1/2 inch	30-60	30-65	40-70
No. 4	20-50	20-50	20-50
No. 10	15-40	15-40	15-40
No. 40	5-25	5-25	5-25
No. 200	0-10	0-10	0-10

NOTE: Particles having diameters less than 0.0008 inch shall not be in excess of 3 percent by weight of the total sample tested.

F. Hot-mix Sand Asphalt Bases: Asphalt Institute Type VI, VII or VIII Mixes for Hot-mix Sand Asphalt Bases. Hot-Mix base shall be used only under asphaltic concrete surfaces.

PART 3 – EXECUTED

3.1 EXECUTION

A. Contractor shall verify to the Owner in writing that the subgrade has been inspected, tested and gradients and elevations are correct, dry, and properly prepared in accordance with Section 02200.

3.2 CONSTRUCTION

A. Perform base course construction in accordance with the applicable State standard specifications or as shown or specified.

B. Perform base course construction in a manner that will drain the surface properly and prevent runoff from adjacent areas from draining onto base course construction.

C. Compact base material to not less than 98 percent of optimum density as determined by ASTM D 698 or 95 percent of optimum density, as determined by ASTM D 1557 unless otherwise indicated on Drawings.

D. Construct to thickness indicated on Construction Drawings.

1. Granular Base: Apply in lifts or layers not exceeding 8-inches, measured loose.
2. Sand/Shell Base: Apply in lifts or layers not exceeding 4-inches, measured loose.
3. Hot-mix Sand Asphalt Bases: Apply in lifts or layers not exceeding 3-inches, measured loose.

3.3 FIELD QUALITY CONTROL

A. Field testing specified below will be performed by the Contractor's Independent Testing Laboratory at no cost to the Owner.

B. Field testing, frequency, and methods may vary as determined by and between the Owner and the Owner's Testing Laboratory.

C. Field density tests for in-place materials will be performed in accordance with the following:

1. Nuclear Method: ASTM D 2922 (Method B-Direct Transmission)
2. Base material thickness: One test for each 20,000 sq. ft. of in-place base material area.
3. Base material compaction: One test in each lift for each 20,000 sq. ft. of in-place base material area.

D. The independent testing laboratory will prepare reports that indicate test location, elevation data, and test results. Owner and contractor shall be provided with copies of the reports within 96 hours of the time the test was performed. In the event that the test results show failure to meet any of the Specifications; Owner and Contractor will be notified immediately by the independent testing laboratory.

E. The Contractor shall certify in writing to the Owner that base course placement is in accordance with specification requirements prior to subsequent work thereon.

F. The Contractor shall pay for retesting due to failures at no additional expense to Owner. Contractor shall provide free access to the site for testing activities.

END OF SECTION 32 11 00

SECTION 32 11 33 – AGGREGATE MATERIALS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Aggregate materials use as specified in other Sections.

1.2 REFERENCE STANDARD

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced with the text by the basic designation only.

B. American Society for Testing and Materials (ASTM) Latest Edition

1. ASTM C136-Standard Test Methods for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3)
3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 lf-lbf/ft^3)
4. ASTM D2216-Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
5. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
6. ASTM D2488 – Standard Description and Identification of Soils (Visual-Manual Procedures).
7. ASTM – D2922 – Standard Test Methods for Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)
8. ASTM – D3017 – Standard Test Methods for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
9. ASTM D4318 – Standard Tests Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

C. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO T 88 – Particle Size Analysis of Soils

D. Arkansas Highway and Transportation Department: Latest Edition

1. Standard Specifications for Construction and Materials

1.3 QUALITY ASSURANCE

A. Tests and analysis of aggregate materials will be performed in accordance with ASTM and AASHTO procedures specified herein.

1.4 SUBMITTALS

A. Submit 30-pound sample of each aggregate or mixture that is to be incorporated into project in air-tight containers to the independent testing laboratory or submit gradation and certification of aggregate material that is to be incorporated into project to the independent testing laboratory for review.

B. Submit name of each material supplier and specific type and source of each material. Any change in source requires approval of Owner.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Construction and materials shall meet or exceed requirements of this Section and applicable state highway department specifications section(s) referred to or noted on the Construction Drawings which pertain to paving base course design, materials, preparation, and execution. Materials shall be as indicated in the Construction Documents and shall comply with state highway department specifications regarding source, quality, gradation, soundness, absorption, liquid limit, plasticity index, and mix proportioning.

B. Soil Materials

1. Class II: Coarse-Grained Soils; conforming to ASTM D2487 Group Symbol, GW, GP, SW and SP.
2. Class III: Coarse-Grained Soils with Fines; conforming to ASTM D2487 Symbol GM, GC, SM and SC.
3. Class IV-A: Fine-Grained Soils (inorganic); conforming to ASTM D2487 Group Symbol ML and CL.
4. Class IV-B: Fine Grained Soils (inorganic); conforming to ASTM D2487 Group Symbol MH and CH.
5. Class V: Organic Soils; conforming to ASTM D2487 Group Symbol OL, OH, and PT.

C. Aggregate Material

1. Coarse Aggregate Type A1: Material shall be sound crushed limestone, crushed slag, granulated slag, crushed gravel, or other types of suitable material meeting the requirements of this section. Crushed limestone, crushed slag and crushed gravel shall meet the following grading requirements:

Sieve Size	Percent Passing
1 ½ inches	100
1 inch	75 - 100
3/4 inch	60 - 100
3/8 inch	35 - 75
No. 4	30 - 60
No. 30	7 - 30
No. 200	0 - 5

2. Coarse Aggregate Type A2: Materials shall be crushed carbonate, crushed gravel crushed air-cooled slag, granulated slag, a mixture of crushed and granulated slag, or other types of suitable material meeting the requirements of this item. Crushed carbonate stone or mixtures of crushed and granulated slags shall meet the following gradation requirements.

Sieve Size	Percent Passing
2 ½ inches	100
1 inch	70 - 100
¾ inch	50 - 90
No. 4	30 - 60
No. 30	7 - 30
No. 200	0 – 5

3. Aggregate Type A3: Pea Gravel – Natural stone; washed, free of clay, shale, organic matter; graded in accordance with ASTM C136 and D2487; to the following limits:

   a. Minimum size: ¼ inch
   b. Maximum size: 5/8 inch

4. Fine Aggregate Type A4: Sand – Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C 136 and D2487; within the following limits:

Sieve Size	Percent Passing
No. 4	90 - 100
No. 50	7 - 40
No. 200	0 - 5

5. Class I-A: Material shall be sound crushed limestone, crush slag, granulated slag, crushed gravel, or other types of suitable material meeting the requirements of this item. Crushed limestone, crushed slag and crushed gravel shall meet the following grading requirements:

Sieve Size	Percent Passing
1 ½ inches	100
No. 4	<10
No. 200	<05

6. Class I-B: Material shall be crushed carbonate, crushed gravel, crushed air-cooled slag, granulated slag, a mixture of crushed and granulated slag, or other types of suitable material meeting the requirements of this item. Crushed carbonate stone or mixtures of crushed and granulated slags shall meet the following gradation requirements:

Sieve Size	Percent Passing
1½ Inches	100
No. 4	<50
No. 200	<5

2.2 EQUIPMENT

A. Transport off-site materials to project using well-maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger any improvements by rutting, overloading, or pumping.

PART 3 – EXECUTION

3.1 STOCKPILING

A. Stockpile on-site at locations indicated by Owner in such a manner that there will be no standing water or mixing with other materials.

3.2 BORROW AND SPOIL SITES

A. Upon completion of borrow and/or spoil operations, clean up borrow and/or spoil areas as indicated on Construction Drawings in neat and reasonable manner to satisfaction of property owner and Owner.

END OF SECTION 32 11 33

SECTION 32 12 16 – ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following work:

1. Subgrade preparation.
2. Aggregate base course.
3. Hot mix asphalt surfacing.

B. Related Sections:

1. Section 02110 "Site Clearing".
2. Section 02200 "Earthwork".

C. Construct work of this Section that is adjacent to or connected to city streets in accordance with requirements of the City. Contractor shall secure permits and inspections, post necessary bonds, and pay required fees.

1.02 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

C. Base Course Material: Standard proctor density, Atterberg limits and gradation analysis.

1.03 QUALITY ASSURANCE

A. Codes and Standards: Comply with applicable requirements including the following:

1. American Association of State Highway and Transportation Officials (AASHTO), 444 North Capitol Street, North West, Suite 225, Washington, DC 20001.

   a. AASHTO M14 - Anionic Emulsified Asphalt.
   b. AASHTO M81 - Cut-Back Asphalt Concrete (Rapid-Curing Type).
   c. AASHTO M82 - Cut-Back Asphalt Concrete (Medium-Curing Type).
   d. AASHTO M208 - Cationic Emulsified Asphalt.

2. American Society of Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103.

   a. ASTM C207 - Specification for Hydrated Lime for Masonry Purposes.
   b. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg) Rammer and 12-in. (304.8 mm) Drop.

c. ASTM D946 - Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
d. ASTM D977 - Specification for Emulsified Asphalt.

3. Standard Specifications for Highway Construction, Arkansas State Highway and Transportation Department (AHTD), P.O. Box 2262, Little Rock, Arkansas 72203.

a. AHTD 303 - Aggregate Base Course.
b. AHTD 304 - Aggregate Surface Course.
c. AHTD 405 - Asphalt Concrete Hot Mix Stabilized Base Course.
d. AHTD 407 - Asphalt Concrete Hot Mix Surface Course.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.

B. Base Course:

1. Crushed stone aggregate base course conforming to AHTD Section 303, Class 7.
2. Stone aggregate base course conforming to AHTD Section 303, Class 4, 5 or 6.

C. Coarse Aggregate: Sound, angular crushed stone, crushed gravel, or properly cured crushed blast furnace slag, complying with ASTM D 692-88.

D. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone, properly cured blast furnace slag, gravel, or combinations thereof, complying with ASTM D 1073.

E. Asphalt Cement: ASTM D 3381 for viscosity-graded material; ASTM D 946 for penetration-graded material.

F. Prime Coat (if required): Cut-back asphalt type, ASTM D 2027; MC-30, MC-70 or MC-250.

G. Asphalt Concrete Mixture: Comply with AHTD 407 for the type as indicated on the drawings or as recommended by local paving authorities to suit project conditions.

2.02 TESTING

A. Tests of asphalt materials and mixtures shall be made by a commercial testing laboratory approved by Owner. Submit test reports to Engineer.

PART 3 - EXECUTION

3.01 SITE CONDITIONS

A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours

immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 deg F (4 deg C) and when base is dry. Base course may be placed when air temperature is above 30 deg F (minus 1 deg C) and rising.

C. Grade Control: Establish and maintain required lines and elevations.

1. Where proposed asphalt pavement is to tie into existing pavement, the existing pavement shall be evenly saw cut to the existing full depth and shall be removed and disposed to a point that the proposed pavement will be full design depth over entire area. Finish grade shall match existing grade at the cut line smoothly and without bumps or depressions.

3.02 SUBGRADE PREPARATION

A. Refer to Section 02200 - Earthwork for general preparation.

B. Fill and compact traces of utility trenches.

C. Scarify and re-compact subgrade.

D. Proof roll and correct deficient subgrade areas.

3.03 BASE COURSE

A. Place material on prepared subgrade and spread the same day material is hauled.

B. Thoroughly mix material, either by repeated handling with a blade grader or by harrowing sufficiently to produce a uniform mixture of coarse and fire particles.

C. Compact base course by systematically rolling and watering as required to obtain a firm, uniform, smooth surface. Minimum density shall be 98 percent standard proctor (ASTM D698).

3.04 PRIME COAT

A. Remove loose material from compacted subbase surface immediately before applying prime coat.

B. After acceptance of completed base course, apply prime coat at rate of 0.20 to 0.50 gal. per sq. yd., over the prepared base. Apply material uniformly to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile (2 days minimum). Construct and maintain barricades to keep traffic off the primed surface.

3.05 PLACING HOT MIX

A. General: Mixing, transportation and temperature limitations shall be in accordance with AHTD Part 400.

B. Place hot-mixed asphalt mixture on prepared and approved base course surface, spread, and strike off. Spread mixture at minimum temperature of 250 deg F and a maximum of 340 deg. F. Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.

C. Immediately correct surface irregularities in finished course behind paver. Remove excess material forming high spots with shovel or lute.

D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

3.06 ROLLING

A. General: Begin rolling when mixture will bear roller weight without excessive displacement.

B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.

D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.

E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.

F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.07 FIELD QUALITY CONTROL

A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness will be done by the Owner. Contractor to repair or remove and replace unacceptable paving at Contractor's expense as directed by the Engineer.

B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:

1. Base Course: Plus or minus ½ inch.

2. Surface Course: Plus or minus ¼ inch.

C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 12-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:

1. Base Course Surface: ¼ inch.

2. Wearing Course Surface: 3/16 inch.

END OF SECTION 32 12 16

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SECTION 32 13 00 – PORTLAND CEMENT CONCRETE PAVING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes Preparation and placement of Portland cement concrete for the following:

1. Street/Roadway
2. Parking Lots
3. Interior Parking/Delivery Drives
4. Curbs and Gutters
5. Sidewalks

B. Related Sections

1. Section 02250 – Excavation, Backfill and Compaction for Pavement
2. Section 02350 – Base Course

1.2 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 301 – Structural Concrete for Buildings
2. ACI 305R – Hot Weather Concreting
3. ACI 306R – Standard Specification for Cold Weather Concreting
4. ACI 308 – Standard Practice for Curing Concrete

B. American Society for Testing and Materials (ASTM)

1. ASTM A185 – Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
2. ASTM A615 – Deformed and Plain Billet-Steel for Concrete Reinforcement
3. ASTM C31 – Test Methods of making and Curing Concrete Test Specimens in the Field
4. ASTM C33 – Concrete Aggregates
5. ASTM C39 – Test Method for Comprehensive Strength of Cylindrical Concrete Specimens
6. ASTM C42 – Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
7. ASTM C94 – Ready-Mixed Concrete
8. ASTM C138 – Test Method for Unit Weight, Yield and Air Content (Gravemetric) of Concrete
9. ASTM C143 – Method for Slump of Hydraulic Cement Concrete
10. ASTM C150 – Portland Cement
11 ASTM C172 – Method of Sampling Freshly Mixed Concrete
12. ASTM C231 – Air-Content of Freshly Mixed Concrete by the Pressure Method
13. ASTM C260 – Air-Entraining Admixtures for Concrete
14. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete
15. ASTM C920 – Standard Specification for Elastomeric Joint Sealants
16. ASTM C1064 – Temperature of Freshly Mixed Portland Concrete Cement
17. ASTM D994 – Performed Expansion Joint Filler for Concrete (Bituminous)
18. ASTM D1751 – Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)

19. ASTM D2628 – Performed Polychloroprene Elastomeric Joint Seals for Concrete Pavements

C. Federal Specifications (FS)

1. FS HH-F-341-Fillers, Expansion Joint: Bituminous (Asphalt & Tar)

D. State Highway Department Standard Specifications

1.3 QUALITY ASSURANCE

A. Establish and maintain required lines and elevations

B. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner.

1.4 SUBMITTALS

A. Submit certified laboratory test data or manufacturer's certificates and data for the items listed below certifying that materials are in conformance requirements specified herein. Submit to the Engineering Consultant of Record and the Independent Testing Laboratory for review and approval and within 7 calendar days after receipt of Notice-to-Proceed.

1. Portland cement concrete mix
2. Aggregate gradations
3. Preformed expansion joint filler
4. Field molded/poured sealant
5. Dowel bars
6. Expansion sleeves
7. Tie bars
8. Reinforcing steel bars
9. Welded wire fabric
10. Air entraining admixtures
11. Water-reducing and set-retarding admixtures (if used)

B. Submit certification that joint sealant has been installed in accordance with the manufacturer's instructions. Include copy of written instructions.

1.5 PROJECT CONDITIONS

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete: Mix concrete and deliver in accordance with ASTM C94.

1. Design mix shall produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce following:

    a. Compressive Strength: 3,500 psi, minimum at 28 days, unless otherwise indicated on Construction Drawings.
    b. Slump Range: 2"-4" for hand placed concrete, 1-1/4" to 3" for machine placed (slipform) concrete.
    c. Air Entrainment: 5 to 8 percent

B. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible steel spring forms or laminated boards to form radius bends as required. Coat forms with nonstaining type of coating that will not discolor or deface surface of concrete.

C. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A185. Furnish in flat sheets.

D. Reinforcing Bars: Deformed Steel bars, ASTM A615, Grade 60.

E. Portland Cement: ASTM C150, Type I.

F. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D994, D1751, D2628; FS HH-F-341, Type II, Class A.

G. Joint Sealants: ASTM C920, non-priming, pourable, self-leveling polyurethane.

1. Acceptable sealants include Sonneborn "SL1", Sonneborn "SL2", Sonneborn "Sonomeric 1", Sonneborn, Sonomeric-2", Mameco "Vulkem 245", or Woodmont Products "Chem-Caulk" or approved equal.

H. Aggregate: ASTM C33

I. Water: Clean and potable

J. Dowel Bars: ASTM A615, grade 60, and plain steel bars

K. Air Entraining Mixture: ASTM C260, Sika AER by Sika Corporation or Air Mix by the Euclid Chemical Corporation or approved equal.

L. Curing Compound: ASTM C309, Hydrocide by Sonneborn of Rexnord Chemical Products, Inc. or Polyseal 4 in 1 by Chem Masters Corporation or approved equal.

M. Joint Backup Rods: CCEVA Rod 100 by E-Poxy Industrials, Inc. or Sealtight BACKER ROPE by W.R. Meadows, Inc., or approved equal.

PART 3 – EXECUTION

3.1 PREPARATION

A. Proofroll prepared base material surface to check for unstable areas in accordance with Section 02200 including documentation and re-proof rolling as required. Paving work shall begin only after unsuitable areas have been corrected and are ready to receive paving.

B. Remove loose material from compacted base material surface to produce firm, smooth surface immediately before placing concrete.

3.2 INSTALLATION

A. Form Construction

1. Set forms to required grades and lines, rigidly braced and secured.
2. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place minimum of 24 hours after concrete placement.
3. Check complete formwork for grade and alignment to following tolerances:

   a. Top of forms not more than 1/8-inch in 10'-0"
   b. Vertical face on longitudinal axis, not more than ¼-inch in 10'-0"

4. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement: Fasten reinforcing bars or welding wire fabric (if required) accurately and securely in place with suitable supports and ties. Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement.

C. Concrete Placement

1. Concrete may be mixed and placed when the air temperature in the shade and away from artificial heat is a minimum of 35 degrees F and rising. Hot and cold weather concreting shall be in accordance with ACI 305R and 306R, respectively.
2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at required finish elevation and alignment.
3. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
4. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than ½ hour, place construction joint.

D. Joint Construction: Construction expansion, weakened-plane control (Contraction), and construction joints straight with face perpendicular to concrete surface. Construct transverse joint perpendicular to centerline, unless otherwise detailed.

1. Weakened-Plane Control or Contraction Joints: Provide joints at spacing or 15'-0" on centers, maximum each way. Construction control joints for depth equal to at least ¼ of the concrete thickness, as follows:

   a. Form tooled joints in fresh concrete by grooving top with recommended tool and finishing edge with jointer.

b. Form sawed joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.

2. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for period of more than ½ hour, except where such placements terminate at expansion joints. Construct joints in accordance with standard details.
3. Transverse Expansion Joints: Locate expansion joints at maximum of 180'-0" on centers, maximum each way unless otherwise shown on the Construction Drawings. Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, sidewalks, and other fixed objects.
4. Butt joints: For joints against existing pavement, place 16" long dowels eight inches into holes drilled into center of existing slab. Epoxy dowels into holes with approved epoxy compound. Place dowels prior to concrete placement for new concrete. Dowel spacing to be 24" on center unless otherwise shown on Construction Drawings. Saw joint and fill with joint sealer.

E. Joint Fillers: Extend joint fillers the full width and depth of joint, and not less than ½-inch or more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths for full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler sections together.

F. Joint Sealants: Joints shall be sealed with approved exterior pavement joint sealants and shall be installed in accordance with manufacturer's recommendations.

3.3 CONCRETE FINISHING

A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide continuous smooth finish.

B. Work edges of slabs and formed joints with edging tool, rounding edge to ½-inch radius. Eliminate tool marks on concrete surface. After completion of floating and troweling, when excess moisture or surfaces sheen has disappeared, complete surface finishing, as follows:

1. Inclined Slab Surfaces, Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.
2. Paving: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic so as to produce regular corrugations not over 1/16 of an inch deep.

C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Owner.

D. Protect and cure finished concrete paving using either membrane curing compound or moist-curing methods described in "water-curing" section of ACI 308.

3.4 CLEANING AND ADJUSTING

A. The Contractor shall certify in writing that placement is in accordance with specification requirements.

B. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

3.5 FIELD QUALITY CONTROL

A. Field quality control tests specified herein will be conducted by the Contractor's Independent Testing Laboratory at no cost to the Owner in accordance with Section 014000. The Contractor shall perform additional testing as considered necessary by the Contractor for assurance of quality control. Retesting required as a result of failed initial tests shall be at the Contractor's expense.

B. Field testing, frequency, and methods may vary as determined by and between the Owner and the Owner's Testing Laboratory.

C. Review the Contractor's proposed materials and mix design for conformance with specifications.

D. Perform testing in accordance with ACI 301 and testing standards listed herein.

E. Strength Tests:

1. Secure composite samples in accordance with ASTM C 172. Sample at regularly spaced intervals from middle portion of the batch. Sampling time shall not exceed 15 minutes.
2. Mold and cure specimens in accordance with ASTM C 31.

    a. A minimum of four concrete test cylinders shall be taken for every 100 cubic yards or less of each class of concrete placed each day and not less than once for each 5000 square feet of paved area.
    b. During the initial 24 hours (plus or minus 8 hours) after molding, the temperature immediately adjacent to the specimens shall be maintained in the range of 60 to 80 degrees F. Control loss of moisture from the specimens by shielding from the direct rays of the sun and from radiant heating devices.
    c. Specimens transported prior to 48 hours after molding shall not be demolded, but shall continue initial curing at 60 to 80 degrees F until time for transporting.
    d. Specimens transported after 48 hours age shall be demolded in 24 hours (plus or minus 8 hours). Curing shall then be continued but in saturated limewater at 73.4 degrees (plus or minus 3 degrees F) until the time of transporting.
    e. Wet cure cylinders under controlled temperature until testing.

3. Test cylinders in accordance with ASTM C 39.

    a. Date test cylinders and number consecutively. Give each cylinder of each set an identifying letter (i.e. A, B, C, D). Prepare a sketch of the building plan for each test set identifying location of placed concrete.
    b. Test one cylinder (A) at 7 days for information. If the compressive strength of the concrete sample is equal to or above the 28 day specified strength, test another

cylinder (B) at 7 days. The average of the breaks shall constitute the compressive strength of the concrete sample.

c. Test two cylinders (B and C) at 28 days and the average of the breaks shall constitute the compressive strength of the concrete sample.

d. Retain fourth cylinder (D) for further testing if needed, but do not retain cylinder more than 60 days.

4. Evaluation and Acceptance.

a. Strength level of concrete will be considered satisfactory if the average of all sets of three consecutive strength tests equal or exceed specified strength and no individual strength tests(average of two cylinders) results are below specified compressive strength by more than 500 psi.

b. Complete concrete work will be accepted unless requirements of ACI 301, have been met, including dimensional tolerances, appearance, and strength of structure.

c. Where average strength of cylinders, as shown by tests is not satisfactory, Owner reserves the right to require Contractor to provide improved curing conditions of temperature and moisture to secure required strength. If average strength of laboratory control cylinders should fall so low as to cause portions of structure to be in question by Owner, follow core procedure set forth in ASTM C42. If results of core test indicate, in opinion of Owner, that strength of structure is inadequate, provide without additional cost to Owner, replacement, load testing, or strengthening as may be ordered by Owner. If core tests are so ordered and results of such test disclose that strength of structure is as required, cost of test will be paid by Owner.

F. Slump Test: Conduct slump test for each cylinder set taken in accordance with ASTM C 143. Make additional slump tests for every other load from a stationary mixer of truck to test consistency. Sampling shall be in accordance with ASTM C 172.

G. Air Content: Conduct air content test for each cylinder set for concrete exposed to freeze-thaw in accordance with ASTM C 231, ASTM C 173, or ASTM C 138. Indicate test method on report. Make test at same time as slump test.

H. Unit Weight: ASTM C 138

I. Temperature Test: Conduct temperature test for each cylinder set taken in accordance with ASTM C 1064. Test hourly when air temperature is 40 F and below or 80 F and above. Determine temperature of concrete sample and ambient air for each strength test.

J. In addition to required information noted previously in Section, record the following information on concrete compression reports:

1. Test cylinder number and letter
2. Specific foundations or structures covered by this test
3. Proportions of concrete mix or mix identification
4. Maximum size coarse aggregate
5. Specified compressive strength
6. Test compressive strength
7. Slump, air-content (when applicable) and concrete temperature
8. Concrete plastic unit weight
9. Concrete Temperature
10. Elapsed time from batching at plant to discharge from delivery truck at project
11. Date and time concrete was placed
12. Ambient temperature, wind speed, and relative humidity during concrete placement
13. Name of technician securing samples

14. Curing conditions for concrete strength test specimens (field and laboratory)
15. Date strength specimens transported to laboratory
16. Age of strength specimens when tested
17. Type of fracture during test

K. At the start of each day's mixing, report any significant deviations from approved mix design including temperature, moisture and condition of aggregate.

L. Certify each delivery ticket of concrete. Report type of concrete delivered, amount of water added and time at which cement and aggregate were loaded into truck, and time at which concrete was discharged from truck.

M. In Place Pavement Testing: The Owner's Independent Testing Laboratory will randomly core pavement at minimum rate of 1 core per 20,000 sq. ft. of pavement, with minimum of 3 cores from heavy-duty areas and 3 cores from light duty areas. Cores will be sampled and tested in accordance with ASTM C 42. Core will be tested for thickness and quality of aggregate distribution. Core holes shall be patched by the Contractor immediately with Portland cement concrete and shall be finished to provide level surface as specified herein.

END OF SECTION 32 13 00

SECTION 32 16 00 – CURBS, GUTTERS, SIDEWALKS AND DRIVEWAYS

PART 1 –GENERAL

1.1 SUMMARY

A. Section Includes

1. Portland cement concrete curb, gutter and sidewalk.

1.2 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 305R – Hot Weather Concreting.
2. ACI 306R-Standard Specification for Cold Weather Concreting
3. ACI 308 – Standard Practice for Curing Concrete.

B. American Standards for Testing and Materials (ASTM) latest edition

1. ASTM A185 – Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. ASTM A615 – Deformed and Plain Billet-Steel for Concrete Reinforcement.
3. ASTM C94 – Ready-Mixed Concrete.
4. ASTM C260 – Air-Entraining Admixtures for Concrete.
5. ASTM C309 – Liquid Membrane – Forming Compounds for Curing Concrete.
6. ASTM D994 – Preformed Expansion Joint Filler for Concrete (Bituminous).
7. ASTM D1190 – Concrete Joint Sealer, Hot Poured, Elastic Type.
8. ASTM D1751 – Performed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
9. ASTM D2628 – Performed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

C. Federal Specifications (FS)

1. FS HH-F-341 – Fillers, Expansion Joint: Bituminous (Asphalt & Tar).

D. Arkansas Highway and Transportation Department Standard Specifications

1.3 SUBMITTALS

A. Submit materials certificate from materials producer and Contractor, certifying that materials comply with, or exceed requirements specified herein to the Engineering Consultant of Record and the Independent Testing Laboratory for review and approval and within 7 calendar days after receipt of Notice-to-Proceed, submit for approval, certified laboratory test data or manufacturers certificates and data for the following items:

1. Portland cement concrete mix.
2. Aggregate gradations.
3. Performed expansion joint filler.
4. Field molded/poured sealant.

5. Dowel bars.
6. Expansion sleeves.
7. Tie bars.
8. Reinforcing steel bars.
9. Welded wire fabric.
10. Air entraining admixtures.
11. Water-reducing and set-retarding admixtures (if used).

1.4 QUALITY ASSURANCE

A. Establish and maintain required lines and elevations.

B. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable work as directed by Owner.

1.5 PROJECT CONDITIONS

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

PART 2 – PRODUCTS

2.1 MATERIAL

A. Concrete: Mix concrete and deliver in accordance with ASTM C94.

1. Design mix shall produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce following:

a. Compressive Strength: 3,500 psi, minimum at 28 days, unless otherwise indicated on Construction Drawings.
b. Slump Range: 2"-4" for hand placed concrete, 1-1/4" to 3" for machine placed (slipform) concrete.
c. Air Entrainment: 5 to 8 percent.

B. Forms: Steels, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Forms shall be of depth equal to depth of curbing or sidewalk, and so designed as to permit secure fastening together at tops. Coat forms with nonstaining type of coating that will not discolor or deface surface of concrete.

C. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185. Furnish in flat sheets.

D. Reinforcing Steel: Deformed steel bars, ASTM A 615, Grade 60.

E. Portland Cement: Shall conform to ASTM C 150, Type I

F. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D994, D1751, D2628; FS HH-F-341, Type II, Class A or approved equal.

G. Joint Sealants: Conforming to ASTM D1190, non-priming, pourable, self-leveling polyurethane. Acceptable sealants are Sonneborn "Sonolastic Paving Joint Sealant", Sonneborn "Sonomeric CT 1 Sealant", Sonneborn "Sonomeric CT 2 Sealant", Mameco "Vulken 245", or Woodmont Products "Chem-Caulk".

H. Aggregate: ASTM C33.

I. Water: Clean and potable.

J. Dowel Bars: ASTM A615, grade 60, and plain steel bars.

K. Air Entraining Mixture: ASTM C260; Sika AER by Sika Corporation or Air Mix by the Euclid Chemical Corporation.

L. Curing Compound: ASTM C309; Hydrocide by Sonneborn of Rexnord Chemical Products, Inc. or and Polyseal 4 in 1 by Chem Masters Corporation.

M. Joint Backup Rods: CCEVA Rod 100 by E-Poxy Industrials, Inc., Sealtight BACKER ROPE by W.R. Meadows, Inc. or approved equal.

PART 3 – EXECUTION

3.1 PREPARATION

A. Begin paving work only after unsuitable areas have been corrected and are ready to receive paving.

B. Remove loose material from compacted base material surface to produce firm, smooth surface immediately before placing concrete.

3.2 INSTALLATION

A. Form Construction

1. Set forms to required grades and lines, rigidly braced and secured.
2. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place minimum of 24 hours after concrete placement.
3. Check completed formwork for grade and alignment to following tolerances:
   a. Top of forms not more than 1/8-inch in 10'-0".
   b. Vertical face on longitudinal axis, not more than ¼-inch in 10'-0".
4. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement: Fasten reinforcing bars or welded wire fabric (if required) accurately and securely in place with suitable supports and ties. Remove from reinforcement all dirt, oil, loose mill scale, rust, and other substances that will prevent proper bonding of the concrete to the reinforcement.

C. Concrete Placement

1. Concrete shall be mixed and placed when the air temperature in the shade and away from artificial heat is a minimum of 35 degrees F and rising. Hot and cold weather concreting shall be in accordance with ACI 305R and 306R, respectively.
2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Do no place concrete around manholes or other structures until set at required finish elevation and alignment.
3. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation or reinforcing, dowels, and joint devices.
4. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than ½ hour, place construction joint. Automatic machine may be used for curb and gutter placement. Machine placement shall be at required cross section, line, grade, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified herein.

D. Joint Construction

1. Contraction Joints: Construct concrete curb or combination concrete curb and gutter, where specified on Construction Drawings, in uniform sections of length specified on Construction Drawings. Form joints between sections either by steel templates, 1/8-inch in thickness, of length equal to width of curb and gutter, and with depth which will penetrate at least 2-inches below surface of curb and gutter; or with ¾-inch thick performed expansion joint filler cut to exact cross section of curb and gutter; or by sawing to depth of at least 2-inches while concrete is between 4 and 24 hours old. If steel templates are used, they shall be left in place until concrete has set enough to hold its shape, but shall be removed while forms are still in place.
2. Longitudinal Construction Joints: Tie concrete curb or combination concrete curb and gutter, where specified on Construction Drawings, to concrete pavement with ½-inch round deformed reinforcement bars of length and spacing shown on Construction Drawings.
3. Transverse Expansion Joints: Concrete curb, combination concrete curb and gutter, or concrete sidewalk shall have filler cut to exact cross section of curb, gutter or sidewalk. Joints shall be similar to type of expansion joint used in adjacent pavement.

E. Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than ½-inch or more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths or full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler section together.

F. Joint Sealants: Install in accordance with manufacturer's recommendations.

3.3 CONCRETE FINISHING

A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide continuous smooth finish.

B. Work edges of sidewalks, gutters, back top edge of curb, and formed joints with edging tool, rounding edge to ½-inch radius. Eliminate tool marks on concrete surface. After completion of floating and trowelling, when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

1. Curbs, gutters, and sidewalks: Broom finish by drawing fine-hair broom across surface perpendicular to flow of traffic. Repeat operation as necessary to produce fine line texture.

C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or section with major defects as directed by Owner.

D. Protect and cure finished concrete paving using acceptable moist-curing methods in accordance with "water-curing" section of ACI 308.

3.4 BACKFILLING

A. After concrete has set sufficiently, spaces on either side of concrete curb, combination concrete curb and gutter, or concrete sidewalk shall be refilled to required elevation with suitable material compacted in accordance with Section 02200.

3.5 CLEANING AND PROTECTION

A. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

END OF SECTION 31 16 00

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SECTION 32 92 00 – TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY: Turf & Seed.

A. Work included: Prepare the rough grade and furnish and place topsoil, fertilizer, seed, and sod in areas where shown and called for on the Drawings. Maintain growth of the turf during the contract period.

B. This Section includes the following:

1. Seeding.
2. Sodding.

1.2 RELATED WORK

A. Section 02490 - Landscaping.

B. Section 02810 – Underground Sprinkler System.

1.3 DEFINITIONS

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

C. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

D. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

F. Final Acceptance: Approval of the establishment of a "Stand of Grass" as defined herein, Section 3.6.

1.4 SUBMITTALS

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

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

1. Certification of each seed mixture for turfgrass sod, identifying source, including name and telephone number of supplier.

C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

D. Qualification Data: For landscape Installer.

E. Material Test Reports: For existing surface soil and imported topsoil.

F. Planting Schedule: Indicating anticipated planting dates for each type of planting.

G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns and meadows during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn, meadow and wildflower establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers bearing original certification labels showing quantity, analysis, and name of manufacturer.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

C. Mulch: Each package of cellulose fiber shall be marked by the manufacturer to show the air-dry weight content.

D. Product Storage: Protect products from weather or other conditions that would damage or impair the effectiveness of the items.

1.8 SCHEDULING

A. General: Installation shall occur only when soil temperatures are conducive for germination. Verify with proposed seed mix. Advise the landscape architect where project timing will not be appropriate for the proposed or specified seed mix.

B. Hydro-mulch seeding:

1. Irrigated Areas: Within five (5) calendar days after the completion and acceptance of soil preparation and finish grading in any area and prior to any weather conditions that would affect graded areas. Re-grade as required if rainfall occurs between fine grading and hydroseeding.

2. Unirrigated areas (Between May 1st and October 1st of any calendar year.

a. Provide temporary irrigation until material is established.

C. Installation: Immediately after soil preparation, finish grading and irrigation installation is accepted.

D. Planting Restrictions: Installation may be performed in late fall to early winter (while seed is dormant) or in the spring. Do not sow in late summer to mid fall, as prairie seedlings will not establish before winter. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

E. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit. Do not install lawns and grasses during rainy weather.

1.9 WARRANTY

A. Time Period: Warrant that lawns and grasses shall be in a healthy and flourishing condition of active growth twelve (12) months from date of Final Acceptance.

B. Appearance During Warranty: Lawns and grasses shall be free of dead or dying patches, and all areas shall show foliage of a normal density, size and color.

C. Delays: Delays caused by the Contractor in completing planting operations, which extend the planting into more than one planting season, shall extend the Warranty Period correspondingly.

D. Coverage: Warrant growth and coverage of hydro-mulch seeded planting to the effect that a minimum of 95% of the area planted shall be covered with specified planting after one growing season with no bare spots.

1. For Sod: Complete lush cover with no brown sections, edges, seams or cracks showing. Sod shall have established to the extent that satisfactory capillary action between the sod and soil has been established.

2. For Seed: Ninety eight (98%) percent uniform coverage of grass in excess of one (1") inch height. No bare spots of greater than one (1) square foot and no aggregate bare areas in any 100 square feet greater than 2 square feet.

E. Exceptions: Contractor shall not be held responsible for failures due to neglect by Owner, vandalism, or natural disaster during Warranty Period. Report such conditions in writing.

1.10 QUALITY ASSURANCE:

A. Source:

1. Sod: Shall be subject to inspection and approval by Landscape Architect at the site upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Landscape Architect reserves right to refuse inspection at this time if, in his judgment, a sufficient quantity of sod is not available for inspection.

2. Seed: The Landscape Architect shall be furnished a signed copy of statement from vendor, certifying that each container of seed delivered is labeled in accordance with the Federal Seed Act and is at least equal to requirements previously specified. Seed analysis shall be furnished prior to commencement of planting operations. If data for seed reveal the seed to be below the specified pure live seed content, the Contractor shall be required to make allowances for additional seed to compensate for the deficiency at no additional cost to the Owner.

B. Inspections:

1. Make written request for inspection after hydro-mulch seeding or sodding operations have been completed. Such inspection is for the purpose of commencement of the Landscape Establishment Period.

2. Submit written requests for inspections to the Landscape Architect at least seven (7) days prior to anticipated inspection date.

1.11 FINAL ACCEPTANCE:

A. Work under this Section will be accepted by Landscape Architect upon satisfactory completion of all work, but exclusive of re-application under the Guarantee Period. Final Acceptance of lawn establishment shall be as follows:

1. For Sod: Complete lush cover with no bare or brown sections and no seams or cracks are showing. Sod shall have established to the extent that satisfactory capillary action between the sod and soil has been established and there area no bare areas.

2. The Landscape Architect and/or Owner shall interpret the above. Upon Final Acceptance, the Owner will assume the responsibility for maintenance of the work. Revise rate of watering in subparagraph below to suit Project. Revise meadow watering requirements according to meadow seed vendor's written recommendations.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Grass Seed Mix: Seed mix as follows:

1. Products: Subject to compliance with requirements, provide the following.

   a. Native American Seed, 3791 N. US Hwy 377, Junction, TX 76849, Ph. 1-800-728-4043, www.seedsource.com; Dam Slope/Upper Slope Mix.

   b. Native American Seed, 3791 N. US Hwy 377, Junction, TX 76849, Ph. 1-800-728-4043, www.seedsource.com; Eastern Savannah/Wetland Fringe Mix

   c. Native American Seed, 3791 N. US Hwy 377, Junction, TX 76849, Ph. 1-800-728-4043, www.seedsource.com; Native Sun Turf Mix

2.2 TURFGRASS SOD

A. Turfgrass Sod: Certified Approved free of thatch, weeds, diseases, nematodes, and insects, complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

B. Topsoil furnished shall be a natural, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well drained areas. Topsoil shall be without admixture of subsoil and free from Johnson Grass (sorgamhalepense), nut grass (cyperus rotundus), and objectionable weeds and toxic substances. Topsoil to be furnished shall be free from trash, brush, and stones over one inch (1") in diameter, and other extraneous material. (Sandy loam will not be allowed).

C. Commercial fertilizer shall be an organic fertilizer containing the following minimum percentages of available plant food by weight: 13-13-13 Nitrogen-Phosphorus-Potash.

D. The sod shall contain a good cover of living or growing grass. The sod shall be obtained from areas having growing conditions similar to the sodded areas under this contract. Deliver sod on pallets. Protect root system from exposure to wind and sun. Do not deliver more sod than can be placed within 24 hours.

E. Turfgrass Species: Sod of grass species as shown on plans.

2.4 TOPSOIL

A. Topsoil: ASTM D 5268, pH range and percent organic material content; will be according to the soil analysis; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

   1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

      a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

   2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

    a. Surface soil may be supplemented with imported or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.5 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through ½ inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50–60 percent of dry weight.

2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb of ammonium nitrate or 0.25 lb of ammonium sulfate per cubic foot of loose sawdust or ground bark.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.6 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.7 MULCHES

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

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

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

2.8 EROSION-CONTROL MATERIALS

A. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long. Refer to erosion control plan for areas of coverage.

2.9 PLANTING SOIL MIX

A. Planting Soil Mix: If additional topsoil is required, then the new topsoil shall be mixed and amended according to the recommendations from the soil test reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Verify that seedbed is sufficiently firm.

C. Verify that the site is clean and free of debris.

3.2 SOIL PREPARATION

A. General:

1. Moisture Content: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.

2. Clearing of Debris: Clear all planting areas of stones 1 in. diameter and larger, weeds, debris and other extraneous materials prior to amending existing soil.

B. Preparation of Existing Soil:

1. Verification of Existing Grades: Verify that grades are within 1 in. plus or minus of the required finished grades. Report all variations to the Landscape Architect.

2. Clearing of Debris: Clear all planting areas of stones 2 in. diameter and larger, weeds, debris and other extraneous materials prior to amending existing soil or spreading imported topsoil.

3. Cultivation: Rip or cultivate all planting areas to a depth of 6 inches immediately prior to amending existing soil. Rototil to reduce soil clods to a maximum diameter of one (1") inch in the top six (6") inches.) Do not rototil within the existing tree areas.

C. Preparation of Existing Soil on 3:1 Groundcover Slopes:

1. Hand cultivate and loosen soil to 3 inch depth. Rototil to 2 inch depth.

3.3 SEEDING

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

1. Protect adjacent and adjoining areas from hydroseeding overspray.

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

C. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

D. Night temperatures must be no lower than 65-70 degrees for germination.

E. Chisel, rip, root plow, cultivate, till or otherwise loosen the ground 2-4" deep. Make only one pass running sideways on the contour with implement. Do not run up and down the slope; unless using a dozer with steel tracks. Leave surface rough, clods will help disperse rain drops. Put duals on tractor for severe slopes to stabilize the operation.

F. Spread 1" of black compost over the ripped ground to help give seeds a boost. Lightly disc, only one pass on the contour running sideways, not up and down. Again, leave it rough.

G. Native seeds want seed-to-soil contact so put the slightest amount of mulch in the tank for a marker only. Load a measure of seed to cover appropriate square footage of ground. Add a dose of compost tea, molasses or other bio-starter, but skip the fertilizer. Hydroseed until area is covered with proper seeding rate. Then cap the job with a hydro-mulch coating (3/8" thick max.) Or use erosion control blankets.

H. After spreading the seed, thouroughly soak the ground.

I. Watering for the germination and establishment of the native grass and wildflower seed is as follows: 1/2" of water a day applied evenly throughout the day until the grasses reach 1" in height, after the grasses reach 1" in height with 3-4 blades per sprout then apply 1" of water three times weekly.

J. Supplemental watering should be applied if the weather is unseasonably dry. If rainfall is normal then supplemental watering should be unnecessary.

K. Sow seed at the net rate as indicated on the landscape plans.

3.4 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Spread stockpiled topsoil to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if topsoil or subgrade is frozen, muddy, or excessively wet.

a. Spread approximately one-half the thickness of the topsoil over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of topsoil.
b. Reduce elevation of planting soil to allow for soil thickness of sod.
c. Verify the drainage is adequate in the planting beds for all trees and shrubs. Depressions where water will stand or inequalities in the grade shall be corrected before additional topsoil is spread.

C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.5 SODDING

A. Sod which is cut for more than 72 hours shall not be used unless specifically authorized by the Owner's Landscape Architect after his/her inspection thereof. Sod which is not planted within 24 hours of cutting shall be stacked in an approved manner and maintained with proper moisture. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced with fresh, uninjured pieces.

B. Do not lay sod if dormant or if ground is frozen or muddy. Sodding shall not be performed when weather and soil conditions are, in the Landscape Architect's opinion, unsuitable for proper results.

C. Lay sod to form a solid mass with tightly fitted joints that provides positive drainage. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.

2. Anchor sod on slopes exceeding 1:6 with steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

D. Allowance for settlement shall be made and after settlement of topsoil and placement of the sod, the top of the sod thickness shall be flush with the finished grades of all types of adjacent pavement. Every precaution shall be taken to insure that there is positive drainage away from the building in all areas and that a smooth and continuous grade is provided from the building out to the sidewalks.

E. Crown all sodded parking islands for positive drainage unless otherwise shown on grading plan.

F. Saturate sod with fine water spray within two hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod. Soil tests are to be taken and submitted

to the County Agent for analysis to turf areas to specify fertilizer application based on the results of the testing. Apply amendments according to the needs of the plant materials and soil to reduce the fertilizer input to run-off water quality.

G. The area on which the sod is to be placed shall contain sufficient moisture, as determined by the Landscape Architect for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least two (2) weeks. There after, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 days (or until final acceptance, whichever is latest).

H. After completion of sodding, the entire area shall be rolled thoroughly with the appropriate rolling equipment. At least two (2) trips over the entire area will be required to eliminate all air from under the newly planted sod.

3.6 SATISFACTORY LAWNS

A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

C. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

D. The Contractor will be required to establish a stand of grass prior to acceptance of the job. A uniform stand of grass shall be defined as a total coverage of the planting soil by the specified turfgrass to the satisfaction of the Owner, The Contractor is responsible for all watering, weeding, and replanting during the time which is necessary to establish a uniform stand of grass.

E. The Contractor will include in his price the cost of the initial seeding of grasses as well as reseeding the entire site a second time within the twelve-month maintenance period.

3.7 CLEANUP AND PROTECTION

A. Keep all areas of work clean, neat and orderly at all times.

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

C. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

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

E. Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance to the satisfaction of the Landscape Architect.

3.8 NATIVE GRASS/WILDFLOWER MAINTENANCE

A. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established.

B. Maintain and establish meadow by watering, weeding, replanting, and other operations. Roll, re-grade, and replant bare or eroded areas and re-mulch.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep meadow uniformly moist.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

D. Mowing: Mowing is crucial during the establishment period, particularly the first growing season for weed control.

1. Mow at a height of 4 to 6 inches when the oats set seed heads. Mow at a height of 4 to 6 inches once a month or whenever weed growth reaches 10 inches for the remainder of the first season.

2. If cool season weed growth is heavy in the spring of the second season, mow once in late May.

3. Mowing in the late fall, or spring burning, is recommended after 3-4 years.

END OF SECTION 32 92 00

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SECTION 33 40 00 – STORMWATER UTILITIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Storm sewer drainage pipe, fittings, and accessories.

2. Storm drainage structures.

B. Related Requirements

1 Section 02200 – Earthwork

2. Section 03300 – Cast-In Place Concrete

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO)

1. AASHTO M36 – Zinc Coated (Galvanized) Corrugated Iron or Steel Culverts and Under Drains
2. AASHTO M190 – Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches
3. AASHTO M252 – Corrugated Polyethylene Drainage Pipe
4. AASHTO M294 – Corrugated Polyethylene Pipe 12" to 60" Diameter
5. AASHTO MP7 – Corrugated Polyethylene Pipe 54" and 60" Diameter
6. AASHTO M198 – Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Performed Flexible Joint Sealants
7. AASHTO H170-Reinforced Concrete Culvert, Storm Drain and Sewer Pipe

B. American Society for Testing and Materials (ASTM)

1. ASTM A74 – Cast Iron Soil Pipe and Fittings
2. ASTM A185 – Steel Welded Wire Reinforcement, Plain, for Concrete
3. ASTM A615-Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
4. ASTM A746 – Ductile Iron Gravity Sewer Pipe
5. ASTM C76 – Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
6. ASTM C150 – Portland Cement
7. ASTM C206 – Finishing Hydrated Lime
8. ASTM C443 – Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
9. ASTM C564 – Rubber Gasket for Cast Iron Soil Pipe and Fittings
10. ASTM C969-Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
11. ASTM D3034 – Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings
12. ASTM D3212 – Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals
13. ASTM F477 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe
14. ASTM F949 – Poly (Vinyl Chloride)(PVC) Corrugated Sewer Pipe with Smooth Interior and Fittings

C. American Concrete Institute (ACI)

1. ACI 301 – Structural Concrete

1.4 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, and accessories. Provide shop drawings for precast inlets, catch basins and junction boxes.

B. Manufacturer's Certificate: Certify that products meet or exceed specified local requirements.

C. Project Record Documents

1. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions and location of uncharted utilities.

1.5 PROJECT CONDITIONS

A. Coordinate work with termination of storm sewer connection outside building including connection to municipal storm sewer system.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Reinforced Concrete Pipe (RCP): ASTM C76, Class III unless noted otherwise on Drawings, installed with flexible plastic, bitumen gaskets at joints.

1. Gaskets: AASHTO M 198 751, Type B or ASTM C 443, installed in accordance with manufacturer's recommendations.
2. Flared end sections shall be per ASTM C76 or AASHTO H170 (for sections with toe wall)

B. High Density Polyethylene Pipe (HDPE): AASHTO Designation M252 Type S, M294 Type S and MP7-97 Type S, smooth interior/annular exterior. Only permitted when specifically indicated on Drawings. Pipe shall be installed in accordance with pipe manufacturer's installation Guidelines for Culvert Storm Drainage Applications.

1. Pipe Joints and fittings shall conform to AASHTO M252 and M294.
2. Acceptable manufacturers: Advanced Drainage Systems, Inc. "ADS N-12", HANCOR, INC. "Hi-Q", or approved equal.

C. Spiral Rib Metal Pipe: ASTM A 760 Type 1R or Type IIR. Coatings shall meet requirements of ASTM A929 and shall be galvanized, aluminized, or bituminous coated as specified on Drawings. Only permitted when specifically indicated on Drawings.

1. Pipe ends shall be re-corrugated and installed with semi-corrugated "Hugger" type bands and "O" ring gaskets in accordance with pipe manufacturer's installation requirements.

2. Pipe gauge shall be as specified on construction drawings or if no gauge is given then the minimum gauges are as follows: 15" to 42" diameter round pipe – 16 gauge (0.0064"), 48" to 60" round pipe-14 gauge (0.079"), 66" to 78" round pipe – 12 gauge (0.109"), 15" to 30" pipe arch – 16 gauge (0.064"), 36" to 42" pipe arch – 14 gauge (0.079"), and 48" to 78" pipe arch – 12 gauge (0.109"). Gauges for larger diameters shall be indicated on the drawings.
3. Installation shall be in accordance with ASTM A798 and A796 as they apply, manufacturer's requirements, and as indicated on the drawings.
4. Standard corrugated steel pipe as described in Section E of these specifications shall not be substituted for any diameter of Spiral Rib Steel Pipe.
5. Manufacturer: Contech, Inc. "Ultra Flo or Ultra Flo II", Southeast Culvert, Inc. "Max Flow", St Regis Culvert, Inc. "Max Flow", Thompson Culvert, Inc. "Max Flow" or approved equal.

D. Polyvinyl Chloride (PVC) Pipe: ASTM D3034, rate SDR 35 (or ASTM 949 for Profile Pipe) continually marked with manufacturer's name, pipe size, cell classification, SDR rating, and ASTM D 3034 classification. Only permitted when specifically indicated on Drawings.

1. Pipe Joints: ASTM D 3212 using restrained gasket conforming to ASTM F477.

E. Corrugated Steel (Metal) Pipe (CSP or CMP): ASTM A 760, 16 gauge unless another gauge is indicated on Drawings. Galvanized, aluminized (Type 1R), or bituminous coated as specified on Drawings. Only permitted when specifically indicated on Drawings. Corrugated steel pipe may be round pipe, arch pipe, or slotted drainpipe as indicated on Drawings. Slotted drainpipe shall have 1.75-inches wide drain waterway openings and 6 inches minimum height drain guide.

1. CSP, bands and appurtenances shall be uniformly coated inside and outside with a 0.05 inch minimum thickness bituminous coating in accordance with AASHTO M190.
2. CSP shall be supplied with paved inverts or fully lined to provide a smooth interior, smooth flow lining only as indicated on the drawings.

F. Ductile Iron Pipe (DIP): ASTM A746

1. Fittings: Cast iron conforming to ASTM A74.

2. Joint Material: Rubber gasket conforming to the requirements of ASTM C564 for compression joints.

G. Subdrains: Perforated, PVC or flexible corrugated plastic pipe as specified herein of the size indicated on the drawings.

2.2 DRAINAGE STRUCTURES

A. Manholes: Construct as shown on the drawings and in accordance with Section 03300.

B. Grates and Frame: Provide in accordance with details shown on Drawings.

1. Provide heavy duty grates, with maximum slot width of 1-1/8"
2. Acceptable Manufacturers:
a. Neenah Foundry.
b. East Jordan Iron Works.
c. Bass & Hays Foundry.

C. Cast-in-Place concrete for drainage structures including manholes, inlets, catch basins, collars, support blocks, headwalls and paved ditches shall conform to ACI 301.

1. Compressive Strength: 3500 psi at 28 days.
2. Reinforcement: ASTM A615, grade 40 or 60 deformed reinforcing bars, and ASTM A185 for wire fabric.

D. Cement Mortar used for paving inverts, filling lift holes, joints, patching and anchoring castings shall consist of one part Portland cement, type I, ASTM C150, ¼ part hydrated lime, ASTM C206 and 2-1/2 parts clean, well-graded sand and water free of suspended matter, alkali, and containing no industrial or domestic waste.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that trench cut and excavation is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with bedding material.

B. Remove large stones or other hard matter that could damage piping or impede consistent backfilling or compaction.

C. Protect benchmarks, proper corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

3.3 INSTALLATION – PIPE

A. The pipe shall be inspected for defects and cracks before being lowered into the trench, piece by piece. Any defective, damaged or unsound pipe or any pipe that has had its grade disturbed after laying shall be taken up and replaced. Open ends shall be protected with a stopper to prevent earth or other material from entering the pipe during construction. The interior of the pipe shall be free from dirt, excess water and other foreign materials as the pipe laying progresses and left clean at the completion of the installation.

B. Excavate pipe trench and place bedding material in accordance with Section 02200 and 312300.

C. Installation shall commence at the lower point for each segment of the route. RCP shall be laid with the groove or bell end upstream. Riveted CSP shall be placed with the inside circumferential laps pointing downstream. Repair damaged bituminous coating on CSP by applying bituminous material conforming to AASHTO M190.

D. Lay pipe to the required line and slope gradients with the necessary fittings, bends, manhole, risers and other appurtenances placed at the required location as noted on Drawings.

E. Do not displace or damage pipe when compacting.

F. No pipe shall be laid in water or when trench conditions are unsuitable for such work.

G. Joints:

1. Joints shall be constructed as described herein and in accordance with manufacturer's installation instructions with the intent that they be made watertight.
2. For RCP, the joint surface shall be cleaned and washed with water, if necessary, before the joints are made. For tongue and groove joints in smaller sizes, make joints butting the inside of the bell with a cement mortar before joining. The inside joint shall be wiped clean of excess mortar by brush or a squeegee drawn through the pipe as the laying operation progress. In the larger diameters, which permit the entry of a man, annular space between pipe sections shall be completely filled with mortar and finished off smooth with the inside surface of the pipe.
3. CSP shall be joined by standard corrugated connecting bands. Keep dirt or gravel out from between the pipes and band so that corrugations fit snugly. While being tightened, the bands shall be tapped with a mallet to take up slack and insure a tight joint.
4. PVC fittings shall be attached to the pipe by solvent welding according to the manufacturer's recommendations.

3.4 INSTALLATION – MANHOLES, CATCH BASINS, INLETS, AND JUNCTION BOXES

A. Drainage structures shall be constructed in accordance with details shown on Drawings and in accordance with Section 330800 as applicable.

B. Precast Sections:

1. Precast section with bases shall be installed in accordance with Section 02200 and 330800 or as shown on drawings.
2. Pipe openings shall be aligned to that of the pipe entering and leaving the manhole, etc. Pipe shall be properly aligned with connections to manholes, etc. as shown on the drawings.

C. Cast-in-Place sections shall be as shown on the drawings and in accordance with Section 03300.

1. Form bottom of excavation clean and smooth to correct elevation.
2. Form and place cast-in-place concrete base pad, with provision for storm sewer pipe to be placed at proper elevation.
3. Form and place cast-in-place concrete walls, sleeved at proper elevation to receive storm sewer pipe in accordance with details shown on Drawings.

D. Invert channels shall be smooth and accurately shaped to a semicircular bottom conforming to the inside of the adjacent sewer section. Invert channels and structure bottoms shall be shaped with cement mortar. Changes in size and grade of invert shall be made gradually and evenly. Change in direction of the sewer entering branch or branches shall have a true curve of as large a radius as the manhole will permit.

E. Frames and Covers:

1. Frames and covers shall be set to the proper elevation. The frames shall be firmly embedded in mortar approximately 1 inch thick and aligned to fit the top section of the structure.
2. Bricks set in mortar used to adjust the frame to finished grade shall be limited to no more than four courses.

3. Adjustment rings used to make adjustments in grade shall be made with the initial ring embedded in mortar and the exterior of the rings parged with mortar not less than ½ inch thick. No adjustment made in this manner shall exceed 8 inches.

F. Concrete cradles shall be constructed as shown on the drawings and as needed when crossing over and under sewer pipe or utility lines. Concrete shall be 3000 psi mix with a minimum thickness of 6 inches.

3.5 SUBDRAINS

A. Subdrains shall be installed in accordance with the details and at the locations shown on the drawings.

3.6 INSPECTION AND TESTING

A. General

1. Storm sewer systems and culverts, upon completion or at such time as directed, shall be cleaned, inspected and tested. The system or culvert shall have a true grade and line. Actual elevations shall be within 0.008 feet of the elevations given on the drawings.
2. After completion of the Work, or any part thereof, the job shall be tested to determine that it has been installed in accordance with the drawings and specifications. In general, the Work shall prove to be in good condition, installed in accordance with the drawings and specifications and ready for use.

B. Cleaning and Testing

1. Visibly inspect and remove all debris and obstructions from storm pipe. Test for infiltration and exfiltration by hydrostatic testing per ASTM C969. Manholes and pipe shall conform to ASTM C969 leakage criteria.

C. Alignment Test

1. After backfill has been placed and compacted to a depth not less than one foot above top of pipe, a visual inspection shall be made by flashing a light between manholes. Any displacement or misalignment of invert shall be corrected.

END OF SECTION 33 40 00

SECTION 00 41 00 - BID FORM

FILED
SEP 12 2023
MARGARET DARTER
FAULKNER COUNTY CLERK
BY Amellin DC

Project: A REMODEL FOR
FAULKNER COUNTY ANIMAL SHELTER
GREENBRIER, AR

Project No.: 21054

Owner: FAULKNER COUNTY
801 LOCUST AVENUE
CONWAY, AR 72034

Bid from: Stephen Hay Construction LLC — Contracting Firm

0401120324 — License number

2150 Destin Drive — Address

Conway AR 72034 — City, State, Zip

501-428-1349 — Telephone number

BASE BID:

Having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and cost of the Work at the job site, and having fully inspected the site, we hereby propose and agree to perform the Work in strict accordance with the Contract Documents and addenda (acknowledge all addenda numbers: 1) for the Base Bid:

One Million Two Hundred Seventeen Thousand One Hundred Twenty One **Dollars** $ 1,217,121.00

ALTERNATE BIDS:

Alternate Bid No. 1 (deductive): State the amount to be deducted from the Base Bid to delete the floor finishes in all locations scheduled to receive flooring and provide sealed concrete floors in all locations. Rubber base as scheduled shall be provided at all locations scheduled to receive a base. (Polished per Add. 1)

Twenty Two Thousand Four Hundred Four Dollars -$ 22,404.00

Alternate Bid No. 2 (deductive): State the amount to be deducted from the Base Bid to delete the entire front façade as detailed on Sheets A6.1 and A6.2. Refer to Building Elevations on Sheet A4.1 for the finishing of the façade of the existing building.

Fifty Thousand Five Hundred Eighty Dollars -$ 50,580.00

We understand the Owner reserves the right to reject this bid, but that this bid shall remain open and not be withdrawn for a period of sixty (60) days from the date above.

We estimate the time of construction to be 6 Months or 24 weeks.

Authorized signature: _____

Position: Owner

Date: 9/12/23

END OF SECTION 00 41 00