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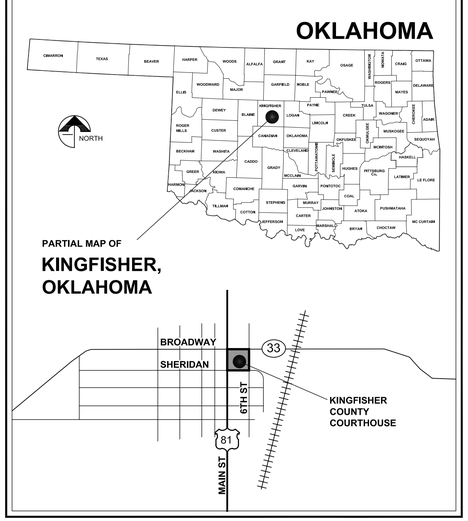
VICINITY MAP



KEY PLAN

ALTERNATES

CONSULTANTS

ARCHITECT:

ARCHITECTS IN PARTNERSHIP, LLC
3220 MARSHALL AVE.
NORMAN, OK 73072

MECHANICAL/ELECTRICAL/PLUMBING ENGINEERING CONSULTANTS:

Moxify Engineering, LLC.
4334 NW Expressway, Suite 156
Oklahoma City, Oklahoma 73116
Phone: 405-254-5038
www.moxifyengineering.com

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

Kingfisher Oklahoma

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
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FAX: 405.360.1431

SEAL:

4/17/2023

KINGFISHER COUNTY COURTHOUSE - PARKING
NEW PARKING LOT
KINGFISHER OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: COVER SHEET
SHEET NO.: G-001

LIST OF ABBREVIATIONS

AB	ANCHOR BOLT
ACOUS	ACOUSTICAL
ACM	ALUMINUM COMPOSITE MATERIAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADD'L	ADDITIONAL
ADJ	ADJUSTABLE
ADMIN	ADMINISTRATION
AEWC	ACCESSIBLE EWC
AFF	ABOVE FINISHED FLOOR
ALUM/AL	ALUMINUM
ALT	ALTERNATE
ANCIL	ANCILLARY
ANOD/AN	ANODIZED
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
AWI	ARCH'TL WOODWORK INSTITUTE
AWV	AIR WATER VAPOR BARRIER
BD	BOARD
BFF	BELOW FINISHED FLOOR
BLDG	BUILDING
BLK	BLOCK
BLK'G	BLOCKING
BM	BEAM
B.O.	BOTTOM OF
BRG	BEARING
BRK	BRICK
B.S	BOTH SIDES
CAB	CABINETS
CF/CI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFMF	COLD FORMED METAL FRAMING
CL	CENTERLINE
CLR	CLEAR
CJ	CONTROL JOINT
CLG	CEILING
CLO	CLOSET
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMP	COMPOSITE, COMPOSITION
CONC	CONCRETE
CONF	CONFERENCE
CONST	CONSTRUCTION
CONT	CONTINUOUS
COR	COLOR
CORR	CORRIDOR
CPT	CARPET
CR	COLD ROLLED
CRS	COURSE
CT	CERAMIC TILE
CTR	CENTER
CTSK	COUNTERSINK
CU.FT	CUBIC FOOT
CU.YD	CUBIC YARD
DBL	DOUBLE
DEG	DEGREE
DEMO	DEMOLISH/DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DET	DETAIL
DIA	DIAMETER
DIM/DIM'S	DIMENSION(S)
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DWR	DRAWER
DWG/DWG'S	DRAWING/DRAWINGS
E	EAST
EA	EACH
E.I.F.S. or EFIS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
EL or ELEV	ELEVATION
ELEC	ELECTRICAL
ELEVR	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATERCOOLER
EXIST/EXG	EXISTING
EXP	EXPANSION
EXPO	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISHED FLOOR
FE	FIRE EXTINGUISHER
FEB	FIRE EXTINGUISHER BRACKET
FEC	FIRE EXTINGUISHER CABINET
FF&E	FURNITURE, FIXTURES & EQUIPMENT
FIN	FINISH
FLEX	FLEXIBLE
FLR	FLOOR
FLASH or FLG	FLASHING
FR	FIRE RATED
FRM	FRAME
FRT	FIRE RETARDANT TREATED
FT	FOOT or FEET
FTG	FOOTING
FURN	FURNISHED
FURR'G	FURRING
FV	FIELD VERIFY
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GEN	GENERAL
GI	GALVANIZED IRON
G.L.	GLOSS LEVEL
GLAZ	GLAZING
GND	ELECTRICAL GROUND
GR	GRADE
GWB or GYP BD.	GYPSUM BOARD
GYP	GYPSUM
HC	HOLLOW CORE or HANDICAP ACCESSIBLE
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING-VENTILATION-AIR CONDITIONING
HW	HOT WATER HEATER
I.D.	INSIDE DIAMETER
IN	INCHES
INSUL/INS	INSULATION, INSULATED
INT	INTERIOR
JAN	JANITOR
JST	JOIST
JT	JOINT
KIT	KITCHEN
K.D.	KNOCKDOWN
LAB	LABORATORY
LAM	LAMINATED
LAV	LAVATORY
LED	LIGHT-EMITTING DIODE
LF	LIGHT FIXTURE
LT	LIGHT
MACH	MACHINE
MAX	MAXIMUM
MECH	MECHANICAL
MED	MEDICINE
MEMB	MEMBRANE
MFR	MANUFACTURER
MGR	MANAGER
M.H.	MANHOLE
MIC. OV	MICROWAVE OVEN
MIN	MINIMUM
MIR or M	MIRROR
MISC	MISCELLANEOUS
M.O.	MASONRY OPENING
MR	MOP RACK
M.R.G.B	MOISTURE RESISTANT GYPSUM BOARD
MS	MOP SINK
MTD	MOUNTED
MTL	METAL
MW	BUILT-IN MILLWORK
N	NORTH
N.I.C	NOT IN CONTRACT
NO.(#)	NUMBER
NOM.	NOMINAL
N.T.S	NOT TO SCALE
O.A	OVERALL
OC/oc	ON CENTER
O.C.E.W	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED/CONTR. INSTALLED
OFF	OFFICE
OF/OI	OWNER FURNISHED/OWNER INSTALLED
O.H	OPPOSITE HAND
OPER	OPERABLE
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
O.T.O	OUTSIDE TO OUTSIDE
PC	PORTLAND CEMENT
PH	PHONE (TELEPHONE)
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
PPT	PRESERVATIVE PRESSURE TREATED
PR	PAIR
PREP	PREPARATION
PT	PAINT
P.T.D	PAPER TOWEL DISPENSER
PTN	PARTITION
P.T.D/R	COMBINATION PAPER TOWEL DISPENSER/RECEPTACLE
Q.T	QUARRY TILE
R or RAD	RADIUS
RCP	REFLECTED CEILING PLAN
R.D.	ROOF DRAIN
RE: or REF	REFERENCE
REC'P	RECEPTION
REFR	REFRIDGERATOR
REINF	REINFORCED
RESIL	RESILIENT
RESIST	RESISTANT
REQ or REQ'D	REQUIRED
RET	RETAINING
REV	REVISION
R.F.S	ROOM FINISH SCHEDULE
R.J.	RUSTICATION JOINT
RM	ROOM
RO	ROUGH OPENING
R&S	ROD AND SHELF
RTU	ROOF TOP UNIT (HVAC)
RWC	RAIN WATER CONDUCTOR
S	SOUTH
S.B.	SMART BOARD
SCHED/SCH	SCHEDULE
SCWD	SOLID CORE WOOD DOOR
SD	SOAP DISPENSER
SECT	SECTION
SEC'Y	SECRETARY
SH	SHELF
SHWR	SHOWER
SHT	SHEET
SHTH'G	SHEATHING
SIM	SIMILAR
S.N.D	SANITARY NAPKIN DISPENSER
S.N.R	SANITARY NAPKIN RECEPTACLE
SQ	SQUARE
SS	SANITARY SEWER
S.S.	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STN	STAIN
STOR	STORAGE
STR or STRUCT	STRUCTURAL
SUSP	SUSPEND(ED)
S&V	STAIN & VARNISH
SYM	SYMMETRICAL
T	TOILET
T.B.	TACK BOARD
T.C.	TOP OF CURB
TEMP	TEMPERED/ TEMPORARY
TER	TERRAZZO
TG	TOP OF GRATE
T&G	TOUNGE AND GROOVE
THK	THICK(NESS)
TLWC	TOP OF LIGHTWEIGHT CONCRETE
T.O.	TOP OF
T.O.M.	TOP OF MASONRY
T.O.S.	TOP OF STEEL
T.O.W/T.W.	TOP OF WALL
T.P.	TOP OF PAVEMENT
T.P.D.	TOILET PAPER DISPENSER
TV	TELEVISION
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
U.N.O	UNLESS OTHERWISE NOTED
UR	URINAL
VERT	VERTICAL
VEST	VESTIBULE
VCT	VINYL COMPOSITION TILE
VIF or V.I.F.	VERIFY IN FIELD
VWC	VINYL WALL COVERING
W	WEST
W.B.	WHITE MARKER BOARD
W/	WITH
W.C.	WATER CLOSET
WD	WOOD
W/O	WITHOUT
WSCT	WAINSCOT
WT	WEIGHT

MATERIALS LEGEND

- EARTH
- BRICK
- CMU
- CONCRETE
- STEEL
- ALUMINUM
- SHEET METAL
- HARDWOOD
- DIMENSIONAL LUMBER CONTINUOUS
- DIMENSIONAL LUMBER NON-CONTINUOUS
- GYP. BD.
- RIGID INSULATION
- BATT INSULATION
- PLYWOOD SHEATHING
- GROUT, MORTAR OR SAND
- E.I.F.S.
- PLASTER ON METAL LATH
- GRAVEL
- CEILING TILE OR CERAMIC TILE
- GLASS

SYMBOLS LEGEND

THE FOLLOWING SYMBOLS APPLY TO ALL ARCHITECTURAL SHEETS BUT NOT TO OTHER DISCIPLINES DRAWING SHEETS.

- WALL SECTION — SECTION NUMBER / DRAWING NUMBER
- BUILDING SECTION — SECTION NUMBER / DRAWING NUMBER
- COLUMN GRID LINE / DIMENSION GRID LINE — COLUMN NUMBER AND LETTER DESIGNATION / COLUMN GRID
- ROOM REFERENCE — MAIN ENTRY 101 — ROOM NAME / ROOM NUMBER USED FOR CONSTR
- PARTITION TYPE — 4A 4A — REFERENCE WALL TYPE DRAWING
- DOOR NUMBER — 101 — REFERENCE DOOR SCHEDULE
- DETAIL REFERENCE — DETAIL NUMBER / DRAWING NUMBER
- REFERENCE OR DATUM — 1ST. LEVEL F.F. ELEV.
- BUILDING ELEVATION REFERENCE — DETAIL NUMBER / DRAWING NUMBER
- CENTER LINE
- NORTH REFERENCE ARROW POINTS NORTH BUILDING NORTH IS SET WHEN BLDG IS ANGLED — NORTH
- REVISION REFERENCE — 1
- REFERENCE TO DIMENSION POINT — 4'-6" — FACE TO FACE OF STUD / FACE TO FACE OF MASS / ℄ COLUMN TO FACE OF MASS OR STUD — OR ℄ COLUMN TO ℄ COLUMN
- WINDOW TYPE/ FRAME TYPE — A AA
- INTERIOR ELEV MARKER — A-A000 — ARROW POINTS TO ELEVATION DRAWN / DRAWING NUMBER / DETAIL LETTER
- PHOTOGRAPH MARKER — PHOTOGRAPH NUMBER / DRAWING NUMBER
- BREAK LINE

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SEAL:

STATE OF OKLAHOMA — GANG — 4980 — LICENSED ARCHITECT

4/17/2023

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER OKLAHOMA

REVISIONS

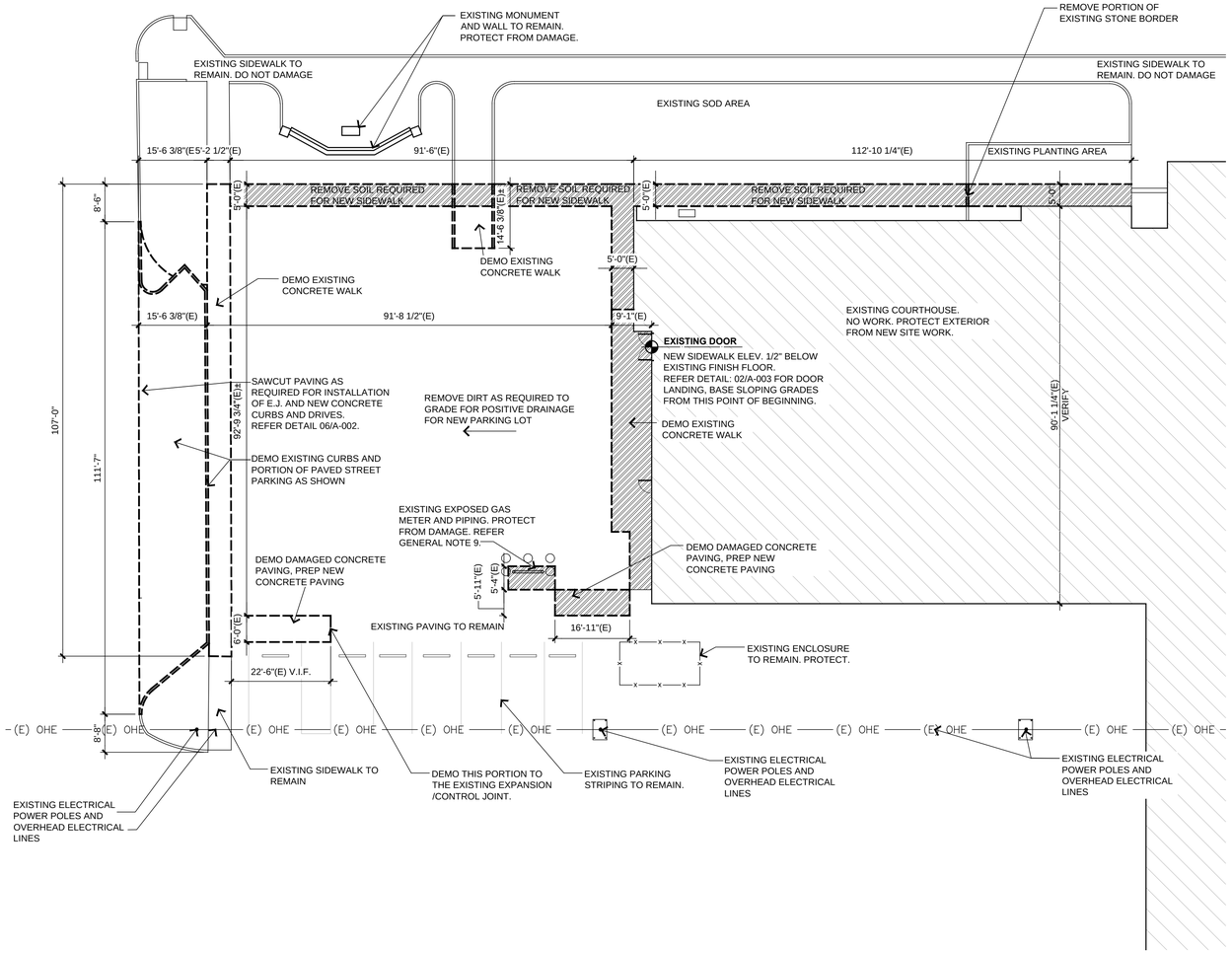
REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: GENERAL INFORMATION

SHEET NO.: G-002



01 PARTIAL SITE DEMO PLAN PARKING LOT EXPANSION

SCALE: 1/16"=1'-0"

NORTH

SITE NOTES:

1. DIRT TO BE WASTED SHALL BE OFFERED TO OWNER FOR FIRST REFUSAL. SHOULD OWNER REFUSE, SOIL SHALL BECOME PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF SITE.
2. MAINTAIN POSITIVE DRAINAGE AWAY FROM EXISTING STRUCTURES AT ALL TIMES.
3. EXCAVATED MATERIAL MAY BE USED FOR ALL FILL AREAS EXCEPT UNDER PAVING.
4. DIMENSION NOTED (E) ARE EXISTING - FIELD VERIFY BEFORE ORDERING MATERIALS OR BEGINNING ANY WORK - REPORT ANY VARIANCES TO ARCHITECT.
5. CONTRACTOR TO BE RESPONSIBLE FOR HAVING ALL UTILITIES LOCATED IN ALL AREAS OF WORK..
6. CONTRACTOR SHALL REPAIR ALL EXISTING LAWN AREAS, LANDSCAPE MATERIALS, CURBS & PAVING, WALKS, PATIO'S AND PADS, AND OTHER EXISTING SITE ITEMS CUT OR DAMAGED DURING CONSTRUCTION OPERATIONS.
7. CONTRACTOR SHALL CONFINE ALL OPERATIONS WITHIN THE DISTURBED AREA LIMIT LINE.
8. COORDINATE WITH OWNER AND ARCHITECT FOR CONTRACTOR STAGING AREA.
9. AT EXISTING GAS PIPING AND METER, REMOVE ALL CONCRETE. DO NOT DAMAGE EXISTING PIPING OR METER. PREPARE FOR NEW CONCRETE PAVING TO BE POURED AROUND STRUCTURE.

LEGEND :

– – – – –	DEMOLITION
▨	AREA OF DEMOLISHED WORK

ARCHITECTS IN PARTNERSHIP

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SEAL:

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER OKLAHOMA

REVISIONS

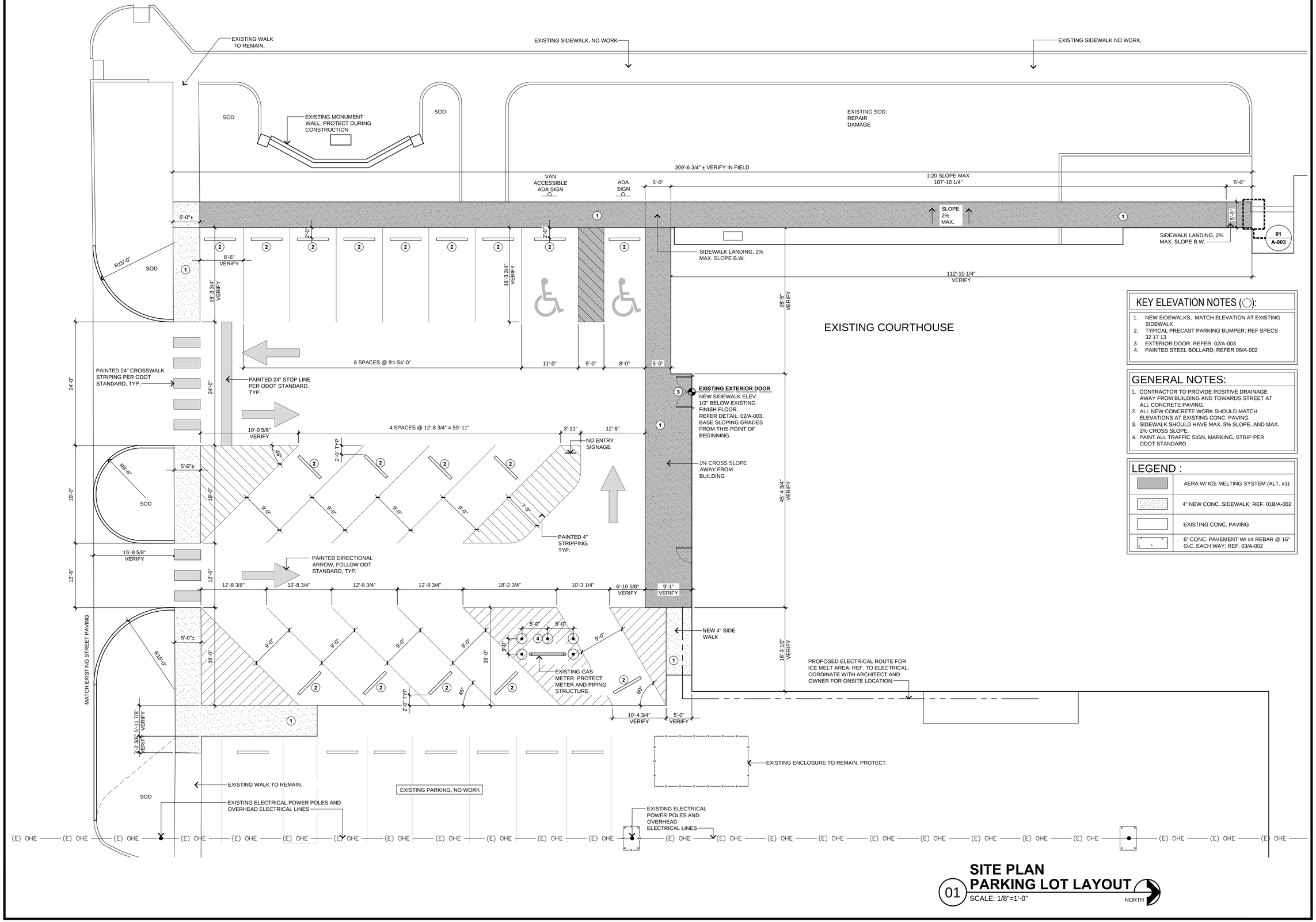
REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: SITE DEMO

SHEET NO.: AD-001



KEY ELEVATION NOTES (◯):

1. NEW SIDEWALKS, MATCH ELEVATION AT EXISTING SIDEWALK
2. TYPICAL PRECAST PARKING BUMPER; REF SPECS 32 17 13
3. EXTERIOR DOOR; REFER 02/A-003
4. PAINTED STEEL BOLLARD; REFER 05/A-002

GENERAL NOTES:

1. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING AND TOWARDS STREET AT ALL CONCRETE PAVING.
2. ALL NEW CONCRETE WORK SHOULD MATCH ELEVATIONS AT EXISTING CONC. PAVING.
3. SIDEWALK SHOULD HAVE MAX. 5% SLOPE. AND MAX. 2% CROSS SLOPE.
4. PAINT ALL TRAFFIC SIGN, MARKING, STRIP PER ODOT STANDARD.

LEGEND :

	AERA W/ ICE MELTING SYSTEM (ALT. #1)
	4" NEW CONC. SIDEWALK; REF. 01B/A-002
	EXISTING CONC. PAVING
	6" CONC. PAVEMENT W/ #4 REBAR @ 16" O.C. EACH WAY; REF. 03/A-002

SITE PLAN
PARKING LOT LAYOUT

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

NORTH

ARCHITECTS IN PARTNERSHIP

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SEAL:

STATE OF OKLAHOMA — GANG — 21810 — LICENSED ARCHITECT — COMMERCIAL

4/17/2023

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER OKLAHOMA

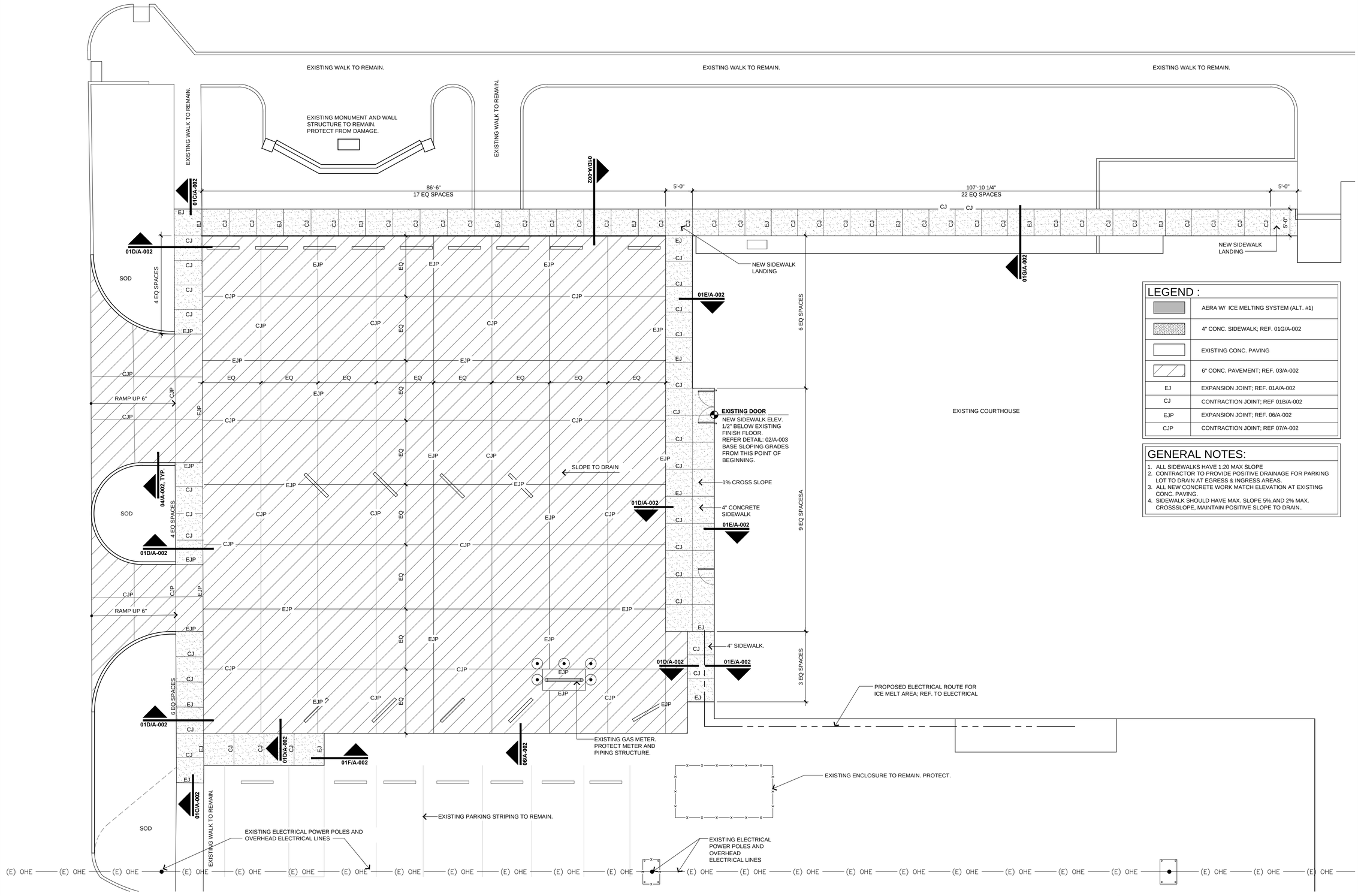
REVISIONS

REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: PARKING LOT LAYOUT
SHEET NO.: A-001a



SITE PLAN
PAVING JOINT LAYOUT

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

NORTH

LEGEND :	
	AERA W/ ICE MELTING SYSTEM (ALT. #1)
	4" CONC. SIDEWALK; REF. 01G/A-002
	EXISTING CONC. PAVING
	6" CONC. PAVEMENT; REF. 03/A-002
EJ	EXPANSION JOINT; REF. 01A/A-002
CJ	CONTRACTION JOINT; REF 01B/A-002
EJP	EXPANSION JOINT; REF. 06/A-002
CJP	CONTRACTION JOINT; REF 07/A-002

GENERAL NOTES:

1. ALL SIDEWALKS HAVE 1:20 MAX SLOPE
2. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE FOR PARKING LOT TO DRAIN AT EGRESS & INGRESS AREAS.
3. ALL NEW CONCRETE WORK MATCH ELEVATION AT EXISTING CONC. PAVING.
4. SIDEWALK SHOULD HAVE MAX. SLOPE 5%,AND 2% MAX. CROSSSLOPE, MAINTAIN POSITIVE SLOPE TO DRAIN..

ARCHITECTS IN PARTNERSHIP

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SEAL:

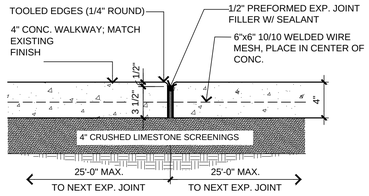
KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

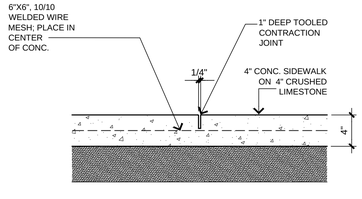
KINGFISHER OKLAHOMA

REVISIONS		
REV.	DATE	DESCRIPTION

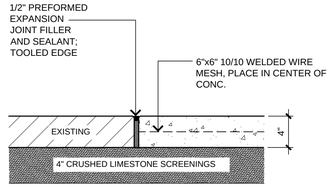
PROJ. MANAGER:	GL
DRAWN BY:	STAFF
CHECKED BY:	GL
DATE:	04/17/2023
PROJECT NO.:	2303
SHEET TITLE:	PAVING JOINT LAYOUT
SHEET NO.:	A-001b



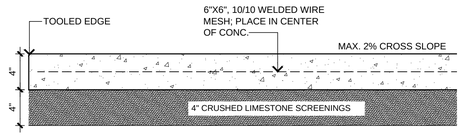
A EXPANSION JOINT, TYP.



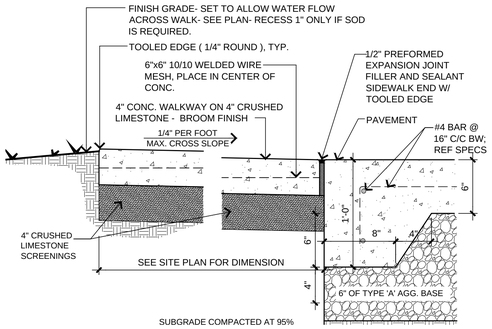
B CONTROL JOINT, TYP.



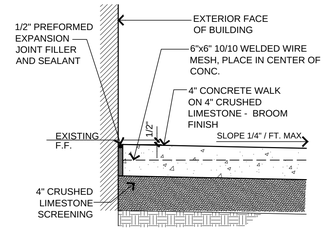
C EXPANSION JOINT @ EXISTING



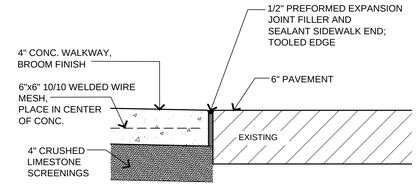
G CONCRETE SIDEWALK DETAIL



D EXPANSION JOINT @ 6" PAVEMENT, TYP.



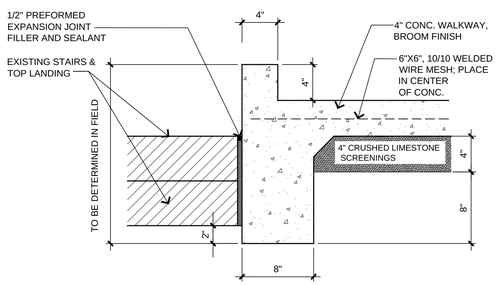
E EXPANSION JOINT @ BUILDING, TYP.



F EXPAAION JOINT @ EXISTING PAVEMENT

01 TYP. DETAILS @ CONC. SIDEWALK

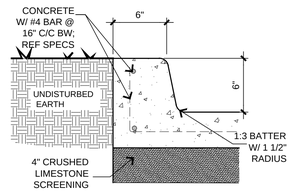
SCALE: 1 1/2"=1'-0"



EXISTING STAIR ENTRANCE JOINT AT NEW CONCRETE SIDEWALK & STAIRS

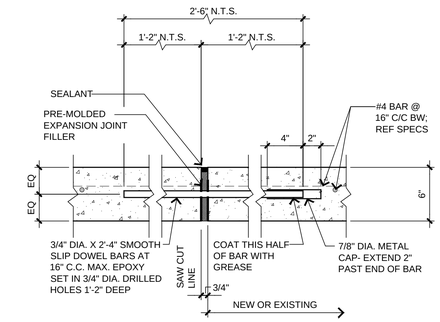
02

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



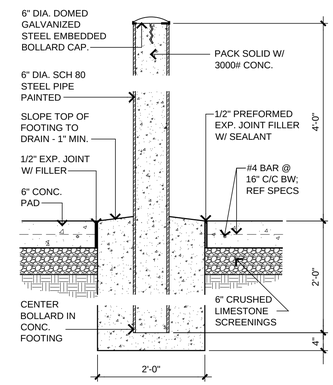
04 CURB DETAIL

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



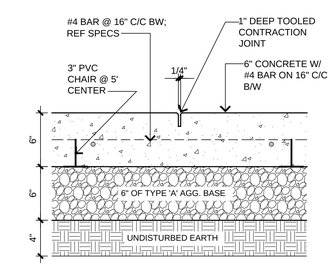
06 PAVEMENT EXPANSION JOINT

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



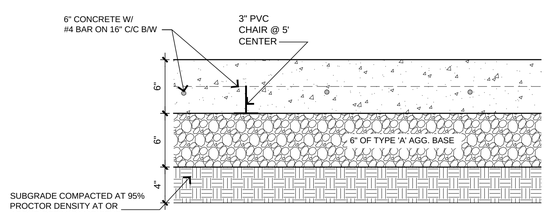
05 BOLLARD DETAIL

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



07 PAVEMENT CONTRACTION JOINT, TYP.

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



TYP. SECTION PARKING LOT PAVEMENT

03

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

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FAX: 405.360.1431

SEAL:

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER OKLAHOMA

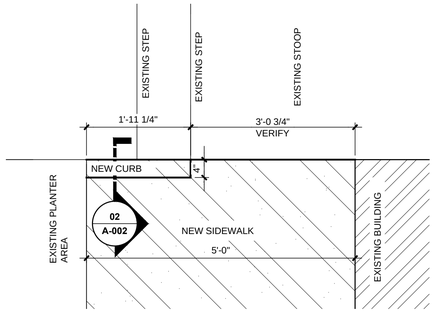
REVISIONS

REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

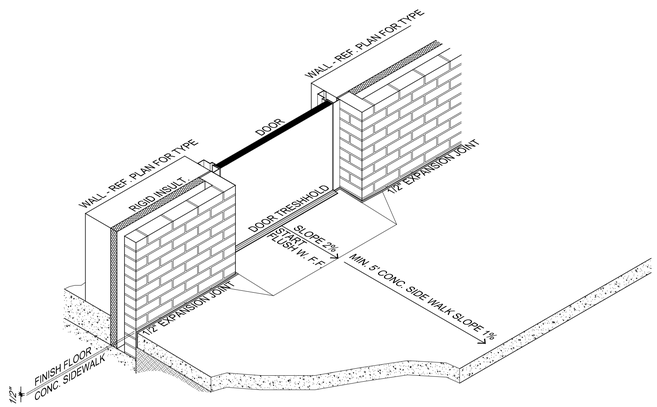
DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: PAVING DETAILS
SHEET NO.: A-002



ENLARGED PLAN @ ENTRANCE STAIRS

01 SCALE: 3/4"=1'-0"



TYPICAL EXTERIOR DOOR THRESHOLD DETAIL

02 SCALE: 3/4"=1'-0"

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
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SEAL:

4/17/2023

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER

OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION

PROJ. MANAGER: GL
DRAWN BY: STAFF
CHECKED BY: GL

DATE: 04/17/2023
PROJECT NO.: 2303

SHEET TITLE: SITE DETAILS

SHEET NO.: A-003

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)
A	AMPERE
AC	ABOVE COUNTER
ACLG	ABOVE CEILING
ADO	AUTOMATIC DOOR OPENER
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFI	ARC FAULT CIRCUIT INTERRUPTER
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
AMP	AMPERE
AMPL	AMPLIFIER
ANNUN	ANNUNCIATOR
ARCH	ARCHITECT, ARCHITECTURAL
AS	AMP SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CCT	CIRCUIT
CLG	CEILING
COMB	COMBINATION
CMPR	COMPRESSOR
CONT	CONTINUATION OR CONTINUOUS
CP	CIRCULATING PUMP
CT	CURRENT TRANSFORMER
CTR	CENTER
CU	COPPER
DCP	DOMESTIC WATER CIRCULATING PUMP
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DS	SAFETY DISCONNECT SWITCH
DT	DOUBLE THROW
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMGB	EQUIPMENT MAIN GROUNDING BUSBAR
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXH	EXHAUST
EXP	EXPLOSION PROOF
FA	FIRE ALARM
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FLR	FLOOR
FU	FUSE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTOR
GND	GROUND
GRS	GALVANIZED RIGID STEEL (CONDUIT)
GYP	GYPSUM BOARD
HOA	HAND-OFF-AUTOMATIC SWITCH
HORIZ	HORIZONTAL
HP	HORSEPOWER
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IR	INFRARED
IW	INTERLOCK WITH
J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LTG	LIGHTING
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
M/C	MOMENTARY CONTACT
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDC	MAIN DISTRIBUTION CENTER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIC	MICROPHONE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOA	MULTIOUTLET ASSEMBLY
MSBD	MAIN SWITCHBOARD
MT	MOUNT
MTS	MANUAL TRANSFER SWITCH
MTR	MOTOR, MOTORIZED
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOADS
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (CONDUIT)
PWR	POWER
QTY	QUANTITY
RCPT	RECEPTACLE
REQD	REQUIRED
RM	ROOM
RSC	RIGID STEEL CONDUIT
RTU	ROOF TOP UNIT
SEC	SECONDARY
SHT	SHEET
SIM	SIMILAR
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
SPKR	SPEAKER
SP	SPARE
SS	STAINLESS STEEL
S/S	STOP/START PUSHBUTTONS
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
SYS	SYSTEM
TEL	TELEPHONE
TEL/DATA	TELEPHONE/DATA
TERM	TERMINAL
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TL	TWIST LOCK
TR	TAMPER RESISTANT
T-STAT	THERMOSTAT
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UT	UNDERGROUND TELEPHONE
UTIL	UTILITY
UV	ULTRAVIOLET
V	VOLT
VA	VOLT-AMPERES
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WATT
W/	WITH
WAP	WIRELESS ACCESS POINT
WG	WIRE GUARD
WH	WATER HEATER
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER

∠	ANGLE
@	AT
▲	DELTA
'	FEET
"	INCHES
#	NUMBER
Ø	PHASE
C	CENTER LINE
P	PLATE

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	2' X 4' RECESSED LIGHT
	LINEAR RECESSED LIGHT
	LINEAR PENDANT LIGHT
	2' X 2' RECESSED LIGHT (DESIGNATES (EM) LIFE SAFETY FIXTURE)
	HIGH BAY LIGHT
	STRIP LIGHT
	ROUND RECESSED LIGHT
	ROUND RECESSED LIGHT (WALL WASH)
	ROUND SURFACE LIGHT
	ROUND PENDANT LIGHT
	CEILING EXIT LIGHT
	EXIT SIGN
	(DESIGNATES # OF HEADS)
	EMERGENCY BATTERY LIGHT
	EMERGENCY LIGHT (DOUBLE REMOTE HEADS)
	EMERGENCY LIGHT (SINGLE REMOTE HEAD)
	SINGLE POLE SWITCH
	2 POLE SINGLE THROW SWITCH
	3-WAY SWITCH
	4-WAY SWITCH
	KEYED SWITCH
	SWITCH W/PILOT
	DIMMER SWITCH
	OCCUPANCY SENSOR SWITCH
	MOMENTARY CONTACT SWITCH
	TIMER SWITCH
	TIME DELAY SWITCH
	TIME CONTROL SWITCH
	PHOTOCELL
	SIMPLEX RECEPTACLE
	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE DESIGNATES: DW: DISHWASHER; EWC: ELECTRIC WATER COOLER; GD: GARBAGE DISPOSAL; GFI: GROUND FAULT INTERRUPTER; UC: UNDER COUNTER; WP: WEATHERPROOF
	DUPLEX RECEPTACLE DESIGNATES: AC: ABOVE COUNTER; AC GFI: ABOVE COUNTER GROUND FAULT INTERRUPTER; AC MW: ABOVE COUNTER MICROWAVE; AC COFF: ABOVE COUNTER COFFEE; AC COFF GFI: ABOVE COUNTER COFFEE GROUND FAULT INTERRUPTER; 48": SPECIFIC MOUNTING HEIGHT; 96": SPECIFIC MOUNTING HEIGHT
	SPLIT DUPLEX RECEPT.
	DUPLEX ISOLATED GROUND RECEPT.
	DUPLEX RECEPT. ON EMERG. CIRCUIT
	FLOOR DUPLEX RECEPT.
	CEILING DUPLEX RECEPT.
	QUADRUPLEX RECEPT.
	QUADRUPLEX RECEPT. ON EMERG. CIRCUIT
	240V RECEPTACLE
	RECEPT. ON CORD REEL
	SPECIAL RECEPT.
	208V SINGLE PHASE SPECIAL RECEPTACLE
	208V SINGLE PHASE SPECIAL RECEPTACLE (DESIGNATES SPECIFIC MOUNTING HEIGHT)
	208V SINGLE PHASE SPECIAL RECEPTACLE
	JUNCTION BOX
	FLOOR JUNCTION BOX
	CEILING JUNCTION BOX
PS - D2	MULTIOUTLET ASSEMBLY
	COMB. MOTOR STARTER (FUSED)
	MANUAL MOTOR STARTER
	SAFETY DISC. SW. (NON-FUSED)
	SAFETY DISC. SW. (FUSED)
	RELAY
	PUSH BUTTON
	THERMOSTAT
	HUMIDISTAT
T1	TRANSFORMER
	BUS DUCT W/ PLUG IN DISCONNECT CABLE TAP BOX

MOUNTING HEIGHT	SYMBOL	DESCRIPTION
18"		TELEPHONE OUTLET
		FLOOR TELEPHONE OUTLET
18"	1V2D	VOICE/DATA OUTLET
		# OF VOICE AND # OF DATA OUTLETS. FOR EXAMPLE 1V2D = 1 VOICE, 2 DATA
		FLOOR DATA OUTLET
	CLNG	CEILING DATA OUTLET
18"		CATV OUTLET
84"	TV	TV OUTLET
84"	WS	WALL SPEAKER
	S	CEILING SPEAKER
90"		HORN TYPE SPEAKER
84"	C	CLOCK
48"	F P	FIRE ALARM PULL STATION
90"	F	FIRE ALARM HORN W/STROBE (CANDELAS)
90"	F	FIRE ALARM BELL
90"	F	FIRE ALARM BELL W/STROBE (CANDELAS)
90"	F	FIRE ALARM CHIME W/STROBE (CANDELAS)
78"		FIRE ALARM DOOR HOLDER
78"		FIRE ALARM DOOR CLOSER
60"	FR	FIRE ALARM SHUT DOWN RELAY
		THERMAL DETECTOR
	S	DUCT SMOKE DETECTOR
	2	CEILING SMOKE DETECTOR
		SPRINKLER FLOW SWITCH
		SPRINKLER VALVE TAMPER SWITCH
		SPRINKLER LEVEL SWITCH
		SPRINKLER PRESSURE SWITCH
		SPRINKLER TEMPERATURE SWITCH
90"		DOOR BELL
90"		DOOR BUZZER
90"		DOOR CHIME
60"	D	DOOR SIGNAL
48"	ES	ELECTRIC STRIKE
48"	ML	MAGNETIC LOCK
48"	CL	COMBINATION LOCK
84"	DC	DOOR CONTACT
48"	CR	CARD READER
48"		SECURITY KEYPAD
90"	MD	MOTION DETECTOR
48"	E	NURSE CALL EMERG. STATION
48"	B	NURSE CALL CODE BLUE STATION
48"	D	NURSE CALL DUTY STATION
48"	S	NURSE CALL STAFF STATION
48"	P1	NURSE CALL PATIENT STATION
48"	P2	NURSE CALL DUAL PATIENT STATION
90"	N	NURSE CALL DOME LIGHT
90"	N 3	NUMBER INDICATES QUANTITY OF LIGHTS
90"	N 4	
	P	UTILITY SERVICE POWER POLE
	P	POWER POLE (OPEN OFFICE STYLE)
		SURGERY SERVICE COLUMN

XX-1 MOTOR
XX-1 IDENTITY (SEE SCHEDULE)

EXISTING TO REMAIN	RELOCATED	DEMOLISHED
XX-1	XX-1	XX-1
(E)XX-1	(R)XX-1	(D)XX-1

A	LIGHTNING PROTECTION AIR TERMINAL
B	LIGHTNING PROTECTION MECHANICAL EQUIPMENT AIR TERMINAL
	LIGHTNING PROTECTION CONDUCTOR
	BOND OR CONNECTION
	DOWN CONDUCTOR
	LIGHTNING PROTECTION CONDUCTOR SPLICE
TW	TEST WELL WITH GROUND ROD
	GROUND ROD
	GROUND ROD
	STATIC GROUND RECEPTACLE

ELECTRICAL SYMBOL NOTES

D3 / 1d — THE LIGHTING FIXTURE TYPE IS INDICATED BY AN UPPER CASE LETTER. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER.

EXAMPLE 1: LIGHTING FIXTURE TYPE "A" IS CONNECTED TO CIRCUIT 12 AND CONTROLLED BY SWITCH "b".

D60/1 / 2e — EXAMPLE 2: THE FIXTURE TYPE SHOWN AS A NUMERATOR INDICATES ALL LIGHTING FIXTURES IN THE ROOM OR SPACE ARE THE SAME TYPE. THE CIRCUIT NUMBER AND SWITCH DESIGNATION SHOWN AS A DENOMINATOR INDICATES ALL LIGHTING FIXTURES IN THE ROOM OR SPACE ARE CONNECTED TO THE SAME CIRCUIT, CONTROLLED BY THE SAME SWITCHES, CENTER/OUTBOARD MULTILEVEL SWITCHING.

E1 / 1 — EXIT LIGHTS: STEM INDICATES WALL MOUNTING. NO STEM INDICATES CEILING MOUNTING. SHADED AREA INDICATES ILLUMINATED FACE(S). ARROW INDICATES DIRECTIONAL ARROW ON ILLUMINATED FACE(S). THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. EXAMPLE: THE WALL MOUNTED EXIT LIGHT TYPE "E1" WITH SINGLE FACE AND DIRECTIONAL ARROW IS CONNECTED TO CIRCUIT 1.

1d — DEVICES: THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SPLIT DUPLEX RECEPTACLE IS CONNECTED TO CIRCUIT 1 AND ONE RECEPTACLE OUTLET IS CONTROLLED BY SWITCH "d".

d — THE CONTROL DEVICE DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SINGLE POLE SWITCH "d" TO CONTROL LIGHTING FIXTURES INDICATED BY "d".

e — WALL BOX DIMMER WITH SIZE AS INDICATED AT DEVICE. EXAMPLE: WALL BOX DIMMER TO CONTROL LIGHTING FIXTURES INDICATED BY "e". SEE SPECIFICATIONS FOR WATTAGE IF NOT INDICATED.

2 — SPECIAL CONNECTIONS: THE EQUIPMENT IS INDICATED BY A NUMBER IN A CIRCLE. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE LOAD DESCRIPTION AND TYPE OF CONNECTION. THE CIRCUIT DESIGNATION IS INDICATED BY NUMBER(S) ADJACENT TO THE SYMBOL.

PANELBOARDS: PANELBOARD DOORS MAY BE SHOWN TO INDICATE OPENING SIDE OF RECESSED PANELBOARDS. SEE PANELBOARD IDENTIFICATION FOR DESIGNATION CODES.

FLOOR CLEARANCE AREA

XX-1 — MOTOR CONNECTIONS: THE MOTOR IS INDICATED BY A NUMBER WITHIN OR CHARACTERS ADJACENT TO THE MOTOR SYMBOL. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE MOTOR DESCRIPTION AND ELECTRICAL REQUIREMENTS.

T1 — TRANSFORMERS: THE TRANSFORMER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "T". SEE THE TRANSFORMER SCHEDULE OR THE SINGLE LINE DIAGRAM FOR THE TRANSFORMER DESCRIPTION AND REQUIREMENTS. EXAMPLE: TRANSFORMER TYPE "T1".

CONDUIT IN CEILING, FLOOR, OR WALL AS REQUIRED BY FIELD CONDITIONS

CONDUIT IN FLOOR

#12 — CONDUIT SHOWN WITHOUT SLASH MARKS SHALL CONTAIN 2 # 12 PHASE/ NEUTRAL CONDUCTORS AND 1 #12 GROUND IN 3/4" CONDUIT UNLESS SPECIFIC EQUIPMENT REQUIRES A DIFFERENT SIZE.

#10 — CONDUIT SHOWN SHALL CONTAIN 1 # 10 CONDUCTOR PER PHASE AND 1 #10 GROUND IN 3/4" CONDUIT UNLESS A CONDUCTOR AND CONDUIT SIZE IS SHOWN ADJACENT.

LP4N-102 / 1, 3, 5 — HOME RUN TO BRANCH CIRCUIT PANELBOARD. THE PANELBOARD DESIGNATION IS SHOWN ADJACENT TO THE HOME RUN ARROW AS A NUMERATOR AND THE CIRCUIT DESIGNATION IS SHOWN AS THE DENOMINATOR. CIRCUIT BREAKER SIZES (AMPS/NUMBER OF POLES) ARE SHOWN IN THE PANELBOARD SCHEDULE WITH THE CORRESPONDING PANELBOARD AND CIRCUIT DESIGNATION. EXAMPLE: HOME RUN TO PANELBOARD LP4N-102, CIRCUITS 1, 3, 5.

GRAPHICAL REPRESENTATION OF PHASING, TYPICAL FOR ALL SYMBOLS.

- EXISTING TO REMAIN (GRAY)
- EXISTING TO BE REMOVED (DASHED)
- NEW (BLACK)

ITEM TO BE REMOVED

AREA NOT IN CONTRACT

REVISION NUMBER - SHOWN ON PLANS

- / --- — NUMBER OF DETAIL ON SHEET / NUMBER OF SHEET WHERE DETAIL APPEARS
- 1 — KEYED NOTE (SEE SCHEDULE)
- ROOM ### — ROOM NAME AND NUMBER

SCALE BAR: 0, 4', 8', 16'

GENERAL ELECTRICAL NOTES

A. ALL CONDUCTORS OPERATING AT 50 VOLTS OR GREATER SHALL BE IN RACEWAY. ALL RACEWAY WITHIN THE STRUCTURE AND FLOOR SLAB SHALL BE METAL. UNDERGROUND RACEWAY OUTSIDE THE STRUCTURE SHALL BE PVC.

B. VERIFY LOCATIONS AND ROUGH-IN REQUIREMENTS OF ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

SPECIFIC CODE NOTES

FIRE PROTECTION REQUIREMENTS

A. PENETRATIONS IN WALLS REQUIRING PROTECTED OPENINGS MUST BE FIRESTOPPED WITH AN APPROVED MATERIAL.

1. CONDUITS MAY PENETRATE WALLS OR PARTITIONS, PROVIDED THEY ARE FIRE-STOPPED.
2. OPENINGS FOR STEEL ELECTRICAL BOXES NOT EXCEEDING 16 SQUARE INCHES ARE PERMITTED PROVIDED OPENINGS DO NOT AGGREGATE MORE THAN 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL OR PARTITION.
3. OUTLET BOXES ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES.

ELECTRICAL SHEET INDEX

* NOTE *
ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
FAX: 405.360.1431

SEAL: LICENSED PROFESSIONAL ENGINEER — DAVID ISAAC WATERS 25178 — OKLAHOMA — 04/14/23

KINGFISHER COUNTY COURTHOUSE - PARKING
NEW PARKING LOT
KINGFISHER, OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION
1		

PROJ. MANAGER: GL
DRAWN BY: DIW
CHECKED BY: DIW

DATE: 4/14/23
PROJECT NO.: 2303

SHEET TITLE: ELECTRICAL GENERAL
SHEET NO.: E001

MOXIFY
4334 NW EXPRESSWAY
SUITE 156
OKLAHOMA CITY, OK 73116
PHONE: (405) 254-5038
www.moxifyengineering.com
PROJECT: 501109
CA: 7612 EXP: 06/30/23

DIVISION 26 - ELECTRICAL

SECTION 26 0505
SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.01 SUBMITTALS

A. Sustainable Design Documentation: Submit certification of removal and appropriate disposal of abandoned cables containing lead stabilizers.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.

3.02 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
1. PCB-containing electrical equipment, including transformers, capacitors, and switches.
2. PCB- and DEHP-containing lighting ballasts.
3. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

F. Disconnect and remove abandoned panelboards and distribution equipment.

G. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

H. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

I. Repair adjacent construction and finishes damaged during demolition and extension work.

J. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

3.03 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that remain or that are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

B. Field Quality Control Test Reports.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Provide new conductors and cables manufactured not more than one year prior to installation.

D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

E. Comply with NEMA WC 70.

F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

H. Conductors for Grounding and Bonding: Also comply with Section 26 0526.

I. Conductors and Cables Installed in Cable Tray: Listed and labeled as suitable for cable tray use.

J. Conductors and Cables Installed Where Exposed to Direct Rays of Sun: Listed and labeled as sunlight resistant.

K. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.

L. Conductor Material:
1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33.

M. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
2. Control Circuits: 14 AWG.

N. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

O. Conductor Color Coding:
1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
3. Color Code:
   a. 240/120 V High-Leg Delta, 3 Phase, 4 Wire System:
      1) Phase A: Black.
      2) Phase B (High-Leg): Orange.
      3) Phase C: Blue.
      4) Neutral/Grounded: White.
   b. Equipment Ground, All Systems: Green.
   c. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.
   d. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

A. Description: Single conductor insulated wire.

B. Conductor Stranding:
1. Feeders and Branch Circuits:
   a. Size 10 AWG and Smaller: Solid.
   b. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation:
1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
   a. Size 4 AWG and Larger: Type XHHW-2.
   b. Installed Underground: Type XHHW-2.

2.04 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 0526.

C. Wiring Connectors for Splices and Taps:
1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors or compression connectors.
2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Wiring Connectors for Terminations:
1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.

H. Mechanical Connectors: Provide bolted type.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.

2.05 ACCESSORIES

A. Electrical Tape:
1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.
6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.

C. Wire Pulling Lubricant:
1. Listed and labeled as complying with UL 267.
2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
3. Suitable for use at installation temperature.

D. Cable Ties: Material and tensile strength rating suitable for application.

E. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for cables and roofing system to be installed; designed to accommodate existing penetrations where applicable.

F. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.

PART 3 EXECUTION

3.01 INSTALLATION

A. Circuiting Requirements:
1. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
2. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
3. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is permitted, under the following conditions:
   a. Provide no more than four current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
   b. Increase size of conductors as required to account for ampacity derating.
   c. Size raceways, boxes, etc. to accommodate conductors.
4. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install metal-clad cable (Type MC) in accordance with NECA 120.

E. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
2. Pull all conductors and cables together into raceway at same time.
3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

H. Terminate cables using suitable fittings.

I. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.

J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

L. Make wiring connections using specified wiring connectors.

M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.

N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

O. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.

B. Do not use products for applications other than as permitted by NFPA 70 and product listing.

C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

E. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
1. Use insulated copper conductors unless otherwise indicated.

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors or exothermic welded connections for accessible connections.

D. Oxide Inhibiting Compound: Comply with Section 26 0519.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Make grounding and bonding connections using specified connectors.
1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

SECTION 26 0529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

1.02 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
1. Comply with the following. Where requirements differ, comply with most stringent.
   a. NFPA 70.
   b. Requirements of authorities having jurisdiction.
2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
5. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
   a. Outdoor and Damp or Wet Indoor Locations: Use stainless steel or approved equivalent unless otherwise indicated.
   b. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
   c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Components for Vibration Isolation and/or Seismic Controls: See Section 26 0548.

C. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
2. Conduit Clamps: Bolted type unless otherwise indicated.

D. Metal Channel/Strut Framing Systems:
1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
2. Comply with MFMA-4.

E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
   a. Equipment Supports: 1/2-inch diameter.
   b. Busway Supports: 1/2-inch diameter.
   c. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch diameter.
   d. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch diameter.
   e. Trapeze Support for Multiple Conduits: 3/8-inch diameter.
   f. Outlet Boxes: 1/4-inch diameter.
   g. Luminaires: 1/4-inch diameter.

F. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
2. Concrete: Use preset concrete inserts or expansion anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Wood: Use wood screws.
9. Plastic and lead anchors are not permitted.
10. Hammer-driven anchors and fasteners are not permitted.
11. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
    b. Comply with MFMA-4.
    c. Channel Material: Use galvanized steel.
12. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Provide required vibration isolation and/or seismic controls; see Section 26 0548.

I. Equipment Support and Attachment:
1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
2. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
3. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

J. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

K. Remove temporary supports.

L. Identify independent electrical component support wires above accessible ceilings, where permitted, with color distinguishable from ceiling support wires in accordance with NFPA 70.

SECTION 26 0533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

B. Shop Drawings:
1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
2. Include proposed locations of roof penetrations and proposed methods for sealing.

C. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2-inch (53 mm) trade size and larger.

1.02 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
1. Under Slab on Grade: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
2. Exterior, Direct-Buried: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
3. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit, PVC-coated galvanized steel rigid metal conduit, or rigid PVC conduit.
4. Where rigid polyvinyl (PVC) conduit is provided, transition to PVC-coated galvanized steel rigid metal conduit where emerging from underground.

MOXIFY
4334 NW EXPRESSWAY
SUITE 156
OKLAHOMA CITY, OK 73116
PHONE: (405) 254-5038
www.moxifyengineering.com
PROJECT: 501109
CA: 7612 EXP: 06/30/23

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
FAX: 405.360.1431

SEAL:

KINGFISHER COUNTY COURTHOUSE - PARKING
NEW PARKING LOT
KINGFISHER, OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION
1		

PROJ. MANAGER: GL
DRAWN BY: DIW
CHECKED BY: DIW

DATE: 4/14/23
PROJECT NO.: 2303

SHEET TITLE: ELECTRICAL SPECIFICATIONS
SHEET NO.: E002

5. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows or PVC-coated galvanized steel rigid metal conduit elbows for bends.
6. Where galvanized rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), or galvanized steel electrical metallic tubing (EMT) emerges from concrete into soil, use corrosion protection tape, factory-applied corrosion protection coating, or field-applied corrosion protection compound acceptable to authorities having jurisdiction to provide supplementary corrosion protection for minimum of 4 inches on either side of where conduit emerges.

D. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC) or stainless steel rigid metal conduit (RMC).

E. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit.

F. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
1. Locations subject to physical damage include, but are not limited to:
   a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
   b. Where exposed below 20 feet in warehouse areas.
   c. Loading docks.

G. Exposed, Exterior: Use galvanized steel rigid metal conduit or PVC-coated galvanized steel rigid metal conduit.

H. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.

I. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
3. Maximum Length: 6 feet unless otherwise indicated.
4. Vibrating equipment includes, but is not limited to:
   a. Transformers.
   b. Motors.

2.02 CONDUIT - GENERAL REQUIREMENTS

A. Comply with NFPA 70.

B. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling mandrel through them.

C. Fittings for Grounding and Bonding: See Section 26 0526 for additional requirements.

D. Provide conduit, fittings, supports, and accessories required for complete raceway system.

E. Provide products listed, classified, and labeled as suitable for purpose intended.

F. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
2. Hazardous/Classified Locations: Use fittings listed and labeled as complying with UL 1203 for classification of installed location.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

B. Fittings:
1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.

2.05 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil, 0.020 inch.

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

C. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

D. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.

E. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

F. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Conduit Routing:
1. Conceal conduits unless specifically indicated to be exposed.
2. Conduits in the following areas may be exposed, unless otherwise indicated:
   a. Electrical rooms.
   b. Mechanical equipment rooms.
   c. Within joists in areas with no ceiling.
3. Arrange conduit to maintain adequate headroom, clearances, and access.
4. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
5. Arrange conduit to provide no more than 150 feet between pull points.
6. Route conduits above water and drain piping where possible.
7. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
8. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
9. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
   a. Heaters.
   b. Hot water piping.
   c. Flues.

E. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use conduit strap to support single surface-mounted conduit.
   a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.
6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
8. Use nonpenetrating rooftop supports to support conduits routed across rooftops, where approved.
9. Use of spring steel conduit clips for support of conduits is not permitted.
10. Use of wire for support of conduits is not permitted.
11. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with most stringent requirements.

F. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
5. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.

G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
3. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
4. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 8400.

H. Underground Installation:
1. Minimum Cover, Unless Otherwise Indicated or Required:
   a. Underground, Exterior: 18 inches.
   b. Under Slab on Grade: 12 inches to bottom of slab.
2. Provide underground warning tape along entire conduit length for service entrance where not concrete-encased; see Section 26 0553.

I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where conduits are subject to earth movement by settlement or frost.

J. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
   a. Where conduits enter building from outside.
   b. Where service conduits enter building from underground distribution system.
   c. Where conduits enter building from underground.
   d. Where conduits may transport moisture to contact live parts.
2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
   a. Where conduits pass from outdoors into conditioned interior spaces.
   b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

K. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

L. Provide grounding and bonding; see Section 26 0526.

3.02 FIELD QUALITY CONTROL

A. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

B. Correct deficiencies and replace damaged or defective conduits.

3.03 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

SECTION 26 0533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.
1. Underground Boxes/Enclosures: Include reports for load testing in accordance with SCTE 77 certified by a professional engineer or an independent testing agency upon request.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use suitable concrete type boxes where flush-mounted in concrete.
4. Use suitable masonry type boxes where flush-mounted in masonry walls.
5. Use raised covers suitable for the type of wall construction and device configuration where required.
6. Use shallow boxes only where required by the type of wall construction.
7. Do not use "through-wall" boxes designed for access from both sides of wall.
8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
10. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
   a. Indoor Clean, Dry Locations: Type 1, painted steel.
   b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches:
   a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
   a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.

D. Underground Boxes/Enclosures:
1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
2. Size: As indicated on drawings.
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches.
4. Provide logo on cover to indicate type of service.
5. Applications:
   a. Sidewalks and Landscaped Areas Subject Only to Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 8 load rating.
   b. Parking Lots, in Areas Subject Only To Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 15 load rating.
   c. Do not use polymer concrete enclosures in areas subject to deliberate vehicular traffic.
6. Polymer Concrete Underground Boxes/Enclosures: Comply with SCTE 77.
   a. Combination fiberglass/polymer concrete boxes/enclosures are acceptable.

2.02 ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for boxes and facade materials to be installed.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

H. Box Locations:
1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
2. Unless dimensioned, box locations indicated are approximate.
3. Locate boxes as required for devices installed under other sections or by others.
4. Locate boxes so that wall plates do not span different building finishes.
5. Locate boxes so that wall plates do not cross masonry joints.
6. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
   a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
   b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.
7. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0533.13.
8. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
   a. Concealed above accessible suspended ceilings.
   b. Within joists in areas with no ceiling.
   c. Electrical rooms.
   d. Mechanical equipment rooms.

I. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide required seismic controls in accordance with Section 26 0548.
3. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
4. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.

J. Install boxes plumb and level.

K. Install boxes as required to preserve insulation integrity.

L. Underground Boxes/Enclosures:
1. Install enclosure on gravel base, minimum 6 inches deep.
2. Flush-mount enclosures located in concrete or paved areas.
3. Mount enclosures located in landscaped areas with top at 1 inch above finished grade.
4. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.

M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

O. Close unused box openings.

P. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

3.02 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

SECTION 26 0553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
   a. Panelboards:
      1) Identify ampere rating.
      2) Identify voltage and phase.
      3) Identify power source and circuit number. Include location when not within sight of equipment.
      4) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
      5) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Identify spares and spaces.
   b. Enclosed switches, circuit breakers, and motor controllers:
      1) Identify voltage and phase.
      2) Identify power source and circuit number. Include location when not within sight of equipment.
      3) Identify load(s) served. Include location when not within sight of equipment.
   c. Enclosed Contactors:
2. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
3. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
4. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
   a. Service equipment.
   b. Elevator control panels.
5. Arc Flash Hazard Warning Labels: Comply with Section 26 0573.

B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
   a. At each source and load connection.
   b. Within boxes when more than one circuit is present.
   c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
4. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
5. Use underground warning tape to identify direct buried cables.

C. Identification for Raceways:
1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
2. Use voltage markers, color-coded bands, or factory-painted conduits to identify systems other than normal power system for accessible conduits.
   a. Maximum Intervals: 20 feet.
   b. Color-Coded Bands: Use field-painting or vinyl color coding electrical tape to mark bands 3 inches wide.
      1) Field-Painting: Comply with Section 09 9123 and 09 9113.
      2) Vinyl Color Coding Electrical Tape: Comply with Section 26 0519.
   c. Color Code:
3. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify circuits enclosed for accessible conduits at wall penetrations, at floor penetrations, at roof penetrations, and at equipment terminations when source is not within sight.
4. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
5. Use underground warning tape to identify underground raceways.
6. Use voltage markers to identify highest voltage present for wireways at maximum intervals of 20 feet.

D. Identification for Boxes:
1. Use voltage markers to identify highest voltage present.
2. Use voltage markers or color coded boxes to identify systems other than normal power system.
   a. Color-Coded Boxes: Field-painted in accordance with Section 09 9123 and 09 9113 per the same color code used for raceways.
   b. For exposed boxes in public areas, do not color code.
3. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
   a. For exposed boxes in public areas, use only identification labels.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Materials:
   a. Indoor Clean, Dry Locations: Use plastic nameplates.
   b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
   a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.

B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend:
   a. System designation where applicable:
      1) Emergency Power System: Identify with text "EMERGENCY".
      2) Fire Alarm System: Identify with text "FIRE ALARM".
   b. Equipment designation or other approved description.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height:
   a. System Designation: 1 inch.
   b. Equipment Designation: 1/2 inch.
   c. Exception: Provide minimum text height of 1 inch for equipment located more than 10 feet above floor or working platform.
5. Color:
   a. Normal Power System: White text on black background.

D. Format for General Information and Operating Instructions:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/4 inch.
5. Color: Black text on white background unless otherwise indicated.
   a. Exceptions:
      1) Provide white text on red background for general information or operational instructions for emergency systems.
      2) Provide white text on red background for general information or operational instructions for fire alarm systems.

E. Format for Caution and Warning Messages:
1. Minimum Size: 2 inches by 4 inches.
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/2 inch.
5. Color: Black text on yellow background unless otherwise indicated.

F. Format for Receptacle Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Power source and circuit number or other designation indicated.
   a. Include voltage and phase for other than 120 V, single phase circuits.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Black text on clear background.

G. Format for Control Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Load controlled or other designation indicated.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Black text on clear background.

2.03 WIRE AND CABLE MARKERS

MOXIFY
4334 NW EXPRESSWAY
SUITE 156
OKLAHOMA CITY, OK 73116
PHONE: (405) 254-5038
www.moxifyengineering.com
PROJECT: 501109
CA: 7612 EXP: 06/30/23

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL
AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
FAX: 405.360.1431

SEAL:

KINGFISHER COUNTY COURTHOUSE - PARKING
NEW PARKING LOT
KINGFISHER
OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION
1		

PROJ. MANAGER: GL
DRAWN BY: DIW
CHECKED BY: DIW

DATE: 4/14/23
PROJECT NO.: 2303

SHEET TITLE: ELECTRICAL SPECIFICATIONS
SHEET NO.: E003

A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
C. Legend: Power source and circuit number or other designation indicated.
D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
E. Minimum Text Height: 1/8 inch.
F. Color: Black text on white background unless otherwise indicated.

2.04 VOLTAGE MARKERS

A. Markers for Conduits: Use factory pre-printed self-adhesive vinyl or vinyl snap-around type markers.
B. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl type markers.
C. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
4. Markers for Junction Boxes: 1/2 by 2 1/4 inches.
D. Legend:
1. Markers for Voltage Identification: Highest voltage present.
2. Markers for System Identification:
E. Color: Black text on orange background unless otherwise indicated.

2.05 UNDERGROUND WARNING TAPE

A. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
B. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.
C. Legend: Type of service, continuously repeated over full length of tape.
D. Color:
1. Tape for Buried Power Lines: Black text on red background.
2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

2.06 WARNING SIGNS AND LABELS

A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
B. Warning Signs:
1. Materials:
a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
2. Minimum Size: 7 by 10 inches unless otherwise indicated.
C. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
a. Do not use labels designed to be completed using handwritten text.
2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
C. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
D. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.
E. Secure rigid signs using stainless steel screws.

SECTION 26 0583
WIRING CONNECTIONS

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Products: Listed, classified, and labeled as suitable for the purpose intended.
C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
1. Colors: Comply with NEMA WD 1.
2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.
B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
D. Provide receptacle outlet to accommodate connection with attachment plug.
E. Provide cord and cap where field-supplied attachment plug is required.
F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
H. Install terminal block jumpers to complete equipment wiring requirements.
I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

SECTION 26 2816.16
ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Horsepower Rating: Suitable for connected load.
D. Voltage Rating: Suitable for circuit voltage.
E. Short Circuit Current Rating:
1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
F. Enclosed Safety Switches Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
G. Fuse Clips for Fusible Switches: As required to accept fuses indicated.
1. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.
H. Conductor Terminations: Suitable for use with the conductors to be installed.
I. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.
J. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
K. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
1. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
L. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
M. Heavy Duty Switches:
1. Comply with NEMA KS 1.
2. Conductor Terminations:
a. Provide mechanical lugs unless otherwise indicated.
b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.
N. Provide the following features and accessories where indicated or where required to complete installation:
1. Viewing Window: Positioned over switch blades for visual confirmation of contact position with door closed.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
D. Provide required support and attachment in accordance with Section 26 0529.
E. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.
F. Provide grounding and bonding in accordance with Section 26 0526.
G. Provide fuses complying with Section 26 2813 for fusible switches as indicated or as required by equipment manufacturer's recommendations.
H. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

MOXIFY
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www.moxifyengineering.com
PROJECT: 501109
CA: 7612 EXP: 06/30/23

ARCHITECTS IN PARTNERSHIP

ARCHITECTS
INTERIOR DESIGNERS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
FAX: 405.360.1431

SEAL:

KINGFISHER COUNTY COURTHOUSE - PARKING
NEW PARKING LOT
KINGFISHER
OKLAHOMA

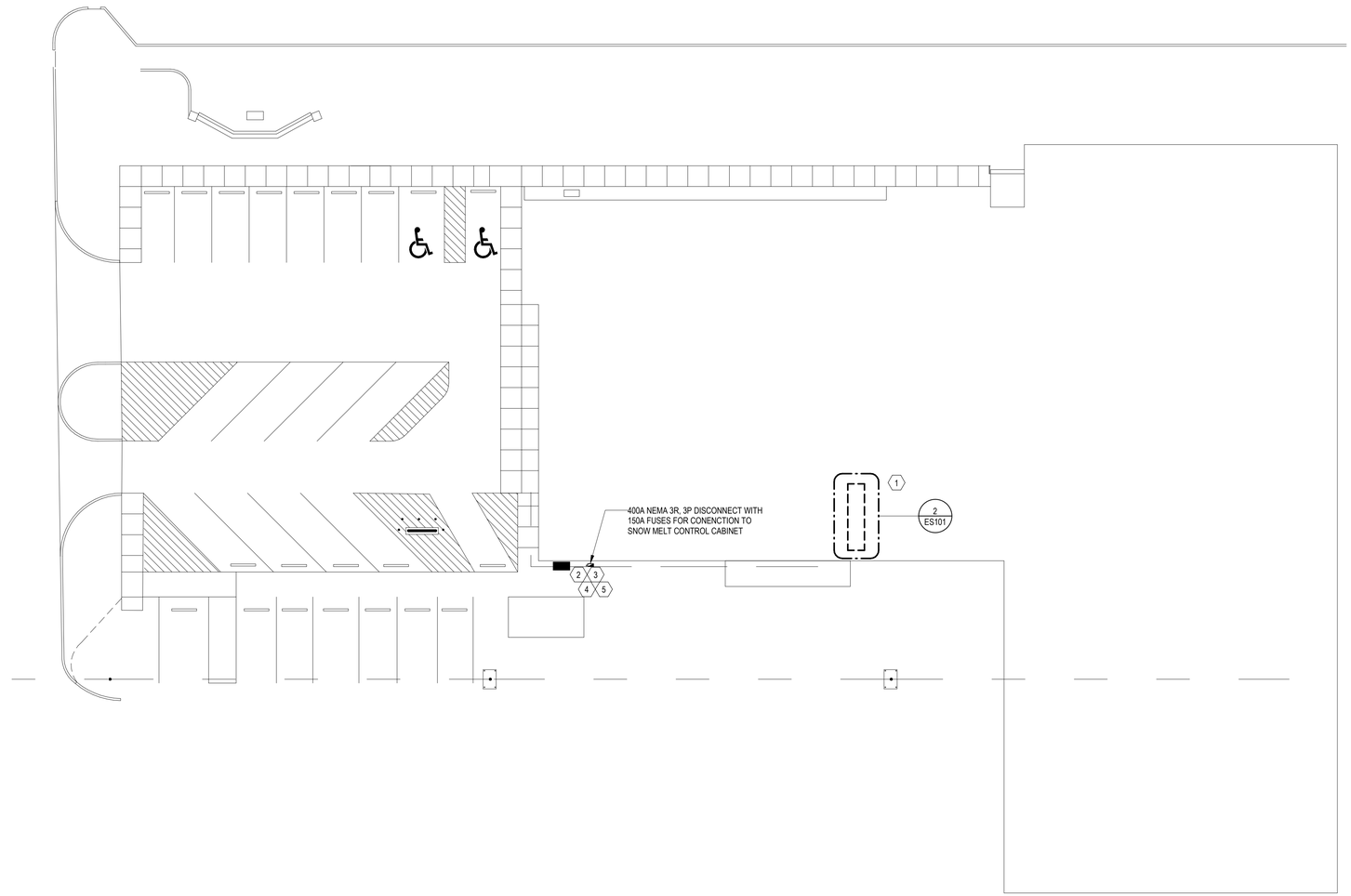
REVISIONS

REV.	DATE	DESCRIPTION
1		

PROJ. MANAGER: GL
DRAWN BY: DIW
CHECKED BY: DIW

DATE: 4/14/23
PROJECT NO.: 2303

SHEET TITLE: ELECTRICAL SPECIFICATIONS
SHEET NO.: E004



1 ES101 ELECTRICAL SITE PLAN
1/16" = 1'-0"
0 8' 16' 32'

PROJECT NORTH

SITE PLAN GENERAL NOTES

A ALL CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISHED GRADE.

B ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.

C COORDINATE ALL REQUIREMENTS FOR SNOW MELT SYSTEM WITH EQUIPMENT PROVIDED.

D INCLUDE SHORT CIRCUIT AND ARC FLASH INFORMATION ON LABELS AT SNOW MELT CONTROL CABINET.

E EXISTING ELECTRICAL SYSTEM IS 240V, THREE PHASE.

KEYNOTES

1 PROVIDE 3P, 225AF / 150AT CIRCUIT BREAKER FED FROM LOWER LEVEL ELECTRICAL GEAR. COORDINATE ALL REQUIREMENTS WITH EXISTING GEAR. CONCURRENT PROJECTS UPDATING THE GEAR, OR NEW GEAR THAT HAS BEEN INSTALLED. COORDINATE BREAKER SIZE WITH MANUFACTURER AND EQUIPMENT PROVIDED AS REQUIRED.

2 "PLUG AND PLAY" OUTDOOR CONTROLLER WITH (4) 50A, 3P CONTACTORS. EQUIPMENT TO BE PURCHASED FROM WARMUP INC. PROVIDE ALL WIRING, CONDUIT, PARTS, PIECES, AND APPURTENANCES REQUIRED FOR A FULLY FUNCTIONAL SNOW MELT SYSTEM. MAKE ALL INTERCONNECTIONS REQUIRED BY MANUFACTURER.

3 COORDINATE INSTALLATION LOCATION WITH ARCHITECT AND OWNER. PROVIDE UNISTRUT RACK IF REQUIRED.

4 WIRE SNOW MELT CONTROLLER WITH (3) 4/0, (1) #4 GROUND IN 2" CONDUIT. SERVE FROM EXISTING/NEW ELECTRICAL EQUIPMENT. SEE DETAIL 2 THIS SHEET.

5 COORDINATE CONDUIT ROUTING WITH OWNER, ARCHITECT, AND EXISTING CONDITIONS. SEAL ALL PENETRATIONS THROUGH BUILDING.

2 ES101 EXISTING ELECTRICAL GEAR
NOT TO SCALE

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SEAL:

LICENSED PROFESSIONAL ENGINEER
DAVID ISAAC WATERS
25178
OKLAHOMA
04/14/23

KINGFISHER COUNTY COURTHOUSE - PARKING

NEW PARKING LOT

KINGFISHER, OKLAHOMA

REVISIONS

REV.	DATE	DESCRIPTION
1		

PROJ. MANAGER: GL
DRAWN BY: DIW
CHECKED BY: DIW

DATE: 4/14/23
PROJECT NO.: 2303

SHEET TITLE: ELECTRICAL SITE PLAN
SHEET NO.: ES101

PROJECT MANUAL

DIVISION 00 00 00 - 33 00 00

KINGFISHER COUNTY COURTHOUSE-PARKING
NEW PARKING LOT

KINGFISHER OKLAHOMA

ARCHITECTS
IN
PARTNERSHIP

ARCHITECTS
INTERIORS
PLANNERS

3220 MARSHALL AVENUE
NORMAN, OK 73072
TEL: 405.360.1300
FAX: 405.360.1431

SEAL

04/17/2023

ISSUE DATE
04/17/2023

PROJECT NUMBER
2303

SET NUMBER

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

PROJECT TITLE SECTION 00 01 01

PROJECT NAME:	Kingfisher County Courthouse Parking
OWNER:	Kingfisher County Commissioners
PROJECT LOCATION:	119 S Main St. Kingfisher, OK 73750
ARCHITECT:	ARCHITECTS IN PARTNERSHIP, LLC. 3220 Marshall Avenue Norman, OK 73072 Telephone: (405) 360 1300 Email: aip@aipok.com
PRINCIPAL IN CHARGE:	Gang Li
PROJECT MANAGER:	Mary Baily
ARCHITECT'S PROJECT NUMBER:	2303
MECHANICAL AND ELECTRICAL ENGINEER:	Moxify Engineering LLC 4334 NW Expressway, Suite 156 Oklahoma City, OK 73116 Telephone: (405) 254-5038

END OF SECTION

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DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

SEALS PAGE SECTION 00 01 07

This section includes the Professional Seals by Design Professionals and others responsible for preparing the Construction Documents for Architect's project number 2111.

	ARCHITECT	
NAME:	**GANG LI**	
	4870	
	(PROFESSIONAL NUMBER)	

04/17/2023

ENGINEER	
NAME:	--
(PROFESSIONAL NUMBER)	

	ENGINEER	
NAME:		
	(PROFESSIONAL NUMBER)	

END OF SECTION

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DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

TABLE OF CONTENT SECTION 00 01 10

END OF SECTION

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

ADVERTISEMENT FOR BIDS SECTION 00 11 13

Sealed bids addressed to the Owner will be received at the Place of Bid until the Time of Bid on the Bid Date and then will be opened and read publicly later.

PROJECT: Kingfisher County Courthouse Parking
119 S Main St.
Kingfisher, OK 73750

OWNER: Kingfisher County Commissioners
101 South Main Street #9.
Kingfisher, OK 73750

BID DATE: May 26, 2023

TIME OF BID: 4:00pm CDT

PLACE OF BID: Kingfisher County Courthouse Conference Room
101 S. Main Street
Kingfisher, OK 73750

Bids will be opened and read publicly at 9:00am on May 30th at Commissioner Meeting. Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays, and holidays, before the time of bid, as well as any bids received after that time, will be returned unopened. Any bids received after the stated Time of Bid will be returned to the Bidder unopened.

Sealed bids addressed to the Kingfisher County Commissioners are requested to perform the construction Work.

The Owner will construct under the general contractor method and will be accepting a single bid for all Work required.

A copy of the Construction Document is on file at the office of the Commissioners and is open for public inspection. Interested parties shall arrange an appointment to review the documents and must visit the site or attend the pre-bid meeting. Please do not visit the site without making prior arrangements.

One paper set of Construction Documents will be made available to all interested parties for which a hundred ($100.00) dollar non-refundable deposit will be required. Electronic (CD) copies are available for twenty-five dollars ($25.00), each; non-refundable. Electronic Documents (PDF) can be downloaded at no cost. Construction Documents can be requested by contacting the Architect at: 405-360-1300. Document distribution will be provided by the Architect. Architects may need up to 48 business hours for paper set(s) to distribute.

Each Bidder shall submit their Proposal in a sealed envelope. Enclosed with their Proposal shall be executed copies of the Non-Collusion and Business Relationship Affidavits. Any bid not in compliance with the Construction Documents will be rejected.

Each Bidder shall submit, with the Proposal, a Bidder's Bond as required in Laws of Oklahoma and the Construction Documents. Such Bonds may be in the form of an irrevocable letter of credit, cashier's check or bid bond. Cash is not acceptable. All such bonds shall be made payable to the Owner in an amount no less than five (5%) percent of the largest combination of the Base Proposal and any Alternates. The Contractor may be required to forfeit the Bid Bond, to the Owner, in the event the Contractor fails to execute a Contract or fails to provide the required Bonding and Insurances.

Upon the Owner's acceptance of bids, a Contract will be executed between the Owner and the approved Bidder. All bonding and insurance will be attached to the executed Contract.

Bids may not be withdrawn for a period of thirty (30) calendar days after the date of this Bid Opening. The Owner reserves the right to reject any or all Bids and waive any informality or irregularity in any Bids received.

For information concerning any part of the proposed work, contact the Architect: Architects in Partnership, 3220 Marshall Ave., Norman, OK 73072. Telephone: (405) 360-1300.

BY: Kingfisher County Commissioners
101 S. Main Street #9
Kingfisher, OK 73750

END OF SECTION

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SUMMARY

1.01 SEE AIA A701, INSTRUCTIONS TO BIDDERS FOLLOWING THIS DOCUMENT.

1.02 THE INSTRUCTIONS IN THIS DOCUMENT AMEND OR SUPPLEMENT THE INSTRUCTIONS TO BIDDERS AND OTHER PROVISIONS OF THE BIDDING AND CONTRACT DOCUMENTS.

1.03 DOCUMENT INCLUDES

A. Invitation
   1. Bid Submission
   2. Intent
   3. Work Identified in the Contract Documents
   4. Contract Time

B. Bid Documents and Contract Documents
   1. Definitions
   2. Contract Documents Identification
   3. Availability
   4. Examination
   5. Inquiries/Addenda
   6. Product/Assembly/System Substitutions

C. Site Assessment
   1. Site Examination

D. Qualifications
   1. Qualifications
   2. Prequalification
   3. Subcontractors/Suppliers/Others

E. Bid Submission
   1. Bid Depository
   2. Submission Procedure
   3. Bid Ineligibility

F. Bid Enclosures/Requirements
   1. Security Deposit
   2. Consent of Surety
   3. Performance Assurance
   4. Insurance
   5. Bid Form Requirements
   6. Fees for Changes in the Work
   7. Bid Form Signature
   8. Additional Bid Information
   9. Selection and Award of Alternates

G. Offer Acceptance/Rejection
   1. Duration of Offer
   2. Acceptance of Offer

1.04 RELATED DOCUMENTS

A. Document 00 1113 - Advertisement for Bids.

B. Document 00 4100 - Bid Form.

C. Document 00 7200 - General Conditions.

D. Document 00 7300 - Supplementary Conditions.

E. Document 01 1100 - Summary of Work.

INVITATION

2.01 BID SUBMISSION

A. Bids signed and under seal, executed, and dated will be received at the office of the Owner at address below before 4:00pm. local daylight time on May 26th 2023.

1. Kingfisher County Clerk's Office

   101 S. Main Street

   Kingfisher, Oklahoma 73750

B. Offers submitted after the above time shall be returned to the bidder unopened.

C. Offers will be opened publicly in following Monday commissioner's meeting after the time for receipt of bids.

D. Amendments to the submitted offer will be permitted if received in writing prior to bid closing and if endorsed by the same party or parties who signed and sealed the offer.

2.02 INTENT

A. The intent of this Bid request is to obtain an offer to build additional parking spaces on demolished old county jail site located at 119 S Main St., Kingfisher, OK 73750 for single Stipulated Sum contracts, in accordance with the Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises new construction, and demolition, and other work as required to complete project, including general construction.

2.04 CONTRACT TIME

A. Owner requires that under the work of this contract be completed as quickly as possible and consideration will be given to time of completion when reviewing the submitted bids.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS

A. Bid Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form Supplements To Bid Forms and Appendices identified.

B. Contract Documents: Defined in General Conditions to the Contract, including issued Addenda.

C. Bid, Offer, or Bidding: Act of submitting an offer under seal.

D. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

E. Bid Form: A form which includes a specific space in which the bid price shall be inserted and which the Bidder shall sign and submit along with all other necessary submissions. A Bidder may submit a reasonable facsimile of the Bid Form. Bids received by facsimile or in electronic format will not be accepted.

F. Bidding Requirements: Notice of Invitation to Bid, Prebid Information, Instructions to Bidders, Information Available for Bidders, the Bid Form, Supplements to the Bid Form, and portions of Addenda relating to any of these.

G. Responsible Bidder: A Bidder who is properly licensed in accordance with the Construction Industries Licensing Act and submits a Responsive Bid and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation, and experience are adequate to make satisfactory delivery of the services, construction, or items of tangible personal property described in the Invitation for Bid.

H. Responsive Bid: A bid which conforms in all material respects to the requirements set forth in the Invitation for Bid.

I. Successful Bidder: The lowest Responsible Bidder to whom the Owner, on the basis of the Owner's evaluation, makes an award. A Successful Bidder does not become the contractor until an agreement with the Owner is signed.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

A. The Contract Documents are identified as Project Number 2303, as prepared by Architect, and with contents as identified in the Table of Contents.

3.03 AVAILABILITY

A. Bid Documents may be obtained at the office of Architect.

B. One sets of Bid Documents can be obtained by bidders upon receipt of a deposit, by certified check, in the amount of $100.00 for one set. Electronic copy in PDF format can be download from online at no cost.

C. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION

A. Bid Documents may be viewed at the office of Architect.

B. Bid Documents may be viewed at the office of Owner.

C. Bid Documents are on display at the offices of the following construction plan rooms:

1. Southwest Construction News.
2. ISQFT.
3. E-Plan
4. Dodge

D. It is the intent of these Bidding Documents to be as clear, complete and consistent as possible.

E. Bidders are required to carefully review the:

1. Bidding Documents (drawings and specifications).
2. Bid Form.
3. Contract for construction

F. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.

G. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

H. The Bidder shall not take advantage of any error in the Bidding Documents. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown on or mentioned in both. In case of any apparent difference between the drawings and specifications, or any other apparent discrepancy which the Bidder may discover, the matter shall be referred to the Architect as to which, in accordance with the intent of the Bidding Documents, shall govern. The Owner and the Architect shall have the right to correct any error discovered.

3.05 INQUIRIES/ADDENDA

A. Direct questions to the Architect, email: gang.li@aipok.com.

B. Addenda may be issued during the bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.

C. Verbal answers are not binding on any party.

D. Clarifications requested by bidders must be in writing not less than 4 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

3.06 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 5 days before receipt of bids.

B. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.

C. The submission shall provide sufficient information to determine acceptability of such products.

D. Provide complete information on required revisions to other work to accommodate each proposed substitution.

E. Provide products as specified unless substitutions are submitted in this manner and accepted.

F. See Section 01 25 00 - Substitutions Procedures for additional requirements.

G. See Section 01 60 00 - Product Requirements for additional requirements.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Examine the project site before submitting a bid.

B. On request, the Owner will provide each Bidder access to the site to conduct investigations and tests as

each Bidder deems necessary for submission of his Bid.

C. Bidders shall promptly notify Architect of any ambiguity, inconsistency, or error which they may discover upon examination of the site and local conditions.

D. The lands upon which the Work is to be performed, rights-of-way for access thereto, and other lands designated for use by the Contractor in performing the work are identified in the Bidding Documents.

E. The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Section and that the Bidding Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

4.02 PREBID CONFERENCE

A. Architect along with representative of Owner will conduct a Prebid Conference for this project on project site at location of 119 S Main St., Kingfisher, OK 73750, refer to 00 25 13 Pre-Bid Meeting

B. Architect and his consultants, as applicable, shall be represented. Prospective Bidders, Prospective Subcontractors, and Prospective Vendors are encouraged to attend and should be prepared to ask questions regarding substitutions and to request clarification of the Bidding Documents. The failure of a Bidder, Subcontractor, or Vendor to attend shall be interpreted to mean that the Bidding Documents are clear and acceptable to all non-participants at the Prebid Conference. Such clarity and acceptability shall be presumed with respect to all Bidders.

C. Questions and requests for clarification presented in written form will receive written response, and if warranted, issued as Addenda. No verbal response shall be binding.

QUALIFICATIONS

5.01 EVIDENCE OF QUALIFICATIONS

A. To demonstrate qualification for performing the Work of this Contract, bidders may be requested to submit written evidence of financial position, license to perform work in the State.

5.02 SUBCONTRACTORS/SUPPLIERS/OTHERS

A. Owner reserves the right to reject a proposed subcontractor for reasonable cause.

B. Refer to General Conditions and Supplementary Conditions.

BID SUBMISSION

6.01 BID DEPOSITORY

A. The five percent (5%) Bid Depository system of bid collection shall be used for all trades.

B. The rules and regulations of this bid deposit system, in force on the day of bid submission shall apply.

6.02 SUBMISSION PROCEDURE

A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.

1. No other party, Owner, or Architect, etc. is responsible for making sure the submitted Bid is delivered to the location where the Bid will be opened and read aloud, no exception.

B. Submit one copy of the executed offer on the Bid Forms provided, signed, and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.

C. Incomplete bid submission may be the cause to reject the Bid Form and declare the bid invalid or informal.

D. An abstract summary of submitted bids will be made available to all bidders following bid opening.

6.03 BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Owner, be declared unacceptable.

C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Owner, invalidate the bid.

D. Failure to provide the business relationship and noncollusion affidavits will invalidate the bid.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit as follows:

1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form. Certified check and irrevocable letter of credit, as allowed by the Competitive Bidding Act, will be allowed.

B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

C. The security deposit will be returned after delivery to the Owner of the required Defect, Performance and Payment Bond(s) by the accepted bidder.

D. Include the cost of bid security in the Bid Amount.

E. After a bid has been accepted, all securities will be returned to the respective bidders and other requested enclosures.

F. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide a Performance bond as described in 00 73 00 - Supplementary Conditions.

B. Include the cost of Performance and Payment Bonds and Defect Bond in the Bid Amount.

7.03 INSURANCE

A. Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of the Contract Documents.

7.04 BID FORM REQUIREMENTS

A. Complete all requested information in the Bid Form and Appendices.

B. Taxes: Refer to Document 00 73 00 - Supplementary Conditions for products that are tax exempt.

1. This project is wholly exempt.

7.05 FEES FOR CHANGES IN THE WORK

A. Include in the Bid Form, the overhead and profit fees on own Work and Work by subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Amount is based.

7.06 BID FORM SIGNATURE

A. The Bid Form shall be signed by the bidder, as follows:

1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.

2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.

3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.

4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

7.07 ADDITIONAL BID INFORMATION

A. The lowest bidder will be requested to complete the Supplements To Bid Forms within 24 hours after submission of bids.

B. Submit the following Supplements 48 hours after bid submission:

1. Document 00 43 73 - Proposed Schedule of Values Form identifies the Bid Amount segmented into portions as requested.

7.08 SELECTION AND AWARD OF ALTERNATES

A. Indicate variation of bid price for Alternates listed on the Bid Form. Unless otherwise indicated, indicate Alternatives as a difference in bid price by adding to or deducting from the base bid price.

B. Bids will be evaluated on the base bid price, plus consideration of Alternates with bid price adjustments to determine of a successful bidder.

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the bid closing date.

8.02 ACCEPTANCE OF OFFER

A. Owner reserves the right to accept or reject any or all offers.

B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written letter of Contract Award.

END OF SECTION

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

PRE-BID MEETING SECTION 00 25 13

A pre-bid conference will be held at the time, date and location specified below:

Date/Time: 10:00am, May 11th,2023.

Location: Project Site/ Commissioners Office
101 S Main St.
Kingfisher, OK 73750

Each bidder is specifically advised that attendance at this Pre-bid Conference is not Mandatory. If you cannot make to this pre-bid meeting and want to visit the project site, contact architect to schedule an onsite visit with owner.

END OF SECTION

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PART 1 - GENERAL

THE PROJECT AND THE PARTIES

1.01 TO:

A. Kingfisher County Commissioners (Owner)
101 S. Main Street #9
Kingfisher, Oklahoma 73750

1.02 FOR:

A. Project: Kingfisher County Courthouse Parking

B. Architect's Project Number: 2303

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name:

_____

Address:

_____

City, State, Zip:

_____

Type of Entity:

_____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Architect for the above-mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

1.06 TO PROVIDE ALL WORK INDICATED OR REASONABLY IMPLIED BY THE CONSTRUCTION DOCUMENTS:

A. Base Bid:

_____dollars

($_____),
in lawful money of the United States of America.

B. Alternate:

No. 1: Snow Melting System and all Related Electrical Work.

_____dollars

($_____),
in lawful money of the United States of America.

C. Allowance:

No. 1: Testing and Inspecting.

_____dollars

($_____),
in lawful money of the United States of America.

D. Unit Price:

No. 1: Unit price per square foot to install 4” concrete sidewalk.

_____dollars

($_____),
in lawful money of the United States of America.

No. 2: Unit price per square foot to install 6” concrete Pavement.

_____dollars

($_____),

in lawful money of the United States of America.

1.07 WE HAVE INCLUDED THE REQUIRED SECURITY DEPOSIT AS REQUIRED BY THE INSTRUCTION TO BIDDERS.

1.08 WE HAVE INCLUDED THE REQUIRED DEFECT, PERFORMANCE AND PAYMENT ASSURANCE BONDS IN THE BID AMOUNT AS REQUIRED BY THE INSTRUCTIONS TO BIDDERS.

1.09 ALL APPLICABLE FEDERAL TAXES ARE INCLUDED AND STATE OF OKLAHOMA SALES TAXES ARE EXCLUDED FROM THE BID SUM.

1.10 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:

1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Furnish the required bonds within seven days of receipt of Notice of Award.
3. Commence work within seven days after written Notice to Proceed of this bid.

C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.11 CONTRACT TIME

A. If Awarded the Contract, the undersigned Bidder agrees to complete the Work described as Base Bid with City of Hennessey approval to occupancy within the following number of calendar days from the date specified in the Notice to Proceed: (_____) Calendar Days.

1.12 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:

1. _____ percent overhead and profit on the net cost of our own Work;
2. _____ percent on the cost of work done by any Subcontractor.

B. On work deleted from the Contract, our credit to Owner shall be Architect-approved net cost plus _____ of the overhead and profit percentage noted above.

1.13 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

1. Addendum # _____ Dated _____.
2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.
4. Addendum # _____ Dated _____.
5. Addendum # _____ Dated _____.
6. Addendum # _____ Dated _____.

1.14 BID FORM SUPPLEMENTS

A. The following information is included with Bid submission:

1. Executed Noncollusion Affidavit
2. Executed Business Relationship Affidavit.

1.15 BID FORM SIGNATURE(S)

The Corporate Seal of

_____

(Bidder - print the full name of your firm)

was hereunto affixed in the presence of:

_____

(Authorized signing officer, Title)

(Seal)

_____

(Authorized signing officer, Title)

1.16 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE APPROPRIATE FORM OR FORMS AS ABOVE.

END OF SECTION

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BUSINESS RELATIONSHIP AFFIDAVIT

STATE OF _____)
)ss
COUNTY OF _____)

_____of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer or other party of the project is as follows: (if none, so state)

_____

_____

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the architectural or engineering firm or other party of the project as follows. (If none, so state)

_____

_____

Affiant further states that the names of all persons having any such business relationships and the positions thy hold with their respective companies or firms as follows:

_____

_____

(If none of the business relationships herein above mentioned exist, affiant should so state.)

_____
Affiant

Subscribed and sworn before me this_____day of_____, 20___.

_____
Notary Public

My Commission Expires:_____

THIS AFFIDAVIT SHALL ACCOMPANY PROPOSAL

NONCOLLUSION AFFIDAVIT

STATE OF _____)
)ss
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says:

1. (s)he is the duly authorized agent of_____, the bidder submitting the competitive bid which is attached to this statement, for the purpose of certifying the facts pertaining to the existence of collusion among bidders and between bidders and state officials or employees, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the letting of any contract pursuant to the bid to which this statement is attached;
2. (s)he is fully aware of the facts and circumstances surrounding the making of the bid to which this statement is attached and has been personally and directly involved in the proceedings leading to the submission of such bid; and
3. neither the bidder nor anyone subject to the bidder's direction or control has been a party:
    a. to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding,
    b. to any collusion with any state official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract, nor
    c. in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

_____

Affiant

Subscribed and sworn before me this_____day of_____, 20___

_____

Notary Public

My Commission Expires:_____

THIS AFFIDAVIT SHALL ACCOMPANY PROPOSAL

PART 1 - GENERAL

1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. See Section 00 7200 - General Conditions for the General Conditions.

B. See Section 00 7300 - Supplementary Conditions for the Supplementary Conditions.

C. The Agreement is based on AIA A101.

D. The General Conditions are based on AIA A201.

E. The Guide for Supplementary Conditions includes AIA A503.

1.02 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.

B. Bond Forms:

1. Bid Bond Form: AIA A310.
2. Performance and Payment Bond Form: AIA A312.

C. Post-Award Certificates and Other Forms:

1. Submittal Transmittal Letter Form: AIA G810.
2. Schedule of Values Form: AIA G703.
3. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).

D. Clarification and Modification Forms:

1. Architect's Supplemental Instructions Form: AIA G710.
2. Construction Change Directive Form: AIA G714.
3. Change Order Form: AIA G701.

E. Closeout Forms:

1. Certificate of Substantial Completion Form: AIA G704.

1.03 REFERENCE STANDARDS

A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2017.

B. AIA A201 - General Conditions of the Contract for Construction; 2017.

C. AIA A310 - Bid Bond; 2010.

D. AIA A312 - Performance Bond and Payment Bond; 2010.

E. AIA A503 - Guide for Supplementary Conditions; 2007.

F. AIA G701 - Change Order; 2017.

G AIA G702 - Application and Certificate for Payment; 2017.

H. AIA G703 - Continuation Sheet; 2017.

I. AIA G704 - Certificate of Substantial Completion; 2017.

J. AIA G710 - Architect's Supplemental Instructions; 2017.

K. AIA G714 - Construction Change Directive; 2017.

L. AIA G810 - Transmittal Letter; 2001.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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PART 1 - GENERAL

1.01 FORM OF GENERAL CONDITIONS

A. The General Conditions applicable to this contract is AIA Document A201 - 2017.

1.02 RELATED REQUIREMENTS

A. Section 00 73 00 - Supplementary Conditions.

1.03 SUPPLEMENTARY CONDITIONS

A. Refer to document 00 73 00 - Supplementary Conditions for amendments to the general conditions.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Kingfisher County Courthouse - Parking
Kingfisher, Oklahoma

THE OWNER:
(Name, legal status and address)

Kingfisher County Commissioners
101 S. Main St. #9
Kingfisher, Oklahoma 73750

THE ARCHITECT:
(Name, legal status and address)

Architects in Partnership, LLC
3220 Marshall Avenue
Norman, Oklahoma 73072
Telephone Number: (405) 360-1300
Fax Number: (405) 360-1431

TABLE OF ARTICLES

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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INDEX
(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- **.1** The change in the Work;
- **.2** The amount of the adjustment, if any, in the Contract Sum; and
- **.3** The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Additions and Deletions Report for
AIA® Document A201® – 2017

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PAGE 1

Kingfisher County Courthouse - Parking
Kingfisher, Oklahoma

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Certification of Document's Authenticity

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I, Gang Li, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 15:01:47 ET on 04/10/2023 under Order No. 2114342316 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

Principal

(Title)

4.10.23

(Dated)

PART 1 - GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 72 00 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 RELATED SECTIONS

A. Section 00 50 00 - Contracting Forms and Supplements.

B. Section 01 42 00 - References.

1.03 REFERENCE STANDARDS

A. AIA A503 - Guide for Supplementary Conditions; 2017.

1.04 MODIFICATIONS TO GENERAL CONDITIONS

A. The following supplements modify AIA Document A201-2017, General Conditions of the Contract for Construction. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

1.05 ARTICLE 1 - GENERAL PROVISIONS:

A. Add new Clause 1.1.1.1 to Subparagraph 1.1.1 THE CONTRACT DOCUMENTS immediately following Subparagraph 1.1.1 to read as follows:

1.1.1.1 The Owner has prepared a Subsoil Investigation Report on the project site. This report shall not be deemed to be a part of the Contract Documents. As a convenience to Bidders and the Contractor, this report is on file and may be examined at the Office of the Architect during normal business hours or it may be bound within the specifications.

B. The fourth sentence of Subparagraph 1.1.2 THE CONTRACT shall be modified to read as follows:

The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect’s consultants, (2) between any Subcontractor, Sub-subcontractor or a Material Supplier and the Architect or the Architect’s consultants, (3) between the Owner and a Subcontractor, Sub subcontractor, or a Material Supplier (4) between the Owner and Architect or the Architect’s consultants, or (5) between any persons or entities other than the Owner and Contractor.

C. Add new Clause 1.1.3.1 to Subparagraph 1.1.3 THE WORK to read as follows:

1.1.3.1 It is agreed that the definition of the term "Work" for the purposes of the Architect's observations of the Work shall not include temporary shoring, bracing, scaffolding, form work, safety barriers, trench bracing and other similar items referred to herein as "temporary facilities," material moving equipment to include cranes and elevators, or any other temporary structures or construction equipment or aids, for which the Contractor shall have sole responsibility.

D. Add the following sentence to the end of Subparagraph 1.1.6 THE SPECIFICATIONS:

Other items or requirements related to the Work or the Project may also be included in the Specifications.

E. Add new Subparagraph 1.1.9 to Paragraph 1.1 BASIC DEFINITIONS immediately following Subparagraph 1.1.8 INITIAL DECISION MAKER to read as follows:

1.1.9 THE PROJECT SITE

The Project Site is the tract of ground upon which the Project is to be situated and is generally defined on the Plot Plan or Site Plan Drawing. The Project may be located on more than one Project Sites which may be located remote from each other.

F. Add the following sentences at the end of Subparagraph 1.2.2:

Organization of the Drawings and Specifications into a format for easy cross reference by any person or entity is for the specific purpose of convenience only and such cross references shall not be considered as being full and complete. The omission of any cross reference shall not relieve the Contractor of his responsibility to perform all of the Work required by the Contract Documents.

G. Add new Subparagraph 1.2.4 to Paragraph 1.2 CORRELATION AND INTENT OF THE CONTRACT

DOCUMENTS immediately following Subparagraph 1.2.3 to read as follows:

1.2.4 All of the Contract Documents are complementary and do not have a system of precedence. In the event of conflicts or discrepancies among the separate parts of the Contract Documents, or within any one part of the Contract Documents, and subject to the terms of Subparagraph 3.2.1 and Supplementary Clause 3.2.1.1, the Architect shall upon request from the Owner, or Contractor, consistent with Subparagraphs 4.2.11 and 4.2.12, interpret the conflict or discrepancy based upon the Contract Documents as a whole. Should such a conflict or discrepancy occur, it is the specific intent of the Contract Documents to require the better quality or greater quantity of Work be performed and the Architects interpretation shall be consistent with this intent.

H. Add the following sentence at the end of Paragraph 1.3:

The capitalization of other words or terms, or the failure to capitalize any word or term, throughout the Contract Documents, shall be interpreted to have no meaning and shall be without effect on all interpretations of the Contract Documents.

1.06 ARTICLE 2 - OWNER

A. Subparagraph 2.3.4 shall be revised to read as follows:

The Owner shall furnish surveys describing the Project Site. The Architect makes no representations to the accuracy or completeness of these surveys. Such surveys may contain descriptions of physical characteristics, legal limitations, utility locations, permanent benchmarks, existing structures, slopes and contours, legal descriptions and other such pertinent information. Such Owner furnished surveys may be bound with the Drawings or may be fully or partially transcribed onto the Plot Plan or Site Plan Drawing. This survey shall be a part of the Drawings and, as such, shall be a part of the Contract Documents.

B. Add new Subparagraph 2.3.7 immediately following Subparagraph 2.3.6 to read as follows:

2.3.7 The Owner's instructions to the Contractor shall be communicated through the Architect.

C. Add new Subparagraph 2.4.1 to Paragraph 2.4 OWNER'S RIGHT TO STOP WORK to read as follows:

2.4.1 The Owners right to stop the Work shall not imply that the Owner, or the Architect, has any duty, obligation or responsibility to determine either the safety of the Contractors means, methods, techniques or sequences, including but not limited to, temporary shoring, bracing, scaffolding, form work, safety barriers, trench bracing, and other similar items, referred to herein as "temporary facilities," or their compliance with the requirements of laws, codes, regulations and safety requirements, which shall be the full and sole responsibility of the Contractor and the Contractor shall solely bear any damages or injury, including death, arising therefrom.

D. Add new Subparagraph 2.5.1 to Paragraph 2.5 OWNER'S RIGHT TO CARRY OUT THE WORK to read as follows:

2.5.1 Should the Contractor fail or refuse to sign the Change Order, and should the Contractor not give written notice of his specific reasons within a seven (7) day period after his receipt of the Change Order, or should the Contractor not accept delivery of the Change Order, a Construction Change Directive for a like amount shall be issued in compliance with Paragraph 7.3 CONSTRUCTION CHANGE DIRECTIVES.

1.07 ARTICLE 3 - CONTRACTOR

A. Revise words "ANY ERRORS" in the second sentence of Subparagraph 3.2.2 to read as follows:

"any open, obvious or patent errors"

B. Add new Clause 3.2.2.1 immediately following Subparagraph 3.2.2 to read as follows:

3.2.1.1 During his careful study as required in Subparagraph 3.2.2, the Contractor shall note all typographical and spelling errors in the Construction Documents. Any such errors which produce a phrase or sentence in compliance with both well-known technical and trade meanings and common English usage shall not be deemed a typographical or spelling error. All other such typographical or spelling errors will produce phrases or sentences which are inconsistent with well-known technical and trade meanings or common English usage. The Contractor shall report all such errors to the Architect in compliance with Subparagraph 3.2.2.

C. Revise words "ANY NONCONFORMITY" in the Subparagraph 3.2.3 to read as follows:

"any open, obvious or patent nonconformity"

D. The third sentence of Subparagraph 3.2.4 shall be modified to read as follows:

"The Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless such errors inconsistencies, omissions or differences were open, obvious or patent and should have been discovered by Contractor during a careful examination of

the various Drawings and other Contract Documents.

E. The second sentence of Subparagraph 3.3.1 shall be modified by adding the words "temporary facilities and safety precautions and programs" immediately following the word "techniques." The second sentence shall be additionally modified by deleting the words, "unless the Contract Documents give other specific instructions concerning these matters."

F. Add new Clause 3.4.3.1 immediately following Subparagraph 3.4.3 to read as follows:

3.4.3.1. The Contractor shall adopt and maintain a policy strictly prohibiting social contact between the employees of the Contractor, Subcontractors, Sub-subcontractors, Material Suppliers or any other persons for whose acts the Contractor is responsible and any students, regardless of age, or underage employees of the Owner on or around the Project Site. All applicable employees shall be informed of this policy by the Contractor and the Superintendent of the Contractor shall be responsible for enforcement of this policy.

G. Add new Subparagraph 3.4.4 to read as follows:

3.4.4 After the Contract has been executed, the Owner will consider a formal request for the substitution of products, systems, means, methods or designs in place of those specified only under the conditions set forth in the Additional Project Requirements of Division C of the Contract Documents. By making requests for substitutions based upon this Subparagraph, the Contractor represents and certifies that:

1. He has personally investigated the proposed substitute products, systems, means, methods or designs and has determined that it is equal or superior in all respects to that specified;
2. He will provide the same warranty for the substitution that the Contractor would for that specified;
3. The cost data presented is complete and includes all related costs under this Contract except the Architects redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent;
4. He will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

H. Add new Subparagraph 3.6.1 to read as follows:

3.6.1 Certain Public and Non Profit Organization Owners may be exempt, either wholly or partially, from taxes as defined in Subparagraph 3.6. Where applicable, these exemptions are fully described elsewhere in the Contract Documents.

I. Subparagraph 3.7.2 shall be modified by adding the following sentences to the end of Subparagraph:

Compliance with one or more specific laws, ordinances, rules, regulations and lawful orders of public authorities may be brought to the Contractors specific attention elsewhere in the Contract Documents. The inclusion or omission of any law, ordinance, rule, regulation or lawful order of a public authority shall not relieve the Contractor of his duty, obligation and responsibility for compliance with all laws, ordinances, rules, regulations and lawful orders of public authorities.

J. Add new Clause 3.7.2.1 immediately following Subparagraph 3.7.2 to read as follows:

3.7.2.1 In general, it is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, ordinances, statutes, standards, building codes, rules and regulations. However, building trades licensed by regulatory authority shall be held responsible for full and complete knowledge of all applicable laws, ordinances, statues, standards, building codes, rules and regulations as they apply to their own licensed trade. Where the Contract Documents specifically direct that portions of the Work be completed in compliance with certain or applicable laws, ordinances, statues, standards, building codes, rules and regulations, it is the Contractor's duty, obligation and responsibility to diligently and carefully research and study, and to acquire full knowledge of, such laws, ordinances, statutes, standards, building codes, rules and regulations. If the Contractor observes that portions of the Contract Documents are at variance from applicable laws, ordinances, statues, standards, building codes, rules and regulations, or is informed of such variance by any public authority or other entity, the Contractor shall promptly notify the Architect in writing, and necessary changes shall be accomplished by appropriate Modification. Nothing in these requirements shall relieve the Contractor of his responsibility for compliance with the requirements of the Contract Documents where those requirements exceed those of the applicable laws, ordinances, statutes, standards, building codes, rules and regulations.

K. Add the following sentence at the end of Subparagraph 3.7.3:

Claims for additional cost will not be approved by the Owner for changes required to comply with applicable laws, ordinances, statutes, standards, building codes, rules and regulations for those portions

of the Work for which the Contractor is required by the Contract for Construction to have knowledge of the applicable laws, ordinances, statues, standards, building codes, rules and regulations.

L. Add new Subparagraph 3.7.6 immediately following Subparagraph 3.7.5 to read as follows:

3.7.6 Applicable laws, ordinances, statutes, standards, building codes, rules and regulations are defined as those laws, ordinances, statutes, standards, building codes, rules and regulations which are in effect on the Bid Date as defined in the Invitation or Advertisement to Bid. Should any applicable law, ordinance, statute, standard, building code, rule or regulation, or interpretation thereof, change during the progress of the Work, and should any such change require the Contractor to perform either more or less work, the Contract Sum and Contract Time shall be appropriately adjusted in compliance with the requirements of ARTICLE 7, CHANGES IN THE WORK.

M. The first sentence of Subparagraph 3.9.1 shall be modified by adding the words "on a full time basis" immediately after the word "attendance".

N. Add new Subparagraph 3.10.4 immediately following Subparagraph 3.10.3 to read as follows:

3.10.4 Nothing in the requirement to submit construction schedules, or to revise such schedules, or any review of such schedules by the Owner or Architect, shall give rise to a duty, obligation or responsibility of the Owner or Architect to any Contractor, Subcontractor, Sub subcontractor, Material Supplier, or any other entity involved in the Work, to insure completion of the Work within the Contract Time. It is the sole duty, responsibility and obligation of the Contractor to complete the Work within the Contract Time.

O. The second sentence of Subparagraph 3.12.8 shall be modified to read as follows:

Specifically informing the Architect in writing of deviations shall be defined as a letter submitted with the Shop Drawing, Product Data, Sample or similar submittal which shall contain the following phrase, "Your attention is directed to the following deviations from the Requirements of the Contract Documents" followed by a detailed written listing of all such deviations. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof. Any portion of the Work which fails to conform to the requirements of the Contract Documents shall be corrected in compliance with Article 12 UNCOVERING AND CORRECTION OF WORK and the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals shall not relieve the Contractor of his duty, obligation and responsibility to make any such required corrections.

P. Add the following sentence to the end of Subparagraph 3.12.9:

Specific attention in writing shall be defined as a letter submitted with the Shop Drawings, Product Data, Sample or similar submittal which shall contain the following phrase, "Your attention is directed to the following revisions which are in addition to those revisions that you requested" followed by a detailed written listing of all such revisions.

Q. Add new Subparagraph 3.12.11 immediately following Clause 3.12.10.2 to read as follows:

3.12.11 Letters of Conformance will not be acceptable in lieu of Shop Drawings or other required submittals.

1.08 ARTICLE 4 - ARCHITECT

A. Add new Clause 4.2.1.1 immediately following Subparagraph 4.2.1 to read as follows:

4.2.1.1 Nothing in the Agreement shall be construed to mean or to imply that the Architect has any duty, obligation or responsibility to supervise the Work.

B. The first sentence of Subparagraph 4.2.2 shall be modified by adding the words "as a whole" immediately after the words "will visit the site."

C. The third sentence of Subparagraph 4.2.2 shall be modified by adding the words "temporary facilities" immediately following the word "techniques".

D. Add new Clauses 4.2.2.1, 4.2.2.2 and 4.2.2.3 immediately following Subparagraph 4.2.2 to read as follows:

4.2.2.1 It is understood that the Architect's observations of the Work shall be conducted on a sampling basis and that the observed samples of the Work, at the time observed, may not be representative of all work by the Contractor in terms of quality and quantity.

4.2.2.2 Nothing in the Agreement shall be construed to mean or to imply:

1. That the Architect has any duty, obligation or responsibility to observe the work of any individual Subcontractor, Sub subcontractor, Tradesman, Material Supplier or other person or entity during the progress of that Subcontractor's, Sub Subcontractors, Tradesmen, Material Suppliers or other persons or entities Work.

2. That the Architect has any duty, obligation or responsibility to observe, note and report to the Contractor every discrepancy, error, instance of work of poor quality and

variances from the requirements of the Contract Documents which may be present during any period of observation of the Work. The Architect's failure to observe, note and report to the Contractor any discrepancy, error, instance of work of poor quality or variance from the requirements of the Contract Documents shall not relieve the Contractor of his obligation to perform the work in accordance with the Contract Documents.

3. That the Architect has any duty, obligation or responsibility to observe, note and report to the Contractor any discrepancy, error, instance of work of poor quality or variance from the requirements of the Contract Documents at any specific time or period during the progress of the Work. Work shall be corrected under the requirements of Article 12 UNCOVERING AND CORRECTION OF WORK without respect to the time or period when the Work requiring correction was discovered and reported to the Contractor.

4. That the Architect has any duty, obligation or responsibility to protect the Contractor or any Subcontractor, Sub Subcontractor, Material Supplier or other person or entity involved in the Work against their own construction errors or other variance from the requirements of the Contract Documents during his observations of the Work.

5. That the Architect has any duty, obligation or responsibility to verify the accuracy of Documents and Samples at the Project Site as defined in Subparagraph 3.11.

6. That the Architect has any duty, obligation or responsibility to observe those portions of the Work excluded from the definition of the term "Work" in Clause 1.1.3.1

4.2.2.3 Nothing in the Agreement shall be construed to mean or imply that the Architect has any duty, obligation or responsibility to provide for the safety of the Contractor, Subcontractors, Sub-subcontractors, Material Suppliers, or their agents or employees, any other persons performing portions of the work, or any other persons who may be at the Project Site either legitimately or illegitimately.

E. Add new Clauses 4.2.6.1 and 4.2.6.2 immediately following Subparagraph 4.2.6 to read as follows:

4.2.6.1 The Architect shall not have the authority to reject the Contractor's temporary facilities, construction means, methods, techniques, sequences or procedures or safety precautions and programs.

4.2.6.2 The Architect shall not have the authority to stop the Work for any reason. The exercise of the Architect's authority to reject Work under Subparagraph 4.2.6 shall in no case be interpreted as an order to stop the Work.

F. The second sentence of Subparagraph 4.2.7 shall be modified by adding the words, "within the constraints of the Contractor's schedule of submittals and the Architect's current workload." at the end of the sentence.

1.09 ARTICLE 5 - SUBCONTRACTORS

A. Add new Clause 5.2.1.1 immediately following Subparagraph 5.2.1 to read as follows:

5.2.1.1 The exercise of the Owner's and Architect's authority to make, or not to make, reasonable objection to any proposed person or entity shall not relieve the Contractor of his duty, obligation and responsibility to complete all Work in full compliance with the requirements of the Contract Documents and shall not be construed to mean the approval or rejection of any particular process or material.

B. Subparagraph 5.2.4 shall be modified by adding a sentence immediately prior to the first sentence to read as follows:

The Contractor shall not change a Subcontractor, person or entity previously selected without first notifying the Owner through the Architect of the proposed change in writing and allowing the Owner or Architect reasonable time, after due investigation, to raise a reasonable objection.

C. Add new Subparagraph 5.3.1 immediately following Paragraph 5.3. to read as follows:

5.3.1 The Contractor shall indemnify and hold harmless the Owner, Architect, Architect's Consultants and Agents and employees of any of them from and against claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of the Contractor's failure to bind a Subcontractor or Subcontractors to all the terms of the Bidding Documents and the Contract Documents or the Contractor's failure to insure that Subcontractors bind each and every Sub Subcontractor to all the terms of the Bidding Documents or the Contract Documents.

D. Add new Paragraph 5.5 SUPERINTENDENT and Subparagraph 5.5.1 immediately following Subparagraph 5.4.2 to read as follows:

5.5 SUPERINTENDENT

5.5.1 Each Subcontractor and Sub subcontractor shall employ or name a competent Superintendent or

Foreman and necessary assistants who shall be in attendance on a full-time basis at the Project Site during the performance of the Subcontractors or Sub subcontractor's portion of the Work. The Superintendent or Foreman shall represent the Subcontractor or Sub subcontractor, and communications given to the Superintendent or Foreman shall be as binding as if given to the Subcontractor or Sub subcontractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed with written request in each case.

1.10 ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

A. Add new Subparagraph 6.2.6 immediately following Subparagraph 6.2.5 to read as follows:

6.2.6 Should a Claim against the Owner be filed by a Separate Contractor alleging damage caused by the Contractor, the Owner shall notify the Contractor of such claim. The Contractor shall defend the Owner in all Claim proceedings at the Owner's expense. Should an award or judgement against the Owner be secured by the Separate Contractor, the Contractor shall pay or satisfy said award or judgement and shall reimburse the Owner for all attorney's fees, arbitration costs, court costs, additional architectural fees, and other costs which the Owner has incurred.

1.11 ARTICLE 7 - CHANGES IN THE WORK

A. In Subparagraph 7.3.4 delete the phrase "in case of an increase in the Contract Sum," from the first sentence.

B. The first and second sentences of Subparagraph 7.3.8 shall be modified to read as follows:

The amount of credit or addition for a change which results in a net increase or decrease in the Contract Sum shall be actual net cost as confirmed by the Architect to include a reasonable corresponding adjustment for overhead and profit. When both additions and credits are involved in a change, the overhead and profit allowance shall be calculated on the basis of the net change.

C. Add new Subparagraph 7.3.11 immediately following Subparagraph 7.3.10 to read as follows:

7.3.11 Prior to final payment, all Construction Change Directives issued during the progress of the Work shall be converted into Change Orders and signed by the Contractor. Should the Owner and Contractor fail to agree with the determination made by the Architect concerning adjustments in the Contract Sum and the Contract Time, or otherwise fail to reach agreements upon the adjustments, a controversy shall exist and such controversy shall be submitted to arbitration in compliance with the requirements of Paragraph 15.4 ARBITRATION.

D. Add new Paragraph 7.5 EXPEDITION immediately following Paragraph 7.4. to read as follows:

7.5 EXPEDITION

7.5.1 The Contractor shall not proceed with Changes in the Work authorized under Paragraphs 7.2 or 7.3 until receipt of the appropriate signed documents.

7.5.2 It is recognized that under certain circumstances, changes in the Work, if not processed expeditiously, may delay or endanger the Work. Upon certification by the Architect that unacceptable delay may be caused, or that the Work may be endangered, the Owner may authorize the Contractor to immediately proceed with a Change in the Work. All such authorizations will contain an estimated change in the Contract Sum and an estimated change in the Contract Time. The Contractor shall proceed promptly with the Change in the Work upon receipt of such authorization. Final determination of the changes in the Contract Sum and Contract Time shall be made in a reasonable time and the authorization shall be converted into a Change Order or a Construction Change Directive.

1.12 ARTICLE 8 - TIME

A. Add new Clauses 8.1.4.1 and 8.1.4.2 immediately following Subparagraph 8.1.4 to read as follows:

8.1.4.1 Calendar day shall be defined as a continuous twenty four (24) hour period beginning at 12:00 o'clock midnight.

8.1.4.2 Working day, if used, shall be defined as a Calendar Day, exclusive of Saturdays, Sundays and Federal Holidays when weather or other conditions beyond the Contractor's control do not prevent the completion of at least four (4) hours of work on the principal unit of work underway between the hours of 7:00 o'clock AM and 6:00 o'clock PM local time.

1.13 ARTICLE 9 - PAYMENTS AND COMPLETION

A. Add new Clause 9.3.1.3 immediately following Clause 9.3.1.2 to read as follows:

9.3.1.3 Until Substantial Completion, the Owner shall pay ninety percent (90%) of the amount due the Contractor on account of progress payments unless otherwise provided by statute.

B. Add new Clause 9.3.2.1 immediately following Subparagraph 9.3.2 to read as follows:

9.3.2.1 On each and every Application and Certificate for Payment upon which the Contractor applies for payment for materials stored on the Project Site but not yet incorporated into the Work, or

applies for payment for materials stored off the Project Site, the Contractor shall include a statement as follows: "At time of payment, for value received, the Contractor and applicable Subcontractors, Sub Subcontractors and Material Suppliers, jointly and severely, hereby sell, assign or transfer unto the Owner the property described as stored materials on this Application and Certificate for Payment and do hereby warrant the Title to said property and do hereby certify that said property is free of all liens and encumbrances." Should this statement not be included with the Application and Certificate for Payment, it shall be included by reference with the same force and effect as if it had been written thereon unless the Contractor states his reasons in writing for omitting the statement.

C. Subparagraph 9.4.2 shall be modified by adding the words, "temporary facilities" immediately after the word "techniques" in the fourth sentence.

D. Add new Subparagraph 9.5.5 immediately following Subparagraph 9.5.4 to read as follows:

9.5.5 The Owner shall have the right to act as Agent for the Contractor in disbursing such funds as have been withheld pursuant to Paragraph 9.5 to the party or parties entitled to payment therefrom. The Owner shall render the Contractor an accounting of funds so disbursed.

E. Add new Clauses 9.8.1.1 and 9.8.1.2 immediately following Subparagraph 9.8.1 to read as follows:

9.8.1.1 All inspections required by Federal, State or Local Regulatory Authorities shall be complete prior to the issuance of the Certificate of Substantial Completion unless specifically noted elsewhere. When so required by Regulatory Authority, the Contractor shall also obtain and submit to the Architect a Use or Occupancy Permit prior to the issuance of the Certificate of Substantial Completion. It is the Contractor's responsibility to determine or ascertain what inspections are required, to schedule all such inspections, and to notify the Architect of the time and date of all such inspections a minimum of seven (7) days prior to the inspection date.

9.8.1.2 Should any regulatory inspection disclose any Work which is not in compliance with the Contract Documents, the Contractor shall, prior to the issuance of the Certificate of Substantial Completion, complete or correct such Work promptly. The Contractor shall then schedule another inspection by the appropriate regulatory authority and notify the Architect of the time and date of such reinspection.

F. The first sentence of Subparagraph 9.8.2 shall be modified by adding the phrase "and after all regulatory inspections are complete and, if required, a Use or Occupancy Permit is obtained" immediately following the words "is substantially complete".

G. Subparagraph 9.8.4 shall be modified by deleting the words "and insurance" from the first sentence.

H. Add new Subparagraph 9.8.6 immediately following Subparagraph 9.8.5 to read as follows:

9.8.6 Unless otherwise agreed upon in writing, the issuance of a Certificate of Substantial Completion shall not constitute acceptance of Work not in compliance with the requirements of the Contact Documents.

1.14 ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

A. Add new Clause 10.2.4.1 immediately following Subparagraph 10.2.4 to read as follows:

10.2.4.1 When use or storage of explosives or other hazardous materials or equipment are necessary, the Contractor shall give the Owner reasonable advance notice prior to using or storing such hazardous materials.

B. Subparagraph 10.2.7 shall be revised to read as follows:

The Contractor shall be solely responsible for designing and providing all necessary bracing, shoring and tying of all structures, decks and framing and for all other temporary facilities. The Contractor shall adequately brace, shore or otherwise support all elements of the Work to prevent any structural failure which could result in damage to the Work, property or injury or death to persons. The Contractor shall not load or permit any part of the Project or Project Site to be loaded so as to endanger its safety.

C. Add new Clause 10.2.7.1 immediately following Subparagraph 10.2.7 to read as follows:

10.2.7.1 The Contractor shall be solely responsible for the adequacy and safety of all hoisting equipment and scaffolding.

D. Add the following sentence to Subparagraph 10.3.2 at the end of the paragraph:

The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, or by mediation or arbitration under Paragraph 15.3 MEDIATION and Paragraph 15.4 ARBITRATION, which shall be commenced upon demand by either party without the necessity of a determination by the Architect.

E. Add new Clause 10.3.2.1 immediately following Subparagraph 10.3.2 to read as follows:

10.3.2.1 Asbestos shall be defined as Asbestos Containing Building Material (ACBM) which contains one

percent (1%) or greater of Asbestos as determined by the Polarized Light Microscopy Analysis (PLM), within the meaning of Public Law 99 519 together with the United States Environmental Protection Agency Regulations, Section 763.83 promulgated October 30, 1987, Federal Register, Volume 52, No. 210 defining Asbestos Containing Building Material (ACBM) As modified or supplemented on the Bid Date.

1.15 ARTICLE 11 - INSURANCE AND BONDS

A. Subparagraph 11.3.1 shall be modified by deleting the word "Owner"

B. Add new Clause 11.3.1.1 immediately following Subparagraph 11.3.1 to read as follows:

11.3.7.1 The Owner and Contractor intend that all policies provided in response to the property insurance provisions of the Agreement shall protect all of the parties insured and shall provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insured or additional insured.

1.16 ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

(Not Supplemented)

1.17 ARTICLE 13 - MISCELLANEOUS PROVISIONS

A. Add the following sentence immediately following the first sentence of Subparagraph 13.4.2.

Should the Contractor fail to, or refuse to, make arrangements for such additional testing, the Owner may, after written notice to the Contractor, make arrangements for such additional testing.

B. The first sentence of Subparagraph 13.4.3 shall be modified by adding the words "cost of testing" after the phrase "of repeated procedures".

C. Add new Paragraph 13.6 immediately following Clause 13.5.to read as follows:

13.6 OVERTIME WORK

13.6.1 All Overtime Work as defined by Federal and State Statue required to complete the Work in the Contract Time shall be included in the Contract Sum and the Contractor shall work overtime as required to complete the Work within the Contract Time. The Contract Sum shall not be adjusted for overtime work required to complete the Work in the Contract Time.

13.6.2 The Owner may order, in writing, additional Overtime Work to be performed. The Owner shall bear all costs of such Overtime Work and the Contact Sum shall be adjusted as provided in ARTICLE 7 - CHANGES IN THE WORK.

1.18 ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

A. Add new Clause 14.2.1.5 to Subparagraph 14.2.1 immediately following Clause 14.2.1.4 to read as follows:

14.2.1.5 is adjudged a bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency.

1.19 ARTICLE 15 – CLAIMS AND DISPUTES

A. Add new Clauses 15.1.6.2.1, 15.1.6.2.2 and 15.1.6.2.3 immediately following Clause 15.6.1.2 to read as follows:

15.6.1.2.1 The Contractor shall diligently and carefully research and study weather records for the Project Site for the purpose of determining the anticipated number of adverse weather days which will be encountered during the progress of the Work. An adverse weather day is defined as a day for which the temperature falls below 32°F or precipitation of 0.50 inches or more occurs such that the completion of at least four hours of work on the principal unit of work underway, between the hours of 7:00 o'clock A.M. and 6:00 o'clock P.M., local time, is not possible. This data shall be included with any claim submitted under Clause 15.6.1.2. Weather days for that month have been exceeded. Normal adverse Weather Days shall be as outlined in Table A and described in Section 108.07, Determination and Extension of Contract Time, by Oklahoma Department of Transportation Division.

15.6.1.2.2 Through submission of his Bid, the Contractor attests and warrants that his proposed Contract Time was prepared with full allowance for the anticipated number of adverse weather days.

15.6.1.2.3 Throughout the progress of the Work, the Contractor shall maintain accurate records on a calendar day basis of actual adverse weather days, to include weekends and holidays. These records shall be included with any claim submitted under Subparagraph 15.6.1.2.

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

SUMMARY OF WORK SECTION 01 11 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Salvage requirements.
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and drawing conventions.
10. Miscellaneous provisions.

B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.03 WORK COVERED BY THE CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. New concrete pavement parking spaces at south side of existing kingfisher county courthouse.

B. The Work is located at:

1. 119 S Main St.
   Kingfisher, OK 73750

C. The Work will be constructed for:

1. Kingfisher County Commissioners
   101 South Main Street #9.
   Kingfisher, OK 73750

D. The Partner in Charge is Gang Li

E. The Project Manager is Mary Baily

1.04 TYPE OF CONTRACT

A. Project will be constructed under a Single Prime contract.

1.05 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.06 SALVAGE REQUIREMENT

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Unless otherwise indicated, all equipment that must be removed due to interference with work of this contract remains the property of the Owner, and may be salvaged at the Owner's discretion.

1.07 CONTRACTORS USE OF SITE AND PREMISES

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

C. Provide access to and from site as required by law and by Owner:

1. Emergency Building Exits During Construction: Keep all building exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

2. Do not obstruct roadways, sidewalks, Entrance or other public ways without permit. Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

D. Existing building spaces may not be used for storage.

E. Utility Outages and Shutdown:

1. Limit disruption of utility services to hours the building is unoccupied.

2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.

3. Prevent accidental disruption of utility services to other facilities.

1.09 OWNER OCCUPANCY

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.

2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. The Owner will occupy the Project after Substantial Completion. Should the Owner require occupancy and occupy the Project prior to issuance of Substantial Completion Certificate, Contractor shall not consider this act an acceptance of any deficient work or deem the project substantially complete.

1.10 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

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

1. Notify Owner not less than two days in advance of proposed utility interruptions.

2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.

2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: The Kingfisher County Courthouse is a non-smoking building. Smoking is not permitted within the building or on the construction site.

F. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.

1.11 OTHER FEATURES

A. At the completion of all work periods the work area shall be cleared, all tools, equipment, materials and other items removed from the work area.

B. Prior to leaving the Project Site at the completion of any work period, take special precautions to insure that the facilities of the Owner have been fully and completely secured.

1.12 SPECIAL PAYMENT PROCEDURES

A. The last day to submit Payment Request to Architect will be established in preconstruction meeting with all parties involved, Owner, Architect, and Contractor.

B. Architect cannot assure timely submission of Payment Requests received after the date established in <A> above.

1.13 CONSTRUCTION OCCUPANCY

A. The Construction Occupancy Date shall be the date of the Notice to Proceed.

1.14 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

A. Unless otherwise noted, all provisions of the sections listed below apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.

B. Section 01 20 00 - Price and Payment Procedures.

C. Section 01 25 00 - Substitutions Procedures

D. Section 01 30 00 - Administrative Requirements.

E. Section 01 35 53 - Security Procedures.

F. Section 01 40 00 - Quality Requirements.

G. Section 01 41 00 - References.

H. Section 01 50 00 - Temporary Facilities and Controls.

I. Section 01 51 00 - Temporary Utilities.

J. Section 01 55 00 - Vehicular Access and Parking.

K. Section 01 60 00 - Product Requirements.

L. Section 01 77 00 - Closeout Procedures.

M. Section 01 78 00 -Closeout Submittals.

1.15 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The 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. Imperative mood and streamlined language are generally used in the Specifications. 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.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

3. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown on or mentioned in both. Any clarification and additional information needed, an RFI per 01 31 00 shall prepare and submit to architect.

4. In case of any inconsistency, any apparent difference, or any other apparent discrepancy in drawings, in specifications, or between drawings and specifications, which is most advantageous to the project interpreted by architect according to 00 73 00 Supplementary Condition 1.2.4 will govern. No modifications to the Contract Price will be granted under this situation to follow architect's direction unless contractor specified what was included in the bid form.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations and scheduled on Drawings.

3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.21 SEQUENCING OF WORK

A. The Work shall proceed continuously from the Notice to Proceed until Final Completion.

B. Substantial Completion of the project is expecting on or before 15 JUNE 2023.

PART 2 - PRODUCTS

2.01 OWNER-FURNISHED AND CONTRACTOR-INSTALLED PRODUCTS:

Not Used

2.02 OWNER-FURNISHED AND INSTALLED PRODUCTS:

Not Used

2.03 CONTRACTOR-FURNISHED AND OWNER-INSTALLED PRODUCTS:

Not Used

PART 3 - EXECUTION

3.01 GENERAL

A. Comply with all applicable codes, ordinances and requirements specified in Division 26 - Electrical.

B. Installation, where required, shall be complete, in accordance with manufacturer's written instructions and the best practices and standards of the trade involved.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.03 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    a. Application for Payment forms with continuation sheets.
    b. Submittal schedule.
    c. Items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than 14 days before the date scheduled for submittal of initial Application for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.
2. Form to be used: AIA Form G702 and AIA Form G703 -Application and Certification for Payment Continuation Sheet.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
    a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    a. Differentiate between items stored on-site and items stored off-site. If required, include

evidence of insurance.

6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity to achieve the total for the item. Use information indicated in the Contract Documents to determine quantities.

7. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum. a. Include each Change Order as a new line item.

9. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

10. Forms filled out by hand will not be accepted.

1.04 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect and Owner.

C. Application for Payment Forms: AIA Form G702 and AIA Form G703 -Application and Certification for Payment Continuation Sheet.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.

3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

5. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

6. Forms filled out by hand will not be accepted.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.

2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.

3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.

    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.

c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit either four signed and notarized original hard copies or digital copy in PDF format of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Digital copy or one copy shall include waivers of lien and similar attachments.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.

H. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

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

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Schedule of unit prices.
6. Submittal schedule (preliminary if not final).
7. List of Contractor's staff assignments.
8. List of Contractor's principal consultants.
9. Copies of building permits.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements as specified in Section 01 70 00, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.

8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

9. Final liquidated damages settlement statement.

1.05 CONTRACT MODIFICATION PROCEDURES

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in Proposal Request or 14 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

C. Administrative Change Orders

1. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

2. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

a. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.

b. Promptly execute the change.

3. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 15 days.

4. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.

5. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
    a. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
    b. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
    c. For pre-determined unit prices and quantities, the amount will base on the fixed unit prices.
    d. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
6. Substantiation of Costs: Provide full information required for evaluation.
    a. On request, provide following data:
        1). Quantities of products, labor, and equipment.
        2). Taxes, insurance, and bonds.
        3). Overhead and profit.
        4). Justification for any change in Contract Time.
        5). Credit for deletions from Contract, similarly documented.
    b. Support each claim for additional costs with additional information:
        1). Origin and date of claim.
        2). Dates and times work was performed, and by whom.
        3). Time records and wage rates paid.
        4). Invoices and receipts for products, equipment, and subcontracts, similarly documented.
    c. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
7. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
8. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
9. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
10. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Section Includes:

1. Cash allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowance.
5. Inspection and testing allowances. - Use of allowances for inspection and testing agencies (those included as part of contractor's base bid cost and those that are not) are included in Section 01 40 00 Quality Requirements.
6. Payment and modification procedures relating to allowances.

1.03 RELATED REQUIREMENTS

A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

B. Section 01 22 00 - Unit Prices: for procedures for using unit prices.

C. Section 01 40 00 - Quality Requirements: for procedures governing the use of allowances for testing and inspecting.

1.04 SELECTION AND PURCHASE

A. At the earliest feasible date after Contract award, advice the Architect of the date when the final selection and purchase of each product or system described by an allowance must be completed in order to avoid delay in performance of the Work.

1. When requested by the Architect, obtain proposals for each allowance for use in making final selections; include recommendations that are relevant to performance of the Work.
2. Purchase products and systems as selected by the Architect from the designated supplier.

1.05 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.06 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.07 CASH UNIT-COST AND QUANTITY ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site.

B. Costs Not Included in Cash Allowances: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing. All those shall be included as part of the Contract Sum and not part of the allowance.

C. Architect Responsibilities:

1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
2. Select products in consultation with Owner and transmit decision to Contractor.
3. Prepare Change Order.

D. Contractor Responsibilities:

1. Assist Architect in selection of products, suppliers, and installers.
2. Obtain proposals from suppliers and installers and offer recommendations.
3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

1.08 CONTINGENCY ALLOWANCE

A. Use the contingency allowance only as directed for the Owner's purposes. Funds will be drawn from the Contingency Allowance only by Change Order.

1. The Contractor's related costs for products or equipment ordered by the Owner under the contingency allowance, including delivery, installation, taxes, insurance, equipment rental, and similar costs are not part of the Contract Sum. However, no costs for Performance Bonds and Contractor’s Insurance can be added to Change Orders using Contingency Allowance funds until the original contract sum for which the bonds and insurances have been written for has been exceeded.
2. Change Orders authorizing use of funds from the contingency allowance will include the Contractor's related costs and reasonable overhead and profit margins (see Supplementary General Conditions).

B. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.09 INSPECTION AND TESTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. Inspection and testing allowances include the cost of engaging the inspection or testing agencies and costs for reporting the results of **unanticipated** below grade soil conditions. General Contractor shall include in his regular job costs, the inspection and testing required for footing and foundation soil compaction, concrete testing as specified in those sections of these specifications.

C. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

D. Costs of services not required by the Contract Documents are not included in the allowance.

E. At Project closeout, credit unused amounts remaining in the inspection and testing allowance to Owner by Change Order.

1.10 UNUSED MATERIALS

A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

B. Where it is not economically feasible to return unused material for credit and when requested by the Architect, prepare unused material for the Owner's storage, and deliver to the Owner's storage space as directed. Otherwise, disposal of excess material is the Contractor's responsibility.

1.11 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.

4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 INSPECTION

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

3.02 PREPARATION

A. 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 construction activities.

3.03 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Testing and Inspecting - Including special testing and report as specified in Section 01 45 33 “Code-Required Special Inspections and Procedures”

1. This fund shall be listed separately on the Schedule of Values. Should an additive or deductive Change Order occur on this Project, this fund amount will be adjusted upward or downward an amount exactly equal to the amount of said Change Order. At the conclusion of the Project, the Owner and Contractor agree to execute a deductive Change Order in the full amount remaining in the OWNER CONTINGENCY Fund. For the purposes of calculating the percentage of project completion on the Contractor's monthly Application and Certification for Payment, the amount in the CONTINGENCY ALLOWANCE fund shall be excluded.

END OF SECTION

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DIVISION 01 - GENERAL REQUIREMENTS

UNIT PRICES SECTION 01 22 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Defect assessment and non-payment for rejected work.

1.03 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities. Measurements and quantities will be verified by Contractor and Architect.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

D. Measurement Devices:

1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

3. Metering Devices: Inspected, tested and certified by the applicable state department within the past year.

E. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

G. Measurement by Area: Measured by square dimension using mean length and width or radius.

H. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

I. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

J. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

K. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

1.06 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

B. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined as unacceptable before or after placement.

3. Products not completely unloaded from the transporting vehicle.

4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.

6. Loading, hauling, and disposing of rejected Products.

1.07 DEFECT ASSESSMENT

A. Replace Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:

1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.

2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.

C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.

D. The authority of Architect to assess the defect and identify payment adjustment is final.

1.08 SCHEDULE OF UNIT PRICES

A. Item: No.1; Unit price per square foot to install four (4) inch concrete sidewalk on four (4) inch sand base per Section 32 13 14 “Concrete Walks and Pads”.

B. Item: No.2; Unit price per square foot to install six (6) inch concrete pavement per Section 32 13 13 “Concrete Pavement”.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.03 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.04 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, each party involved shall be notified in writing of the status of each alternate, in particular whether alternates have been accepted, rejected, or deferred for later consideration. Notification shall include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Snow Melting System and all related electrical work.

1. Base Bid: Not include.
2. Alternate: Provide snow melting system as shown on drawings, including electrical connections to existing basement electrical room.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Section:

1. Section 01 21 00 - Allowances for products selected under an allowance.
2. Section 01 23 00 - Alternates for products selected under an alternate.
3. Section 01 60 00 - Product Requirements for requirements for submitting comparable product submittals for products by listed manufacturers.

1.03 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.04 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. During the Bidding Phase Substitution Request Form: CSI Form 1.5C
2. After the Bidding Phase Substitution Request Form: CSI Form 13.1A.
3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate subcontractors that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.
    f. Certificates and qualification data, where applicable or requested.
    g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
    j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract

Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Requested substitution will not adversely affect Contractor's construction schedule.

c. Requested substitution has received necessary approvals of authorities having jurisdiction.

d. Requested substitution is compatible with other portions of the Work.

e. Requested substitution has been coordinated with other portions of the Work.

f. Requested substitution provides specified warranty.

g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

b. Requested substitution does not require extensive revisions to the Contract Documents.

c. Requested substitution is consistent with the Contract Documents and will produce indicated results.

d. Requested substitution will not adversely affect contractor's construction schedule.

e. Requested substitution has received necessary approvals of authorities having jurisdiction.

f. Requested substitution is compatible with other portions of the Work.

g. Requested substitution has been coordinated with other portions of the Work.

h. Requested substitution provides specified warranty.

i. If requested substitution involves more than one subcontractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all subcontractors involved.

PART 3 - EXECUTION

NOT USED

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

ADMINISTRATIVE REQUIREMENTS SECTION 01 30 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Preconstruction meeting.

B. Site mobilization meeting.

1.03 PROJECT COORDINATION

A. Project Coordinator: Contractor.

B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for vehicle access, traffic, and parking facilities.

C. During construction, coordinate use of site and facilities through the Project Coordinator.

D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.

F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

G. Make the following types of submittals to Architect through the Project Coordinator:

1. Requests for interpretation.
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Coordination drawings.
10. Closeout submittals.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Contractor will schedule a meeting after Notice of Award.

B. Attendance Required:

1. Owner.
2. Architect.
3. Contractor.

C. Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
5. Procedures and processing of field decisions, submittals, and substitutions, applications for

payments, proposal request, Change Orders, and Contract closeout procedures.

6. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Contractor will schedule a meeting at the Project Site prior to Contractor Occupancy.

B. Attendance Required:

1. Contractor.
2. Owner.
3. Architect.
4. Contractor's Superintendent.
5. Major Subcontractors.

C. Agenda:

1. Use of premises by Owner.
2. Owner's requirements and occupancy prior to completion.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. Requests for Information (RFIs).
4. Project meetings.

B. Related Sections:

1. Section 01 73 00 - Execution for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
2. Section 01 77 00 - Closeout Procedures for coordinating closeout of the Contract.

1.03 DEFINITIONS

A. RFI: Request from Owner, or Architect seeking information from each other during construction.

1.04 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.05 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

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

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate subcontractors if coordination of their Work is required.

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

1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

1.06 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
   a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
   b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
   d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
   e. Indicate required installation sequences.
   f. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inches (31.5 mm) in diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.

c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.

d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility.

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.

2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.

3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.

b. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

1.07 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.

2. Project number.

3. Date.

4. Name of Contractor.

5. Name of Architect.

6. RFI number, numbered sequentially.

7. RFI subject.

8. Specification Section number and title and related paragraphs, as appropriate.

9. Drawing number and detail references, as appropriate.

10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.

b. Requests for approval of substitutions.

c. Requests for approval of Contractor's means and methods.

d. Requests for coordination information already indicated in the Contract Documents.

e. Requests for adjustments in the Contract Time or the Contract Sum.

f. Requests for interpretation of Architect's actions on submittals.

g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 20 00 – Price and Payment Procedures, 1.05 Contract Modification Procedures.

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use CSI Log Form 13.2B. Include the following:

1. Project name.

2. Name and address of Contractor.

3. Name and address of Architect.

4. RFI number including RFIs that were dropped and not submitted.

5. RFI description.

6. Date the RFI was submitted.

7. Date Architect's response was received.

8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.08 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.

2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.

b. Phasing.

c. Critical work sequencing and long-lead items.

d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Sustainable design requirements.
l. Preparation of record documents.
m. Use of the premises.
n. Work restrictions.
o. Working hours.
p. Owner's occupancy requirements.
q. Responsibility for temporary facilities and controls.
r. Procedures for moisture and mold control.
s. Procedures for disruptions and shutdowns.
t. Construction waste management and recycling.
u. Parking availability.
v. Office, work, and storage areas. w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders. e. Purchases.
f. Deliveries. g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.

u. Installation procedures.

v. Coordination with other work.

w. Required performance results.

x. Protection of adjacent work.

y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.

2. Attendees: In addition to representatives of Owner and Architect, Contractor, each subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1). Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1). Interface requirements.

2). Sequence of operations.

3). Status of submittals.

4). Deliveries.

5). Off-site fabrication.

6). Access.

7). Site utilization.

8). Temporary facilities and controls.

9). Progress cleaning.

10). Quality and work standards.

11). Status of correction of deficient items.

12). Field observations.

13). Status of RFIs.

14). Status of proposal requests.

15). Pending changes.

16). Status of Change Orders.

17). Pending claims and disputes.

18). Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise GC's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule

concurrently with the report of each meeting.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

FACILITY SERVICES COORDINATION SECTION 01 31 14

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Coordination documents.

1.03 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Additional requirements for coordination.

B. Section 01 60 00 - Product Requirements: Spare parts and maintenance materials.

C. Section 01 78 00 - Closeout Submittals: Project record documents.

D. Section 01 79 00 - Demonstration and Training: Demonstration and Training.

1.04 MECHANICAL AND ELECTRICAL COORDINATOR

A. The Contractor will employ and pay for services of a person, technically qualified and administratively experienced in field coordination of the type of work required to be coordinated, for the duration of the Work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 COORDINATION REQUIRED

A. Coordinate the work listed below:

1. Electrical: Division 26.

B. Coordinate progress schedules, including dates for submittals and for delivery of products.

C. Conduct meetings among subcontractors and others concerned, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.

D. Participate in progress meetings. Report on progress of work to be adjusted under coordination requirements, and any required changes in schedules. Transmit minutes of meetings and reports to concerned parties.

3.02 COORDINATION DOCUMENTS

A. Prepare coordination drawings to organize installation of products for efficient use of available space, for proper sequence of installation, and to identify potential conflicts.

B. Prepare a master schedule identifying responsibilities for activities that directly relate to this work, including submittals and temporary utilities; organize by specification section.

C. Identify electrical power characteristics and control wiring required for each item of equipment.

D. Maintain documents for the duration of the work, recording changes due to site instructions, modifications or adjustments.

3.03 COORDINATION OF SUBMITTALS

A. Review shop drawings, product data, and samples for compliance with Contract Documents and for coordination with related work. Transmit copies of reviewed documents to Architect.

B. Check field dimensions and clearances and relationship to available space and anchors.

C. Check compatibility with equipment and work of other sections, electrical characteristics, and operational control requirements.

D. Check motor voltages and control characteristics.

E. Coordinate controls, interlocks, wiring of switches, and relays.

F. Coordinate wiring and control diagrams.

G. When changes in the work are made, review their effect on other work.

H. Verify information and coordinate maintenance of record documents.

3.04 COORDINATION OF SUBSTITUTIONS AND MODIFICATIONS

A. Review proposals and requests for substitution prior to submission to Architect.

B. Verify compliance with Contract Documents and for compatibility with work of other sections.

C. Submit with recommendation for action.

3.05 OBSERVATION OF WORK

A. Observe work for compliance with Contract Documents.

B. Maintain a list of observed deficiencies and defects; promptly submit.

3.06 DOCUMENTATION

A. Observe and maintain a record of tests. Record:

1. Specification section number and product name.
2. Name of Contractor, subcontractor.
3. Name of testing agency and name of inspector.
4. Name of manufacturer's representative present.
5. Date, time, and duration of tests.
6. Type of test, and results.
7. Retesting required.

B. Assemble background documentation for dispute and claim settlement.

C. Submit copies of documentation to Architect upon request.

3.07 EQUIPMENT START-UP

A. Verify utilities, connections, and controls are complete and equipment is in operable condition as required by Section 01 77 00.

B. Observe start-up and adjustments, test run, record time and date of start-up, and results.

C. Observe equipment demonstrations made to Owner; record times and additional information required for operation and maintenance manuals.

3.08 INSPECTION AND ACCEPTANCE OF EQUIPMENT

A. Prior to inspection, verify that equipment is tested, operational, clean, and ready for operation.

B. Assist Architect with review. Prepare list of items to be completed and corrected.

END OF SECTION

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. CPM schedule is a mutually-agreed construction plan which demonstrates to the Owner that the contractor has thought through all elements of the construction process, has conformed to the requirements of the contract, and can and will execute the activities within the contractual time frames. The CPM schedule also may be used as a tool for communication, re-examination of methodology, and settlement of disputes.

B. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Daily construction reports.
3. Field condition reports.

1.03 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network. 3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.04 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. PDF electronic file.
2. Two paper copies.

B. Start-up Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.

4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

E. Daily Construction Reports: Submit at monthly intervals.

F. Field Condition Reports: Submit at time of discovery of differing conditions.

1.05 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate subcontractors.

B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.

2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.

4. Startup and Testing Time: Include not less than 15 days for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

6. Punch List and Final Completion: Include not more than 30 days for punch list and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.

2. Work under More Than One Contract: Include a separate activity for each contract.

3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.

4. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.

b. Limitations of continued occupancies.

c. Uninterruptible services.

d. Partial occupancy before Substantial Completion.

e. Use of premises restrictions.

f. Provisions for future construction.

g. Seasonal variations.

h. Environmental control.

5. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the

current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.

E. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Utilize scheduling component of project Web site software specified in Division 01 Section "Project Management and Coordination", for Windows operating system.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.03 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events.
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule

responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

CONTRACTOR'S CONSTRUCTION REPORT

REPORT NO. _____

CONTRACTOR _____ DATE _____

JOB DESCRIPTION _____ CONTRACT COMPLETION DATE: _____

WORKING DAY YES _____ NO _____ WEATHER _____

CRAFTS WORKING THIS DATE:

CONTRACTOR		SUB-CONTRACTORS	
CRAFT	MEN	CRAFT	MEN
1. _____	_____	1. _____	_____
2. _____	_____	2. _____	_____
3. _____	_____	3. _____	_____

DESCRIPTION OF WORK DONE THIS DATE: _____

INFORMATION REQUESTED FROM A & E: _____

CONTRACTOR'S SUPT. _____

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections:

1. Section 01 32 00 - Construction Progress Documentation for submitting schedules and reports, including GC's construction schedule.
2. Section 01 78 00 - Closeout Submittals for submitting record Drawings, record Specifications, and record Product Data.

1.03 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.04 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

1.05 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
    a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Digital Drawing Software Program: The Contract Drawings are available in .DWG format. Other BIM formats may be made available on request if BIM has been utilized in the preparation of the Contract Documents.
    c. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
    d. The following digital data files will be furnished for each appropriate discipline:
        1). Floor plans.
        2). Reflected ceiling plans.
        3). BIM model, if available.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow 15 days for review of each resubmittal.

4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record GC's review and approval markings and action taken by Architect.

3. Include the following information for processing and recording action taken:

    a. Project name.

    b. Date.

    c. Name of Architect.

    d. Name of Contractor.

    e. Name of subcontractor.

    f. Name of supplier.

    g. Name of manufacturer.

    h. Submittal number or other unique identifier, including revision identifier.

        1). Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    i. Number and title of appropriate Specification Section.

    j. Drawing number and detail references, as appropriate.

    k. Location(s) where product is to be installed, as appropriate.

    l. Other necessary identification.

4. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.

    a. On an attached separate sheet, prepared on GC's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

    b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

        1). Project name.

        2). Date.

        3). Destination (To:).

4). Source (From:).

5). Name and address of Architect.

6). Name of Contractor.

7). Name of firm or entity that prepared submittal.

9). Names of subcontractor, manufacturer, and supplier.

10) Category and type of submittal.

11) Submittal purpose and description.

12). Specification Section number and title.

13). Specification paragraph number or drawing designation and generic name for each of multiple items.

14). Drawing number and detail references, as appropriate.

15). Indication of full or partial submittal.

16). Transmittal number.

17). Submittal and transmittal distribution record.

18). Remarks.

19). Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record GC's review and approval markings and action taken by Architect.

4. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software acceptable to Owner, containing the following information:

a. Project name.

b. Date.

c. Name and address of Architect.

d. Name of GC.

e. Name of Contractor.

f. Name of firm or entity that prepared submittal.

g. Names of subcontractor.

h. Category and type of submittal.

i. Submittal purpose and description.

j. Specification Section number and title.

k. Specification paragraph number or drawing designation and generic name for each of multiple items.

l. Drawing number and detail references, as appropriate.

m. Location(s) where product is to be installed, as appropriate.

n. Related physical samples submitted directly.

o. Indication of full or partial submittal.

p. Transmittal number.

q. Submittal and transmittal distribution record.

r. Other necessary identification.

s. Remarks.

F. Options: Identify options requiring selection by the Architect.

G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by

Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

H. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installer's, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.
    a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
2. Action Submittals: Submit three paper copies of each submittal, unless otherwise indicated. Architect will return two copies.
3. Informational Submittals: Submit two paper copies of each submittal, unless otherwise indicated. Architect will not return copies.
4. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
    b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
6. Test and Inspection Reports Submittals: Comply with requirements specified in Section 01 40 00 - Quality Requirements.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
    a. Wiring diagrams showing factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
    a. PDF electronic file.
    b. Three paper copies of Product Data, unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    a. Identification of products. b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm).
3. Submit Shop Drawings in the following format:
    a. PDF electronic file.
    b. Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture

variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project record sample.

1). If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:

a. PDF electronic file.

b. Three paper copies of product schedule or list, unless otherwise indicated. Architect will return two copies.

F. GC's Construction Schedule: Comply with requirements specified in Section 01 32 00 - Construction Progress Documentation.

G. Application for Payment: Comply with requirements specified in Section 01 20 00 – Price and Payment Procedures.

H. Schedule of Values: Comply with requirements specified in Section 01 20 00 – Price and Payment Procedures.

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A.

1. Submit subcontract list in the following format:

a. PDF electronic file.

b. Number of Copies: Three paper copies of subcontractor list, unless otherwise indicated. Architect will return two copies.

J. Coordination Drawings: Comply with requirements specified in Section 01 31 00 - Project Management and Coordination.

K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities

having jurisdiction, that product complies with building code in effect for Project.

T. Schedule of Tests and Inspections: Comply with requirements specified in Section 01 40 00 - Quality Requirements.

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

W. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

X. Maintenance Data: Comply with requirements specified in Section 01 78 00 - Closeout Submittals.

Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.02 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Section 01 77 00 - Closeout Procedures.

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear GC's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Security measures including entry control and personnel identification.

1.03 SECURITY PROGRAM

A. Protect Work, existing premises and Owner's operations from theft, vandalism, and unauthorized entry.

B. Initiate program at project mobilization.

C. Maintain program throughout construction period until Owner occupancy.

1.04 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into Project site and existing facilities.

B. Allow entrance only to authorized persons with proper identification.

C. Maintain log of workers and visitors, make available to Owner on request.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

C. Related Sections:

1. Divisions 2 through 33 Sections for specific test and inspection requirements.

1.03 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

D. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.04 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.05 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.

1. Indicate manufacturer and model number of individual components.
2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.06 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.07 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and

rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.08 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For 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.

1.09 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Manufacturer's Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.

b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

d. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.

2. Notify Architect seven days in advance of dates and times when mockups will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

6. Demolish and remove mockups when directed, unless otherwise indicated.

K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies

engaged and a description of types of testing and inspecting they are engaged to perform.

2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.

3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the Work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the Work, and submittal of written reports.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency/special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

B. Special Tests and Inspections: Conducted by a qualified testing agency/special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, reference during normal working hours.

3.01 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 - Execution.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Regulatory requirements applicable to this project are the following (most recent edition adopted by Authority Having Jurisdiction, Including all applicable Amendments and Supplements):

1. 29 CFR 1910 -Occupational Safety and Health Standards; as a work place.
2. ICC (IFC) -ICC International Fire Code.
3. ICC (IBC) -ICC International Building Code.
4. ICC (IPC) -ICC International Plumbing Code.
5. ICC (IMC) -ICC International Mechanical Code.
6. ICC (IFGC) -ICC International Fuel Gas Code.
7. ICC (IECC) -ICC International Energy Conservation Code.
8. NFPA 101 -Life Safety Code.
9. NFPA 70 -National Electrical Code.

1.03 RELATED REQUIREMENTS

A. Section 01 40 00 - Quality Requirements.

1.04 QUALITY ASSURANCE

A. Designer Qualifications: Where delegated engineering design is to be performed under the construction contract provide the direct supervision of a Professional Engineer experienced in design of this type of work and licensed in Oklahoma.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.03 DEFINITIONS

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

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

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

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

J. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

1.04 INDUSTRY STANDARDS

A. 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.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.05 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909)	472-4100
ICC	International Code Council www.iccsafe.org	(888)	422-7233
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) (562).	423-6587 699-0543

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities s in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

COE	Army Corps of Engineers www.usace.army.mil	(202)	761-0011
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) (301)	638-2772 504-7923
DOC	Department of Commerce www.commerce.gov	(202)	482-2000
DOD	Department of Defense http://dodssp.daps.dla.mil	(215)	697-6257
DOE	Department of Energy www.energy.gov	(202)	586-9220
EPA	Environmental Protection Agency www.epa.gov	(202)	272-0167
FAA	Federal Aviation Administration www.faa.gov	(866)	835-5322
FCC	Federal Communications Commission www.fcc.gov	(888)	225-5322
FDA	Food and Drug Administration www.fda.gov	(888)	463-6332
GSA	General Services Administration www.gsa.gov	(800)	488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202)	708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510)	486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)		
NIST	National Institute of Standards and Technology www.nist.gov	(301)	975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) (202)	321-6742 693-1999
PBS	Public Buildings Service (See GSA)		
PHS	Office of Public Health and Science http://www.hhs.gov/ophs/	(202)	690-7694
RUS	Rural Utilities Service (See USDA)	(202)	720-9540
SD	State Department www.state.gov	(202)	647-4000
TRB	Transportation Research Board http://gulliver.trb.org	(202)	334-2934
USDA	Department of Agriculture www.usda.gov	(202)	720-2791
USP	U.S. Pharmacopeia www.usp.org	(800)	227-8772
USPS	Postal Service	(202)	268-2000

www.usps.com

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512-1800 (202) 512-1800
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697-2664
DSCC	Defense Supply Center Columbus (See FS)	
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil/ Available from Defense Standardization Program www.dsp.dla.mil Available from General Services Administration www.gsa.gov Available from National Institute of Building Sciences www.wbdg.org/ccb	(215) 697-2664 (202) 619-8925 (202) 289-7800
FTMS	Federal Test Method Standard (See FS)	
MIL	(See MILSPEC)	
MIL-STD	(See MILSPEC)	
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697- 2664
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ODEQ	Oklahoma Department of Environmental Quality http://www.deq.state.ok.us/	(405) 702-0100
ODOC	Oklahoma Department of Corrections http://doc.ok.gov//	(405) 425-2500
ODOT	Oklahoma Department of Transportation https://ok.gov/odot/	
OMES	Oklahoma office of management and Enterprise Services https://www.ok.gov/OSF/	(405) 521-2141
OSBI	Oklahoma State Bureau of Investigation https://www.ok.gov/osbi/	(405) 848-6724
OSDE	Oklahoma State Department of Education http://www.sde.ok.gov/sde/	(405) 521-3301
OSDH	Oklahoma State Department of Health https://www.ok.gov/health/	(405) 271-5600
OUBCC	Oklahoma Uniform Building Code Commission	(405) 521-6501

https://www.ok.gov/oubcc/

1.06 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue specified in this section, except where a specific date is established by applicable code.

C. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES SECTION 01 45 33

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-01 Specification Sections apply to work specified in this Section.

1.02 SCOPE OF WORK

A. The Owner's Testing Laboratory: An independent testing laboratory will sample and test materials as they are being installed for compliance with acceptance criteria as specified and report and interpret the results. The laboratory shall monitor and report on the installation of constructed work and shall perform tests on the completed construction as required to indicate Contractor's compliance with the various material specifications governing this work. The owner shall be responsible for paying the testing laboratory for these services.

B. The Contractor shall not engage the same testing laboratory for construction services as the Owner has for quality assurance testing, unless agreed to by the Owner.

1.03 RELATED REQUIREMENTS

A. Section 01 25 00 - Submittal Procedures.

B. Section 01 40 00 - Quality Requirements.

C. Section 01 42 00 - References.

D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.04 DEFINITIONS

A. Code or Building Code: current adopted Edition of the International Building Code and, more specifically, Chapter 17 - Special Inspections and Tests.

B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.

C. Special Inspection:

1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved contract documents and the referenced standards.

2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

1.05 REFERENCE STANDARDS

(Current Edition when furnishing Inspections or conducting Tests)

A. ACI 318 -Building Code Requirements for Structural Concrete and Commentary.

B. ACI 530/530.1/ERTA -Building Code Requirements and Specification for Masonry Structures and Related Commentaries.

C. AISC 360 -Specification for Structural Steel Buildings.

D. ASTM C31/C31M -Standard Practice for Making and Curing Concrete Test Specimens in the Field.

E. ASTM C172/C172M -Standard Practice for Sampling Freshly Mixed Concrete.

F. ASTM D3740 -Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

G. ASTM E543 -Standard Specification for Agencies Performing Nondestructive Testing.

H. ASTM E2570 -Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage.

I. AWS D1.1/D1.1M -Structural Welding Code - Steel.

J. AWS D1.3 -Structural Welding Code - Sheet Steel.

K. AWS D1.4/D1.4M -Structural Welding Code - Reinforcing Steel.

1.06 SPECIAL INSPECTIONS

A. The Owner's Testing Laboratory or a separate agency shall serve as a Special Inspector to provide Special Inspection services for the items listed below. The scope of such services for each item shall be as defined

in the Building Code or as defined in the local building code of the jurisdiction wherein the project is located. These inspections are mandatory for conformance to the legal requirements of the building code and shall be in addition to the inspections and tests otherwise defined in this specification.

1. Reinforcing Steel Placement
2. Concrete Work
3. Welding of Reinforcing Steel
4. Bolts to be Installed in Concrete and Their Installation to allow for higher allowable tension values
5. Prestressing Tendons Placement
6. Prestressing Operation
7. Grouting of Bonded Prestressing Tendons
8. Precast Concrete Erection
9. Inspection of Structural Steel, Bolting, and Welding Material
10. Welding of Structural Steel
11. High-Strength Bolting
12. Compacted Earth Fill
13. Pile Foundations
14. Pier Foundations
15. Shotcrete Work
16. Masonry Work
17. Wood Construction

B. Qualifications of Special Inspector: The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the Building Official, for inspection of the particular type of construction or operation being inspected. The Special Inspector shall meet the legal qualifications of the building code having jurisdiction.

C. Duties and Responsibilities of the Special Inspector:

1. The special inspector shall observe the work assigned to ascertain that, to the best of his/her knowledge, it is in conformance with the approved design drawings and specifications.
2. The special inspector shall furnish inspection reports to the Building Official, the Architect/Engineer, and the Owner. All discrepancies shall be brought to the immediate attention of the Architect/Engineer, Contractor, and Owner. A report that the corrected work has been inspected shall be sent to the Building Official, the Architect/Engineer, and the Owner.
3. The special inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance to the approved plans and specifications and the applicable workmanship provisions of the building code.

1.07 QUALIFICATIONS OF TESTING LABORATORY

A. The Testing Laboratory shall meet the basic requirements of ASTM E329 and shall submit to the Owner, Architect, and Engineer evidence of current accreditation from the American Association for Laboratory Accreditation, the AASHTO Accreditation Program or the "NIST" National Voluntary Laboratory Accreditation Program.

B. The Testing Laboratory shall be an Approved Agency by the Building Official of the city wherein the project is located to perform Special Inspections and other tests and inspections as outlined in the applicable building code.

C. Tests and inspections shall be conducted in accordance with specified requirements, and if not specified, in accordance with the applicable standards of the American Society for Testing and Materials or other recognized and accepted authorities in the field.

D. Qualifications of Welding Inspectors

1. Inspectors performing visual weld inspection shall meet the requirements of AWS D1.1 Section 6.1.4. Welding inspection shall be supervised and the inspection reports signed by an inspector with current certification as an AWS Certified Welding Inspector (CWI)
2. Inspectors performing nondestructive examinations of welds other than visual inspection (MT, PT, UT, RT) shall meet the requirements of AWS D1.1, Section 6.14.6.

E. Qualifications for Post-Tensioning Inspector - The technician for the Owner's Testing Laboratory performing the field inspections required for post-tensioned concrete shall possess a currently valid Level

2 Post-Tensioning Inspector Certification issued by the Post-Tensioning Institute. A copy of such certification for each such technician shall be submitted for Engineer review and approval.

1.08 AUTHORITIES AND DUTIES OF THE LABORATORY

A. The Owner's Testing Laboratory shall receive from the Owner and review the project plans and specifications with the Architect and Engineer immediately upon receipt and prior to the start of construction. The Laboratory may attend preconstruction conferences with the Architect, Engineer, Project Manager, Contractor, and Material Suppliers as required to coordinate materials inspection and testing requirements with the planned construction schedule and shall participate in such conferences throughout the course of the project.

B. Cost Proposal: The Testing Laboratory's proposal to the Owner shall contain unit price stipulations for specified tests and inspections and on an hourly basis for personnel. A total estimated price shall also be submitted.

C. Cooperation with Design Team: The Laboratory shall cooperate with the Architect, Engineer, and Contractor and provide qualified personnel promptly on notice.

D. The Laboratory shall perform the required inspections, sampling, and testing of materials as specified under each section and observe methods of construction for compliance with the requirements of the Contract Documents and the applicable building code.

E. Inspections Required by Government Agencies: The Testing Laboratory shall perform inspections and submit reports and certifications as required by government agencies having jurisdiction over the aspects of the project covered by this specification.

F. Notification of Deficiencies in the Work: The Laboratory shall notify the Architect, Engineer, and Contractor within 24 hours of discovery by telephone or e-mail, and then in writing of observed irregularities and deficiencies of the work and other conditions not in compliance with the requirements of the Contract Documents.

G. Reports:

1. Information on Reports: The Laboratory shall submit copies of reports of inspections and tests promptly and directly to the parties named below. The reports shall contain at least the following information:
    a. Project Name
    b. Date report issued
    c. Testing Laboratory name and address
    d. Name and signature of inspector
    e. Date of inspection and sampling
    f. Date of test
    g. Identification of product and Specification section
    h. Location in the project
    i. Identification of inspection or test
    j. Record of weather conditions and temperature (if applicable)
    k. Results of test regarding compliance with Contract Documents
2. Copies: The Laboratory shall send signed copies of test and inspection reports to the following parties:
    a. 2 copies to the Owner or his representative
    b. 2 copies to the Contractor
    c. 1 copy to the Architect
    d. 1 copy to the Engineer of responsibility
3. Certification: Upon completion of the job, the Laboratory shall furnish to the Owner, Architect, and Engineer of Record, a statement signed by a licensed professional engineer that, to the best of their knowledge, required tests and inspections were made in accordance with the requirements of the Contract Documents.

H. Accounting: The Testing Laboratory shall be responsible for separating and billing costs attributed to the Owner and costs attributed to the Contractor.

I. Monitoring Product and Material Certifications: The Testing Laboratory shall be responsible for monitoring the submittals of product and material certifications from manufacturers and suppliers as specified in the Specifications and shall report to the Owner, Architect, and Engineer when those submittals are not made in a timely manner.

J. Limitations of Authority: The Testing Laboratory is not authorized to revoke, alter, relax, enlarge upon, or release any requirements of the Specifications or to approve or accept any portion of the work or to perform any duties of the Contractor and his Subcontractors.

1.09 CONTRACTOR'S RESPONSIBILITY

A. Cooperation with Design Team: The Contractor shall cooperate with laboratory personnel, provide access to the work, and to manufacturer's operations.

B. Furnishing Samples and Certificates: The Contractor shall provide to the laboratory certificates and representative samples of materials proposed for use in the work in quantities sufficient for accurate testing as specified.

C. Furnishing Casual Labor, Equipment and Facilities: The Contractor shall furnish casual labor, equipment, and facilities as required for sampling and testing by the laboratory and otherwise facilitate the required inspections and tests.

D. Advance Notice: The Contractor shall be responsible for notifying the Testing Laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests. Failure to sufficiently notify may result in additional costs incurred by the Testing Laboratory that may be back-charged to the Contractor by the Owner.

E. Payment for Substitution Testing: The Contractor shall arrange for and pay for any additional samples and tests above those required by the Contract Documents as requested by the Contractor for his convenience in performing the work.

F. Payment for Retesting: The Contractor shall be liable to the Owner for the cost for any additional inspections, sampling, testing, and retesting done by the Owner’s Testing Laboratory as required when initial tests indicate work does not comply with the requirements of the Contract Documents.

G. Payment by Contractor: The Contractor shall furnish and pay for the following items if required:

1. Soil survey of the location of borrow soil materials, samples of existing soil materials, and delivery to the Contractor’s Testing Laboratory.
2. Samples of concrete aggregates and delivery to the Contractor’s Testing Laboratory.
3. Concrete mix designs as prepared by his concrete supplier.
4. Site-situated storage boxes for concrete cylinders
5. Concrete coring, tests of below strength concrete, and load tests, if ordered by the Owner, Architect, or Engineer.
6. Certification of reinforcing steel and prestressing steel mill order.
7. Certification of structural steel mill order.
8. Certification of portland cement, lime, fly ash.
9. Certification of welders and preparation of Welding Procedure Specifications.
10. Tests, samples, and mock-ups of substitute material where the substitution is requested by the Contractor and the tests are necessary in the opinion of the Owner, Architect or Engineer to establish equality with specified items.
11. The making and testing of concrete cylinders for the purpose of evaluating strength at time of form stripping or for post-tensioning or the time spent evaluating the in situ strength of concrete using the Maturity Method.
12. Any other tests when such costs are required by the Contract Documents to be paid by the Contractor.

H. Notification of Source Change: The Contractor shall be responsible for notifying the Owner, Architect, Engineer, and Owner’s Testing Laboratory when the source of any material is changed after the original tests or inspections have been made.

I. Tests for Suspected Deficient Work: If in the opinion of the Owner, Architect, or Engineer any of the work of the Contractor is not satisfactory, the Contractor shall furnish and pay for all tests that the Owner, Architect, or Engineer deem advisable to determine its proper construction. The Owner shall pay all costs if the tests prove the questioned work to be satisfactory.

1.10 PAYMENT OF TESTING LABORATORY

A. The Owner will pay for the initial Laboratory services for testing of materials for compliance with the requirements of the Contract Documents. The Contractor will be liable to the Owner for the cost for testing and retesting of materials that do not comply with the requirements of the Contract Documents and shall furnish and pay for the testing and inspection of other items as specified in these Specifications.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 SCOPE OF WORK

A. The work to be performed by the Testing Laboratory shall be as specified in this Section of the Specification and as determined in meetings with the Owner, Architect, and Engineer.

3.02 EARTHWORK:

A. Compacted Fill Inspection and Testing:

1. Field Density Testing:

a. Paved Areas and Building Slab Subgrade:

1). Make at least one field density test of the natural subgrade for every 2500 square feet of paved area or building slab but in no case less than three tests.

2). In each compacted fill layer or lift, make one field density test for every 2500 square feet of building slab or paved area but in no case less than three tests.

b. Foundation Wall Backfill: Make at least one field density test for each 200 lineal feet of wall with a minimum of 4 tests for the basement walls around the perimeter of each building and a minimum of one test for every other type of foundation wall on the site. Tests shall be performed in random lifts along each wall.

c. Compacted Fill Beneath Column and Wall Footings and Mat Foundations: Make at least one field density test in each compacted fill layer or lift for each column footing, one for each twenty-five lineal feet of wall and one for each 2500 sq. ft of mat foundation area or fraction thereof.

2. Field Density Tests: Field Density Tests shall be run according to ASTM D2937, or ASTM D2922 as applicable.

3. Acceptance Criteria: The results of field density tests by the Laboratory will be considered satisfactory if the average of any three consecutive tests has a value not less than the required density with no single test falling more than 2 percent below the required density and the moisture content conforms to the requirements of the specification.

4. Additional Testing: If reports by the Laboratory indicate field densities lower than specified, additional tests will be run by the Laboratory with at least the frequencies scheduled above on recompacted fill and/or natural subgrade. The Testing Laboratory shall notify the Contractor on a timely basis for any required retesting so as not to delay the work. The costs of such tests shall be liable to the Owner for repayment by the Contractor.

B. Foundation Inspection by the Testing Laboratory:

1. Augercast Piles:

a. Grout Tests: Make and test one set of 6 2-inch cubes according to the requirements of ASTM C109. Each strength test shall be the average of two 28 day strengths. Test two cubes at 3 days, two at 7 days, and two cubes at 28 days. Make an additional set of three cubes and test them at 90 days if a special pozzolan is used in the grout mix. Make one set of cubes for each day's operation but not less than one set for each 25 cubic yards or one set for each pile cap.

2. Precast Concrete Piles:

a. Plant Inspection: Inspect forms, placement of reinforcing steel, and strands, placement and finishing of concrete, and tensioning of strands.

b. Concrete Cylinders: Make and test one set of four cylinders for each 100 cubic yards but not less than one set for each day's operation. Break one cylinder at 7 days and two at 28 days and one at 56 days.

3. Drilled Piers, Underreamed and Spread Footings:

a. Concrete Cylinders: Make and test concrete cylinders as specified for Cast-in-Place Concrete.

b. Reinforcing Steel: Inspect reinforcing steel for proper number and size of bars and confirm dowel or anchor bolt placement into top of pier.

4. Mat Footings

a. Concrete Cylinders: Make and test concrete cylinders as specified for Poured-in-Place Concrete.

b. Reinforcing Steel: Inspect reinforcing steel size, number of bars, and placement and confirm dowel or anchor bolt placement into footing.

c. Temperature Monitoring: Monitor the temperature of the concrete in the mat at different levels as it cures.

C. Foundation Inspection by the Geotechnical Engineer: The Geotechnical Engineer of Record shall provide inspection service for the following items before and during foundation installation as appropriate for the foundation type. The Geotechnical Engineer shall submit written field inspection reports promptly after inspection to the parties listed above and report his findings after each inspection by telephone or e-mail to the Engineer.

1. Spread (Excavated) and Mat Footing:

a. Subgrade: Verify that foundation bearing conditions are consistent with soil report tests and that the footing is being installed in the proper soil strata at the proper elevation. Make recommendations regarding adjustment to subgrade or bearing elevation if subgrade is not adequate to support footing.

2. Augercast Piles:

a. Dimensional Verification: Verify placement location, plumbness, diameter and length of piles.

b. Monitoring Grout Quantity: Record for each pile inspected quantity of grout placed compared to the actual quantity required. Report discrepancies to Engineer.

c. Continuously monitor the grouting operation to verify that the grout head is maintained at least 5 feet above the injection point.

d. Grout Level: Continuously monitor and record top of pile elevation as grout sets over a 24 hour period. Immediately report any drop in pile elevation to Engineer.

e. Report: For each pile installed, prepare and submit a report the lists the following information: pile location, pile number, pile diameter, actual tip elevation, actual top of grout elevation, pile length, theoretical volume of grout, actual volume of grout placed, reinforcing steel size and actual depth actually placed, drilling start and finish time, amount of drop of grout level in the first 24 hours after placing, and a list of any unusual occurrences that may affect pile performance. The report shall include the name of the project, the name of the piling contractor and the name of the drilling superintendent. The report shall be signed by a licensed engineer in the state where the project is located.

3. Precast Concrete Piles:

a. Blow Counts: Record blow count per foot of penetration for each pile. Report any discrepancies to Engineer.

b. Splices: Inspect 100% of piles splices for proper type and installation.

c. Report: For each pile installed, prepare and submit a report that lists the following information: pile location and number, computed pile capacity, type and size of hammer used, type of pile-driving cap used, rate of operation of pile driving equipment, pile size or dimensions, elevation of point, elevation of butt before and after cut-off, ground elevation, continuous record of number of blows for each foot of penetration, splice type and locations along length of pile, any pile deviation from specified tolerances, evidence and measurement of pile heave (if any), evidence of pile relaxation (drop-off in pile capacity with time), evidence of soil freeze (increase in pile capacity with time), retap data if a pile is driven further after initial installation, any unusual occurrences during pile driving and state whether or not the pile is capable of supporting the specified design load. The report shall state the recommended course of action for any damaged or mis-driven piles. The report shall include the name of the project, the name of the piling contractor and the name of the field superintendent. The report shall be signed by a licensed engineer in the state where the project is located.

4. Drilled Piers and Underreamed Footings:

a. Bearing Elevation: Observe that piers are founded in proper bearing strata as defined in the Geotechnical Report and that bottom of hole is clean and properly formed. Recommend appropriate action if specified bearing elevation does not provide proper strength.

b. Bell and Shaft Sizes: Verify that the shaft and bell diameters are within specified tolerances.

c. Shaft Stability: Observe the shaft sides as drilling proceeds and recommend appropriate

action if sloughing becomes excessive.

d. Concrete Quantities: Record quantity of concrete placed in each pier and compare against theoretical quantity required. Report discrepancies to Engineer.

e. Placement Method: Observe that piers are placed by approved methods as defined in the Geotechnical Report and in the specifications. Confirm that casings are being used as recommended in the Geotechnical Report. Confirm that concrete is not being contaminated by soil encroachment into pier.

f. Report: For each drilled shaft installed, prepare and submit a report indicating the following information: pier number and location, pier shaft diameter, pier underream diameter (if applicable), bottom elevation, top elevation, pier length, theoretical volume of concrete in pier, estimate of actual volume of concrete placed, reinforcing steel size and depth actually placed, drilling start and finish time, concreting start and finish time, variation from specified tolerances including surveyed location and plumbness, construction method (dry method, casing method, or slurry displacement method), groundwater conditions (rate of water infiltration and depth of water in hole prior to concreting for dry piers; water elevation in hole for wet piers), elevation of top and bottom of any casing left in place, description of temporary or permanent casing (including purpose, diameter, wall thickness and length), description and elevation of any obstructions encountered and whether removal was obtained, description of pier bottom including amount and extent of loose material, method of concrete placement, any difficulties encountered in drilling or concreting operations, and any deviations from specifications. The report shall include the name of the project, the name of the drilling contractor and the name of the field superintendent. The report shall be signed by a licensed engineer in the state where the project is located.

D. Pile Load Test: The Geotechnical Engineer shall supervise a pile load test(s) as specified on the drawings according to ASTM D1143-74. He shall submit a written report of his findings to the parties listed above and report by telephone or e-mail to the Engineer, the results of the pile load tests. Refer to the Pile Specification for additional requirements of the test.

3.03 REINFORCING STEEL

A. If reinforcing steel is purchased direct from a United States Mill, Manufacturer’s test sheets will be sufficient. Steel supplier shall furnish mill certificate reports.

B. If steel is from an undetermined origin or manufacturer’s test sheets or mill certificate reports are unavailable, perform tension and bending tests on three separate samples of each size of bar for every five tons of each type of steel as specified in the appropriate ASTM Specifications. Contractor shall furnish all material for testing and pay for all such tests.

C. Mechanical Tension Splices: The Owner’s Testing Laboratory shall provide 100% visual inspection of mechanical tension splices on the project. Inspection shall verify compliance with specifications and conformance with the manufacturer’s recommendations for installation after consulting with the manufacturer, who is to be present for the first installation of the splice on the project. The Laboratory shall additionally conduct monotonic tension tests in accordance with ASTM A1034 of mechanical tension splices of the type as specified on the structural drawings. It is not necessary that the specimens to be tested are production splices, however, the specimens to be tested shall have been made by the Contractor's personnel under field conditions. The rate of testing shall be as follows:

1. Two specimens for the first 50 splices (or fraction thereof for small jobs) at the beginning of the job. Splices not meeting tension requirements shall be retested at Contractor's expense until all splices meet the tension requirements.

2. One specimen for every 100 (or fraction thereof) additional splices occurring on the job. Any splices not meeting tension requirements shall be retested at Contractors expense until all splices have passed the test.

3. A minimum of one test specimen shall also be selected from transition splices (splices of one bar size to another bar size), if any.

B. Compression Butt Splices: The Owner’s Testing Laboratory shall provide 100% visual inspection of compression butt splices on the job. Inspection shall verify splice conformance with the requirements for end bearing splices as set forth in ACI 318 Building Code Requirements for Reinforced Concrete as well as the manufacturer’s instructions.

C. Reinforcing Steel Field Inspection: The Owner’s Testing Laboratory or designated Special Inspector shall inspect 100 % of reinforcement before each concrete pour to verify the information noted below. Inspection reports shall be prepared and distributed in accordance with the local building code and as specified in this specification.

1. Primary and secondary, longitudinal reinforcement has correct size and number in proper layers.

2. Longitudinal reinforcement has correct length and lap.
3. Ties and stirrups are of correct size, spacing, and number and have the proper termination-hook geometry.
4. Unscheduled face reinforcement in beams are provided and are of correct size, number and spacing and have the proper end terminations.
5. Proper hooks are provided at bar ends as detailed.
6. Reinforcement is properly supported and braced to formwork to prevent movement during concreting operation.
7. Reinforcement has proper cover.
8. Sufficient spacing between reinforcement for concrete placement.
9. Dowel reinforcement is of proper size, at proper spacing, and has proper lap length and embedment length.
10. Welded wire reinforcement is composed of flat sheets, has proper wire gage and spacing, is properly supported, and is properly lapped with a length of one square plus two inches.
11. Proper Construction/Control/Expansion joint spacing and reinforcement.
12. Reinforcement around embedded items is erected according to details.
13. Welded reinforcement has been done according to AWS requirements. Review the Welding Procedure Specification (WPS) submitted by the contractor for any reinforcing steel other than ASTM A 706 that is proposed to be welded for consistency with acceptable welding practices and the AWS.
14. Proper installation of flat-slab shear-head reinforcement

D. Welded Reinforcing: Continuous inspection of the welding of reinforcing bars to ensure compliance with the requirements of AWS shall be done for the following items:
1. Reinforcing steel resisting flexural and axial forces.
2. Boundary elements of reinforced concrete walls.
3. Shear reinforcement.

3.04 CONCRETE CONTROL AND TESTING

A. Secure composite samples in accordance with ASTM C172. Each sample shall be obtained from a different batch of concrete on a random basis, avoiding any selection of the test batch other than by a number selected at random before commencement of concrete placement.

B. Specimens for pumped concrete shall be taken at the discharge end of pumping equipment.

C. Any deviations from the requirements of ASTM Specifications shall be recorded in the test report. Test concrete specimens in accordance with ASTM C39.

D. Concrete Test Cylinders:
1. Cylinder Molding and Testing: Cylinders for strength tests shall be molded and Laboratory cured in accordance with ASTM C31 and tested in accordance with ASTM C39. Cylinders may be either 6” in diameter by 12” or 4” in diameter by 8”, however, the diameter of the cylinder shall be at least three times the nominal maximum size of the coarse aggregate in the mix tested. All of the cylinders for each class of concrete shall be of the same dimension for all sets of that class.
2. Frequency of Testing: Each set of test cylinders shall consist of a minimum of four standard test cylinders. A set of test cylinders shall be made according to the following minimum frequency guidelines:
a. One set for each class of concrete taken not less than once a day.
b. Mat Foundation: One set for each 250 cubic yards or fraction thereof.
c. Piers, Piles, Underreamed Footings: One set for each 100 cubic yards or fraction thereof.
d. Pressure-Injected Footings: One set for each 50 cubic yards or fraction thereof.
e. Spread Footings: One set for each 100 cubic yards or fraction thereof.
f. Pile Caps: One set for each 50 cubic yards or fraction thereof.
g. Basement Walls: One set for each 150 cubic yards.
h. Floors: One set for each 150 cubic yards or fraction thereof but not less than one set for each 5000 square foot of floor area.
i. Columns: One set for each 100 cubic yards or fraction thereof with a minimum of 2 sets per floor.

j. Shear Walls: One set for each 50 cubic yards but not less than 2 sets per floor.

k. Tilt-wall Panels: One set for every 100 cubic yards or fraction thereof.

l. All Other Concrete: A minimum of one set for each 150 cubic yards or fraction thereof.

m. No more than one set of cylinders at a time shall be made from any single truck.

n. If the total volume of concrete is such that the frequency of testing as specified above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

o. The above frequencies assume that one batch plant will be used for each pour. If more than one batch plant is used, the frequencies cited above shall apply for each plant used.

3. The cylinders shall be numbered, dated, and the point of concrete placement in the building recorded.

4. Standards for Tests of Concrete:

a. Slump Tests: Slump Tests (ASTM C143) shall be made at the beginning of concrete placement for each batch plant and for each set of test cylinders made. The slump test shall be made from concrete taken from the end of the concrete truck chute. The concrete shall be considered acceptable if the slump is within plus or minus 1 inch of the slump noted on the mix design submittal form for that class of concrete.

b. Air Entrainment: Air entrainment tests (ASTM C231 or C173, C173 only for lightweight concrete) shall be made at the same time slump tests are made as cited above.

c. Concrete Temperature: Concrete temperature at placement shall be measured (ASTM C1064) at the same time slump tests are made as cited above.

d. Unit Weight Test: ASTM C138

E. Inspect each batch of concrete, monitor addition of mixing water to assure uniform consistency from truck to truck. Check mixing from mixers before mix begins to set and within time limits set forth in ASTM C94.

1. Monitor addition of water to concrete at job site and length of time concrete is allowed to remain in truck during placement.

2. Certify each delivery ticket indicating class of concrete delivered, amount of water added and time at which cement and aggregate was discharged into truck, and time at which concrete was discharged from truck.

F. Should the strength of concrete fall below the minimum, then additional tests, including load tests, may be required. These tests, if required, shall be made at the Contractor's expense and shall be in accordance with ASTM C42 and ACI 318. If tests do not meet the applicable requirements, then the structure, or any part of the structure, shall be removed and replaced at the Contractor's expense.

G. Test reports shall include but not be limited to the following information: Date of concrete placement, concrete mix identification number or proportions of ingredients, truck ticket number, time test was made, time of batching, location of each placement, slump, unit weight and air content of concrete sampled and date and results of strength test.

H. Report promptly to Architect all details of reasons for rejection of any and all quantities of concrete. Give all information concerning locations of the concrete pours, quantities, date of pours, and other pertinent facts concerning concrete represented by the specimens.

I. Any concrete testing requested by the Contractor for early formwork or shoring removal, etc., shall be at the Contractor's expense.

J. Furnish a statistical analysis for each class of concrete placed on the project in accordance with ACI 214-77 and ACI 318. Information shall be updated and distributed once a month as directed by the Architect. Information shall include, but not be limited to, the following:

1. Strength tests at 7 days of 2 cylinder averages.

2. Strength tests at 28 days of 2 cylinder averages.

3. 28-day moving average strength tests of last 3 test groups.

4. Standard deviation and coefficient of variation based on 28 day strength tests.

5. Average strength and number of 28 day tests for most recent month.

K. Rejection of Concrete: The Contractor shall reject concrete delivered to the site for any of the following reasons:

1. Wrong class of concrete (incorrect mix design number).
2. Environmental Conditions: Environmental condition limits shall be as follows unless appropriate provisions in concreting practices have been made for cold or hot weather:
    a. Cold Weather: Air temperature must be 40°F and rising or the average daily temperature cannot have been lower than 40°F for 3 consecutive days unless the temperature rose above 50°F for at least one-half of any of those 24 hour periods.
    b. Hot Weather: Environmental conditions must be such that cause an evaporation rate from the concrete surface of 0.2 lb./sq. ft./hr. or less as determined by Figure 2.1.5 in ACI 305R-91. Concrete may be placed at other environmental condition ranges only with approval of the job inspector for the Owner's Testing Laboratory or other duly appointed representative.
3. Concrete with temperatures exceeding 95°F shall not be placed in the structure.
4. Air contents outside the limits specified in the mix designs.
5. Slumps outside the limits specified.
6. Excessive Age: Concrete shall be discharged within 90 minutes of plant departure or before it begins to set if sooner than 90 minutes unless approved by the Laboratory job inspector or other duly appointed representative.

L. Concrete Batch Trip Tickets: Concrete batch trip tickets shall be collected and retained by the Contractor. Compressive strength, slump, air, and temperature tests shall be identified by reference to a particular trip ticket. Tickets shall contain the information specified in ASTM C94. Each ticket shall also show the amount of water that may be added in the field for the entire batch that will not exceed the specified water cement ratio for the design mix. The Contractor and Owner's Testing Laboratory shall immediately notify the Architect/Engineer and each other of tickets not meeting the criteria specified.

3.05 MORTAR OR GROUT

A. For every other day of grout placed, strength shall be tested with a set of cubes as follows:
1. A set of cubes shall consist of three cubes to be tested at 7 days, and three cubes to be tested at 28 days.
2. Test cubes shall be made and tested in accordance with ASTM C109, with the exception that the grout should be restrained from expansion by a top plate.

3.06 STRUCTURAL STEEL

A. Contractor shall provide the Testing Laboratory with names of welder to be employed on work, during fabrication and erection, together with certification that each of these welders has passed qualifications tests within the last year, unless noted otherwise, in accordance with AWS Standards.

B. Inspect all structural steel during and after erection for conformance with Contract Documents and Shop Drawings. Any cases of insufficient bracing or guying, or other unsafe conditions shall be immediately called to attention of Contractor and reported to Architect.
1. No burning or other field correction of steel members is permitted without express permission of Owner's representative. Immediately report violations.
2. Shop Inspection:
    a. Review Shop Drawings and shop procedures with Fabricator's supervisory personnel.
    b. Request and obtain necessary mill certification of steel and verify proper material throughout the duration of the job, as required.
    c. Review welding procedures and welder operator qualifications for conformance to the technical requirements of the specifications.
    d. Check layout and dimensions of jigs and fixtures for multiple fabrications, joint preparation, fit-up, and runout plates.
    e. Verify welding electrodes to be used and other welding consumables as job progresses.
    f. Check preheating procedure for uniformly and thoroughness through the full thickness of material.
    g. Make visual inspection of welding in progress for size, length and quality.
    h. Check bolted connections as required by the technical requirements of the specifications.
    i. Perform random dimensional checks of completed members.
    j. Provide inspection of surface preparation for coating and coating operations.
3. Field inspection:

a. Obtain planned erection procedure, and review with Erector's supervisory personnel.

b. Check installation of anchor bolts and base plates.

c. Verify field welding procedures and welder qualifications to assure conformance with the specifications.

d. Check steel as received in field for possible shipping damage, workmanship and piece marking.

e. Check plumbness, alignment and camber as erection progresses including proper bracing.

f. Check joint preparation, fit-up, backing strips and runout plates.

g. Check preheating to assure proper temperature, uniformity, and thoroughness through the full material thickness.

h. Review welding sequence.

i. Visually inspect field welding for size, length, and quality.

4. Inspection of High-Strength Bolted Construction shall be in accordance with the latest edition of AISC Specification for Structural Joints, and as follows:

a. All high-strength bolted connections shall be visually inspected.

b. At least two bolts of every third connection between floor beams and girders shall be checked with a calibrated torque wrench for proper torque.

c. At least two bolts of every third connection between girders and columns shall be checked as above.

d. All bolts in every connection in the primary exterior framing and braced framing shall be checked as above.

e. All bolted connections that fail shall be corrected and all bolts in the connection shall be retested.

f. Check calibration of impact wrenches at least twice daily.

5. Inspection of all welds shall be in accordance with the latest edition of the AWS Structural Welding Code.

a. Visually inspect all welds in accordance with AWS D1.1.

b. All penetration column to base plate welds shall be inspected by ultrasonic testing in accordance with ASTM E-164.

c. All full penetration welds in moment connections shall be inspected by ultrasonic testing.

6. Inspection of headed stud connector welding shall be in accordance with the latest edition of the AWS Structural Welding Code and as follows:

a. Visual inspection of all studs shall indicate complete fusion and weld flush or fillet for 100 percent circumference. There will be no indication of lack of infusion or undercut weld.

b. A minimum of two (2) shear studs shall be welded at the start of each production period in order to determine proper generator, control unit and stud welder setting. These studs shall be capable of being bent 45 degrees from vertical without weld failure. If, after welding, visual inspection reveals that a sound weld or a full 360 degree fillet has not been obtained for a particular stud, such stud shall be struck with a hammer and bent 15 degrees off perpendicular to the nearest end of the beam. Studs failing under this test shall be replaced.

3.07 STEEL JOISTS AND JOIST GIRDERS

A. Testing Laboratory shall inspect the shop fabrication and the field fabrication and erection at all times during the process of the Work. The Testing Laboratory shall inspect all connections of both bolted and welded types.

B. Testing Laboratory shall inspect the erection of steel joists and joist girders for proper installation. This inspection shall include checking for proper bearing, welding, bolting, and installation of bridging.

3.08 METAL DECK

A. Testing Laboratory shall perform field inspection of metal deck for proper type, gage, finish, installation and attachment. Testing Laboratory shall provide a written report of their inspection.

3.09 MASONRY

A. Verification Testing Frequency: Verification of masonry strength (f'm) will be performed at the beginning of masonry construction and during construction for each 5000 square feet of wall area or portion thereof.

B. Concrete Masonry Unit: For each type of concrete masonry unit indicated, verify compliance with ASTM C90 and the strength required by design. Verification may be by reviewing certification from unit producer showing compliance.

C. Mortar:

1. Throughout construction, verify the proportions of the site-prepared mortar mix comply with the requirements of ASTM C270 for the type specified.

2. Verify the proportions of materials in premixed or preblended mortar comply with the requirements of ASTM C270 for the type specified as delivered to the site.

D. Grout:

1. Prior to grouting, verify the proportions of site-prepared grout mix comply with the requirements of ASTM C476 for each type of grout used.

2. Verify the proportions of materials in premixed or preblended grout comply with the requirements of ASTM C476 as delivered to the site.

E. Prism Test Method:

1. Compression Test: For each type of wall construction indicated for testing, test representative masonry prisms by methods of sampling and testing of ASTM C1314, and as follows:

a. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

b. For concrete masonry prisms adhere to requirements as specified under preconstruction testing. Build prisms on job using same materials and methods as for wall construction. Store prisms in air at temperature not less than 65°F in a facility supplied by the contractor where they will be undisturbed for seven (7) days. After seven (7) days, transport to laboratory in a manner which will not disturb mortar bond. c. Cap each prism with suitable material to provide bearing surfaces on each end.

1). Plane within 0.003 inch.

2). Approximately perpendicular to the axis of the prism.

d. The preparation of prisms shall be observed by the testing agency that will test the prisms.

2. Report test results in writing and in form specified under each test method, to Architect and Contractor, on same day tests are made.

3. Retests: Where prism tests indicate non-compliance with specified requirements, additional testing shall be performed at the frequency of two additional tests for each unsatisfactory test. The cost of such additional testing shall be the responsibility of the Contractor. Where retesting fails to indicate conformance with specified requirements, any masonry construction represented by unsatisfactory tests shall be removed and replaced with acceptable masonry construction.

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

TEMPORARY FACILITIES AND CONTROLS SECTION 01 50 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Section:

1. Section 01 11 00 – Summary of Work for limitations on work restrictions and utility interruptions.

1.03 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.04 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit

D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste handling procedures.
5. Other dust-control measures installation of finish materials.

1.05 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

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

C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.06 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch (3.8-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts with 1-5/8-inch- (42-mm-) OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

C. Wood Enclosure Fence: Plywood, [6 feet (1.8 m)] [8 feet (2.4 m)] high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.

D. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).

E. Insulation for insulated temporary enclosures and partitions: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.02 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of 6 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m) square tack and marker boards.
3. Drinking water and private toilet.
4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
5. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.03 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 01 77 00 "Closeout Procedures".

C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

b. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust producing equipment. Isolate limited work within occupied areas using portable dust containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter equipped vacuum equipment.

H. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

I. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

K. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install telephone line(s) for each field office.

1. At each telephone, post a list of important telephone numbers.
   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor's home office.
   d. Architect's office.
   e. Engineers' offices.
   f. Owner's office.
   g. Principal subcontractors' field and home offices.
2. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Provide temporary parking areas for construction personnel in accordance with the Owner.

D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required.
   a. Provide temporary, directional signs for construction personnel and visitors.

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution Requirements" for progress cleaning requirements.

G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

H. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Prohibit smoking in construction areas.

2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.05 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.

2. Protect stored and installed material from flowing or standing water.

3. Keep porous and organic materials from coming into prolonged contact with concrete.

4. Remove standing water from decks.

5. Keep deck openings covered or dammed.

3.06 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 - Closeout Procedures.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, and water.

1.03 RELATED REQUIREMENTS

A. Section 01 50 00 - Temporary Facilities and Controls:

1. Temporary telecommunications services for administrative purposes.
2. Temporary sanitary facilities required by law.

1.04 TEMPORARY ELECTRICITY

A. Cost: By Owner.

B. Provide power service required from owner's existing utility source.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location and meter.

E. Permanent convenience receptacles may be utilized during construction.

F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.05 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain incandescent lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.

B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.

C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

D. Maintain lighting and provide routine repairs.

1.06 TEMPORARY HEATING

A. Cost of Energy: By Contractor.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

D. Existing facilities shall not be used.

1.07 TEMPORARY COOLING

A. Cost of Energy: By Contractor.

B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.

C. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

D. Existing facilities shall not be used.

1.07 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Owner.

B. Connect to existing water source.

1. Exercise measures to conserve water.

PART 2 - PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

VEHICULAR ACCESS AND PARKING SECTION 01 55 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Access roads.

B. Parking.

C. Existing pavements and parking areas.

D. Permanent pavements and parking facilities.

E. Maintenance.

F. Removal, repair.

G. Mud from site vehicles.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Temporary Construction: Contractor's option.

B. Materials for Permanent Construction: As specified in product specification sections, including earthwork, paving base, and topping.

2.02 SIGNS, SIGNALS, AND DEVICES

A. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

B. Flag Person Equipment: As required by local jurisdictions.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.

3.02 ACCESS ROADS

A. Use of designated existing on-site streets and driveways for construction traffic is permitted.

B. Tracked vehicles not allowed on paved areas.

C. Provide and maintain access to fire hydrants free of obstructions.

D. Coordinate with owner to provide access to onsite fire trucks.

3.03 PARKING

A. Use of designated areas of existing parking facilities by construction personnel is permitted.

B. Do not allow heavy vehicles or construction equipment in parking areas.

C. Arrange for temporary parking areas to accommodate use of construction personnel.

D. When site space is not adequate, provide additional off-site parking.

3.04 NEW PERMANENT PAVEMENTS

A. Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.

B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

3.05 CONSTRUCTION PARKING CONTROL

A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.

B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.

C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.06 FLAG PERSONS

A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.07 HAUL ROUTES

A. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

3.08 MAINTENANCE

A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud, snow, and ice.

B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.09 REMOVAL, REPAIR

A. Remove underground work and compacted materials to a depth of 2 feet; fill and grade site as specified.

B. Repair existing facilities damaged by use, to original condition.

C. Repair damage caused by installation.

3.10 MUD FROM SITE VEHICLES

A. Provide means of removing mud from vehicle wheels before entering streets.

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

TEMPORARY EROSION AND SEDIMENT CONTROL SECTION 01 57 13

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.03 RELATED REQUIREMENTS

A. Section 32 11 24 - Graded Crushed Agg Base Course for Flexible Pavement.

1.04 REFERENCE STANDARDS

(Current Edition at Date of Bid)

A. ASTM D4355 -Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.

B. ASTM D4491 -Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

C. ASTM D4533 -Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

D. ASTM D4632 -Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

E. ASTM D4751 -Standard Test Method for Determining Apparent Opening Size of a Geotextile.

F. ASTM D4873 -Standard Guide for Identification, Storage, and Handling of Geo synthetic Rolls and Samples.

1.05 PERFORMANCE REQUIREMENTS

A. Comply with requirements of State of Oklahoma Department of Environmental Quality.

B. Submit DEQ Form 606-002A, Notice of Intent for Storm water Discharges Associated with Construction Activity on Sites of One or More Acres. Develop, submit and follow Storm Water Pollution Plan as required by Oklahoma Department of Environmental Quality.

C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

1. Obtain and pay for permits and provide security required by authority having jurisdiction.

2. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.

D. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

E. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.

1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.

2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

F. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.

2. Prevent development of ruts due to equipment and vehicular traffic.

3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

G. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.

1. Prevent windblown soil from leaving the project site.
2. Prevent tracking of mud onto public roads outside site.
3. Prevent mud and sediment from flowing onto sidewalks and pavements.
4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

H. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

I. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

J. Open Water: Prevent standing water that could become stagnant.

K. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Mulch: Use one of the following:
1. Straw or hay.
2. Wood waste, chips, or bark.
3. Erosion control matting or netting.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Bales: Air dry, rectangular straw bales.
1. Cross Section: 14 by 18 inches, minimum.
2. Bindings: Wire or string, around long dimension.

D. Bale Stakes: One of the following, minimum 3 feet long:
1. Steel U-or T-section, with minimum mass of 1.33 lb per linear foot.
2. Wood, 2 by 2 inches in cross section.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
2. Permittivity: 0.05 sec^{-1}, minimum, when tested in accordance with ASTM D4491.
3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355 after 500 hours exposure.
4. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D4632.
5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632.
6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D4533.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

F. Silt Fence Posts: One of the following, minimum 5 feet long:
1. Steel U-or T-section, with minimum mass of 1.33 lb per linear foot.
2. Softwood, 4 by 4 inches in cross section.
3. Hardwood, 2 by 2 inches in cross section.

G. Gravel: See Section 32 11 24 for aggregate.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.

1. Width: As required; 20 feet, minimum.
2. Length: 50 feet, minimum.
3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.

1. Provide linear sediment barriers:
   a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   b. Across the entrances to culverts that receive runoff from disturbed areas.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
   a. Slope of Less Than 2 Percent: 100 feet.
   b. Slope Between 2 and 5 Percent: 75 feet.
   c. Slope Between 5 and 10 Percent: 50 feet.
   d. Slope Between 10 and 20 Percent: 25 feet.
   e. Slope Over 20 Percent: 15 feet.

D. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

E. Soil Stockpiles: Protect using one of the following measures:

1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

F. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.

1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

G. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:

1. Excavate minimum of 6 inches.
2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
3. Place and compact at least 6 inches of 1.5 to 3.5 inch diameter stone.

B. Silt Fences:

1. Store and handle fabric in accordance with ASTM D4873.
2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more

than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.

5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
7. Fasten fabric to wood posts using one of the following:
   a. Four 3/4 inch diameter, 1 inch long, 14 gage nails.
   b. Five 17-gage staples with 3/4 inch wide crown and 1/2 inch legs.
8. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Straw Bale Rows:

1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
2. Install bales so that bindings are not in contact with the ground.
3. Embed bales at least 4 inches in the ground.
4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
5. Fill gaps between ends of bales with loose straw wedged tightly.
6. Place soil excavated for trench against bales on the upslope side of the row, compacted.

D. Temporary Seeding:

1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:

1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:

1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Clean out temporary sediment control structures weekly and relocate soil on site.

F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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DIVISION 01 - GENERAL REQUIREMENTS

TEMPORARY PROJECT SIGNAGE SECTION 01 58 13

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Project identification sign.

1.03 QUALITY ASSURANCE

A. Design sign and structure to withstand 50 miles/hr. wind velocity.

B. Sign Painter: Experienced as a professional sign painter for minimum three years.

C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: New, wood, structurally adequate.

B. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch thick, standard large sizes to minimize joints.

C. Rough Hardware: Galvanized.

D. Paint and Primers: Exterior quality, two coats; sign background of color as selected.

E. Lettering: Exterior quality paint, contrasting colors.

2.02 PROJECT IDENTIFICATION SIGN

A. Two painted signs of construction, design, and content shown on Drawings, location designated.

B. Content:

1. Project title, logo and name of Owner as indicated on Contract Documents.
2. Names and titles of Architect and Consultants.
3. Name of Prime Contractor.

C. Graphic Design, Colors, Style of Lettering: Designated by Architect.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install project identification sign within 30 days after date fixed by Notice to Proceed.

B. Erect at location of high public visibility adjacent to main entrance to site.

C. Install sign surface plumb and level, with butt joints. Anchor securely.

D. Paint exposed surfaces of sign, supports, and framing.

3.02 MAINTENANCE

A. Maintain signs and supports clean, repair deterioration and damage.

3.03 REMOVAL

A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.03 RELATED REQUIREMENTS

A. Section 01 21 00 - Allowances: for products selected under an allowance.

B. Section 01 23 00 - Alternates: for products selected under an alternate.

C. Section 01 25 00 - Substitution Procedures: for requests for substitutions.

D. Section 01 40 00 - Quality Requirements: Product quality monitoring.

E. Section 01 42 00 - References: for applicable industry standards for products specified.

F. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC restricted product categories.

1.04 REFERENCE STANDARDS

A. 16 CFR 260 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; current edition.

B. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.05 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.06 SUBMITTALS

A. Action Submittals

Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 01 25 00 - Submittal Procedures.

b. Use product specified if Architect does not issue a decision on use of a comparable

product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 25 00 - Submittal Procedures. Show compliance with requirements.

C. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.07 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.08 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

3. Refer to Divisions 02 through 33. Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 77 00 - Closeout Procedures.

PART 2 - PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Do not use products having any of the following characteristics unless specifically required or approved by Owner and Architect:

1. Made outside the United States, its territories, Canada, or Mexico.

2. Made using or containing CFC's or HCFC's.

3. Made of wood from newly cut old growth timber.

2.03 PRODUCT SELECTION PROCEDURES

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

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

3. Products:

a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.

b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.

b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 77 00 - Substitution Procedures for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.04 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

2.05 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 - EXECUTION

3.01 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. On delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

C. Transport and handle products in accordance with manufacturer's instructions.

D. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

E. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to

product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Prevent contact with material that may cause corrosion, discoloration, or staining.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

3.04 SYSTEMS DEMONSTRATION

A. Prior to final inspection, demonstrate operation of each system to Architect and Owner.

B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

END OF SECTION

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DIVISION 01 - GENERAL REQUIREMENTS

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS SECTION 01 61 16

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. VOC restrictions for product categories listed below under "DEFINITIONS."

1.03 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

B. Section 01 60 00 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

1.04 DEFINITIONS

A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:

1. Adhesives, sealants, and sealer coatings.
2. Carpet.
3. Carpet cushion.
4. Carpet tile.
5. Resilient floor coverings.
6. Wood flooring.
7. Paints and coatings.
8. Insulation.
9. Gypsum board.
10. Acoustical ceilings and panels.
11. Cabinet work.
12. Wall coverings.
13. Composite wood and agrifiber products used either alone or as part of another product.
14. Other products when specifically stated in the specifications.

B. Interior of Building: Anywhere inside the exterior weather barrier.

C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including fire stopping sealants and duct joint sealers.

1.05 REFERENCE STANDARDS

(Current Edition at Date of Bid)

A. CRI (GLCC) -Green Label Testing Program -Approved Product Categories for Carpet Cushion; Carpet and Rug Institute.

B. CRI (GLP) -Green Label Plus Carpet Testing Program -Approved Products; Carpet and Rug Institute.

C. GreenSeal GS-36 -Commercial Adhesives; Green Seal, Inc..

D. SCAQMD 1168 -South Coast Air Quality Management District Rule No.1168; www.aqmd.gov.

E. SCS (CPD) -SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.06 SUBMITTALS

A. See Section 01 30 00 -Administrative Requirements, for submittal procedures.

B. Evidence of Compliance: Submit for each different product in each applicable category.

C. Product Data: For each VOC-restricted product used in the project, submit product data showing compliance, except when another type of evidence of compliance is required.

D. Installer Certifications for Accessory Materials: Require each installer of any type of product (not just the

products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of his products, or 2) that such products used comply with these requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Adhesives and Joint Sealants: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168.

1. Evidence of Compliance: Acceptable types of evidence are:

a. Report of laboratory testing performed in accordance with requirements.

b. Published product data showing compliance with requirements.

c. Certification by manufacturer that product complies with requirements.

B. Aerosol Adhesives: Provide only products having volatile organic compound (VOC) content not greater than required by GreenSeal GS-36.

1. Evidence of Compliance: Acceptable types of evidence are:

a. Current GreenSeal Certification.

b. Report of laboratory testing performed in accordance with GreenSeal GS-36 requirements.

c. Published product data showing compliance with requirements.

C. Paints and Coatings: Provide products having VOC content as specified in Section 09 90 00.

D. Carpet and Adhesive: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.

1. Evidence of Compliance: Acceptable types of evidence are:

a. Current Green Label Plus Certification.

b. Report of laboratory testing performed in accordance with requirements.

E. Carpet Tile and Adhesive: Provide products having VOC content as specified in Section 09 68 13.

F. Composite Wood and Agrifiber Products and Adhesives Used for Laminating Them: Provide products having no added urea-formaldehyde resins.

1. Evidence of Compliance: Acceptable types of evidence are:

a. Current SCS "No Added Urea Formaldehyde" certification; www.scscertified.com.

b. Published product data showing compliance with requirements.

c. Certification by manufacturer that product complies with requirements.

G. Other Product Categories: Comply with limitations specified elsewhere.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. All additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 INTENT

A. It is the specific intent of this Section of the Specifications to require all materials systems, products and other items to be in full and complete compliance with the ADA.

PART 2 - PRODUCTS

2.01 PRODUCTS, SYSTEMS, MATERIALS, ITEMS

A. All Products, Systems, Materials or others items incorporated into the Work, to include job-built items, shall be in full and complete compliance with the ADA requirements. This requirement shall not be waived even though any Product, System, Material or other item is not specifically required to comply with ADA requirements in other Sections of these Specifications.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install all Products, Systems, Materials and other items in full and complete compliance with ADA requirements.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 COMPLIANCE WITH APPLICABLE LAW

A. The Contractor shall fully comply with the requirements of Public Law 99-519 the Asbestos Hazard Emergency Response Act of 1986 and the United States Environmental Protection Agency Regulations promulgated October 30, 1987, Federal Register Volume 52, No. 210 as amended or supplemented on the Bid Date.

B. The Contractor shall enforce compliance with this law and these regulations to all Sub-Contractors, Sub-Subcontractors and Material Suppliers on this Project. Each Subcontract, Sub-Subcontract and Purchase Order applicable to this project shall contain Subparagraph A directly above.

1.03 INTENT

A. It is the specific intent of this Section of the Specifications to prohibit the use or installation of any product, material, component of any product or material assembled from two or more separate products or materials, or any item into the Work which contains more than one (1) percent asbestos by weight, and, thus, would be classified by Law as an Asbestos Containing Building Material.

PART 2 - PRODUCTS

2.01 ASBESTOS MATERIALS

A. No asbestos materials or products containing asbestos shall be installed in the project.

B. If any such material or product is inadvertently installed, it shall be removed and replaced with an approved substitute, at no cost to the Owner.

C. It shall be the Contractors responsibility to verify that all materials and products used are asbestos-free, regardless of what may be called for in the Contract Documents.

D. The Contractor shall provide a notarized certificate as required in Section 01 78 00, that these conditions have been met.

PART 3 - EXECUTION

NOT USED

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 COMPLIANCE WITH APPLICABLE LAW AND REGULATION

A. Fully comply with the requirements of The Lead Contamination Control Act, and other applicable regulations and laws controlling the use of lead in buildings.

B. The Contractor shall enforce compliance with applicable laws and regulations to all Subcontractors, Sub-subcontractors and Material Suppliers on this Project. Each subcontract, sub-subcontract and purchase order applicable to this Project shall contain Subparagraph A directly above.

1.03 INTENT

A. It is the specific intent of this Section of the Specification to require the use of lead-free solder for all water distribution systems, to include the internal plumbing of all factory assembled products such as water heaters, drinking fountains, electric water coolers and faucets.

PART 2 - PRODUCTS

2.01 LEAD MATERIALS

A. No lead materials or products containing lead shall be installed in the project.

B. If any such material or product is inadvertently installed, it shall be removed and replaced with an approved substitute, at no cost to the Owner.

C. It shall be the Contractors responsibility to verify that all materials and products used are asbestos-free, regardless of what may be called for in the Contract Documents.

D. The Contractor shall provide a notarized certificate as required in Section 01 78 00, that these conditions have been met.

PART 3 - EXECUTION

NOT USED

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

B. Related Sections:

1. Section 01 77 00 - Closeout Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 INFORMATIONAL SUBMITTALS

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.05 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    a. Primary operational systems and equipment.
    b. Fire separation assemblies.
    c. Air or smoke barriers.
    d. Fire-suppression systems.
    e. Mechanical systems piping and ducts.
    f. Control systems.

g. Communication systems.

h. Fire-detection and -alarm systems.

i. Conveying systems.

j. Electrical wiring systems.

k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.

b. Membranes and flashings.

c. Exterior curtain-wall construction.

d. Sprayed fire-resistive material.

e. Equipment supports.

f. Piping, ductwork, vessels, and equipment.

g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.06 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.

2. List of detrimental conditions, including substrates.

3. List of unacceptable installation tolerances.

4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

2. Establish limits on use of Project site.

3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

4. Inform installers of lines and levels to which they must comply.

5. Check the location, level and plumb, of every major element as the Work progresses.

6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points

before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.05 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.06 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original

condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. Do not cut existing reinforcing. X-ray or use another method of locating reinforcing and then adjust the exact location for core-drilling. Verify with Architect the final location of all penetrations to be drilled.

4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.07 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.08 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.09 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Division 1 Section "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.11 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

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DIVISION 01 - GENERAL REQUIREMENTS

CONSTRUCTION WASTE MANAGEMENT SECTION 01 74 19

PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Disposing of nonhazardous construction waste.

1.03 Related Requirements

A. Section 02 41 13 - Selective Site Demolition: for disposition of waste resulting from partial demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.

B. Section 04 22 00 - Concrete Unit Masonry: for disposal requirements for masonry waste.

C. Section 31 10 00 - Site Clearing: for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.04 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.05 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 01 50 00 - Temporary Facilities and Controls.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

2. Comply with Section 01 50 00 - Temporary Facilities and Controls for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

E. Plumbing Fixtures: Separate by type and size.

F. Lighting Fixtures: Separate lamps by type and protect from breakage.

G. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.03 RECYCLING CONSTRUCTION WASTE, GENERAL

A. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

1. Inspect containers and bins for contamination and remove contaminated materials if found.

B. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

C. Stockpile materials away from construction area. Do not store within drip line of remaining trees.

D. Store components off the ground and protect from the weather.

E. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.04 DISPOSAL OF WASTE

A. General: Remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

CLOSEOUT PROCEDURES SECTION 01 77 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Sections:

1. Division 01 Section 01 78 00 - Closeout Submittals for submitting Record Drawings, Record Specifications, and Record Product Data.
2. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.03 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.
   a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certificates of Release: From authorities having jurisdiction.

1.04 SPECIAL TOOLS AND TEST EQUIPMENT

A. Special tools: Provide any special tools needed to perform repair and maintenance for each equipment item.

B. Test Equipment: Provide a detailed list of the test equipment needed to perform repair and maintenance for each equipment item. The list shall contain the special test equipment part number, size, quantity, manufacturer’s name and address, and local supplier’s name and address.

1.05 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.

10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

11. Advise Owner of changeover in heat and other utilities.

12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

13. Complete final cleaning requirements, including touchup painting.

14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.06 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."

2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Submit pest-control final inspection report and warranty.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Architect will return annotated file.

1.08 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

g. Sweep concrete floors broom clean in unoccupied spaces.

h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

j. Remove labels that are not permanent.

k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

1). Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.

o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.

p. Leave Project clean and ready for occupancy.

3.02 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

DIVISION 01 - GENERAL REQUIREMENTS

CLOSEOUT SUBMITTALS SECTION 01 78 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.03 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 77 00 - Closeout Procedures: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.04 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:

1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.

2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.

3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.

4. Submit two sets of revised final documents plus digital copy in PDF format in final form within 10 days after final inspection.

C. Warranties and Bonds:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.

2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Additional information as specified in individual product specification sections.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:

1. Description of unit or system, and component parts.
2. Identify function, normal operating characteristics, and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Complete nomenclature and model number of replaceable parts.

B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

G. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

    a. Significant design criteria.

    b. List of equipment.

    c. Parts list for each component.

    d. Operating instructions.

    e. Maintenance instructions for equipment and systems.

    f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project documents and certificates, including the following:

    a. Shop drawings and product data.

    b. Certificates.

    c. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:

1. HVAC systems and equipment.
2. Plumbing equipment.
3. Electrical systems and equipment.
4. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:

1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
2. Finishes, including flooring, wall finishes, and ceiling finishes.
3. Fixtures and fittings.
4. Items specified in individual product Sections.

1.03 RELATED REQUIREMENTS

A. Section 01 78 00 -Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.04 SUBMITTALS

A. See Section 01 25 00 - Submittal Procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.

1. Submit to Architect for transmittal to Owner.
2. Submit not less than four weeks prior to start of training.
3. Revise and resubmit until acceptable.
4. Provide an overall schedule showing all training sessions.
5. Include at least the following for each training session:
    a. Identification, date, time, and duration.
    b. Description of products and/or systems to be covered.
    c. Name of firm and person conducting training; include qualifications.
    d. Intended audience, such as job description.
    e. Objectives of training and suggested methods of ensuring adequate training.
    f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
    g. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

1.05 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.

1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

1.06 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize

disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.01 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.
2. Documentation: Review the following items in detail:
    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project record documents.
    e. Identification systems.
    f. Warranties and bonds.
    g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.
    h. Normal shutdown instructions.
    i. Operating procedures for emergencies.
    j. Operating procedures for system, subsystem, or equipment failure.

k. Seasonal and weekend operating instructions.

l. Required sequences for electric or electronic systems.

m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.

b. Checking adjustments.

c. Noise and vibration adjustments.

d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.

b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.

b. Types of cleaning agents to be used and methods of cleaning.

c. List of cleaning agents and methods of cleaning detrimental to product.

d. Procedures for routine cleaning

e. Procedures for preventive maintenance.

f. Procedures for routine maintenance.

g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.

b. Repair instructions.

c. Disassembly; component removal, repair, and replacement; and reassembly instructions.

d. Instructions for identifying parts and components.

e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.

2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.

1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. Provide training in minimum two hour segments.

D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:

1. The location of the O&M manuals and procedures for use and preservation; backup copies.

2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.

3. Typical uses of the O&M manuals.

F. Product-and System-Specific Training:

1. Review the applicable O&M manuals.

2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.

3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.

4. Provide hands-on training on all operational modes possible and preventive maintenance.

5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.

6. Discuss common troubleshooting problems and solutions.

7. Discuss any peculiarities of equipment installation or operation.

8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.

9. Review recommended tools and spare parts inventory suggestions of manufacturers.

10. Review spare parts and tools required to be furnished by Contractor.

11. Review spare parts suppliers and sources and procurement procedures.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Demolition and removal of site improvements.
2. Abandoning in place and removing below-grade construction.
3. Disconnecting, capping or sealing, and abandoning in-place and removing site utilities.

B. Related Sections include the following:

1. Section 31 10 00 - Site Clearing for site clearing and removal of above- and below-grade site improvements not part of building demolition.

1.03 DEFINITIONS

A. Demolish/Remove: Completely remove and legally dispose of off-site.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

E. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Building Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.
4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Predemolition Photographs or Video: Submit before Work begins.

F. Landfill Records: Indicate receipt and acceptance of waste disposed of in a landfill. Any waste requiring disposal that does not meet the requirements to be disposed of in a Construction & Demolition landfill as regulated by the Oklahoma Department of Environmental Quality should be pre-approved by the Engineer.

1.06 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA, ODEQ before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

C. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be demolished.
2. Review and finalize protection requirements.
3. Review procedures for erosion control.

1.07 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

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

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

F. Contractor shall provide necessary construction traffic control along any public streets, highways, or other rights-of-way as required by the City of XXX in order to complete the scope of work. Cost of traffic control shall be included in the bid price of other items of work

1.08 COORDINATION

A. Arrange demolition schedule so as not to interfere with operations of adjacent occupied buildings.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting demolition operations.

B. If available, review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 PREPARATION

A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving structures to be demolished.

1. Arrange to shut off indicated utilities with utility companies.
2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that

maintain continuity of service to other buildings and structures.

3. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.

B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

3.03 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.

2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

a. Provide at least 96 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.

D. Temporary Facilities:

1. Protect adjacent buildings and facilities from damage due to demolition activities.

2. Protect existing site improvements, appurtenances, and landscaping to remain.

3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.

4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

5. Provide protection to ensure safe passage of people around demolition area and to and from occupied portions of adjacent buildings and structures.

6. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

7. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

8. Cover and protect furniture, furnishings, and equipment that have not been removed.

9. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 - Temporary Facilities and Controls.

E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.04 DEMOLITION, GENERAL

A. General: Demolish indicated site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.

2. Maintain fire watch during and for at least 24 hours after flame cutting operations.

B. Site Access and Temporary Controls: Conduct demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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

2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

C. Explosives: Use of explosives is not permitted.

3.05 DEMOLITION BY MECHANICAL MEANS

A. At-Grade and Below-Grade Construction: Demolish existing pavement, retaining walls, foundation walls, and other miscellaneous structure necessary to meet final grades and construction shown on all construction documents.

B. Existing Utilities: Demolish and remove any below-grade utility structures.

3.06 SITE RESTORATION

A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.

B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.07 REPAIRS

A. Promptly repair damage to adjacent structures caused by demolition operations.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Do not burn demolished materials.

3.09 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 01 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

A. The work of this section includes all labor, materials and equipment required to form all cast-in-place concrete shown on the drawings including but not limited to all slabs, joists, beams, columns, walls, stairs, and equipment pads.

B. Section Includes

1. Formwork for cast-in-place concrete.
2. Openings in formwork for other affected work.
3. Form accessories such as snap ties, bracing, etc.
4. Stripping formwork.

1.03 REFERENCES

(Current Edition at Date of Bid)

A. ACI 347: Recommended Practice for Concrete Formwork.

1.04 RESPONSIBILITY

A. The design, construction and safety of all formwork shall be the responsibility of the Contractor. All forms, shores, backshores, falsework, bracing, and other temporary supports shall be engineered to support all loads imposed including the wet weight of concrete, construction equipment, live loads, lateral loads due to wind and wet concrete imbalance. The Contractor shall also be responsible for determining when temporary supports, shores, backshores, and other bracing may be safely removed.

1.05 DEFINITIONS

A. Shoring: The activity to support formwork.

B. Re-shoring: The activity to reduce the amount of formwork supporting concrete elements. As concrete sets and strength increases, less need for formwork occurs gradually until concrete becomes free standing.

1.06 DESIGN RESPONSIBILITY

A. The design of all concrete formwork, formwork removal, shoring, and backshoring requirements shall be performed by a registered professional engineer in the state of Oklahoma and experienced in the design of concrete formwork. The Contractor shall employ the formwork engineer.

1.07 SUBMITTALS

A. Shop Drawings: Fabrication and erection drawings of forms for specific finished concrete surfaces, as indicated. Show general construction of forms, jointing, special joints or reveals, location and pattern of form tie placement, and other items affecting exposed concrete visibility.

B. Form Release Agent: Where concrete surfaces are scheduled to receive special finishes or applied coverings which may be affected by agent submit manufacturer's instructions for use of agent.

1.08 QUALITY ASSURANCE

A. Designer's Qualifications: Structural professional engineer who complies with Oklahoma licensing law, has experience in concrete formwork, and is acceptable to the authority having jurisdiction.

B. Design Forms:

1. With sufficient strength to maintain finished tolerances indicated in Section 03 35 00, to support loads, pressures, and allowable stresses as outlined in ACI 347 and for design considerations such.
2. As wind loads, allowable stresses, and other applicable requirements of local Laws and Regulations.
3. To permit easy removal.
4. For required finishes.

C. The design, engineering, and construction of formwork is CONTRACTOR's responsibility.

1.09 JOB CONDITIONS

A. For reference purposes, establish and maintain sufficient control points and bench marks to check tolerances. Maintain in an undisturbed condition and until final completion and acceptance of Work.

B. Regardless of tolerances specified, allow no portion of Work to extend beyond legal boundaries.

1.10 FIELD SAMPLES

A. Prepare field samples and submit per Section 01 33 00.

B. Construct and erect sample formwork panel for architectural concrete surfaces receiving special treatment or finish as a result of formwork. Formwork to include vertical and horizontal form joints and typical rustication joints when required.

C. Size panel to indicate special treatment or finish required, including form release agent.

D. Remove formwork after casting concrete.

1.11 ACCEPTANCE

A. Secure ENGINEER's inspection of form layout for concrete flat work.

PART 2 - PRODUCTS

2.01 PAN FORMS

A. Specification: Unless specified otherwise, concrete joist construction shall conform to current version of Manual of Standard Practice, Chapter 10, as published by CRSI.

B. Material and Pan Type:

1. Material: Pans shall be fabricated either of steel that is free of dents, irregularities, sag and rust or of glass-fiber reinforced plastic that is molded under pressure with matched dies. Pan forms allowing warped surfaces, leakage of concrete at joints, and uneven surfaces beyond tolerance levels will not be acceptable.

2. Subject to pan tolerance and the surface finish required by the surface finish class SF-1.0, pan forms may be either new pans or reconditioned pans at Contractor's option. Forms may be "long forms", "flange forms", "long flange forms", or "adjustable forms" at Contractor's option. Pan splices may be lapped, reinforced butt jointed, or semi-butt jointed (using end caps welded back-to-back with 2" maximum distance between pan ends). The maximum number of joints in any bay shall be four located at approximately the one-fifth points in each bay.

3. New Pans. All pan forms used in areas designated to have surface finish class SF-2.0 shall be new pans either one piece continuous from beam to beam or beam to header ("longforms", "long flange forms", or "adjustable forms") without splices or with reinforced butt joint spliced. "Flange forms" are not acceptable, nor will forms be permitted that are lapped spliced or semi-butt joint spliced (using end caps welded back-to-back). Pans shall meet tolerances and the surface finish required for surface finish class SF-2.0.

5. New Pans. All pan forms used in areas designated to have Surface Finish-3.0 shall be new pans either one piece continuous from beam to beam or beam to header ("longforms", "long flange forms", or "adjustable forms") without splices or reinforced butt joint spliced. "Flange forms" are not acceptable, nor will forms be permitted that are lapped spliced or semi-butt joint spliced (using end caps welded back-to-back). Pans shall meet tolerances and the surface finish required for surface finish class SF-3.0.

The pan form surfaces specified herein are intended to be architecturally

2.02 FORM-FACING MATERIALS

A. General:

1. Arrange facing material orderly and symmetrical, keeping number of seams to a minimum.

2. Do not use material with raised grain, patches, or other defects which will impair texture of concrete surface.

B. Smooth-Formed Finished Concrete: Unless otherwise specified, formwork for exposed concrete surfaces as defined by the Surface Finish Class, shall consist of plywood, metal, metal framed plywood, or other acceptable surface. Formwork shall provide a continuous straight and smooth surface conforming to the joint system as specified on the Architect's drawings. Form material shall have sufficient thickness to withstand pressure of concrete without bow or deflection. Plywood shall be exterior grade plywood panels, suitable for concrete forms, complying with U.S. Product Standard PS-1, each piece bearing a legible inspection trademark, and as follows:

1. Phenolic Surface Film Overlay over Hardwood Face, Class 1 or better.

2. High Density Overlay (100/30 min. rating) on Hardwood Face, Class 1 or better.

3. High Density Overlay (100/30 min. rating) on Softwood Face, Class 1 or better.
4. Medium Density Overlay on Hardwood Face, Class 1 or better, mill-release agent treated and edge sealed.
5. Medium Density Overlay on Softwood Face, Class 1 or better, mill-release agent treated and edge sealed.
6. Structural 1, B-B, or better, mill oiled and edged sealed.
7. "B-B (Concrete Form) Plywood", Class 1, or better, mill-oiled and edge sealed.

B. Non-specific formed concrete: Unless otherwise specified, the default finish for formed surfaces shall be rough-form finish constructed with plywood, lumber, metal or other acceptable material. Lumber shall be dressed on at least two edges and one side for tight fit. The minimum grade shall be B-C, exterior grade.

C. Textured-form finished concrete: For exposed surfaces as noted on the drawings provide units of form face design, size, arrangement and configuration that matches Architect's control sample. Provide solid backing and form supports to ensure stability of textured form liners. See Architect's drawings, specifications and control sample for special form textured finish concrete.

2.03 CYLINDRICAL COLUMNS AND SUPPORTS

A. Round section members shall be formed with metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class unless otherwise specified. Units shall have sufficient wall thickness to resist loads imposed by wet concrete without detrimental deformation.

2.04 FORMWORK ACCESSORIES

A. Form Ties:
1. Use ties constructed so that end fasteners can be removed without spalling concrete faces.
2. After end fasteners of ties have been removed, embedded portion of ties are to terminate not less than 2 times the diameter or thickness of the fasteners from formed faces of concrete, but in no case greater than 3/4 inch.
3. When the formed face on concrete is not exposed, form ties may be cut off flush with formed surfaces. Use ties with 3/4 inch diameter cones on both ends or an approved equal for water retaining structures.
4. Dampproofed Surfaces: Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.
5. Exposed to Weather or Unconditioned Space: Provide removable, glass-fiber-reinforced plastic, stainless steel, or galvanized form ties that will leave no corrodible metal closer than 1 1/2 inches in surfaces that will be exposed to weather or in an unconditioned space in the final structure. The ties shall leave holes no larger than 1 inch in diameter in concrete surfaces when the ends or end-fasteners are removed.

B. Pre-molded Expansion Joint Filler: Unless indicated otherwise, Preformed asphalt impregnated fiber, ASTM D1751, 1/2 inch thick.

C. Form Release Agent: Commercial formulation that will not bond with, stain, nor adversely affect concrete surfaces or impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede curing with water or curing compounds. Provide a product that has a maximum VOC (Volatile Organic Compounds) of 50 g/l but not greater than that permitted by the local government agency having jurisdiction in the area where the project is located. To prevent contamination, agents used on potable water structures are subject to review by ENGINEER prior to use.
Products: Subject to compliance with requirements, provide one of the following:
1. "Bio-Release EF", Dayton Superior
2. “Farm Fresh”, Unitex
3. “Form-Eze Natural”, The Euclid Chemical Company, Inc.
4. “Bio-Form”, Universal Form Clamp
5. “Aqua Blue”, US Spec

D. NAILS AND FASTENERS
1. Use only galvanized nails and fasteners for securing formwork in structures exposed to weather or unconditioned spaces such as garages, canopies and porte-cocheres.

D. Fillets for Chamfered Corners: Wood, Metal, PVC or Rubber strips 1 inch x 1 inch size, maximum length possible.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify lines, levels, and measurements before proceeding with formwork.

3.02 FORM CONSTRUCTION

A. All designs for forms must:

1. Have the strength to withstand the pressure resulting from the placement of concrete and construction loads while maintaining the specified tolerances.
2. Design forms to withstand support loads, lateral pressure, and allowable stresses outlined in ACI 347. Design for wind, allowable stresses, and other applicable requirements.

B. Form Materials:

1. Smooth Forms: Use of smooth-faced panel type material of sufficient strength to provide continuous, straight, smooth as-cast surfaces.
2. Architectural Concrete: Use of 3/4" min. "MDO" or "HDO" plywood.
3. Embedded for accessories: Use of commercially manufactured items only.
4. Form Ties: Use of Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent deflection and spalling of concrete surfaces upon removal only.

C. Form Construction:

1. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
2. Construction is in accordance with ACI 347, to exact sizes, shapes, lines, and dimensions shown.
3. Shoring and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations.
4. Support of form facing materials by structural members spaced sufficiently close to prevent upward or lateral deflection during and after concrete placement.
5. Camber in the formwork as required for anticipated deflections is acceptable when specified.
6. At construction joints, overlap of forms over hardened concrete at least six inches.

D. Earth Forms: Side forms of footings may be omitted and concrete placed directly against excavation upon approval from architect only. When earth forms are used, provide one inch minimum additional concrete on each side of the minimum design footing width.

E. Make forms sufficiently tight to prevent loss of concrete.

F. Unless indicated otherwise, place chamfer strips in corners of forms to produce beveled edges on permanently exposed exterior corners.

G. To maintain specified finish tolerances, camber formwork to compensate for anticipated deflections.

H. Provide positive means of adjustment using wedges, jacks, Shores, and struts to take up all settlement during concrete placing operation.

I. Provide temporary ports in formwork to facilitate cleaning and Inspection. Locate openings at bottom of forms to allow flushing water to drain.

J. At construction joints, overlap forms over hardened concrete at least 6 inches. Hold forms against hardened concrete to prevent offsets or loss of mortar at construction joint and to maintain true surface.

K. Construct wood forms for wall openings to facilitate loosening, or counteract swelling.

L. Fasten wedges used for final adjustment of forms prior to concrete placement in position after final check.

M. Anchor formwork to Shores, supporting surfaces or members to prevent upward or lateral movement and deflection of any part of formwork system during concrete placement.

N. Provide runways for moving equipment with struts or legs, supported directly on formwork or structural member without resting on reinforcing.

O. Position expansion joint material and other embedded items accurately and support to prevent displacement.

P. To prevent entry of concrete, fill voids in sleeves, inserts, and anchor slots temporarily with readily removable material.

Q. For architectural concrete, limit deflection of facing materials between studs as well as deflection of studs

and walers to 0.0025 times span.

R. For underground concrete work, do not use soil walls for forming unless authorized by ENGINEER.

3.03 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings for elements embedded in or passing through concrete.

B. Coordinate work of other sections for the forming and setting of openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

C. Install accessories per manufacturer's instructions. Ensure items are not disturbed during concrete placement.

3.04 FORM FINISHES

A. Use forms with smooth rubbed, scrubbed, sand floated finishes that meet ACI 347 unless indicated otherwise.

B. For As-cast Finishes:

1. Install form panels in orderly arrangement with joints planned in approved relation to building elements.

2. Where panel joints are recessed or otherwise emphasized, locate form ties within joints, not within panel areas

3. Where an as-cast finish is required, no grouting will be permitted in the finishing operation.

C. Textured Finishes: As indicated.

3.05 APPLICATION OF FORM RELEASE AGENT

A. Apply form release agent on formwork per manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

B. Form coatings: Coating of forms is to occur prior to placement of reinforcing steel. Excess form coating material does not accumulate in forms or come into contact with surfaces which will be bonded to fresh concrete.

3.06 FORM REMOVAL

A. Removal of forms: Formwork not supporting concrete may be removed after curing for 24 hours at temperatures not less than 50 F unless removal is contingent upon concrete strength. Where a specified strength is required prior to removing forms, forms shall be removed when specified parameters have been satisfied.

B. Do not pry against face of concrete. Use only wooden wedges.

C. When repair of surface defects or finishing is required at an early age, remove forms as soon as concrete has hardened sufficiently to resist damage from removal operations.

D. Remove top forms on sloping surfaces of concrete as soon as concrete has attained sufficient stiffness to prevent sagging. Perform needed repairs or treatment required on such sloping surfaces at once, followed by specified curing.

E. Loosen wood forms for wall openings as soon as it can be accomplished without damage to concrete.

F. Formwork for columns, walls, sides of beams, and other members not supporting the weight of concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal.

G. Where no Re-shoring is planned, leave forms and Shoring used to support weight of concrete in beams, slabs, and other concrete members in place until concrete has attained its specified strength.

H. Where Re-shoring is planned, supporting formwork may be removed when concrete has reached 70 percent of specified strength, provided Re-shoring is installed immediately.

I. When Shores and other vertical supports are so arranged that non-load carrying, form-facing material may be removed without loosening or disturbing Shores and supports, facing material may be removed at an earlier age as directed.

3.07 RESHORING

A. When Re-shoring is permitted or required, plan operations in advance and obtain approval.

B. During Re-shoring do not subject concrete in beam, slab, column, or any other structural member to combined dead and construction loads and live loads in excess of loads permitted for developed concrete strength at time of Re-shoring.

C. Placing Re-shores as soon as practical after stripping operations are complete, but in no case later than end of working day on which stripping occurs.

D. Tighten Re-shores to carry required loads without over-stressing.

E. Leave Re-shores in place until the concrete being supported has reached its specified strength.

F. For floors supporting Shores under newly placed concrete, level original supporting Shore or Re-shore.

1. Re-shoring system shall have a capacity to resist anticipated loads in all cases equal to at least 1/2 the capacity of the Shoring system.

2. Unless otherwise specified locate Re-shores directly under a Shore.

3. In multistory buildings, extend Re-shoring through a sufficient number of stories to distribute the height of newly placed concrete, forms, and construction live loads in such a manner that design loads of floors and supporting Shores are not exceeded.

G. Design, engineering, and construction of Shoring and Re-shoring is the responsibility of the CONTRACTOR.

3.08 REMOVAL STRENGTH

A. When removal of formwork or Re-shoring is based on concrete reaching a specified strength, it shall be assumed that concrete has reached this strength when either of the following conditions has been met:

1. When test cylinders, field cured along with the concrete they represent, have reached the specified strength.

2. When concrete has been cured per Section 03 39 00 for the same length of time as the site-cured cylinders that reached specified strength. Determine the length of time the concrete has been cured in the structure by cumulative number of days or fractions thereof, not necessarily consecutive, during which the air temperature is above 50 deg. F. and concrete has been damp or sealed from evaporation and loss of moisture.

3.09 REUSE OF FORMS

A. Do not reuse forms if there is any evidence of surface wear or defect which would impair quality of concrete surface.

B. Thoroughly clean and properly coat forms before reuse.

3.10 FIELD QUALITY CONTROL

A. Before commencing a pour, verify connections, form alignment, ties, inserts and Shoring are placed and secure.

B. Observe formwork continuously while concrete is being placed to verify that the forms are plumb and there are no deviations from desired elevation, alignment, or camber.

C. If during construction any weakness develops and false-work shows undue settlement or discoloration, stop work, remove affected construction if permanently damaged, and strengthen false-work

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. The work of this section includes labor, materials, hardware, equipment, transportation and services required to fabricate and place all reinforcement for cast-in-place concrete including bars, welded wire fabric, ties and supports shown on the drawings and as specified.

B. Section Includes:

1. Reinforcing steel bars, wire fabric or rod mats for cast-in-place concrete.
2. Support chairs, bolsters, bar supports, and spacers for supporting reinforcement.

1.03 REFERENCES

(Current Edition at Date of Bid)

A. AASHTO M 254: Standard Specification for Corrosion Resistant Coated Dowel Bars.

B. ACI 117: Specification for Tolerances for Concrete Construction and Materials.

C. ACI 301: Specifications for Structural Concrete.

D. ACI 315R: Guide to Presenting Reinforcing Steel Design Details .

E. ACI 421.1R: Guide for Shear Reinforcement for Slabs.

F. ASTM A 36: Standard Specification for Carbon Structural Steel.

G. ASTM A 416: Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete.

H. ASTM A 576: Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.

I. ASTM A 615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

J. ASTM A 706: Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.

K. ASTM A 722: Standard Specification for High-Strength Steel Bars for Prestressed Concrete.

L. ASTM A 767: Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.

M. ASTM A 775: Standard Specification for Epoxy-Coated Steel Reinforcing Bars.

N. ASTM A 884: Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.

O. ASTM A 934: Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.

P. ASTM A 1035: Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement.

Q. ASTM A 1044: Standard Specification for Steel Stud Assemblies for Shear Reinforcement of Concrete.

R. ASTM A 1064: Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

S. ASTM C 1116: Standard Specification for Fiber-Reinforced Concrete.

T. ASTM C 1609 Standard Test Method for Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading)

U. ASTM D 3963: Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars.

V. AWS D1.1: Structural Welding Code - Steel.

W. AWS D1.4: Structural Welding Code - Steel Reinforcing Bars.

X. CRSI Document: Manual of Standard Practice.

1.04 SUBMITTALS

A. Manufacturer's Certificate: Submit mill test certificates of supplied concrete reinforcement, indicating physical and chemical analysis.

B. Welder's certification.

1. Indicate sizes, spacing, locations, and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting, and spacing devices.

2. When required, prepare shop drawings by an engineer who complies with Oklahoma licensing law and is acceptable to agency having jurisdiction.

C. Shop Drawings: Comply with requirements of ACI 315R. Include bar schedules, shapes of bent bars, spacing of bars and locations of splices.

1.05 QUALITY ASSURANCE

A. The Contractor is responsible for management of quality control on the project, including verification of the compliance of the workmanship and materials furnished by his subcontractors and suppliers.

B. Perform concrete reinforcement work per CRSI Manual of Standard Practice.

C. Comply with ACI 117 AND ACI 301.

D. Welders: Certified to comply with AWS D1.1 or AWS D1.4 as applicable.

1.06 ACCEPTANCE

A. Unless specified otherwise, chairs for supporting reinforcement in flat slabs are spaced as follows.

1. 3 feet maximum for No. 5 and smaller bars.

2. 5 feet maximum for bars larger than No. 5.

B. Dowels are placed on dowel baskets and properly aligned.

C. Epoxy and galvanized coatings are not chipped or cut. Ends of cut bars are epoxy coated or galvanize painted prior to placement.

D. Minimum covering over reinforcement is as specified.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcement:

1. Reinforcing materials shall be delivered from the mill in bundles that are identified as to heat number and manufacturer and accompanied with mill and analysis test reports and an affidavit from the fabricator/supplier stating that the material conforms to the requirements of the governing ASTM specification listed herein.

2. Deformed bar material that is not identifiable according to the criteria listed above shall be tested for tensile strength and bend tests according to ASTM A 615 on a sample of 2 bars for each ten tons or fraction thereof of unidentified material for each bar size. The bars shall be a minimum of 24 inches long. Bend tests are not required for #14 and # 18 bars. Fabricator/supplier shall submit the results of such tests for record.

3. Reinforcing Bars: Reinforcing bars shall conform to ASTM A 615, Grade 75 as noted on the drawings.

4. Reinforcing Bars: Reinforcing bars shall conform to ASTM A 615 Grade 60 as noted on the drawings.

5. Special Requirements for Grade 60 Reinforcing Bars: ASTM A 615 Grade 60 Reinforcing bars used as longitudinal reinforcing in locations as noted on the drawings shall additionally comply with the following requirements.

a. The actual yield strength based on mill tests shall not exceed the nominal yield strength fy by more than 18,000 psi.

b. The ratio of the actual tensile strength to the actual yield strength is not less than 1.25.

6. Reinforcing Bars: Reinforcing bars used as longitudinal reinforcing in locations as noted on the drawings shall conform to ASTM A 706.

7. Reinforcing Steel: Reinforcing steel used as transverse reinforcing or as spiral reinforcing as noted on the drawings shall conform to ASTM A 1035.

8. Weldable Reinforcing Bars: All reinforcing bars noted on the drawings as being required to be welded shall conform to ASTM A 706.

9. Galvanized Reinforcing Steel: Provide galvanized reinforcing bars at the locations indicated on the drawings. Galvanized reinforcing bars shall conform to ASTM A 767 Class II (2.0 oz. zinc PSF), hot dipped galvanized after fabrication and bending. Bars that are to be galvanized shall conform to the type of steel required for the given situation as noted on the drawings.

10. Epoxy-Coated Reinforcing Steel: Provide epoxy coated reinforcing bars at the locations indicated

on the drawings. Epoxy coated reinforcing bars shall conform to ASTM A 775. Bars that are to be epoxy coated shall conform to the type of steel required for the given situation as noted on the drawings.

11. Epoxy-Coated Fabricated Reinforcing Steel: Provide reinforcing bars that are epoxy-coated after fabrication at the locations indicated on the drawings. Reinforcing bars that are epoxy-coated after fabrication shall conform to ASTM A 934. Bars that are to be epoxy-coated shall conform to the type of steel required for the given situation as noted on the drawings.
12. Use Reinforcing steel made from 90% recycled material, 2/3 of which shall be post-consumer material. A minimum of 50% of the material in the reinforcement must have been extracted, harvested, or recovered as well as manufactured, within 500 miles of the project site.
13. Plain Steel Welded Wire Reinforcement: ASTM A 1064 with a yield strength of 65,000 PSI. Provide in flat sheets only.
14. Deformed-Steel Welded Wire Reinforcement: ASTM A 1064 with a yield strength of 70,000 PSI. Provide in flat sheets only.
15. Galvanized Plain-Steel Welded Wire Reinforcement: ASTM A 1064, fabricated from galvanized steel wire into flat sheets.
16. Epoxy Coated Plain-Steel Welded Wire Reinforcement: ASTM A 884, Class A, plain steel.
17. Epoxy Coated Deformed-Steel Welded Wire Reinforcement: ASTM A 884, Class A, deformed steel.
18. Strands: Uncoated seven wire, one half inch diameter, stress relieved 270 ksi strand low relaxation type, ASTM A 416 and "Specification for Unbonded Single Strand Tendons" as published by the Post-Tensioning Institute.
19. Prestressing Bars: All prestressing bars shall be deformed threadbars conforming to ASTM A 722 with a minimum ultimate tensile strength of 150 KSI and other properties as specified on page 11-21 of the PCI Design Handbook, fifth edition. Threadbars, plate anchorages and couplings shall be furnished by Dywidag Systems International or Williams unless approved otherwise in writing by the Engineer.
20. Wire: Smooth wire for spiral reinforcement shall conform to ASTM A 1064 with a minimum yield strength of 70,000 PSI.
21. Epoxy-Coated Plain-Steel Wire: ASTM A 884, Class A, plain-steel wire.
22. Joint Dowel Bars: Smooth bars used to dowel across slab-on-ground construction joints shall conform to ASTM A 615, Grade 40 or ASTM A 36, plain-steel bars. Cut bars true to length with ends square and free of burrs.
23. Epoxy-Coated Joint Dowel Bars: Smooth epoxy-coated bars used to dowel across slab-on-ground construction joints shall conform to ASTM A 775 with ASTM A 615, Grade 40 or ASTM A 36 plain-steel bars. Cut bars true to length with ends square and free of burrs.
24. Dowel Bar Sleeves: Plastic or gage metal (26 ga. min.) sleeves with an inside diameter of 1/16 inch greater than the dowel bar that it encases, that have the strength, durability, and design to provide free movement of the dowel relative to the concrete slab and that are specifically manufactured for this purpose.
25. Alternate Slab-on-Ground Joint Load Transfer Systems: A system that consists of flat, ASTM A 36 plate that is saw cut into a square or rectangular shape and is embedded into or encased by a plastic sleeve that allows movement in both lateral directions but not in the vertical direction. Acceptable systems are manufactured by PNA Construction Technologies with products known by the names "Diamond Dowel System" and "PD3 Basket" and Greenstreak Group Inc. with products known as "Speed Plate' and "Double-Tapered Basket".
26. Tie Wire: Tie wire shall be annealed steel tie wire, minimum 16 gauge.
    a. Tie wire in architecturally exposed concrete shall be plastic coated or stainless steel.
    b. Tie wire for epoxy-coated reinforcement shall be epoxy-coated.
    c. Tie wire for galvanized reinforcement shall be galvanized.
27. Headed Steel Stud Punching Shear Reinforcement: Punching shear reinforcement using headed studs welded to flat bars shall be manufactured in conformance with ASTM A 1044 and approved by the ICC Evaluation Service, Inc. as expressed in an ICC Evaluation Report for use as punching shear reinforcement for slabs and footings designed in accordance with ACI 421.1. The following are acceptable products:
    a. Decon Studrails; Decon.
    b. Dayton Shear Resistance System (DSR) D-140; Dayton Superior Corporation.

c. Suncoast Stud Reinforcement System; Suncoast Post-Tension, Ltd.

28. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations.

a. Slabs-on-Ground: Use precast concrete bar supports (dobies) or supports with sand plates or horizontal runners designed for use on ground.

b. Spread Footing Bottom Reinforcement: Use precast concrete bar supports (dobies) or chairs designed for soil-supported slabs.

c. Mat Foundation: Use precast concrete bar supports (dobies), chairs designed for soil-supported slabs, or poured-in-place concrete curbs.

d. Exposed to View Concrete: Provide supports with legs which are plastic protected stainless steel protected (CRSI, Class 2).

e. Support of Epoxy-Coated Reinforcement: Provide epoxy-coated or other dielectric-polymer-coated wire bar supports to support epoxy-coated reinforcement.

f. Support of Galvanized Reinforcement: When NOT exposed to view, provide galvanized wire bar supports to support galvanized reinforcement. In all exposed to view conditions provide supports with legs which are plastic protected stainless steel protected (CRSI, Class 2).

2.02 SPLICES

A. End Bearing Compression Splices: Members with end bearing compression splices shall have vertical bars saw cut or otherwise finished for true bearing. Bar ends shall terminate in flat surfaces within 1 1/2 degrees of a right angle to the axis of the bars and shall be fitted within 3 degrees of full bearing after assembly. Splice bars shall be held in concentric contact by a suitable device. The following are acceptable end bearing compression devices:

1. Speed Sleeve; Erico Products, Inc.
2. G-Loc; BarSplice Products, Inc.
3. Or other Engineer-approved product.

B. Mechanical Tension Splices:

1. Mechanical splices shall conform to Type 1 and Type 2 splices.

a. Type 1 splice shall develop 1.25 times the specified yield strength of the splice bar.

b. Type 2 splice shall meet the requirements of Type 1 splice and, in addition, develop the full tensile strength of the splice bar.

2. Splices shall be approved by the ICC-Evaluation Service, Inc and shall have the Evaluation Report submitted for Engineer review.

3. The bar ends that are to attach to the splice shall be prepared and installed in accordance with the manufacturer's requirements.

4. The following are acceptable mechanical tension splices (splices qualified for use with grade 75 bars are parenthetically noted):

a. BarLock, S-Series; Dayton Superior.

b. US/MC-SAE Mechanical Coupler; Dayton/Richmond, Inc.

c. DB Grout Sleeve; Dayton/Richmond

d. ZAP Screwlok; BarSplice Products, Inc. (qualified for use with grade 75 bars)

e. BPI Grip XL System; Barsplice Products, Inc.

f. Taper Threaded Grip Twist System; Barsplice Products, Inc.

g. Lenton Coupler; Erico Products, Inc. (for grade 75 bars, use only "Standard Coupler")

h. NMB Splice Sleeve; Splice Sleeve North America" (qualified for grade 75 #7 bars and higher)

i. BarLock, L-Series; Dayton Superior

j. Taperlok Couplers; Dayton Superior

k. Lenton Interlok; Erico Products, Inc.

l. Griptec; Dextra Manufacturing Co.

m. or other Engineer-approved product.

C. Dowel Bar Replacement: All grade 60 reinforcing steel dowel bars shown on the drawings crossing

concrete construction joint surfaces with inserts cast flush against the form and having reinforcing bars connected to the insert in a subsequent concrete pour shall conform to the following:

1. Splice connection to the insert shall develop the 1.25 times the specified yield strength and the full tensile strength of the spliced bar.
2. Splices shall be approved by the ICC Evaluation Service, Inc. as expressed in an ICC Evaluation Service Report which shall be submitted for review.
3. The following are acceptable products (for use only with grade 60 bars):
    a. Lenton Form Saver; Erico Products, Inc.
    b. DB-SAE Dowel Bar Splicer; Dayton/Richmond, Inc.
    c. or other Engineer-approved product.

D. Hooked Anchorage Replacement: Reinforcing bar terminations shall be manufactured out of ASTM A 576 material and shall develop the full tensile strength of the bar when installed at the manufacturer's recommended depth.

1. The anchorage shall be approved by the ICC Evaluation Service Inc. as expressed in an ICC Evaluation Service Report which shall be submitted for review.
2. The following are acceptable products (for use only with grade 60 bars):
    a. Lenton Terminator; Erico Products, Inc.
    b. or other Engineer-approved product.

2.03 FABRICATION

A. Fabricate reinforcement, ACI 315R providing for concrete cover.

B. Locate reinforcing splices not indicated on Drawings at points of minimum stress. Indicate location of splices on shop drawings.

C. Weld reinforcing bars; with AWS D1.4.

PART 3 - EXECUTION

3.01 GENERAL

A. All designs shall be by a Professional Engineer, licensed in the State of Oklahoma, and having experience in steel design. Shop drawing submittals are to include the professional engineer's seal and dated signature.

B. Shop drawings to be prepared in accordance with ACI 315R.

C. Mill Certificates: Submit steel producer's certificates of mill analysis including physical and chemical analysis of reinforcing steel.

3.02 FABRICATION AND DELIVERY

A. Bending and Forming: Fabricate bars of indicated sizes and accurately form to shapes and lengths indicated and required, by methods not injurious to materials. Do not heat reinforcement for bending. Bars shall be free from injurious defects, have a workman-like finish with no excessive rust and/or pitting and have no unusual kinks or bends.

B. Marking and Shipping: Bundle reinforcement and tag in accordance with Section 7.4.5 of the CRSI "Manual of Standard Practice". Transport and store at site so as not to damage material. Keep sufficient supply of tested, approved and proper reinforcement at the site to avoid delays. Maintain reinforcing bars free of mud, dirt, grease, or other coating.

C. Repair of Epoxy-Coated Reinforcing: Repair cut and damaged epoxy coatings on fabricated reinforcing before delivery with epoxy repair coating according to ASTM D 3963

3.03 PLACING REINFORCEMENT

A. Comply with CRSI recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports and as herein specified.

B. Before placing reinforcement and again before concrete is placed, clean reinforcement of loose rust and mill scale, earth, ice and other materials which reduce or destroy bond with concrete.

C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by chairs, runners, bolsters, spacers and hangers, as required. Exercise particular care to maintain proper distance and clearance between parallel bars and between bars and forms. Provide spreaders and spacers to hold steel in position. Support steel at proper height upon approved chairs.

D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and

securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set tie wires so ends are directed into concrete, not toward exposed concrete surfaces.

E. Support of Spread Footing Reinforcing Steel

1. Bottom Steel: Support bottom reinforcing mat to provide the specified clearance to the bars. Spacing between supports shall not exceed 4'-0" centers each way.

2. Top Steel: Support top reinforcing on steel angle frames braced in both directions or on special standee support bars. Spacing between supports shall not exceed 4'-0" centers each way. The depth of the supports shall provide the specified clearance from the bars to the top of the concrete. The design of the support steel shall be the responsibility of the Contractor in accordance with Concrete Reinforcing Steel Institute (CRSI), “Manual of Standard Practice”.

F. Support of Mat Foundation Reinforcing Steel

1. Bottom Steel: Support bottom reinforcing mat to provide the specified clearance to the bars. Spacing between supports shall not exceed 4'-0" centers each way.

2. Top Steel: Support top reinforcing on steel angle frames braced in both directions or on special standee support bars. Spacing between supports shall not exceed 4'-0" centers each way. The depth of the supports shall provide the specified clearance from the bars to the top of the concrete. The design of the support steel shall be the responsibility of the Contractor in accordance with Concrete Reinforcing Steel Institute (CRSI), “Manual of Standard Practice”.

G. Install welded wire reinforcement in as long lengths as practicable. Lap adjoining pieces at least one full mesh plus two inches and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

H. Coordinate with other trades and expedite materials and labor to avoid omissions and delay.

I. Install waterproof membrane or vapor barrier as specified prior to placing steel for concrete slabs-on-ground.

J. Extend reinforcement continuous through construction joints unless otherwise shown on the drawings.

K. Slab-on-Ground Joint Dowel Bars: Support slab-on-ground joint dowel bars independently of support for slab reinforcement on soil supported slab bolsters or specially manufactured cradles such that dowel bar remains parallel to slab surface and at right angles to joint during concreting operations. Lightly coat the exposed end of the dowel with a paraffin-base lubricant, asphalt emulsion, form oil, or grease or use a dowel bar sleeve.

L. Alternate Slab-on-Ground Joint Load Transfer Systems: Install the alternate load transfer system in accordance with the manufacturer’s instructions such that the largest plane of the flat plate is parallel to the plane of the subgrade on which the slab is bearing.

M. Provide and place additional reinforcing steel at all sleeves and openings in beams, slabs and walls as specified on the drawings. Where sleeves or openings not shown on the drawings interrupt the reinforcement, consult with Engineer for instructions for placing and splicing of bars. Provide required additional reinforcing steel at no additional cost to the Owner.

N. Epoxy-Coated Reinforcement: Use epoxy-coated steel tie wires to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963.

O. Galvanized Reinforcement: Use galvanized steel tie wires to fasten galvanized reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

3.04 SPLICING REINFORCING STEEL

A. Provide splice as indicated on the drawings. Splice reinforcing bars only at locations shown on the structural drawings and approved shop drawings. Unauthorized or unscheduled splices not approved by the Engineer in writing will not be accepted.

B. All lap splices in reinforcing steel shall be contact lap splices unless detailed otherwise on the drawings.

C. Maintain proper cover between reinforcing bars at splices.

D. Lap unscheduled reinforcing bars not otherwise specified a minimum of 30 bar diameters at splices. Lap welded wire fabric a minimum of one full wire mesh plus two inches.

E. Reinforcing Steel Placement in Mat Foundations

1. Size, length, spacing, and location of all mat reinforcing steel is shown on the mat plans and details. See details on the drawings for required stagger pattern of top and bottom bar splices and for sequence of placing mat reinforcing steel layers.

2. The number of splices shall be minimized by using bar runs of 60'-0" as much as possible. Unless noted otherwise, continuous top reinforcing bars shall be spliced along column centerlines. Continuous bottom reinforcing bars shall be spliced mid-way between columns.

3. Provide Class B tension lap splices for all bars #11 and smaller. Stagger splices as shown in the typical details.

4. Avoid splices of #14 and #18 bars where possible. Where required, a mechanical tension splice as specified shall be provided. No more that 50% of such bars shall be spliced in any 5'-0" width of mat cross-section. Spliced bars shall be staggered with un-spliced bars.

F. Manufacturer of mechanical tension splice shall be present for first day's installation.

3.05 WELDING REINFORCING STEEL

A. Welding reinforcing steel is permitted only where specifically shown on the drawings. All welding shall conform to AWS D1.4. Only weldable reinforcing steel conforming to ASTM A 706 or deformed bar anchors conforming to ASTM A 1064 shall be permitted. ASTM A 615 bars may not be welded for structural use.

B. Tack welding of reinforcement shall only be allowed for preassembled mats and cages.

3.06 SHRINKAGE AND TEMPERATURE REINFORCEMENT

A. Provide shrinkage and temperature reinforcement as indicated on the drawings or in this spec at right angles to main top and bottom bars for all structural slabs unless detailed otherwise on the drawings.

3.07 PLACEMENT OF WELDED WIRE REINFORCEMENT

A. Wherever welded wire reinforcement is specified as reinforcement in pan-formed beams or slabs, it shall be continuous and properly lapped one full wire spacing plus 2" across the entire concrete surface and not interrupted by beam or girders.

3.08 REINFORCEMENT IN JOIST DISTRIBUTION RIBS

A. Provide reinforcement in ribs, minimum one - #5 continuous top and bottom unless indicated otherwise on the drawings.

3.09 REINFORCEMENT IN COMPOSITE METAL DECK SLAB

A. Composite metal deck slabs shall be reinforced as indicated on the drawings.

B. Extra Reinforcement Over Girders: Provide additional reinforcing steel over interior girders as shown on the drawings.

C. Placement of Slab Reinforcement: Provide bolsters, high chairs, and/or additional reinforcing as shown in details on the drawings to support the reinforcing with the clear cover shown on the drawings.

3.10 FIBER-REINFORCED CONCRETE IN TOPPING SLABS, SIDEWALKS, AND DRIVEWAYS

A. Provide fibers of the type and at the dosage rate shown on the drawings or as follow:

B. The fiber-reinforced concrete shall be produced in accordance with ASTM C 1116.

C. The dosage of synthetic fibrillated microfibers shall be 1.5 lb/yd^3.

D. Recommended dosage of synthetic macrofibers shall provide an equivalent flexural strength ratio ($\boldsymbol{R^{150}_{T,150}}$ ***or*** $R_{e,3}$) of 20 percent when tested in accordance with ASTM C 1609/C 1609M, but shall not be less than 3 lb/yd^3.

3.11 REINFORCEMENT AROUND OPENINGS IN COMPOSITE METAL DECK SLABS

A. For all openings in metal deck not framed with structural steel and greater than 10" in width in either direction, provide additional reinforcing steel as shown in details on the drawings.

3.12 REINFORCEMENT IN PAN-FORMED BEAM SLABS

A. Reinforcement: Provide reinforcing in pan-formed beam slabs as shown on the drawings.

B. Placement of Slab Reinforcement: Provide required bar supports and additional reinforcing as shown in details on the drawings to support slab reinforcing with the clear cover shown on the drawings.

3.13 REINFORCEMENT IN GRADE BEAMS

A. Provide reinforcing in grade beams as shown on the drawings.

B. Bar Support for Grade Beam Cages: Grade beam bottom steel shall be supported at 5'-0" maximum centers using beam bolsters that provide 3" bottom cover to the reinforcing steel. Beam bolsters used shall be designed and manufactured for support on soil.

3.14 REINFORCEMENT IN TOPPING SLABS

A. In addition to fiber reinforcing, provide welded smooth wire reinforcement minimum 6 x 6 W1.4 x W1.4 in all topping slabs unless specified otherwise on the drawings.

3.15 REINFORCEMENT IN HOUSEKEEPING PADS

A. In addition to fiber reinforcing, provide welded smooth wire reinforcement 6 x 6 W2.9 x W2.9 minimum in all housekeeping pads supporting mechanical equipment unless detailed otherwise on the drawings.

3.16 REINFORCEMENT IN SIDEWALKS

A. In addition to fiber reinforcing, provide welded smooth wire reinforcement minimum 6 x 6 W1.4 x W1.4 in all sidewalks unless detailed otherwise in the Contract Documents.

3.17 MECHANICAL AND PLUMBING REQUIREMENTS

A. Refer to Mechanical and Plumbing Drawings for concrete requiring reinforcing steel. Such reinforcement shall be furnished as part of the work of this section.

3.18 QUALITY ASSURANCE TESTING AND INSPECTION DURING CONSTRUCTION

A. See Testing Laboratory Services section of these Specifications for reinforcing inspection and testing requirements.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-01 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

A. Extent of concrete work is shown on drawings, including schedules, notes and details which show size and location of members and type of concrete to be placed. Furnish all labor, materials, services, equipment, and hardware required in conjunction with or related to the forming, delivery and placement of all cast-in-place concrete Work.

1.03 SECTION INCLUDES

A. Material requirements.

1.04 REFERENCES

(Current Edition at Date of Bid)

A. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

B. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete.

C. ACI 211.3: Standard Practice for Selecting Proportions for No-Slump Concrete.

D. ACI 214R: Guide to Evaluation of Strength Test Results of Concrete.

E. ACI 301: Specifications for Structural Concrete.

F. ACI 305.1: Specification for Hot Weather Concreting.

G. ACI 306.1: Standard Specification for Cold Weather Concreting.

H. ACI 318: Building Code Requirements for Structural Concrete.

I. ASTM C 33: Standard Specification for Concrete Aggregates.

J. ASTM C 39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

K. ASTM C 88: Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

L. ASTM C 94: Standard Specification for Ready-Mixed Concrete.

M. ASTM C 117: Standard Test Method for Material Finer than 75µ (No. 200) Sieve in Mineral Aggregates by Washing.

N. ASTM C 138: Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

O. ASTM C 143: Standard Test Method for Slump of Hydraulic-Cement Concrete.

P. ASTM C 150: Standard Specification for Portland Cement.

Q. ASTM C 172: Standard Method of Sampling Freshly Mixed Concrete.

S. ASTM C 231: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

T. ASTM C 260: Standard Specification for Air-Entraining Admixtures for Concrete.

V. ASTM C 295: Standard Guide for Petrographic Examination of Aggregates for Concrete.

W. ASTM C 441: Standard Test Method for Effectiveness of Pozzolans or Ground Blast-Furnace Slag in Preventing Excessive Expansion of Concrete Due to The Alkali-Silica Reaction.

X. ASTM C 494: Standard Specification for Chemical Admixtures for Concrete.

Y. ASTM C 595: Standard Specification for Blended Hydraulic Cements.

Z. ASTM C 618: Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

AA. ASTM C 1064: Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

AB. ASTM C 1077: Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.

AC. ASTM C 1116: Standard Specification for Fiber-Reinforced Concrete.

AD. ASTM C 1157: Standard Performance Specification for Blended Hydraulic Cement.

AE. ASTM C 1240: Standard Specification for Use of Silica Fume as a Mineral Admixture in Hydraulic Cement

Concrete, Mortar, and Grout.

AF. ASTM C 1260: Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method).

AG. ASTM C 1293: Standard Test Method for Concrete Aggregates by Determination of Length Change of Concrete Due to Alkali-Silica Reaction.

AH. ASTM C 1567: Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method).

AI. ASTM C 1602: Standard Specification for Mixing Water Used in The Production of Hydraulic Cement Concrete.

AJ ASTM C 1778: Standard Guide for Reducing the Risk of Deleterious Alkali-Aggregate Reaction in Concrete

1.05 SUBMITTALS

A. Quality Assurance: Submit names, certification levels, and years of experience of testing agency's laboratory and field technicians that are assigned to the Work. Verify laboratory complies with ASTM and ACI standards.

B. Mix Design: Submit.

1. Date of mix design. If older than 365 days, recertify mix design.
2. Mix design number or code designation by which the Contractor shall order the concrete from the Supplier.
3. Structural slab or member for which the concrete is designed (i.e., columns, shear walls, footings, slab on ground, etc.).
4. Cement source, type and chemical composition.
5. Aggregate soundness and potential reactivity.
6. 28-day compressive strength.
7. Fly ash or other pozzolan type and brand (if any).
8. Admixtures including air entrainers, water reducers, high-range water reducers, accelerators, and retarders.
9. Allowable range of slump and air content.
10. Water-cementitious materials ratio and maximum allowable water content.
11. Proportions of materials in the mix.
12. Wet and Dry unit Density.
13. Analysis of water if water is not potable.
14. Mortar bar test results if a pozzolan is included in the mix.
15. Method by which the concrete is intended to be placed (bucket, chute, or pump).
16. Technical data sheets for additives to be used at the plant and at the job site. Certify additives are compatible with each other.
17. Required average strength qualification calculations per ACI 301. Submit separate qualification calculations for each production facility that will supply concrete to the project.
18. Documentation of Average strength (trial mix data or field test data) per ACI 301: When field test data is used to qualify average strength, submit separate documentation for each production facility that will supply concrete to the project.
19. Field test data submitted for qualification of average strength under ACI 301 shall include copies of the Concrete Testing Laboratory's reports from which the data was compiled.
20. All other information requested in the Concrete Mix Design Submittal Form located at the end of this specification section.

C. Pre-approved mix design, submit name and address of Supplier.

D. Before changing mix design, submit a new design and give ENGINEER 10 days to evaluate the changes.

E. Construction Joints: Submit drawing of proposed construction joint locations in concrete for slab on ground, mat foundations, structural floors, roofs and walls. Submit any additional or changed reinforcing that is required at construction joints that differs from that shown on the drawings.

F. Placement Sequence for Mat Foundation: Submit proposed placement sequence for mat foundations.

G. Industrial Slabs: Submit proposed placement sequence and procedure for protecting concrete during placement, finishing, and curing.

H. Source Quality Control Inspections and Testing Report: If requested, submit report describing

CONTRACTOR's and Supplier's quality control activities and test results.

1.06 QUALITY ASSURANCE

A. The concrete supplier shall have a minimum of five years' experience in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment. The supplier must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

B. The concrete contractor shall have a minimum of five years' experience with installation of concrete similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful –service performance.

C. Use a laboratory that follows and complies with ASTM C 1077.

D. Reject concrete that does not meet requirements of this section.

E. Do not change material sources, type of cement, air-entraining admixture, water reducing admixture, other admixtures except as allowed by mix design.

F. Store bagged and bulk cement in weatherproof enclosures. Exclude moisture and contaminants.

G. Prevent segregation and contamination of aggregate stockpiles.

H. Avoid contamination, evaporation, or damage to admixtures. Protect liquid admixtures from freezing.

I. Use of admixtures will not relax hot or cold weather placement requirements.

1.07 QUALITY CONTROL

A. The Contractor is responsible for control of quality, including workmanship and materials furnished by his subcontractors and suppliers.

B. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

1. ACI 301 – "Specifications for Structural Concrete".
2. ACI 117 – "Specification for Tolerances for Concrete Construction and Materials."
3. ACI 318 – "Building Code Requirements for Structural Concrete".
4. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".
5. Steel Construction Manual, 13th edition, American Institute of Steel Construction

C. Document Conflict and Precedence: In case of conflict among Contract Documents and Contract Specifications, request clarification from the Architect/Engineer through "Request for Information" (RFI) process before proceeding with the Work. In case of a conflict between and/or among the structural drawings and specifications, the strictest interpretation shall govern, unless specified otherwise in writing by the Architect/Engineer.

D. Manufacturer Representative Presence:

1. Post-installed anchors: The manufacturer's representative for each post-installed anchor product (adhesive, expansion, undercut, screw, or insert anchor) shall be present during the first day's installation of the product to observe whether the anchors are installed according to manufacturer's instructions.
2. Fiber-reinforced concrete: The manufacturer's representative for each fiber type shall be present during the first placement in which the fiber is used to observe whether the dosage rate and placing and finishing method is in accordance with the specifications and the manufacturer's instruction.

1.08 PROVISION FOR OTHER WORK

A. Provide for installation of inserts, hangers, metal ties, anchors, bolts, angle guards, dowels, thimbles, slots, nailing strips, blocking, grounds and other fastening devices required for attachment of work. Properly locate in cooperation with other trades and secure in position before concrete is placed. Do not install sleeves or blockouts in any concrete slabs, beams or columns except where shown on the drawings or upon written approval of the Architect/Engineer.

B. Protect adjacent finish materials against damage and spatter during concrete placement.

C. To maintain location accuracy, building control lines and elevation bench marks shall be furnished for the use of all trades.

1.09 ACCEPTANCE

A. Materials:

1. At the Source: Verify aggregate gradation. Determine percent of combined aggregate passing No. 200 sieve.

2. At the Site: Verify mix identification, batch time, slump, air content, density, and temperature.

3. At the Laboratory: Verify strength in 28 days.

B. Placement:

1. Concrete in general, Section 03 30 10.

2. Pavement, Section 32 13 13.

C. Defective Material:

1. Price adjustment, Section 01 22 00.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Refer to the drawings and other related specification sections for classes and strengths of concrete required, not all materials used in the project.

B. Hydraulic Cement:

1. Use ASTM C 150, Type I/II or Type III, or ASTM C 1157, Type GU or HE unless otherwise specified. Do not use Type III cement in slabs on ground unless approved in advance by the Architect and Engineer.

2. Use one brand of cement, for each class of concrete, throughout the project, unless approved otherwise by the Architect/Engineer and the Owner's Testing Laboratory. Submit mill certificates certifying conformance to this specification for each brand and type of cement. Documentation of design mix strength history must match the cement brand used.

3. Testing of cement in lieu of mill certificate submittal will be required if:

a. The cement has been in storage at the mixing site for over 30 days

b. It is suspected by the Owner, Architect, Engineer or Testing Laboratory that the cement has been damaged in storage or in transit or is in any way defective.

C. Low-alkali cement: Cement that has the additional requirement that equivalent alkalis ($Na_2O + 0.658K_2O$) do not exceed 0.60% according to ASTM C 150, Table 2.

D. Expansive Cement: ASTM C 845, Type K.

E. Supplementary Cementitious Materials (SCM).

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

2. Silica Fume: ASTM C 1240, Amorphous silica. Products:

a. MasterLife SF 100; Master Builders Solutions US LLC.

3. Slag Cement: ASTM C 989, Grade 100 or 120 or ASTM C 595, Type IS or Type S.

4. Metakaolin: ASTM C618, Class N. Products:

a. MetaMax; BASF Kaolin (part of BASF Corporation).

F. Normal weight Aggregates: ASTM C 33, and as herein specified. Submit material certificates from aggregate supplier or test results from an independent testing Laboratory certifying conformance to this specification for each source of aggregate.

G. Lightweight Aggregates: ASTM C 330. Submit material certificates from aggregate supplier or test results from an independent testing Laboratory certifying conformance to this specification for each source of aggregate.

H. Water: Comply with the requirements of ASTM C 1602

I. Cementitious materials, aggregate, and water must be extracted or recovered as well as manufactured within 500 miles of the project site.

J. For each admixture type listed below, and subject to compliance with requirements, provide one of the products and manufacturers following the admixture type.

K. For each admixture type listed below, submit manufacturer's certification that the product conforms to the requirements specified and is compatible with all other admixtures to be used.

L. Air-Entraining Admixture: ASTM C 260.

1. Products:

a. Darex or Daravair series; W. R. Grace & Co.

b. MasterAir Series; Master Builders Solutions US LLC.

c. Sika AER; Sika Corporation.

d. Air Mix or AEA-92; the Euclid Chemical Company.
e. Eucon Air 30 or Eucon Air 40; the Euclid Chemical Company.

M. Water-Reducing Admixture: ASTM C 494, Type A.
1. Products:
a. MasterPozzolith Series or MasterPolyheed Series; Master Builders Solutions US LLC.
b. Plastocrete 161; Sika Chemical Corp.
c. Eucon WR-75 or WR-91; The Euclid Chemical Company.
d. WRDAseries; W.R. Grace & Co.
e. Eucon NW or Eucon LW; The Euclid Chemical Company.

N. Mid-Range Water-Reducing Admixture: ASTM C 494, Type A and Type F.
1. Products:
a. MasterPolyheed Series; Master Builders Solutions US LLC.
b. Eucon MR; The Euclid Chemical Company
c. Sikament HP; Sika Chemical Corp.
d. Daracem or Mira series; W.R. Grace & Co.
e. Eucon X15 or Eucon X20; The Euclid Chemical Company.

Q. Retarding Admixture: ASTM C 494, Type B.
1. Products:
a. MasterSet R Series or MasterSet DELVO Series; Master Builders Solutions US LLC.

P. Accelerating Admixture (Non-Corrosive, Non-Chloride): ASTM C 494, Type C.
1. Products:
a. Polarset, Gilco, Lubricon NCA or DCI; W.R. Grace & Co.
b. MasterSet AC 534 or MasterSet FP 20; Master Builders Solutions US LLC.
c. Accelguard 80/90, NCA or AcN; The Euclid Chemical Company.
d. Plastocrete 161FL; Sika Chemical Co.
e. Eucon AcN; The Euclid Chemical Company.

Q. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
1. Products:
a. Daratard series; W.R. Grace & Co.
b. MasterSet R Series or MasterSet DELVO Series; Master Builders Solutions US LLC.
c. Plastiment; Sika Chemical Co.
d. Eucon Retarder Series; The Euclid Chemical Company.

R. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.
1. Products:
a. MasterSet FP 20; Master Builders Solutions US LLC.
b. Accelguard 80/90, NCA or AcN; The Euclid Chemical Company.
c. Plastocrete 161FL; Sika Chemical Co.
d. Eucon AcN; The Euclid Chemical Company.

S. High-Range Water-Reducing Admixture (superplasticizer): ASTM C 494, Type F or Type G.
1. Products:
a. ADVA or Daracem Series; W.R. Grace & Co.
b. MasterRheobuild 1000 or MasterGlenium Series; Master Builders Solutions US LLC.
c. Sikament; Sika Chemical Corp.
d. Eucon 37/1037 or Plastol series; The Euclid Chemical Company.
e. Euconl SP or Eucon RD; The Euclid Chemical Company.

U. Workability-Retaining Admixture: ASTM C 494, Type S. Shall retain concrete workability without affecting time of setting or early-age strength development.
1. Products:

a. MasterSure Z 60; Master Builders Solutions US LLC.

T. Viscosity Modifying Admixture: Used to enhance plastic concrete properties such as workability, pumpability, and stability for "self-consolidating concrete".

1. Products:

a. MasterMatrix VMA Series; Master Builders Solutions US LLC.

b. Eucon SL or Visctrol; The Euclid Chemical Company.

c. VisoCrete series; Sika Chemical Co.

d. VMAR series; W.R. Grace & Co.

W. Shrinkage Reducing Admixture: An admixture that reduces drying shrinkage by reducing the capillary tension of pore water. ASTM C 494, Type S.

1. Products:

a. For Air-Entrained Concrete:

1). MasterLife SRA Series or MasterLife CRA 007; Master Builders Solutions US LLC.

2). Eclipse Plus; Grace Construction Products.

3). Eucon SRA; The Euclid Chemical Company.

b. For Non-Air-Entrained Concrete:

1). Eclipse Floor; Grace Construction Products.

2). MasterLife CRA 007; Master Builders Solutions US LLC.

X. Corrosion Inhibitor: 30% calcium nitrite. ASTM C 494, Type C.

1. Products: Provide the following at dosage rates per Engineer of Record from manufacturer's recommendation based on design life, application, clear cover and other products in concrete mix:

a. Eucon CIA or Eucon BCN; the Euclid Chemical Company.

b. DCI or DCI-S; W.R. Grace & Co.

c. MasterLife CI 30; Master Builders Solutions US LLC.

d. Sika CNI; Sika Chemical Co.

Y. Corrosion Inhibitor: Amine-Ester type. ASTM C 494, Type S.

1. Products: Provide the following at dosage rates per manufacturer's recommendation:

a. MasterLife CI 222; Master Builders Solutions US LLC.

Z. Alkali-Silica Reaction-Inhibiting Admixture: ASTM C 494, Type S. Shall contain a nominal lithium nitrate content of 30 percent.

1. Products:

a. MasterLife ASR 30; Master Builders Solutions US LLC.

AA. Crystalline-forming Waterproofing Admixture: A powder admixture capable of producing concrete that is water tight under hydrostatic pressure up to 7 atmospheres when tested in accordance with Corps of Engineers test CRD-C48 and capable of sealing cracks up to 0.4mm.

1. Products: Provide the following at dosage rates per manufacturer's recommendation:

a. Penetron Admix; ICS/Penetron International/Ltd.

b. Krystol Internal Membrane; Kryton International, Inc.

c. Xypex C series; Xypex Chemical Corporation.

d. MasterLife 300 Series; Master Builders Solutions US LLC.

AB. Calcium Chloride and Chloride Ion Content: Calcium chloride or admixtures containing intentionally-added chlorides are not permitted. For concrete exposed to sulfate exposure class S2 or S3 as noted on the drawings, admixtures must be completely free of chloride ions.

AC. Certification: Written conformance to all the above-mentioned requirements and the chloride ion content of the admixture as tested by an accredited laboratory will be required from the admixture manufacturer at the time of mix design review by the Engineer.

AD. Fibers:

1. Synthetic Microfibers: Monofilament or fibrillated polypropylene microfibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III. Products:

a. MasterFiber M Series or MasterFiber F Series; Master Builders Solutions US LLC.

2. Synthetic Macrofibers: Synthetic macrofibers engineered and designed for use in concrete as

temperature and shrinkage reinforcement, complying with ASTM C1116, Type III. Products:

a. MasterFiber MAC Series; Master Builders Solutions US LLC.

2.02 RELATED MATERIALS

A. Waterstops: Provide waterstops at all construction joints and other joints in all foundation walls below grade and where shown on the drawings. Size to suit joints. Provide type as follow where shown on drawings.

1. ADCOR ES waterstops: W.R. Grace & Co.
2. Polyvinyl chloride (PVC) waterstops: Corps of Engineers CRD-C 572.
3. Preformed Plastic Waterstops: Federal Specifications SS-S-210A "Sealing Compound for Expansion Joints".
   a. Manufacturers: Synko-Flex Products, Inc.
4. Bentonite Waterstop RX manufactured by American Volclay Products.

B. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.

C. Moisture-Retaining Cover: One of the following, complying with ANSI/ASTM C 171:

1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.
4. Polyethylene-coated natural cellulose fabric such as “Aquacure” by Greenstreak Group, Inc.
5. Cover for Industrial Slab: Provide a low permeance moisture-retaining cover that allows a moisture loss of no more than 1 lb/sq. yd. in 72 h when tested in accordance with ATSM C 156 for industrial slabs. The material shall be nonstaining with a tensile strength meeting ASTM D 882 and a minimum retention capacity of 6.5 g.

D. Slip-resistive Emery Aggregate or Aluminum Granule Finish: Provide fused aluminum-oxide granules, or crushed emery, as abrasive aggregate for slip-resistive finish. The emery aggregate shall contain not less than 50% aluminum oxide and not less than 20% ferric oxide. The aluminum aggregate material shall contain not less than 95% fused aluminum-oxide granules. Use material that is factory-graded, packaged, rust-proof and non-glazing, and is unaffected by freezing, moisture and cleaning materials.

1. Subject to compliance with requirements, provide one of the following:
   a. Emery Tuff Non-Slip; Dayton-Superior.
   b. Grip-It or Grip-It AO; L&M Construction Chemicals, Inc.
   c. MasterTop 120 SR; Master Builders Solutions US LLC.

E. Colored, Mineral Aggregate, Dry Shake Surface Hardener: Packaged, dry, combination of materials, consisting of portland cement, graded quartz aggregate, coloring pigments (if required) and plasticizing admixtures. Use coloring pigments that are finely ground, non-fading mineral oxides, interground with cement. Color, as selected by Architect, unless otherwise indicated.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Surflex; the Euclid Chemical Company.
   b. Quartz Plate; L & M Const. Chemical Co.
   c. Lithochrome; LM Scofield Construction Chemical Co.
   d. MasterTop 100; Master Builders Solutions US LLC.
   e. Quartz-Tuff; Dayton Superior.
   f. US Spec Dense Top; US Mix Co.
2. Submit manufacturer's certification that product conforms to the requirements specified.

F. Bonding Compound: Polyvinyl acetate or acrylic base, for use in cosmetic and/or nonstructural repairs.

1. Use type I in areas not subject to high humidity or immersion in water with minimum bond strength of 400 psi.
2. Use type II in areas subject to high humidity or immersion in water with minimum bond strength of 1250 psi.
3. Products: Subject to compliance with requirements, provide one of the following:
   a. Acrylic or Styrene Butadiene:
      1). Day-Chem Ad Bond (J-40); Dayton Superior.

2). SBR Latex; The Euclid Chemical Company.
3). Daraweld C; W. R. Grace.
4). MasterEmaco A 400; Master Builders Solutions US LLC.
5). MasterEmaco A 660; Master Builders Solutions US LLC.
6). SikaLatex; Sika Chemical Co.
7). Intralok; W. R. Meadows.
8). US Spec Acrylcoat; US Mix Co.
9). Akkro 7-T; the Euclid Chemical Company.

b. Polyvinyl Acetate (Interior Use Only)
1). Tammseld; the Euclid Chemical Company.
2). Everweld; L & M Construction Chemicals, Inc.
3). Superior Concrete Bonder (J-41); Dayton Superior.
4). US Spec Bondcoat; US Mix Co.

G. Epoxy Products: Two component material suitable for use on dry or damp surface, complying with ASTM C 881.

1. Products for Crack Repair:
a. Sikadur 35 Hi Mod LV"; Sika Chemical Company – injection type.
b. Sikadur 52; Sika Chemical Company – injection type.
c. Sikadur 55 SLV; Sika Chemical Company – gravity feed.
d. Eucopoxy Injection Resin," the Euclid Chemical Company.
e. Sure-Inject (J-56)," Dayton Superior.
f. MasterEmaco ADH 326; Master Builders Solutions US LLC.
g. MasterInject 1380 (injection or gravity feed); Master Builders Solutions US LLC.
h. MasterEmaco ADH 327 RS; Master Builders Solutions US LLC.
i. MasterEmaco ADH 1090 RS; Master Builders Solutions US LLC.
j. ETI-LV" or "ETI-GV; Simpson Strong-Tie Co., Inc. – injection type
k. Pro-Poxy 100 LV" or "Pro-Poxy 50; Unitex
l. Crackbond; U.S. Anchor Corp.
m. Rezi-Weld LV; W. R. Meadows.
n. US Spec Maxibond" US Mix Co. – injection or gravity feed.
o. US Spec Eposeal LVS; US Mix Co. – gravity feed.
p. Duralcrete LV; the Euclid Chemical Company.

2. Products for Epoxy Mortar Patches:
a. MasterEmaco ADH 1090 RS; Master Builders Solutions US LLC.
b. MasterSeal 350; Master Builders Solutions US LLC.
c. Sikadur Lo-Mod LV; Sika Chemical Corporation.
d. Duracrete; the Euclid Chemical Company.
e. Sure Grip Epoxy Grout (J-54)," Dayton-Superior.
f. Epofil; BASF Building Systems.
g. Pro-Poxy 2500; Unitex.
h. Rezi-Weld 1000; W. R. Meadows.
i. US Spec EPM 3000; US Mix Co.
j. Duralcrete LV; the Euclid Chemical Company.

3. Products for Epoxying steel plates to concrete: conform to ASTM C 881-90, Type IV, Grade 3, Class A, B, & C except gel times.
a. MasterEmaco ADH 327 RS; Master Builders Solutions US LLC.
b. Sikadur 31 Hi-Mod Gel; Sika Corporation
c. Sure Anchor I (J-S1); Dayton Superior

d. Epo Gel or Rapid Gel; BASF Building Systems

e. Pro-Poxy 300; Unitex

f. US Spec Gelbond NS; US Mix Co.

g. Duralcrete Gel; The Euclid Chemical Company.

4. Products for Adhesive Anchors or Reinforcing Steel in Normal weight Concrete. Product that conforms to ASTM C 881-02, Type IV, Grade 3, Class A, B, & C except gel times, and that is dispensed from a two-component cartridge system through a mixing nozzle that thoroughly mixes the two components as it is injected into the hole.

a. ICC Approval: Only anchors evaluated by the ICC Evaluation Service, Inc. (ICC-ES) with a published, currently valid, Evaluation Report showing it as having passed Acceptance Criteria 308 shall be approved for use.

b. Consult with the manufacturer for the minimum temperature of the concrete substrate allowed.

c. All anchors installed upwardly inclined require continuous inspection unless an exception to the continuous special inspection for upwardly inclined installation is noted on the drawings.

d. Normal weight Concrete:

1). HIT-RE 500-SD; Hilti Fastening Systems (periodic inspection unless anchors are installed upwardly inclined)

2). SET-XP Adhesive; Simpson Strong-tie (periodic inspection unless higher factors are used in design requiring continuous inspection as noted on the drawings or anchors are installed upwardly inclined)

3). PE 1000+; Powers Fasteners, Inc. (periodic inspection unless anchors are installed upwardly inclined)

4). HIT-HY 150 MAX-SD", Hilti Fastening Systems (periodic inspection unless anchors are installed upwardly inclined)

e. Lightweight Concrete:

1). No approved products.

f. These products may not be used in concrete cast over corrugated deck.

g. Install only anchors identified on the drawings by manufacturer and product. Substitutions using products approved by this Specification may be permitted provided complete design calculations, as required by and in accordance with the proposed product's current and valid ICC Evaluation Service Report (ESR) and ACI 318 Appendix D, are signed and sealed by a professional engineer licensed in the state of Oklahoma and furnished to the Engineer for review and approval prior to commencement of work. The contractor shall request design criteria for all conditions where a product substitution is considered. Failure to obtain approval for an anchor substitution may result in the request by the Engineer to remove installed anchors and replace with the product specified on the drawings at the Contractor's expense.

H. Self-Leveling Mortars, Underlayment Compound: Free flowing, self-leveling, pumpable cementitious base compound. Follow manufacturer's instruction regarding the use of a bonding agent.

1. Products: Unless specified otherwise, provide one of the following:

a. MasterTop 110 SL; Master Builders Solutions US LLC.

b. Sikatop 111; Sika Chemical Co.

c. Flo-Top or "Super Flo-Top; the Euclid Chemical Company.

d. Levelayer I; Dayton Superior.

e. US Spec Self-leveling Underlayment; US Mix Co.

f. Level Magic; the Euclid Chemical Company.

I. Polymer Patching Mortar: Polymer and microsilica modified cementitious based compounds.

1. Horizontal Application

a. Thin Top Supreme, Concrete Top Supreme; the Euclid Chemical Company

b. Sikatop 121 or 122; Sika Chemical

c. MasterEmaco T 310 CI; Master Builders Solutions US LLC

d. MasterEmaco N 420 CI; Master Builders Solutions US LLC

e. US Spec H2 or NuTop; US Mix Co.

Speed Crete PM; the Euclid Chemical Company

2. Upwardly Inclined Application

a. Verticoat/Verticoat Supreme; the Euclid Chemical Company

b. Sikatop 123; Sika Chemical

c. MasterEmaco N 425; Master Builders Solutions US LLC

d. MasterEmaco N 420 CI; Master Builders Solutions US LLC

e. US Spec V/O Patch; US Mix Co.

f. Speed Crete PM; the Euclid Chemical Company

J. High Strength Flowing Repair Mortar: For forming and placing structural members, or large horizontal repairs, provide flowable one-part, high strength microsilica polymer modified repair mortar with 3/8" aggregate. The product shall achieve 9000 psi @ 28-days at a 9-inch slump.

1. Products: Unless specified otherwise, provide one of the following:

a. MasterEmaco S 466 CI; Master Builders Solutions US LLC

b. US Spec STR Mortar; US Mix Co.

c. Eucocrete; the Euclid Chemical Company

d. Form and Pour, the Euclid Chemical Company

K. Anti-Corrosive Epoxy/Cementitious Adhesive: Water-based epoxy/cementitious compound for adhesion and corrosion protection or reinforcing members (20 hour maximum open time).

1. Products: Unless specified otherwise, provide one of the following:

a. Duralprep A.C; the Euclid Chemical Company

b. Armatec 110; Sika Chemical Co.

c. MasterEmaco P 124; Master Builders Solutions US LLC

L. Expansion and Undercut Anchors in Concrete:

1. ICC Approval: Only anchors evaluated by the ICC Evaluation Service, Inc. (ICCES) with a published, currently valid, Evaluation Report showing it as having passed Acceptance Criteria 193 and approval for use in cracked concrete and resisting wind and seismic loads shall be approved for use.

2. Type: All expansion and undercut anchors in concrete shall be only wedge type expansion, sleeve-type expansion, or undercut type anchors.

3. Interior Use: All anchors, nuts and washers for use in interior conditioned environments free of potential moisture shall be manufactured from carbon steel zinc plated in accordance with Federal Specification QQ-Z-325C, Type II, Class 3.

4. Exterior or Exposed Use: All anchors, nuts and washers for use in exposed or potentially wet environments, or for attachment of exterior cladding materials shall be galvanized or stainless steel. Galvanized anchors, nuts and washers shall conform to ASTM A 153. Stainless steel anchors shall be manufactured from 300 series stainless steel and nuts and washers from 300 series or Type 18-8 stainless steel.

5. Nuts and Washers: Nuts and washers shall be furnished from the manufacturer and used with the anchors.

6. Acceptable Products and Manufacturers – Normal and Lightweight Concrete:

a. Kwik Bolt TZ; Hilti Fastening Systems (periodic inspection)

b. HDA Undercut Anchor; Hilti Fastening Systems (continuous inspection)

c. HSL-3 Heavy Duty Sleeve Anchor; Hilti Fastening Systems (continuous inspection)

d. Strong-Bolt Wedge Anchor; Simpson Strong-Tie, Co., Inc. (continuous inspection)

e. Red Head Trubolt + Wedge Anchor; ITW Red Head (periodic inspection)

f. DUC Undercut Anchor; USP Structural Connectors (continuous inspection)

g. Power Stud + SD1; Powers Fasteners, Inc (periodic inspection)

h. Power Stud + SD2; Powers Fasteners, Inc (periodic inspection)

i. SRS TZ Carbon Steel Anchor; MKT Metall-Kunststoff-Technik (continuous inspection)

7. Acceptable Products and Manufacturers – Normal and Light Weight Concrete on Corrugated Deck:

a. Kwik Bolt TZ; Hilti Fastening System (periodic inspection)

b. Strong-Bolt Wedge-Anchor; Simpson Strong-Tie, Co, Inc. (continuous inspection)

c. Power Stud + SD2; Powers Fasteners, Inc. (periodic inspection)

8. Install only anchors identified on the drawings by manufacturer and product. Substitutions using products approved by this Specification may be permitted provided complete design calculations, as required by and in accordance with the proposed product's current and valid ICC Evaluation Service Report (ESR) and ACI 318 Appendix D, are signed and sealed by a professional engineer licensed in the state where the project is located and furnished to the Engineer for review and approval prior to commencement of work. The contractor shall request design criteria for all conditions where a product substitution is considered. Failure to obtain approval for an anchor substitution may result in the request by the Engineer to remove installed anchors and replace with the product specified on the drawings at the Contractor's expense.

M. Screw and Insert Anchors in Concrete

1. Approvals: Only anchors evaluated by the ICC Evaluation Service, Inc. (ICC-ES) with a published, currently valid, Evaluation Report showing it as having passed Acceptance Criteria 193 and approved for use in cracked concrete and resisting wind and seismic loads shall be approved for use.

2. Interior Use: All screw anchors for use in interior conditioned environments free of potential moisture shall be manufactured from carbon steel zinc plated in accordance with Federal Specification QQ-Z-325C, Type II, Class 3.

3. Exterior or Exposed Use: All screw anchors for use in exposed or potentially wet environments, or for attachment of exterior cladding materials shall be galvanized or stainless steel. Galvanized anchors shall conform to ASTM A 153. Stainless steel anchors shall be manufactured from 300 series stainless steel.

4. Acceptable Products and Manufacturers – All Conditions:

a. Titen HD; Simpson Strong-Tie Co., Inc (continuous inspection)

b. Snake+Anchor; Powers Fasteners, Inc. (periodic inspection)

c. Wedge-Bolt+; Powers Fasteners, Inc. (greater than ¼ in. diameter) (periodic inspection)

5. Install only anchors identified on the drawings by manufacturer and product. Substitutions using products approved by this Specification may be permitted provided complete design calculations, as required by and in accordance with the proposed product's current and valid ICC Evaluation Service Report (ESR) and ACI 318 Appendix D, are signed and sealed by a professional engineer licensed in the state of Texas and furnished to the Engineer for review and approval prior to commencement of work. The contractor shall request design criteria for all conditions where a product substitution is considered. Failure to obtain approval for an anchor substitution may result in the request by the Engineer to remove installed anchors and replace with the product specified on the drawings at the Contractor's expense.

N. Threaded Rods Chemically Anchored in Concrete

1. Type: Threaded rods installed in holes using a chemical anchoring process shall have a 45º chiseled end on one end.

2. Interior and Exterior Application: Meet the requirements of ASTM A 153 galvanized steel, or F 593, Group 1 or 2, condition CW stainless steel.

O. Anchor Rods:

1. All anchor rods shall conform to the ASTM designation and shall be of the yield strength as specified below as appropriate for the types and at the locations as specified on the drawings:

a. ASTM F 1554, Grade 36 (1/4 inch to 4 inches in diameter).

b. ASTM F 1554, Grade 55 (1/4 inch to 4 inches in diameter). (Also comply with Supplementary Requirement S1 of ASTM F 1554)

c. ASTM F 1554, Grade 105 (1/4 inch to 3 inches in diameter.

d. ASTM A 588 (corrosion resistant).

e. ASTM A 354 Grade BD, 130 ksi (to 2 ½ inches in diameter).

f. ASTM A 354 Grade BD, 115 ksi (greater than 2 ½ inches to 4 inches in diameter).

g. ASTM A 354 Grade BC, 109 ksi (to 2 ½ inches in diameter).

h. ASTM A 354 Grade BC, 99 ksi (greater than 2 ½ inches to 4 inches in diameter).

2. Anchor rods used with ASTM A 588 base plates shall be threaded round stock conforming to ASTM

A 588, grade 50.

3. Anchor rods used with ASTM A 588 base plates shall be threaded round stock conforming to ASTM A 588, grade 50.
4. Anchor rods used with galvanized base plates shall be galvanized.
5. Nuts: All nuts with anchor rods shall be heavy hex head conforming to ASTM A 563.
6. Washers: Unless noted otherwise on the drawings, washer size and thickness for all anchor rods shall conform to Table 14-2 of AISC “Steel Construction Manual” with holes 1/16” greater than the anchor rod diameter. Washers shall conform to ASTM A 36 steel.

P. Non-Shrink Grout:

1. Type: Grout for base plates, bearing plates and grouting under precast or tilt-up wall panels shall be a non-metallic, shrinkage resistant, premixed, non-corrosive, non-staining product containing Portland cement, silica sands, shrinkage compensating agents and fluidity improving compounds.
2. Specifications: Non-shrink grout shall conform to ASTM C 1107.
3. Compressive Strength: Provide the minimum strength as shown below as determined by grout cube tests at 28 days:
    a. 6,000 PSI for supporting concrete 3000 psi and less.
    b. 8,000 PSI for supporting concrete greater than 3000 psi and less than or equal to 4000 psi.
    c. Unless noted otherwise on the drawings, grout strength on supporting concrete greater than 4000 psi shall be 8000 psi.
4. Products: Acceptable non-shrink grouts are listed below:
    a. Crystex; L & M Construction Chemicals, Inc.
    b. MasterFlow 713; Master Builders Solutions US LLC.
    c. MasterFlow 555; Master Builders Solutions US LLC.
    d. MasterFlow 100; Master Builders Solutions US LLC.
    e. Five Star Grout; U. S. Grout Corp.
    f. NS Grout; the Euclid Chemical Company
    g. Sure-Grip High Performance Grout; Dayton Superior Corp.
    h. CG 200 PC; Hilti, Inc.
    i. CG-86 Grout; W. R. Meadows
    j. US Spec GP Grout; US Mix Co.
5. High Flow, Non-Metallic Grout: Use high-flow grout where high fluidity and/or increased placing time is required and for base plates that are larger than 10 square feet. The factory pre-mixed grout shall conform to ASTM C 1107, "Standard Specification for Packages Dry, Hydraulic-Cement Grout (NonShrink)." In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95% bearing under a 18" x 36" base plate. Provide one of the following:
    a. Hi-Flow Grout; the Euclid Chemical Company
    b. MasterFlow 928; Master Builders Solutions US LLC.
    c. 588 Grout; W. R. Meadows
    d. US Spec MP Grout; US Mix Co.

Q. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 26 gage galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.

R. Carton Forms: Carton forms shall be manufactured using corrugated paper material with a moisture resistant exterior surface and specifically designed for foundation support. Carton forms shall be designed to support the wet weight of the concrete that is shown by the details to be placed on top of the form but not less than 600 psf. Refer to the Reinforced Concrete General Notes for the restriction on horizontal construction joints. The forms shall be designed in such a way that the bottom of the form will collapse when acted upon by upward movement of the soil.

1. Form Configuration: Carton forms shall be of a vertical cellular configuration only, except as permitted by item 4 below, and shall be rectangular as shown on the details. The depth of the carton forms is shown on the details. Forms shall be manufactured to fit snugly against round piers and shall be baffled in such a way as to prevent concrete from flowing back into the form during

the concrete placement. The Contractor shall use expandable foam to fill all gaps and holes between carton forms and at intersections with foundations.

2. Carton forms shall be kept dry and protected until concrete is placed. Wet, compressed, or deteriorated carton forms shall not be used. Do not wrap or cover carton forms with polyethylene sheets or permanent waterproof cover as that will prevent proper deterioration of the forms.

3. Technical data and brochures on carton forms shall be submitted for Engineer's review.

4. Other types of forms using different types of paper and different configurations will be accepted if it can be shown by independent tests that the form will properly function and will deteriorate due to moisture in an appropriate time frame.

5. For slab conditions, cover carton forms with a 1/4 inch masonite protection cover board to prevent puncture and other damage during construction.

6. Products: Subject to requirements, acceptable manufacturers include but are not limited to the following:

   a. SureVoid Products, Inc., Englewood, CO

S. Contraction and Construction Joint-Filler Material for Slabs-on-Ground: Provide a 2-component semi-rigid, 100% solids epoxy having a minimum shore A hardness of 80 when tested in accordance with ASTM D 2240 and an elongation below 25% when measured in accordance with ASTM D 638. Subject to compliance with requirements, provide one of the following:

1. Euco 700; the Euclid Chemical Company

2. Spec-Joint CJ; Conspec Marketing and Manufacturing Co., Inc.

3. MasterSeal 190 CR; Master Builders Solutions US LLC

4. MM-80; Metzger/McGuire Co.

5. Rezi-Weld Flex; W. R. Meadows

6. US Spec SR-50 EJF; US Mix Co.

T. Bond breaker for Construction Joints in Slabs-on-Ground: A dissipating bond breaking compound containing no silicones, resins, or waxes, and that conforms to ASTM C 309. Subject to compliance with requirements, acceptable manufacturers include the following:

1. Sure-Lift; Dayton Superior Corporation, Inc.

2. Tilt-Eez; Conspec Marketing and Manufacturing Co., Inc.

U. Joint-Filler Strips for Isolation Joints in Slabs-on-Ground: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork. In post-tensioned slabs or shrinkage-compensated slabs, use compressible isolation-joint filler material that does not develop a stress greater than 25 psi at 50% strain when tested in accordance with ASTM D 1621 or D 3575.

V. Rigid-Cellular-Polystyrene Boards use as Fill under Topping Slabs or Slabs-on-Ground:

1. Provide rigid, expanded (EPS) or extruded (XPS) cellular polystyrene boards that conform to ASTM D 6817 or ASTM C 578 with a minimum density of 1.0 lb/ft3. Subject to compliance with requirements, acceptable manufacturers include the following:

   a. STYROFOAM Brand; Dow Chemical Company

   b. R-Control EPS Geofoam - All grades; R-Control Building Systems

   c. EPS Geofoam; Carpenter Co.

   d. Knauf Geofoam; Knauf Polystyrene

   e. Insulfill; Premier Industries

W. Synthetic Macro Fiber Reinforcement: Monofilament polypropylene/polyethylene fibers conforming to ASTM C 1116, Type III having an aspect ratio between 50 and 90 and a minimum tensile strength of 90 ksi. The fiber lengths shall be between 1.5 and 2 inches long.

1. Products: Acceptable non-shrink grouts are listed below:

   a. Tuf-Strand S.F.; the Euclid Chemical Company

   b. Forta-Ferro; Forta Corp.

   c. Strux 90/40; W.R. Grace

   d. Fibermesh 650; Propex Concrete Systems, Corp.

   e. Synmix; Bekaert Corp.

   f. MasterFiber MAC serie;, BASF Construction Chemicals

2.03 PROPORTIONING AND DESIGN OF CONCRETE MIXES

A. The Contractor shall submit concrete mix designs for each class of concrete indicated on the structural drawings and in the Specifications for approval by the Engineer at least 15 working days prior to the start of construction. If required, the Contractor shall engage the services of an independent Testing Laboratory to assist in preparing the mix design. The Contractor shall not begin work with a particular mix until that mix design has been approved.

B. Required types of concrete and compressive strengths shall be as indicated on the Structural Drawings.

C. Low Alkali Concrete: For concrete identified on the drawings as exposed to exposure classes C1 and C2, the total alkali contribution from cementitious materials in the concrete mix shall not exceed 4.0 pounds per cubic yd of concrete unless the aggregate used is certified to contain no deleterious materials that react with alkalis in the concrete mix as defined in ASTM C 33. This requirement may be met by the use of low-alkali cement.

D. Lightweight Structural Concrete:

1. Comply with the requirements of ACI 211 and ACI 301.
2. Provide concrete with a dry unit weight of not more than 116 pounds per cubic foot and not less than 110 pounds per cubic foot. Design mix to produce strengths as indicated on the drawings with a split cylinder strength factor (fct/(f'c)0.5) of not less than 5.7.

E. Aggregate: Comply with the following special requirements:

1. Material: Clean, hard, durable, angular, and sound consisting of gravel, crushed gravel, crushed stone, crushed concrete, slag, sand or combination.
2. Source: Use the following requirements to determine suitability of aggregate source and not for project control.
    a. Deleterious Substances and Physical Properties:
        1). Coarse Aggregate: Class designation 4S in table 3 in ASTM C 33.
        2). Fine Aggregate: Table 1 in ASTM C 33. Organic impurities producing a dark color concrete may cause rejection.
3. Comply with the following special requirements:
    a. For exposed concrete, provide aggregates from a single source.
    b. For exposed surfaces subject to Exposure Class C1 or C2, do not use aggregates containing spalling-causing deleterious substances.
    c. For slabs and other designated concrete, combined aggregate gradation shall be 8% - 18% for large top size aggregates (1 1/2 in.) or 8% - 22% for smaller top size aggregates (1 in. or 3/4 in.) retained on each sieve below the top size and above the No. 100. Deviations from this gradation may be allowed upon the approval of the Engineer subject to the following limitations:
        1). The percent retained on two adjacent sieves shall be not less than 5%.
        2). The percent retained on three adjacent sieves shall be not less than 8%.
        3). If the percent retained on two adjacent sieves is less than 8%, the total percent retained on either of those sieves and the adjacent outside sieve shall be not less than 13 %

F. Admixtures:

1. Admixtures to be used in concrete shall be subject to the approval of the Engineer and and shall be used for the purpose intended by the manufacturer to produce concrete to meet the specified requirements.
2. Quantities of admixtures to be used shall be in strict accordance with the manufacturer's instructions.
3. Adjustments of Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant. Such mix design adjustments shall be provided at no additional cost to the Owner. Any adjustments in approved mix designs including changes in admixtures shall be submitted in writing with the specified Concrete Mix Design Submittal Form to the Engineer for approval prior to field use.
4. Lightweight Structural Concrete:
    a. Comply with the requirements of ACI 211 and ACI 301.
    b. Provide concrete with a dry unit weight of not more than 116 pounds per cubic foot and not less than 110 pounds per cubic foot. Design mix to produce strengths as indicated on the drawings with a split cylinder strength factor (fct/(f'c)0.5) of not less than 5.7.

5. Shrinkage: Concrete so identified on the drawings shall be proportioned for maximum allowable unit shrinkage, measured at 28 days after curing in lime water as determined by ASTM C 157 (using air storage).

6. Chloride Ion Content:

   a. Unless noted otherwise, The maximum water soluble chloride ion concentration in hardened concrete measured at ages from 28 to 42 days contributed from all ingredients including water, aggregates, cementitious materials, and admixtures shall not exceed the limits specified in ACI 318-14 Table 19.3.2.1 depending on to which Corrosion Exposure Class (CO, C1 or C2) the concrete is subject. Water-soluble chloride ion tests shall conform to ASTM C 1218. One test shall be run for each class of concrete before the mix design submittal and each time a change is made to the mix design (such as change in aggregate type or source).

   b. The chloride ion content in all concrete used for prestressed or post-tensioned concrete shall not exceed .06 percent by mass of cementitious materials.

   c. The Concrete Supplier shall certify on the Mix Design Submittal Form that the chloride ion content in all concrete mix designs used on the project does not exceed the limits stated above.

7. Pozzolan:

   a. Natural or fly ash per ASTM C 618.

   b. Silica fume per ASTM C 1240.

   c. Slag cement per ASTM C989.

   d. Metakaolin per ASTM C618.

8. Special Admixtures: Allowed if mix design submittal is accepted.

   a. Lithium nitrate based solution for control of reactive aggregates.

   b. Calcium nitrite based solution for corrosion protection of reinforced structures subject to chloride-induced corrosion.

   c. Shrinkage reducer for controlling drying shrinkage in concrete.

   d. Viscosity modifier for enhancement of self-consolidating concrete or for workability.

9. Mix Design

   a. Selection of Cement: ASTM C 150 or C 1157.

      1). For sulfate resistance, use Type V Portland cement, or Type II with Class F fly ash, silica fume or combination thereof. Class F fly ash may be used as an addition to Type V Portland cement.

      2). Do not use fly ash with Type IP(MS) or Type III Portland cement.

   b. Selection of Aggregates.

      1). Maximum Particle Size:

         a). 1/5 of narrowest dimension between forms.

         b). 1/3 of depth of slab.

         c). 3/4 of minimum clear spacing between reinforcing bars.

      2). Gradation: ASTM C 33.

   c. Selection of Pozzolan:

      1). General: If a blended aggregate passes an unmodified ASTM C 1293 test, use of a pozzolan is CONTRACTOR's choice, otherwise select a pozzolan (or blended cement, or both) and determine the effective dosage to meet one of the following tests.

         a). ASTM C 1567. The expansion of a cement-pozzolan-aggregate job-mix mortar bar is less than or equal to 0.10 percent at 16 days. Do not use this test if a lithium admixture is used in the job-mix.

         b). ASTM C 441. The expansion of a test mixture at 56 days is less than or equal to a control mixture prepared with cement with equivalent alkalis between 0.5 and 0.6 percent.

      2). Fly Ash (Class F): Allowed as a cement replacement under the following conditions.

         a). Before replacement is made, use the minimum cement content in the design formula to establish the water/cement ratio.

b). Submit to ENGINEER a quality history of the fly ash identifying a minimum of 15 of the most current ASTM C 618 analysis.

3). Natural Pozzolan (Class N): Allowed as a cement replacement if the 14 day expansion test (ASTM C 1567) with job aggregates, job cement and natural pozzolan does not exceed the 14 day expansion test of job aggregates, job cement and Class F fly ash.

4). Silica Fume: Allowed as a cement replacement if replacement of hydraulic cement on a 1 part silica fume to 1 part cement does not exceed 10 percent, and water/cement ratio is established before cement is replaced with silica fume.

10. Selection of Fiber Reinforcement: The basis for determining material proportions of fiber-reinforced concrete is the Supplier's responsibility per ASTM C 1116 subject to mix property requirements of this Section. Unless specified otherwise provide synthetic fibers.

11. Selection of Mix Properties: Select and proportion mix to produce appropriate strength, durability and workability. Use ACI 211.1, 211.2, or 211.3.

12. Ready-Mix Concrete: Comply with requirements of ANSI/ASTM C 94, Ready Mixed Concrete.

G. SOURCE QUALITY CONTROL

1. Once selected, do not change source quality control sampling point.

2. Aggregate:

a. Soundness, ASTM C 88.

b. Alkali-silica Reactivity: ASTM, C 1567, and C 1293.

c. Petrographically examine fine and coarse aggregate sources once every 3 years per ASTM C 295.

3. Concrete Mix: Obtain samples per ASTM C 172 and run the following tests.

a. Compressive strength, ASTM C 39.

b. Density, ASTM C 138.

c. Slump, ASTM C 143

d. Air, ASTM C 231.

e. Temperature, ASTM C 1064.

4. Concrete Quality Charts: Comply with ACI 214 and ACI 301. Plot new results and identify trends on quality control charts that comply in form to ASTM STP 15-C. Show the Specified Strength (fc'), the required Average Strength (fcr), and the compressive strength versus date of Sample.

5. Equipment: Certify through the services of a professional engineer that trucks and plant equipment comply with the requirements of the National Ready Mixed Concrete Association. Do so at least every 2 years.

a. Transit Trucks: Equip transit trucks with plates indicating total volume, agitating volume and mix volume.

b. Weights and Measures: Comply with regulatory requirements of State of Oklahoma.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Placement, Section 03 30 10.

B. Driveways, sidewalks, curb, gutter, Section 32 13 14.

C. Roadway pavement, Section 32 13 13.

3.02 FIELD QUALITY CONTROL

A Truck Mixed Concrete (Dry Batch): ASTM C 94.

1. Truck Mixer: Fill drum no more than 63 percent of the gross drum volume and no less than 2 cubic yards. Use drum manufacturer's recommended mixing speed (between 12 - 18 rpm).

2. Truck Agitator: Do not fill drum greater than 80 percent of the gross drum volume. Use drum manufacturer's recommended agitating speed (between 2 – 6 rpm).

B. Mixing Plant: ASTM C 94.

1. Use option C and requirements in this section for preparing ready-mixed concrete.

2. Use scales certified by the State of Oklahoma. Do not use volume measurement except for water

and liquid admixtures.

3. Mixing time must exceed 80 seconds after adding air entrainment admixture.

C. Hand Mixing:

1. Do not hand mix batches larger than 0.5 cubic yard.
2. Hand mix only on a watertight platform.
3. Ensure all stones are thoroughly covered with mortar and mixture is of uniform color and consistency prior to adding water.

END OF SECTION

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PART I - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Concrete sampling and testing requirements.

1.03 REFERENCES

(Current Edition at Date of Bid)

A. ACI 318: Building Code Requirements for Structural Concrete.

B. ASTM C 31: Standard Practice for Making and Curing Concrete Test Specimens in the Field.

C. ASTM C 39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

D. ASTM C 42: Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

E. ASTM C 78: Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).

F. ASTM C 136: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

G. ASTM C 138: Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

H. ASTM C 143: Standard Test Method for Slump of Hydraulic-Cement Concrete.

I. ASTM C 172: Standard Method of Sampling Freshly Mixed Concrete.

J. ASTM C 173: Standard Test Method for Air Content of Freshly Mixed Concrete by Volumetric Method.

K. ASTM C 231: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

L. ASTM C 567: Standard Test Method for Determining Density of Structural Lightweight Concrete.

M. ASTM C 1064: Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

N. ASTM C 1077: Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.

1.04 SUBMITTALS

A. Concrete Supplier: If requested, submit reports and material certificates verifying concrete quality control.

B. Laboratory: Promptly submit test data results for 7 and 28 day breaks to Supplier, CONTRACTOR and ENGINEER.

1.05 QUALITY ASSURANCE

A. Provide an ASTM C 1077 compliant and ACI certified laboratory.

B. Provide Level I ACI certified field sampling technicians.

1.06 SITE CONDITIONS

A. Assist ENGINEER: Furnish labor to assist ENGINEER in obtaining and handling acceptance samples at site or sources.

B. Store and Cure Test Specimens: Safely store and cure concrete test specimens and acceptance test specimens for first 24 hours.

1. Follow ASTM C 31 in making and curing cylinders or beams at site. Do not move the cylinders or beams for the initial 16 hour cure period. Provide initial cure temperature as follows.
   a. 60 to 80 deg. F. for Class 4,000 or less.
   b. 68 to 78 deg. F. for Class 5,000 or greater.
2. Equip storage device with an automatic 24 hour temperature recorder with an accuracy of plus or minus 2 deg. F.
3. Use water containing hydrated lime if water is to be in contact with cylinders or beams.
4. Ensure the device(s) can accommodate the required number of test cylinders or beams. Lack of capacity will cause the placement of concrete to cease.
5. Have the storage devices available at the point of placement at least 24 hours before placement.

6. A 24 hour test run may be required.

1.07 ACCEPTANCE

A. At the Site:

1. Sampling: ASTM C 172. Reject non-complying batches until 2 consecutive batches are compliant then proceed in random batch testing for acceptance.

Table 1 - Concrete Mix

Rate of Placement (Cubic Yard / Day)	Temperature	Air	Slump	Density	Strength
0 - 8	1	1	1	1	Determined by ENGINEER
0 - 50	1	1	1	1	1
Each additional 50 cu. yd. or fraction	1	1	1	1	1

NOTES:

Sampled at discharge chute prior to placement, or at pumper hose after priming grout has been wasted.

2. Temperature, ASTM C 1064.
3. Air content, ASTM C 231 or ASTM C 173 if lightweight aggregate is used.
4. Slump, ASTM C 143.
5. Density, ASTM C 138.

B. At the Laboratory:

1. Compressive strength, ASTM C 39.
2. Flexural strength, ASTM C 78.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PRECAST PRODUCTS

A. Obtain composite Samples from different portions of the batch.

B. Make and cure concrete test specimens for acceptance, ASTM C 31.

C. Cure all precast products with water vapor or water.

D. Do not damage precast products by stripping forms or handling before the concrete reaches its specified strength.

3.02 CAST-IN-PLACE PRODUCTS

A. Concrete testing shall be arranged by Contractor and paid for by the Owner. Any retesting due to test failure shall be paid for by the Contractor. Test results to be provided to the Architect/Engineer, and Contractor.

B. Evaluation of test results:

1. Concrete strength is considered satisfactory if every arithmetic averages of any three consecutive strength tests results equal or exceed the specified strength (f'c) and no individual strength test result falls below specified strength (f'c) by more than 500 psi if fc' is 5000 psi or less; or by more than 0.10(f'c) if (f'c) exceeds 5000 psi.
2. Other items tested are considered satisfactory if the test result falls within the specified parameters (i.e. if air entrainment is within 1-1/4% of 6-1/4%).

C. Concrete Testing Requirements: (Require the testing agency to do the following)

1. Respond to the CONTRACTOR's requests for testing in a timely manner. Report all test and inspection results to the project manager and the CONTRACTOR immediately, especially when there appears to be a problem.
2. Review and/or test materials for compliance with specifications.

3. Secure production samples of materials at plants or stock-piles during course of work and test for compliance with specifications.

4. Perform strength testing of concrete with one strength test for each 50 CY, or fraction thereof, of each mix design of concrete placed in any one day. Each test shall include four cylinders (one to be broken at 7 days and three at 28 days).

5. Determine compliance with water/cement ratio requirements through use of the slump test on each batch of concrete delivered. Specify required slump and acceptable variance for each design mix.

6. Determine compliance with air content requirements by testing each batch of concrete delivered.

7. Determine concrete temperature compliance by taking temperature reading on each batch of concrete delivered.

8. Identify the location of placement of tested concrete in testing report.

D. Duties:

1. Provide necessary testing services for qualification of proposed materials and mix designs.

2. Materials and mix design submittals.

3. Facilitate testing by advising testing agency in advance of operations requiring testing. Furnish labor to assist the testing agency in obtaining and handling samples at job site or sources of materials. Provide and maintain adequate facilities for safe storage and proper curing of concrete test specimens on site for first 24 hours.

4. Responsible for testing costs and remedial work required as a result of failed tests.

E. Acceptance: If any test is below the specified strength shown, the concrete may be accepted at a reduced price. The price reduction shall apply to the amount of concrete represented by the strength test as follows:

PSI Below Specified Strength Specifications	Pay Factor
1-100	0.98
101-200	0.94
201-300	0.88
301-400	0.80

*Concrete with compressive strength of more than 400 psi below the required strength shall be evaluated by the project manager. The project manager may accept this concrete at a pay factor of 0.50, or require that it be replaced with acceptable material.

F. Obtaining Samples:

1. Batch samples, ASTM C 172.

2. Core samples, ASTM C 42.

G. Identify location of tests on test reports.

H. Compressive strength, ASTM C 39.

1. Mold four 4”x8” test specimens, ASTM C 31.

2. For each strength test perform slump, air, density, and temperature test.

3. Break 1 cylinder at 7 days and 3 cylinders at 28 days. The average strength of 3 cylinder breaks shall be considered the test result.

4. If any one cylinder in a 28 day test shows definite evidence of improper sampling, molding, handling, curing, or testing, discard the cylinder. The average strength of the remaining cylinders shall be considered the test result.

5. Strength: Four cylinders every 50 cubic yards

I. Tensile (flexural) strength, ASTM C 78.(only needed for concrete parking pavement)

1. Mold 4 test specimens, ASTM C 31.

2. For strength test perform slump, air, unit weight, and temperature test.

3. Break 1 beam at 7 days and 3 beams at 28 days. The average strength of the 3 beam breaks shall be considered the test result.

4. If any one beam in a 28 day test shows definite evidence of improper sampling, molding, handling, curing, or testing, discard the beam. The average strength of the remaining beams shall be considered the test result.

5. Strength: Four cylinders every 50 cubic yards.

I. Aggregate, ASTM C 136 for fine and coarse aggregate.

J. Slump test, ASTM C 143.

1. Slump: Test on each truck load.

K. Air Test:

1. Normal weight concrete, ASTM C 231.
2. Light weight concrete, ASTM C 173.
3. Air entrainment: Test on every truck load.

L. Density:

1. Hardened concrete in the lab, ASTM C567. Fresh concrete in the field, ASTM C138.

M. When requested, test in-place concrete by rebound hammer, ultrasonic, or other non-destructive device:

1. To determine relative strengths in various locations in Work.
2. To aid in evaluating concrete strength.
3. To select areas to be cored.
4. To verify quality control in the absence of control testing.

3.03 RETESTING DEFECTIVE CONCRETE

A. Testing shall be coordinated and paid for by the Construction Manager. Additional testing due to test failure shall be specified to be at the expense of the SUBCONTRACTORS.

B. If CONTRACTOR desires to do a re-test; a request to ENGINEER for retesting must be made within 35 days from time of concrete placement. No coring or retesting shall be done after 40 days have elapsed from the time of placement.

1. Choose 3 random test locations and verify choice with ENGINEER. Obtain retest samples per ASTM C 42 and test compressive strength per ASTM C 39 or flexurale strength per ASTM C 78.
2. Establish a chain of custody for all test samples.
3. If concrete placed in the Work will be dry under service condition, air dry cores for 7 days before tests. Unless otherwise specified, use air temperature 60 to 80 deg. F. and relative humidity less than 60 percent.
4. If concrete placed in the Work will be more than superficially wet under service conditions, test cores after moisture conditioning (liquid or vapor water cure).
5. If more than 1 core shows evidence of having been damaged before testing provide replacement cores, otherwise evaluation will be done on 2 or more core samples.
6. Evaluate cores in accordance with ACI 318 requirements.
7. If core tests are inconclusive, or impractical to obtain, or if structural analysis does not confirm the safety of the Work, load test may be used and evaluated in accordance with ACI 318 requirements.

C. Coat sides of core hole with concrete epoxy resin adhesive. Fill core holes with non-shrink concrete mortar. Match color and texture of surrounding concrete.

D. Within 40 days from time of placement publish the chain of custody record and the results of retesting.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-01 Specification sections, apply to work of this section.

1.02 SECTION INCLUDES

A. Concrete placement for slabs on grade, slabs on fill, structural building frame, and other concrete components.

1.03 REFERENCES

(Current Edition at Date of Bid)

A. ACI 301: Specifications for Structural Concrete.

B. ACI 305.1: Specification for Hot Weather Concreting.

C. ACI 306.1: Standard Specification for Cold Weather Concreting.

D. ACI 309R: Guide for Consolidation of Concrete.

E. ASTM C 881: Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

F. ASTM C 1059: Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.

1.04 SUBMITTALS

A. Batch Delivery Ticket: For each batch delivered to site, identify.

1. Date and Project description.
2. Producer and plant.
3. Name of contractor.
4. Serial number of ticket.
5. Mix identification.
6. Truck number and time dispatched.
7. Volume of concrete.
8. Type and amount of cement.
9. Total water and water/cement ratio.
10. Water added for receiver of concrete and receiver's initials.
11. Admixture types.
12. Separate weights of fine and coarse aggregate.
13. Statement of whether batch is pre-mixed at plant or mixed in transit.

B. Record of Placed Concrete: Identify record date, location of pour, quantity, air temperature, and CONTRACTOR’s quality control test samples taken.

C. Bonding Compound: Identify product name, type, and chemical analysis.

1.05 QUALITY ASSURANCE

A. Provide ACI certified finishers.

B. Remove and replace any placed concrete suffering hot or cold weather damage.

C. For control testing follow Section 03 30 05 requirements.

1.06 ACCEPTANCE

A. General:

1. Price adjustment, Section 01 20 00. CONTRACTOR may request ENGINEER determine appropriate Modifications or payment adjustments to correct Defective Work.
2. Dispute resolution, Section 03 30 05.

B. Concrete work that fails to meet any of the following requirements will be considered defective. Replace any Defective Work at no additional cost to the OWNER.

1. Placement:

a. Reinforcing steel size, quantity, strength, position, damage, or arrangement is not as

specified or does not comply with code.

b. Formwork differs from required dimensions or location in such a manner as to reduce concrete's strength or load carrying capacity or physical esthetics.

c. Workmanship likely to result in deficient strength.

2. Finishing:

a. Concrete exposed to view has defects that adversely affect appearance.

b. Slab tolerances of Section 03 35 00 are not met.

3. Protection:

a. Method of curing is not as specified.

b. Inadequate protection of concrete during early stages of hardening and strength development from.

1). temperature extremes.

2). rapid moisture loss.

c. Mechanical injury, construction fires, accidents, or premature removal of formwork likely to result in deficient strength development.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete, Section 03 30 00. Class as indicated.

1. For roadway cuts, Section 32 13 13.

B. Forms, Section 03 11 00.

C. Reinforcement, Section 03 20 00.

D. Coverings and curing compound, Section 03 39 00.

PART 3 - EXECUTION

3.01 PREPARATION

A. Notify ENGINEER minimum 24 hours prior to commencement of concrete placement operations.

B. Do not allow construction loads to exceed structural capacity.

C. Clean previously placed concrete. Apply bonding compound per manufacturer's instructions.

D. At locations where new concrete is dowelled to existing work, drill, remove dust, insert and pack steel dowels with shrink compensating grout.

3.02 EXAMINATION

A. Verify items to be cast into concrete are accurately placed and held securely.

B. Verify slump, air content range, mix identity, and batch time on delivery ticket matches mix design.

C. Verify slab steel mats are supported by steel chairs, precast concrete blocks, or other slab bolsters. Do not pour if absent.

3.03 DELIVERY

A. Slump and Air Content: Keep slump and air content within the allowable range.

B. Placement Time:

Air Temperature	Time after Initial Batching
Less than 90 deg. F.	1–1/2 hours
Greater than 90 deg. F.	1–hour (without retarder)
Greater than 90 deg. F.	1–1/2 hours (with retarder)

*To increase time past 1-1/2 hours, a hydration stabilizer that is acceptable to Supplier may be used.

C. Tempering:

1. Use of a workability-retaining admixture MasterSure Z 60 from Master Builders Solutions to retain slump and workability, and eliminate or minimize the need for late addition of water.

2. Water may be added if all following conditions are met.

a. The mix design water/cement ratio is not exceeded.

b. The delivery ticket allows for addition of water based upon water/cement ratio.

c. The amount of water added is accurately measured to within 1 gallon of the design addition.

d. Water addition is followed by 3 minutes of mixing at mixing speed prior to discharge.

e. Supplier and CONTRACTOR mutually agree on who is authorized to add water.

2. Do not add water after 1 cubic yard of concrete has discharged from the delivery vehicle.

D. Super-plasticizer: Comply with manufacturer's requirements. If none, then as follows:

1. If added at site, add agent using injection equipment capable of rapidly and uniformly distributing the admixture to the concrete. Prior to discharge, mix for a minimum of 5 minutes at a drum rate not less than 12 rpm or more than 15 rpm.

2. If added at plant; do not deliver to site unless batch delivery ticket displays water/cement ratio prior to super-plasticizer addition.

3.4 CONCRETE PLACEMENT

A. Materials - Specific requirements:

1. Portland Cement: Use Type II cement conforming to ASTM C 150 Low alkali for all on grade or below grade installations. Type I, or I/II may be used in above grade concrete work.

2. Admixtures: Calcium Chloride shall not be used as an admixture.

3. Air Content: Specify 6-1/4% plus or minus 1-1/4%.

4. Pozzolans: Replacement allowed up to 15% of cement with a 1.5 to 1 replacement ratio. Specify loss of ignition at less than 1% and water requirement not to exceed 100%.

5. Synthetic fibrous reinforcement: Specify collated, fibrillated polypropylene with a mix ratio of 1.5 pounds of fiber to 1.0 cubic yards of concrete. To be used in all concrete specified in Section 02528.

6. Curing and Sealing: Specify a combination curing and sealing compound to be used on all exposed concrete flatwork complying with the requirements of ASTM C 309 and AASHTO M 148. The compound shall be acrylic based with a minimum of 18 percent solids and a moisture loss of 0.031 grams per cubic centimeter maximum after 72 hours. Specify a two coat application occurring immediately after surface water dissipation and concrete finishing and at approx. 28 day from placement.

B. Concrete Strength: Specify a minimum allowable compressive strength (at 28 days from placement) and minimum cement content (bags per cubic yard at 94 lbs. per bag) as follows unless otherwise noted:

1. Footings: 3,000 psi and 5.5 bags.

2. All other conditions: 4,000 psi and 6.0 bags.

C. Concrete proportioning and mixing:

1. Specify use of only one type and brand of cement from same mill, and one source of coarse and fine aggregate.

2. Require accurate measurement of all water added to the mix with means for verification.

3. The maximum allowable time between charging of materials in the mixing drum and placement on site is 90 minutes.

4. Ready Mix Concrete: Require a computerized ticket with each batch to be delivered to the project manager that includes the following information:

a. Name of ready-mix batch plant.

b. Serial number of ticket.

c. Date and number of truck.

d. Name of CONTRACTOR.

e. Specific designation of job (name and location).

f. Volume of concrete (number of cubic yards).

g. Time batch was dispensed to truck.

h. Reading of revolution counter at first addition of water.

i. Signature or initials of ready-mix representative.

j. Type and brand of cement.

k. Amount of cement (can be indicated by weight or quantity).

l. Total water content by producer (can be indicated by weight or quantity).

m. Water added by receiver of concrete and his initials (can be indicated by weight or quantity).

n. Admixtures and amount of same.

o. Maximum size of aggregate.

p. Weights of fine and coarse aggregates.

q. Indication that all ingredients are as previously certified or approved.

D. Concrete Replacement Procedures:

1. Cold Weather

a. All procedures of ACI 306.1 shall be followed for all concrete construction. A concrete temperature of 50º to 60º F is desirable.

b. Heating of the concrete aggregate must be approved by Architect.

c. If freezing may occur during curing period, the concrete shall be protected by means of an insulating covering and/or heating to prevent freezing for a period of not less than 10 days after placing.

d. Submittals shall clearly show procedures for protecting concrete and subsurface. Equipment requirements shall be clearly specified. No combustion heating shall be allowed during the first 24 hours unless precautions are taken to prevent exposure to exhaust gases.

2. Hot Weather

a. All procedures of ACI 305.1 shall be followed for all concrete construction.

b. A concrete temperature of 50º to 60ºF. is desirable. Special measures must be taken to maintain aggregate and water temperature below 90 degrees Fahrenheit.

c. Special procedures for wetting forms, reinforcing steel, and supporting earth immediately prior to placing concrete should be given.

d. If the combination of air temperature, relative humidity and wind velocity causes a rate of evaporation approaching 0.2 lb./square foot per hour, precautions against plastic shrinkage are necessary.

e. Sprinkling is acceptable to keep concrete form temperatures down before concrete is placed.

f. Measures should be taken to maintain both concrete strength and air entrainment at higher temperatures. If additional water is required to maintain consistency, additional cement and air entrainment admixture should be required as needed.

3. Curing of concrete: Curing can be accomplished by water ponding, covering with saturated burlap or cotton mats, continuous sprinkling or by using an approved curing and sealing compound.

4. Concrete protection: Protect the concrete from freezing, oil, grease, staining or defacement of any kind until it has set. If such protection is not provided, Removing and replacing the slab is at CONTRACTOR’s expense.

E. Concrete Quality: Specify parameters for acceptance of concrete work and describe measures to be taken when concrete does not meet all parameters such as repair or removal and replacement. Such parameters should include appearance and strength requirements.

3.5 CAST-IN-PLACE CONCRETE

A. Job Conditions:

1. Do not place concrete on frozen ground.

2. Do not place concrete during rain, sleet or snow unless adequate protection has been provided and authorization has been received from Architect.

3. Do not allow rain water to increase mixing water or to damage the concrete finish.

B. Project manager inspections: Must receive project manager's approval of all dimensions, steel location, condition of forms, and placing equipment at least four (4) working hours prior to placing any concrete.

C. Adding water to concrete:

1. Do not add water to concrete without the approval of the project manager.

2. Account for all water added to the concrete mix.

3. Do not add any water to ready-mix concrete drum unless the following conditions are satisfied:

a. Water is added only while the concrete is mixing in the drum.

b. The mixing truck is equipped with a revolution counter and a working water meter.

c. The delivery ticket provides all information required so that the total amount of water added to the mix can be determined.

D. Joints and embedded items:

1. Construction Joints: Locate and install construction joints as indicated on the drawings or if not shown on drawings, located so as not to impair strength and appearance of the structure, as acceptable to Architect/Engineer.

a. Keyways: Provide continuous keyways with a depth of one tenth of the member thickness (1 1/2" minimum or as shown on the drawings) in construction joints only where shown on the drawings.

b. Joint Construction: Place construction joints in the center one third of suspended spans and grade beams and as shown on the drawings for slabs-on-grade and walls unless shown otherwise. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise shown on the drawings. Dowels that cross construction joints shall be supported during concreting operations so as to remain parallel with the slab or wall surface and at right angles to the joint. Submit all construction joint locations as a shop drawing submittal.

c. Waterstops: Provide waterstops in construction joints as indicated on the Architectural and Structural Drawings. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

d. Isolation Joints in Slabs-on-Ground: Construct isolation joints (without dowels) in slabs-on-ground at points of contact between slabs on ground and vertical surfaces only where specifically detailed on the drawings. Install joint-filler strips at joints where indicated. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated on the drawings. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together. Provide construction joints with dowels at all locations unless isolation joints are detailed.

e. Contraction joints in slabs-on-grade and unbonded topping slabs: Maximum joint spacing shall be 36 times the slab thickness or 20 feet, whichever is less and at a minimum on column lines unless otherwise noted on the drawings. Use one of the two following methods (sawed or formed) to create the joints. Do not use the formed joint in areas subject to vehicular traffic or in industrial slabs.

1). Sawed Joints

a). Primary Method: Early-Entry, dry-cut method, by Soff-Cut International, Corona, CA (800) 776-3328. Finisher must have documented successful experience in the use of this method prior to this project. Install cuts within 1 to 4 hours, depending on air temperature, after final finish as soon as the concrete surface is firm enough to not be torn or damaged by the blade at each saw cut location. Use 1/8 inch thick blade, cutting 1 1/4” inch into the slab.

b). Optional Method (where Soff-Cut System method equipment is not available, subject to limitations): This method may not be used when there is no dowel passing through the contraction joint. Use a conventional saw to cut joints within 4 to 12 hours after finishing as soon as the concrete has hardened sufficiently to prevent aggregates from being dislodged by the saw. Complete cutting before shrinkage stresses become sufficient to produce cracking. Use 1/8 inch thick blade, cutting to a depth of 1/4 of the slab thickness but not less than 1 inch. Cut to a depth of 1/3 slab thickness for slabs reinforced with steel fibers.

2). Formed Joints: Form contraction joints by inserting premolded plastic hardboard or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. The depth is to be 1/4 the slab thickness, but not less than 1 inch. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.

3). Joint Filler: Provide in both contraction and saw-cut construction joints when

specified.

a). Remove dirt and debris from the joint by vacuuming immediately prior to filling the joint. Clean the joint of curing compounds and sealers.

b). Filler material shall be applied to the joints when the building is under permanent temperature control, but no less than 90 days after slab construction.

c). Follow the manufacturer's recommended procedure for installing filler material. The joint filler must be flush with the adjacent concrete. A concave profile on the top of the joint filler is unacceptable and will be grounds for removal and replacement.

4). The Contractor shall protect the joints from damage caused by wheeled traffic or other sources during construction until a joint-filler material (if specified) has been installed.

2. Expansion Joints:

a. Reinforcement or other embedded metal items bonded to the concrete shall not extend through expansion joints (except dowels in floors bonded on only one side of joints).

3. Installation of Embedded items

a. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto. Properly locate embedded items in cooperation with other trades and secure in position before concrete is poured.

b. Install inserts, dowels, reglets, hangers, metal ties, anchors, bolts, nailing strips, blocking, ground, and other fastening devices as required for attachment of other work.

c. Provide non-rusting sleeves for electrical conduits, pipes, and fittings that penetrate slabs, walls, or beams.

d. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain the required elevations and contours in the finished slab surface. Provide and secure units sufficiently strong to support the types of screed strips by the use of strike-off templates or accepted compacting type screeds.

e. Manholes, handholes, vaults and underground structures: Set and secure duct connectors in walls at required elevations and spacings.

f. Embedded Conduits and Fittings

1). Conduits and fittings in concrete shall be subject to acceptance by the Engineer and shall be located such that they do not impair the strength of the concrete member. Conduits include pipes, ducts and electrical conduits. Conduits and fittings shall conform to the following, unless otherwise shown on the structural drawings:

a). Concrete walls:

(1). Conduits larger than 1-inch outside diameter shall not be embedded vertically in any wall. Conduits shall be spaced a minimum of 10 times the outside diameter of the conduit and shall be placed in the middle of the wall thickness.

(2) Conduits shall not be embedded horizontally in any wall, lengthwise.

(3) Conduits passing through wall shall not impair the strength of the wall and shall be provided with Schedule 40 galvanized steel pipe (ASTM A53) sleeve.

b). Concrete columns: Conduits shall not penetrate or be embedded in columns unless specifically approved by the Engineer.

c). Concrete beams:

(1). Vertical conduits larger than 1 inch outside diameter shall not be embedded vertically in any concrete beam. Conduits shall be spaced a minimum of 10 times the outside diameter and shall be placed in the middle third of the beam thickness.

(2). Conduits shall not be embedded horizontally in any beam, lengthwise.

(3). Conduits passing through beams shall not impair the strength of the beam and shall be provided with Schedule 40 galvanized steel pipe (ASTM 53) sleeve.

d). Suspended Concrete Slabs and Toppings:

(1) Conduits shall not be embedded in any slabs and toppings on metal decking and in toppings less than 3" thick.

(2) For other conditions, conduits larger than 1-inch outside diameter shall not be embedded in any concrete slab or topping. Conduits shall be spaced a minimum of 10 times the outside diameter and shall be placed in the middle third of the slab thickness. Conduit crossings shall be avoided.

(3) Conduits passing through slabs shall be provided with Schedule 40 galvanized steel pipe (ASTM A53) sleeve.

e). Concrete slabs on grade: Conduits shall not be embedded within the thickness of any concrete slabs on grade. Conduits may be placed below the bottom surface of slabs on grade and shall be spaced a minimum of 10 times the outside conduit diameter.

2). Where a number of conduits are intended to penetrate a structural member at a location which may unduly impair the strength of a member, such as near the surface of a beam or slab, the Engineer shall be informed and his approval must be obtained before the concrete is placed.

3). Contractor shall coordinate the installation of all embedded items and penetrations. Cost of any added reinforcement required at pipe and conduit penetration and embedment shall be borne by the Contractor.

E. Placing and finishing formed concrete:

1. Preparation before placing:

a. Sprinkle semi-porous subgrades sufficiently to eliminate suction of moisture from mix. Porous subgrades shall be sealed prior to concreting.

b. Project manager review and approve formwork, reinforcement, etc. prior to commencement of concreting.

2. Conveying:

a. Conveying equipment conform to ASTM C 94.

b. Handle the concrete from the mixer to the place of final deposit as rapidly as practicable.

3. Placing Concrete:

a. Place concrete continuously, or in layers (24 inches thick or less) such that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section.

b. If a section cannot be placed continuously, construction joints shall be located as approved (30 foot on center max.).

4. Segregation:

a. Concrete shall not be allowed to free fall over six (6) feet.

b. Concrete be deposited as near as possible to its final position to avoid segregation due to rehandling or flowing.

5. Consolidation:

a. All concrete shall be consolidated by vibration. Internal vibrators shall have a minimum frequency of 8000 vibrations per minute and sufficient amplitude to consolidate the concrete effectively.

b. Use of vibrators to transport concrete within forms shall not be allowed.

c. Vibrators shall be inserted and withdrawn at points approx. 18 inches apart. The duration at each insertion point shall be sufficient to consolidate concrete without segregation (generally 5 to 15 seconds).

d. A spare working vibrator shall be kept close at hand during all concrete placing operations.

e. Do not vibrate forms of steel.

6. Bonding:

a. Apply a bonding adhesive when necessary to enhance the bond between hardened

concrete and new concrete if specified by ENGINEER.

b. Clean and dampen hardened concrete surfaces to receive fresh concrete.

7. Perform the following operations:

a. Repair of defective surface areas: Surface defects shall be repaired immediately after form removal.

b. All honey-combed and other defective concrete shall be removed down to sound concrete. The edges of the repair area shall be perpendicular to the surface area and slightly undercut. No featheredge will be permitted.

F. Placing and finishing slabs:

1. Preparation of subgrade for slabs on grade: Keep subgrade moist but do not allow standing water, mud or soft spots. If temperature where concrete is to be placed is below 50° F, enclose and heat to maintain temperature above 50° F long enough to remove frost from subgrade.

2. Concrete mixing and placing with finishing: Spread and finish concrete before bleeding water has an opportunity to collect on the surface.

3. Locate joints in slabs as indicated: Schedule saw cutting with the set of the concrete to eliminate raveling during sawing and before shrinkage cracks develop.

G. Curing and Protection: Begin curing operations immediately after placement. Protect concrete from premature drying, excessively hot or cold temperatures, mechanical injury or vandalism.

H. Guarantee: CONTRACTOR shall furnish the Owner with a written two (2) year guarantee for concrete materials and workmanship, including material and labor for total removal and replacement. The CONTRACTOR shall immediately place in satisfactory condition in every particular, any such guaranteed work upon written notice from the project manager and make good all damage to the buildings and grounds caused by said work, without cost to the Owner. All guarantees shall start from the date of written substantial completion.

3.6 CONCRETE CLEANUP

A. Pay particular attention to project cleanup.

B. Daily cleanup, weekly cleanup and job completion cleanup responsibilities to remove garbage, rubbish and unused materials are required.

C. Coordinate school maintenance department for final project cleanup.

D. Particular attention shall be placed on cleanup of areas subject to daily School activity. Construction activity shall be coordinated with school maintenance department to reduce congestion or interruption of school activity.

3.7 CONCRETE RESURFACING

A. Resurfacing Requirements:

1. Density of 96% of adjacent soil.

2. Saw-cut all existing surfaces at excavations to an absolute minimum width necessary for construction activity.

3. Types of roadway surfaces shall be shown for gravel, bituminous and concrete surfaces. Gravel surfaces shall match existing gravel thickness. New asphalt thickness shall match existing thickness plus 1 inch, but must be a minimum of 3 inches and maximum of 6 inches. Concrete surfaces shall match existing thickness.

3.8 CONCRETE REHABILITATION

A. Requirements for repair of existing concrete, patching or repair of damaged concrete by use of epoxy resin or concrete ingredient compounds. Information shall include cleaning of concrete surfaces; application of bonding agent and cement paste filler; and application of epoxy adhesive and fillers.

B. Materials:

1. Epoxy Resins: Bond Strength - 2700 psi - ASTM C882. Tensile Strength - 6600 psi - ASTM C638. Elongation - 2% at 7-day at 70 degrees F. - ASTM C638. Compressive Strength - 6500 psi - ASTM D695.

2. Bonding Agent: Polyvinyl Acetate.

3. Portland Cement: ASTM 150, Gray color.

4. Sand: Clean, uniformly graded, ASTM C33 or ASTM C404.

5. Cleaning agent: Commercial muriatic acid.

3.9 JOINTS AND JOINT SEALING

A. Steel edging and jointing tools are acceptable. Preferred are magnesium, aluminum or wood tools

B. Pavement joint sealing, Section 07 92 00.

3.10 CONSOLIDATION

A. Keep spare vibrator available during concrete placement operations, ACI 309R.

3.11 FINISHING

A. Section 03 35 00 and as follows:

Table 1 – Finishes

Type of work	Type of finish
Sidewalks, garage floors, ramps, exterior concrete	Broom or Smooth finish
Exterior platforms, steps, and landings, exterior and interior pedestrian ramps, not covered by other finish materials	Non-slip finish
Surfaces intended to receive bonded applied cementitious applications	Scratched finish
Surfaces intended to receive roofing, except future floors, waterproofing membranes, and roof surfaces that are	Floated finish
Floors and roof surfaces that are floors intended as walking surfaces to receive	Troweled
Unpainted concrete surfaces not exposed to public view	Rough as-cast form finish
Unpainted concrete surfaces exposed to public view	Smooth as-cast form finish
Concrete surfaces to receive paint	Grout cleaned finish

3.12 CURING

A. Section 03 39 00. Use a membrane forming compound unless specified otherwise.

3.13 MISCELLANEOUS CONCRETE ITEMS

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor rods for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

D. Grout base plates and foundations as indicated, using specified non-shrink, non-metallic grout. Use high-flow grout where high fluidity and/or increased placing time are required. This grout shall be used for all base plates larger than 10 square feet.

E. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp and finish concrete surfaces as scheduled.

F. Installation of adhesive anchors using injectable epoxy or adhesive: A representative of the adhesive manufacturer shall be present for the first day that adhesive anchors are installed. After drilling the hole to the diameter and depth recommended by the manufacturer, clean the hole with a wire or nylon brush. Blow the dust out of the hole using compressed air with a nozzle that reaches to the bottom of the hole. When using adhesive from a new pack, the adhesive that is discharged from the mixing nozzle should be a uniform gray color before any adhesive is installed in the hole. Fill the hole with adhesive starting from the very bottom of the hole until the hole is about 2/3 full. Do not leave an air pocket at the bottom of the hole. Insert the anchor rod or dowel by slowly twisting it into the hole.

3.14 PROTECTION AND REPAIR

A. Protection:

1. Immediately after placement, protect concrete from premature drying, excessively hot or cold

temperatures, graffiti, and mechanical injury.

2. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

B. Repair:

1. Modify or replace concrete not conforming to required levels, lines, details, and elevations.

a. Formed Surfaces: Concrete surfaces requiring repairs shall include all cracks in excess of 0.01" and any other defects that affect the durability or structural integrity of the concrete. Voids, including honeycombing and rock pockets, and tie holes shall be repaired as required by the specified Surface Finish.

b. Unformed Surfaces: Concrete surfaces requiring repair shall include all surface defects such as crazing, cracks in excess of 0.01" wide or cracks which penetrate to reinforcement or through the member, popouts, spalling and honeycombs.

2. Classification:

a. Structural Concrete Repair: Major defective areas in concrete members that are load carrying (such as shear walls, beams, joists and slabs), are highly stressed, and are vital to the structural integrity of the structure shall require structural repairs. Structural concrete repairs shall be made using a two-part epoxy bonder, epoxy mortar or specified polymer repair mortar. The Engineer shall determine the locations of required structural concrete repairs.

b. Cosmetic Concrete Repair: Defective areas in concrete members that are nonload carrying and minor defective areas in load carrying concrete members shall require cosmetic concrete repair when exposed to view and not covered up by architectural finishes. Cosmetic concrete repairs may be made using a polymer repair mortar and compatible bonding agent. The Architect/Engineer shall determine the locations of required cosmetic concrete repairs. Stains and other discolorations that cannot be removed by cleaning and are exposed to view will require cosmetic repair. Cosmetic concrete repair in exposed-to-view surfaces will require Architect's approval prior to patching operation.

c. Slab Repairs: High and low areas in concrete slabs shall be repaired by removing and replacing defective slab areas unless an alternate method, such as grinding and/or filling with self-leveling underlayment compound or repair mortar is approved by the Architect/Engineer. Repair of slab spalls and other surface defects shall be made using epoxy products as specified above and as determined by the Engineer. The high strength flowing repair mortar may be used for areas greater than 1 inch in depth.

3. Structural analysis and additional testing may be required at no additional cost to OWNER when the strength of a structure is considered potentially deficient.

4. To patch imperfections refer to Section 03 35 00 requirements.

5. Remove graffiti and mechanical injury.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Single application cure-seal-hardener for new concrete floors.

B. Precautions for avoiding staining concrete before and after application.

1.03 RELATED SECTIONS

A. Section 03 30 10 - Concrete Placement: Cast-in-Place Concrete.

1.04 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Material requirements for concrete to which cure-seal-hardener is to be applied, including cement type, water-cement ratio, type of trowel finish, limitations on admixtures, pigments, bonding agents, and bond breakers, etc.

C. Product Data: Manufacturer's data sheets, including product specifications, test data, preparation instructions and recommendations, storage and handling requirements and recommendations, and installation methods.

D. Maintenance instructions, including precautions for avoiding staining after application.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Applicator experienced with installation of product and certified by manufacturer, or applicator experienced with similar products and providing manufacturer's field technician on site to advise on application procedures; and providing adequate number of skilled workers trained and familiar with application requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver product in factory numbered and sealed drums, with numbers recorded for Owner's records.

B. Store products in manufacturer's unopened drums until ready for installation.

1.07 PROJECT CONDITIONS

A. No satisfactory procedures are available to remove petroleum or rust stains from concrete. Prevention is therefore essential. Take precautions to prevent staining of concrete prior to application of cure-seal-hardener and for minimum of three months after application:

1. Prohibit parking of vehicles on concrete slab.
2. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.
3. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid, or other liquids.
4. Prohibit pipe cutting using pipe cutting machinery on concrete slab.
5. Prohibit temporary placement and storage of steel members on concrete slab.

B. Do not install products under environmental conditions outside manufacturer's absolute limits.

C. Do not use frozen material; thaw and agitate prior to use.

1.08 WARRANTY

A. Provide manufacturer's warranty that a structurally sound concrete surface prepared and treated according to the manufacturer's directions will remain permanently dustproof, hardened and water repellent. If after the specified sealing period the treated surface does not remain dustproof, hardened and water repellent, provide, at manufacturer's expense, sufficient material to reseal defective areas.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Evaporation Control: Monomolecular film forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss in hot weather conditions.

1. Products: Subject to compliance with requirements, provide one of the following:
    a. Eucobar; the Euclid Chemical Company
    b. E-Con; L & M Construction Chemical, Inc.
    c. Confilm; BASF Building Systems
    d. Sure Film (J-74); Dayton Superior
    e. SikaFilm; Sika Chemical Co.
    f. Pro-Film; Unitex
    g. Sealtight Evapre; W. R. Meadows
    h. US Spec Monofilm ER; US Mix Co.
2. Submit manufacturer's certification that product conforms to the requirements specified and is compatible with all coverings and surface treatments to be applied. Submit any instructions that must be followed prior to any subsequent surface treatments.

PART 3 - EXECUTION

3.01 FINISH OF FORMED SURFACES

A. General: Formed surfaces shall have the finishes as described below and as shown on the drawings after formwork is removed and repairs made.

B. Matching Sample Finish: Finish on surfaces at locations noted on drawings shall match sample panel furnished to Contractor. Reproduce finish on a 20 square foot mock-up panel in a location designated by Architect/Engineer. Protect mock-up from damage for the duration of project. Approval of mock-up by Architect is required before proceeding with application of finish in project.

C. Definitions and Finish Requirements
1. Surface Finish 1.0 (SF-1.0):
    a. No formwork facing material is specified.
    b. Provide surface tolerance Class C (1/2 in.) for permanently exposed and Class D (1 in.) for permanently concealed as specified in ACI 117.
    c. Patch voids larger than 1 in. wide or 1/2 in. deep for Class C and voids larger than 1-1/2 in. wide or 1/2 in. deep for class D.
    d. Remove projections larger than 1/2 inch for Class C and1.0 inch for Class D.
    e. Tie holes need not be patched.
2. Surface Finish 2.0 (SF-2.0):
    a. Provide specified formwork-facing material.
    b. Patch voids larger than 3/4 in. wide or 1/2 in. deep.
    c. Patch tie holes.
    d. Remove projections larger than 1/4 in.
    e. Provide surface tolerance Class B as specified in ACI 117.
    g. Provide mock-up of concrete surface appearance.
3. Surface Finish 3.0 (SF-3.0):
    a. Provide specified formwork facing material.
    b. Patch voids larger than 3/4 in. wide or 1/2 in. deep.
    c. Remove projections larger than 1/8 inch.
    d. Patch tie holes.
    e. Provide surface tolerance Class A as specified in ACI 117.
    f. Provide specified rubbed finish after formwork removal.
    g. Provide mock-up of concrete surface appearance.

D. Standard Finish: Provide SF-1.0 on all concrete surfaces not exposed to view in the final condition unless otherwise specified.

E. Exposed Finishes: Provide SF-2.0 on all concrete surfaces exposed to view in final condition unless otherwise specified.

F. Rubbed Finishes: Remove forms as early as permitted by these specifications and perform any necessary repairs and patches.

1. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled or specified concrete surfaces which have received smooth-form finish treatment, not later than one day after form removal. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.

2. Cork-floated Finish: Provide cork-floated finish to scheduled or specified concrete surfaces that have received smooth-form finish treatment.

   a. Combine one part portland cement to one part sand meeting the requirement of ASTM C144 or C404, by volume and water and mix to a to consistency of thick paint. Apply stiff to a wet surface, compressing the grout into all voids.

   b. Produce the final finish with a cork float using a swirling motion.

3. Grout Cleaned Finish: Provide grout cleaned finish to scheduled or specified concrete surfaces that have received smooth-form finish treatment.

   a. Combine one part portland cement to 1-1/2 parts sand meeting the requirements of ASTM C144 and C404 by volume, and 50:50 mixture of acrylic or styrene butadiene based bonding admixture and water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.

   b. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

G. Self-Consolidating Concrete Architectural Finish: Use self-consolidating concrete where shown on the plans to produce a smooth, uniform finish upon form removal with no patching, stoning, rubbing or other form of repair, except washing, permitted.

H. Related Unformed Surfaces: At tops of walls, horizontal offsets and similar unformed surfaces occurring 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.

3.02 MONOLITHIC SLAB FINISHES

Place, consolidate, strike off, and level concrete, eliminating high spots and low spots, before proceeding with any other finish operation. Do not add water to the surface of the concrete during finishing operation.

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo and other bonded applied cementitious finish flooring material, and as otherwise indicated. After placing slabs, plane surface to tolerance specified below. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms or rakes.

B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated. After screeding, consolidating and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using a hand float, a bladed power float equipped with float shoes, or a powered disk float, when the bleed water sheen has disappeared and the concrete surface has stiffened sufficiently to permit the operation. Check and level surface plane to a tolerance as specified below. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or other thin film finish coating system. After floating, begin first trowel finish operation by hand or power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final handtroweling operation, free of trowel marks, uniform in texture and appearance, and with a level surface to a tolerance as specified below. Grind smooth surface defects which would telegraph through applied floor covering system.

D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thinset mortar, apply initial trowel finish as specified above, then immediately follow with slightly scarifying surface by fine brooming.

E. Slip-Resistive Broom Finish: Apply slip-resistive broom finish to garage floors and ramps less than 6% slope, exterior concrete platforms, steps and ramps and elsewhere as indicated. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main

traffic route. Coordinate required final finish with Architect before application.

F. Roller-Bug Finish: Provide a roller-bug finish with minimum ¼" amplitude to all ramps exceeding a 6% slope. Extend the finish as least 12 feet beyond the beginning and ending of the greater-than-6% ramp. The finish shall be imprinted on the concrete by the use of a roller-bug tamper.

G. Chemical-Hardener Finish: Apply chemical-hardener finish to interior concrete floors where indicated. Apply liquid chemical-hardener after complete curing and drying of the concrete surface. Apply proprietary chemical hardeners, in strict accordance with manufacturer's printed instructions. After final coat of chemical-hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water.

H. Liquid Sealer/Densifier Finish: Apply liquid sealer/densifier finish to exposed interior concrete floors where indicated. Apply liquid sealer/densifier after complete curing and drying of the concrete surface and in strict accordance with manufacturer's printed instructions.

I. Penetrating Sealer Finish: Apply a chloride-and-water-repelling-penetrating-sealer finish to surfaces as described below and where indicated on the drawings. Apply liquid penetrating sealer after complete curing and drying of the concrete surface. Apply proprietary sealers in strict accordance with manufacturer's printed instructions. The Contractor shall verify the compatibility of the sealer product with the paint used to stripe parking decks and coordinate the sequencing of the sealing and striping operations. Apply to the following surfaces:

1. Sloping and horizontal surfaces of parking garages
2. Top surfaces of exposed exterior balconies

J. Slip-Resistive Aggregate Finish: Apply slip-resistive aggregate finish to concrete stair treads, platforms, ramps and elsewhere as indicated on the Architect's or Structural Drawings.

1. After completion of float finishing, and before starting trowel finish, uniformly spread 25 lbs. of dampened slip-resistive aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified.
2. After curing, lightly work surface with a steel wire brush, or an abrasive stone, and water to expose slip-resistive aggregate.

K. Finish of Top of Spread Footings and/or Mat Foundations:

1. Top Surface below Finished Slab: The top of the footing or mat shall be screeded level and smooth with a flatness F-number, FF15 (overall), FF10 (minimum local) and a levelness F-number, FL12 (overall), FL10 (minimum local).
2. Top Surface as Finished Slab: The top surface of a footing or mat that is to serve as the finished slab in the building shall be leveled cured, and surface prepared as specified for the finished floor construction appropriate to the space usage as defined in the Architectural Drawings.

3.03 CONCRETE FINISH MEASUREMENT AND TOLERANCES

A. Testing Procedure: ASTM E 1155

B. Tolerance on Floor Elevations: Construction tolerance on absolute floor elevation from the specified elevation as shown on the drawings shall be as specified below, taken from ACI 117:

1. Slab-on-Grade Construction - ± 3/4".
2. Top surfaces of formed slabs measured prior to removal of supporting shores - ± 3/4".
3. Top surfaces of all other slabs - ± 3/4".

C. Random Traffic Floor Finish Tolerances:

1. Specified overall values for flatness (SOFF) and levelness (SOFL) shall conform to the values listed below for the floor surface classification noted for each slab category noted.

Floor Surface Classification	SOF_F	SOF_L
Conventional	20	15
Moderately Flat	25	20
Flat	35	25
Very Flat	45	35
Super Flat	60	40

2. Minimum local values for flatness (MLFF) and levelness (MLFL) shall equal 3/5 of the SOFF and SOFL values, respectively, unless noted otherwise. The MLFF and MLFL values shall apply to the minimum areas bounded by the column lines and half-column lines, or the minimum areas bounded by the construction and contraction joints, whichever are the smaller areas.

3. The SOFL and MFLL tolerance values shall apply only to level slabs-on-ground or to level, uncambered suspended slabs that are shored such that it cannot deflect from the time the floor is placed to the time it is measured.

4. Slabs specified to slope shall have a tolerance from the specified slope of 3/8" in 10 feet at any point.

D. Construction Requirements to Achieve Specified Floor Finish Tolerances:

1. Forms shall be properly leveled, in good condition and securely anchored including special attention to ends and transitions.

2. Bearing surfaces for straightedges such as form edges or previously pouredslabs shall be kept clean of laitance, sand, gravel, or other foreign elements.

3. Screeds shall be maintained in good condition with true round rolling wheels and level cutting edges. The use of optical sighting equipment such as lasers is recommended for checking levelness and straightness. The Contractor shall promptly adjust or replace equipment when test results indicate substandard work.

4. Highway straightedges are recommended for use in lieu of bullfloats for all slab placement and finishing operations.

E. Contractor Responsibility for Concrete Floor Finish Requirements: Floor finish requirements shown below (flatness and levelness tolerances) are minimum requirements that apply unless stricter requirements are contained in instructions for installation of applied floor products in which case the Contractor is responsible for attaining the values prescribed by the manufacturer of such products.

F. Concrete Floor Finish Tolerance for Slab-on-Grade Construction:

1. Concrete Placement: Concrete shall be placed and screeded to predetermined marks set to elevations prescribed on the drawings.

2. Finish Tolerances of Random Traffic Floor Surfaces:

a. Slabs in nonpublic areas, mechanical rooms, surfaces to received raised computer flooring, surfaces to have thick-set tile or a topping, and parking structures: Conventional

b. Carpeted Areas: Moderately Flat

c. Industrial Slabs: Moderately Flat

d. Exposed slabs in public spaces, slabs to receive thin-set flooring: Flat

e. Ice or Roller rinks: Very Flat

f. Movie or Television studios: Super Flat

g. Gymnasium Floors Scheduled to Receive Wood Playing Floor: Very Flat

G. Concrete Floor Finish Tolerance for Shored, Cast-in-Place Suspended Slab Construction:

1. Concrete Placement: Formwork shall be set and securely braced so that soffits are positioned to allow scheduled concrete member sizes and thicknesses within tolerances specified in ACI 117. Concrete shall be placed and screeded to predetermined marks on the form surface conforming to elevations prescribed on the drawings.

2. Camber: Formwork camber, as indicated on the drawings, shall be set to provide a uniform, smooth soffit profile in each direction. Minimum slab thickness, as specified on the drawings, shall be maintained throughout the slab surface to a tolerance as specified in ACI 117. Tolerance on camber shall be ± 1/4". Levelness F-Number tolerances specified below does not apply to areas of the floor where camber or intentional slope is shown.

3. Finish Tolerances of Random Traffic Floor Surfaces:

a. Slabs in nonpublic areas, mechanical rooms, surfaces to received raised computer flooring, surfaces to have thick-set tile or a topping, and parking structures: Conventional

b. Carpeted Areas: Moderately Flat

c. Exposed slabs in public spaces, slabs to receive thin-set flooring: Flat

d. Movie or Television studios: Super Flat

4. Extra Concrete: The contractor shall include in his bid any additional concrete required to achieve the specified slab surface finish tolerance.

5. Concrete Placement at Column Bays Supported by unshored transfer girders: Concrete in floor areas supported by unshored transfer girders shall be placed and screeded to predetermined marks placed over the slab conforming to elevations as specified on the drawings. At least the

minimum slab thickness, as specified on the drawings, shall be maintained throughout the slab surface. The Contractor shall conform to the FF values specified above.

H. Concrete Floor Finish Tolerance - Unshored Metal Deck on Shored or Unshored Steel Beam or Open-Web Joist Floor Construction:

1. Concrete Placement: Concrete over metal deck shall be placed and screeded level and flat to the tolerance specified below, maintaining at least the minimum slab thickness at all locations as specified on the drawings. The Contractor shall increase the slab thickness as required to compensate for metal deck deflection, and in unshored beam construction, residual beam camber and beam deflection in order to achieve a level and flat floor within specified tolerances.

2. Finish Tolerance of Random Traffic Floor Surfaces:

a. Slabs in nonpublic areas, mechanical rooms, surfaces to received raised computer flooring, surfaces to have thick-set tile or a topping, and parking structures: Conventional

b. Carpeted Areas: Moderately Flat

c. Exposed slabs in public spaces, slabs to receive thin-set flooring: Flat

d. Movie or Television studios: Super Flat

e. Eighty percent (80%) of the final floor surface shall fall within an envelope of 0.75" centered about the mean elevation of all the readings. (± 0.375 about mean). The mean elevation of all readings shall not deviate from the specified design grade by more than ± 0.375".

3. Extra Concrete: The contractor shall include in his bid any additional concrete required to achieve the specified slab surface finish tolerance and to compensate for metal deck deflection, beam camber and beam deflection.

4. Concrete Placement at Column Bays Supported on Transfer Girders or Trusses: Concrete in floor areas supported by transfer girders or trusses shall be placed and screeded to predetermined marks placed over the metal deck slab conforming to elevations as specified on the drawings. At least the minimum slab thickness, as specified on the drawings, shall be maintained throughout the slab surface. The Contractor shall conform to the F_F values specified above.

I. Remedial Measures for Slab Finish Construction Not Meeting Specified Tolerances:

1. Application of Remedial Measures. Remedial measures specified herein are required whenever either or both of the following occur:

a. The composite overall values of F_F or F_L of the entire floor installation measure less than specified values.

b. Any individual test section measures less than the specified absolute minimum F_F or F_L value.

2. Modification of Existing Surface:

a. If, in the opinion of the Architect/Engineer or Owner's Representative, all or any portion of the substandard work can be repaired without sacrifice to the appearance or serviceability of the area, then the Contractor shall immediately undertake the approved repair method.

b. The Contractor shall submit for review and approval a detailed work plan of the proposed repair showing areas to be repaired, method of repair and time to affect the repair.

c. Repair method(s), at the sole discretion of the Architect/Engineer or Owner's Representative, may include grinding (floor stoning), planing, retopping with self leveling underlayment compound or repair topping, or any combination of the above.

d. The Architect/Engineer or Owner's Representative maintains the right to require a test repair section using the approved method of repair for review and approval to demonstrate a satisfactory end product. If, in the opinion of the Architect/Engineer or Owner's Representative, the repair is not satisfactory an alternate method of repair shall be submitted or the defective area shall be replaced.

e. The judgment of the Architect/Engineer or Owner's Representative on the appropriateness of a repair method and its ability to achieve the desired end product shall be final.

f. All repair work shall be performed at no additional cost to the Owner and with no extension to the construction schedule.

3. Removal and Replacement:

a. If, in the opinion of the Architect/Engineer or Owner's Representative, all or any portion of the substandard work cannot be satisfactorily repaired without sacrifice to the appearance or serviceability of the area, then the Contractor shall immediately commence to remove and replace the defective work.

b. Replacement section boundaries shall be made to coincide with the test section boundaries as previously defined.

c. Sections requiring replacement shall be removed by sawcutting along the section boundary lines to provide a neat clean joint between new replacement floor and existing floor.

d. The new section shall be reinforced the same as the removed section and doweled into the existing floor as required by the Engineer. No existing removed reinforcing steel may be used. All reinforcing steel shall be new steel.

e. Replacement sections may be retested for compliance at the discretion of the Architect/Engineer or Owner's Representative.

f. The judgment of the Architect/Engineer or Owner's Representative on the need for replacement shall be final.

g. All replacement work shall be performed at no additional cost to the Owner and with no extension to the construction schedule.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SECTION INCLUDES

A. Concrete curing requirements.

1.03 REFERENCES
(Current Edition at Date of Bid)

A. ACI 301: Specifications for Structural Concrete for Buildings

B. ACI 305: Hot Weather Concreting.

C. ACI 306: Cold Weather Concreting

D. ASTM C 171: Standard Specification for Sheet Materials for Curing Concrete.

E. ASTM C 1315: Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

1.04 SUBMITTALS

A. Curing agent data sheet.

B. Curing plan. Describe estimated cure quantity and procedure.

C. Manufacturer certificates, Section 01 33 00 that shows product meets performance criteria.

D. Manufacturer's recommended installation procedures which, when accepted by ENGINEER, will become the basis for accepting or rejecting installed product.

1.05 QUALITY ASSURANCE

A. Use workers knowledgeable of ACI 301, 305, 306.

1.06 PRODUCT HANDLING

A. Protect materials of this section before, during, and after installation.

B. Protect the work and materials of other trades.

C. In the event of damage, immediately make replacements and repair at no additional cost to Owner.

1.07 WEATHER LIMITATIONS

A. Above 75 deg. F., ACI 305

B. Below 55 deg. F., ACI 306.

PART 2 - PRODUCTS

2.01 COVERS

A. Water or Fog-spay: Clean, non-staining and non-detrimental to concrete.

B. Sheet Coverings: White waterproof paper, polyethylene film, or polyethylene coated burlap sheet complying with ASTM C 171.

C. Mat Coverings: Clean roll goods of cotton or burlap fabric. D. Insulating Coverings: Non-staining curing blankets.

2.02 MEMBRANE FORMING COMPOUND

A. Material.

1. Styrene-acrylic.
2. Styrene-butadiene.
3. Alpha-methylstyrene.

B. Performance Criteria: ASTM C 1315 compound.

1. Type ID Class A (clear with fugitive dye), or
2. Type II Class A or B (white pigmented).

C. Volatile Organic Compounds (VOC): Comply with local, state and federal requirements.

PART 3 - EXECUTION

3.01 PREPARATION

A. Do not use membrane forming curing compound on surfaces that are to receive hardeners.

B. Commence curing operation within 20 minutes after finishing.

C. Do not allow vehicular traffic on newly paved areas until concrete has reached 90% of design concrete strength.

3.02 APPLICATION

A. General:

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Maintain concrete with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of concrete. Limit moisture loss to a maximum of 0.05 lb. /sq. ft - hr for concrete containing silica fume and 0.2 lb. /sq. ft. - hr for all other concrete before and during finishing operations. If using an evaporation retarder, apply in accordance with manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

2. Curing shall commence as soon as free water has disappeared from the concrete surface after placing and finishing. The curing period shall be 7 days for all concrete except high early strength concrete which shall be cured for 3 days minimum.

   Alternatively, curing times may be reduced if either of the following provisions is complied with:

   a. If tests are made of cylinders kept adjacent to the structure and cured by the same methods, curing measures may be terminated when the average compressive strength has reached 70% of the specified 28 day compressive strength.

   b. If the temperature of the concrete is maintained at a minimum of 50°F for the same length of time required for laboratory cured cylinders of the same concrete to reach 85% of the 28 day compressive strength, then curing may be terminated thereafter.

3. Curing shall be in accordance with ACI 301 procedures. Avoid rapid drying at the end of the curing period.

B. Curing Formed Surfaces: Where wooden forms are used, cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. When forms are removed, continue curing by one or a combination of the methods specified below, as applicable.

1. Columns and shearwalls that are not exposed to view: Moist cure in forms or by one or a combination of methods 1, 2, or 3 specified below. Use a high –solids, liquid membrane-forming curing and sealing compound conforming to ASTM C 1315, type I, Class A or B for method 3.

2. Columns and shearwalls that are exposed to view: Moist cure in forms or by one or a combination of methods 1, 2 or 3 specified below. Use a high-solids, nonyellowing, liquid membrane-forming curing and sealing compound conforming to ASTM C 1315, type 1, class A for method 3.

3. Sides and Soffits of Beams and Pan-Joist Ribs, Soffits of Slabs: Moist cure in forms or by one or a combination of methods 1, 2 or 3 specified below. Use a liquid membrane-forming dissipating resin curing compound conforming to ASTM C 309, type 1, class A or B for method 3.

4. Basement Walls, Sides of Exterior Retaining Walls: Moist cure in forms or by one or a combination of methods 1, 2 or 3 specified below. Use a liquid membrane forming dissipating resin curing compound conforming to ASTM C 309, type 1, class A or B for method 3.

C. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping and other flat surfaces by one or a combination of the methods specified below, as applicable. The Contractor shall choose a curing method that is compatible with the requirements for subsequent material usage on the concrete surface.

1. Ramps and Horizontal Surfaces of Parking Areas, Exposed Exterior Balconies: Cure using only methods 1 or 2 as specified below.

2. Floors Directly Exposed to Vehicular or Foot Traffic not in Parking Areas and not otherwise receiving a chemical hardener or penetrating sealer finish: Apply two coats of a high-solids, water-based, non-yellowing, liquid membrane-forming curing and sealing compound conforming to ASTM C 1315, type 1, Class A in accordance with method 3 as specified below.

3. Floors in Non-Public spaces that are left exposed to view and not receiving sealers or hardeners, floors involved in under-floor air distribution systems: Apply one coat of a high-solids, water-based, non-yellowing, liquid membrane forming curing and sealing compound conforming to

ASTM C 1315, type 1, Class A or B in accordance with method 3 as specified below.

4. Floors that are to receive subsequent cementitious toppings, sealers, hardeners, ceramic tile, acrylic terrazzo, vinyl composition tile, sheet vinyl, linoleum, vinyl backed carpet, rubber, athletic flooring, synthetic turf, wood, epoxy overlay or adhesive, or other coating or finishing products: Cure using methods 2 or 3 as specified below. Use a water-based dissipating resin type curing compound conforming to ASTM C 309, type 1, class A or B for method 3.

5. Industrial Slabs: Cure using methods 1 or 2 as specified below for 7 days. The temperature of applied water shall be with 10◦ F of concrete surface temperature.

6. All Other Surfaces: Cure using methods 1, 2 or 3 as specified below. Use a water-based dissipating resin type curing compound conforming to ASTM C 309, type 1, class A or B for method 3.

D. Curing Methods:

1. Method 1 - Moisture Curing: Provide moisture curing by one of the following methods:

a. Keep concrete surface continuously wet by covering with water.

b. Continuous water-fog spray.

c. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

2. Method 2 - Moisture-Retaining Cover Curing: Provide moisture-retaining cover curing as follows:

a. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape. Water may be added to concrete surface to prevent drying before the cover is installed, but the surface shall not be flooded with water if a non-absorptive cover is used.

3. Method 3 – Curing or Curing and Sealing Compound: Provide curing, curing/hardener, liquid membrane-forming curing, or curing and sealing compound as follows:

a. Apply specified compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Do not allow to puddle. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period. Apply second coat for sealing 2 to 3 hours after the first coat was applied.

4. Do not use membrane-forming curing and sealing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (such as ceramic or quarry tile, glued-down carpet, vinyl composition tile, linoleum, sheet vinyl, rubber, athletic flooring, synthetic turf, or wood), paint or other coatings and finish materials. Dissipating resin type cures are acceptable in these locations.

3.04 CONCRETE CURE TEMPERATURE

A. During cure period, eliminate thermal shock of concrete by keeping cure temperature even throughout extent and depth of concrete.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes:

1. Sealants and caulking of all new exterior and interior joints as indicated and as required to maintain total waterproof integrity of joints.
2. Acoustical joint sealants.

1.03 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

D. Product test reports.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

C. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.05 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

1.06 MOCK-UP

A. Provide mock-up of sealant joints.

B. Construct mock-up with specified sealant types.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

B. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Suitability for Immersion in Liquids. Where sealants are indicated for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated for Project.

E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

2.02 SILICONE JOINT SEALANTS

A. Mildew-Resistant Neutral-Curing Silicone Joint Sealant: ASTM C920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. BASF Building Systems.
   b. Dow Corning Corporation.
   c. GE Advanced Materials - Silicones.
   d. Pecora Corporation.
   e. Tremco Incorporated.
2. Type: Single component (S).
3. Grade: Nonsag (NS).
4. Class: 25.
5. Uses Related to Exposure: Nontraffic (NT).

2.03 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant: ASTM C920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. BASF Building Systems.
   b. Bostik, Inc.
   c. Pecora Corporation.
   d. Tremco Incorporated.
2. Type: Multicomponent (M).
3. Grade: Pourable (P) or Nonsag (NS).
4. Class: 25.
5. Uses Related to Exposure: Traffic (T) or Nontraffic (NT).

2.04 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. BASF Building Systems.
   b. Bostik, Inc.
   c. Pecora Corporation.
   d. Tremco Incorporated.

2.05 PREFORMED JOINT SEALANTS

A. Preformed Foam Joint Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.

2.06 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Pecora Corporation; AC-20 FTR.
    b. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
    c. USG Corporation; SHEETROCK Acoustical Sealant.
2. Apply acoustical joint sealants where indicated and as specified in other Division 09 Sections.

2.07 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.08 MISCELLANEOUS MATERIALS

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

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

1. Remove laitance and form-release agents from concrete.
2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.02 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fin recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile per Figure BA in ASTM C1193, unless otherwise indicated.

F. Acoustical Sealant Instillation: Comply with ASTM C919 and with manufacturer's written recommendations.

G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.03 CURING

A. Cure sealants in accordance with manufacturer's printed instructions to obtain high early bond strength, internal cohesive strength, and durability.

B. If finished sealant has bubbles or other defects, replace sealant and backing.

3.04 PROTECTION AND CLEANING

A. Protect adjacent surfaces against stains, smears, and other damage during the sealant application.

B. Immediately clean and remove droppings, smears, and other soiling caused by sealant application. Use solvents and cleaning agents recommended by sealant manufacturer. Use in accordance with solvent and cleaning agent manufacturer's instructions. Leave no stain, damage, or discoloration on surfaces.

3.05 SCHEDULE

A. Exterior Joints:

1. Joints in vertical surfaces and horizontal nontraffic surfaces:

a. Joint Locations:

1). Construction joints in cast-in-place concrete.

2). Joints between plant-precast architectural concrete units.

3). Control and expansion joints in unit masonry.

4). Joints in dimension stone cladding.

5). Joints in glass unit masonry assemblies.

6). Joints in exterior insulation and finish systems.

7). Joints between metal panels.

8). Joints between different materials listed above.

9). Perimeter joints between materials listed above and frames of doors windows and louvers.

10). Control and expansion joints in ceilings and other overhead surfaces.

11). Other joints as indicated.

b. Multicomponent Nonsag Urethane Sealant.

c. Color: To match adjacent material.

2. Joints in horizontal surfaces subject to traffic:

a. Joint Locations:

1). Control and expansion joints in brick pavers.

2). Isolation and contraction joints in cast-in-place concrete slabs.

3). Joints between plant-precast architectural concrete paving units.

4). Joints in stone paving units, including steps.

5). Tile control and expansion joints.

6). Joints between different materials listed above.

7). Other joints as indicated.

b. Multicomponent Pourable Urethane Sealant.

c. Color: To match adjacent material.

3. Joints at glazed openings to be in accordance with recommendation of glazing and frame manufacturers and as follows:

a. One-Part Nonacidic Curing Silicone Sealant.

B. Interior Joints:

1. Joints in vertical surfaces and horizontal nontraffic surfaces, except in areas exposed to moisture:

a. Joint Locations:

1). Control and expansion joints on exposed interior surfaces of exterior walls.

2). Perimeter joints of exterior openings where indicated.

3). Tile control and expansion joints.

4). Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions.

5). Joints on underside of plant-precast structural concrete beams and planks.

6). Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.

7). Other joints as indicated.

b. Latex Sealant.

c. Color: To match adjacent material.

2. Joints in areas exposed to moisture and where plumbing fixtures meet adjacent floor and wall finishes:

a. Silicone-Emulsion Sealant.

b. Color: To match adjacent material.

3. Joints in horizontal surfaces subject to traffic:

a. Joint Locations:

1). Isolation joints in cast-in-place concrete slabs.

2). Control and expansion joints in stone flooring.

3). Control and expansion joints in brick flooring.

4). Control and expansion joints in tile flooring.

5). Other joints as indicated.

b. Multicomponent Pourable Urethane Sealant.

c. Color: To match adjacent material.

END OF SECTION

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DIVISION 31 - GENERAL REQUIREMENTS

SITE CLEARING **SECTION 31 10 00**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Removal of surface debris.
2. Removal of trees, shrubs, and other plants indicated.
3. Removal of sod indicated.

B. Related Sections:

1. Section 31 22 00 - Grading: Topsoil removal.

1.03 PROJECT CONDITIONS

A. Conform to applicable regulations relating to environmental requirements, disposal of debris, and use of herbicides.

B. Coordinate clearing work with utility companies.

C. Protect utilities to remain from damage.

D. Protect trees, plants, and other features designated to remain as final landscaping.

E. Protect bench marks, survey control points, and existing structures from damage or displacement.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Stake and flag locations of known utilities before starting any site clearing work.
   a. Contact Oklahoma One Call System at (800) 522-6543 for utility company location of existing lines on or adjacent to Project site.
2. Verify that existing plants designated to remain are tagged or identified.
3. Identify a waste area and salvage area for placing removed materials.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove trees, shrubs, and stumps within marked areas or indicated.

C. Remove roots to a depth of 18 inches.

D. Clear undergrowth and deadwood without disturbing subsoil.

E. Apply herbicide to remaining stumps to inhibit growth. Use type of herbicide approved by the local office of the County Extension Agent or local authority having jurisdiction.

F. Remove existing sod where indicated without disturbing topsoil.

3.03 CONSERVATION OF TOPSOIL

A. After clearing, strip existing topsoil to 6 inch depth or to base of organic soil.

B. Stockpile topsoil in designated clear area of new construction.

1. Provide protection from contamination by subsoil.
2. Do not obstruct natural flow of drainage.

C. Maintain topsoil free from debris.

D. Maintain topsoil in damp condition.

1. Do not permit topsoil to dry out.

3.04 REMOVAL

A. Remove debris from site on a daily basis. Deposit materials in landfill or disposal area approved by authority having jurisdiction for types of materials removed.

B. Burning not permitted.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Removal and storage of topsoil.
2. Rough grading site for site structures and building pads.
3. Finish grading.

B. Related Sections:

1. Section 31 10 00 - Site Clearing: Removal of site debris.
2. Section 31 23 16 - Excavation: Excavation for building, footings and utilities within building.
3. Section 31 23 24 - Fill and Backfill: Filling and compaction.
4. Section 31 23 33 - Trenching for Site Utilities: Trenching and backfilling for utilities outside of building.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.04 SUBMITTALS

A. Section 01 78 00 - Closeout Submittals: Requirements for closeout submittals.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with local authority having jurisdiction standards.

1.06 PROJECT CONDITIONS

A. Protect above- and below-grade utilities that remain.

B. Protect plants, lawns, plants, and other features to remain as a portion of final landscaping.

C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil:

1. Excavated On-Site:
   a. Graded.
   b. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign material.
2. Imported Borrow:
   a. Friable loam.
   b. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign material.
   c. Acidity range (pH): 5.0 to 7.0.
   d. Inorganic Matter: Minimum 6 percent and maximum 25 percent.

B. Other Fill Materials: Specified in Section 31 23 24.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Verify that survey bench mark and intended elevations for the Work are as indicated.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities before starting any grading or excavating work.

1. Contact Oklahoma One Call System at (800) 522-6543 for utility company location of existing lines on or adjacent to Project site.

C. Locate, identify, and protect utilities that remain, from damage.

3.03 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. Refer to Section 31 23 24 for filling procedures.

G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.04 SOIL REMOVAL AND STOCKPILING

A. Stockpile excavated topsoil on site.

B. Stockpile excavated subsoil on site.

C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

A. Before Finish Grading:

1. Verify building and trench backfilling have been inspected.

2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to depth of 3 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E. Place topsoil in areas where sodding is indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil to nominal depth of 4 inches.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Near plants spread topsoil manually to prevent damage.

K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

L. Slope finish grade of topsoil away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope slope into level areas.

M. Lightly compact placed topsoil.

3.06 COMPACTING

A. Compacting for building area subgrade pad specified in Section 31 23 24.

B. Compact soil to the minimum percentage density in accordance with ASTM D 2922 for the following areas:

1. Pavements and Sidewalks: Compact the top 8 inches of subgrade to 95 percent optimum density with moisture content between 1 percent below and 2 percent above optimum moisture content.

2. Sodded and Unpaved Areas: Compact the top 8 inches of subgrade to 90 percent optimum density.

3.07 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

B. Top Surface of Finish Grade: Plus or minus 1/2 inch.

3.08 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Contractor Quality Control Representative shall perform contractor field quality control inspections.

1. Inspect grading operations, compaction, rough and finish grading.

2. Document preparatory, initial and follow-up inspection in Contractor Test and Inspection Reports and submit to Architect.

B. Section 01 45 33: Refer to Section 31 23 24 for compaction density testing.

C. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.09 CLEANING AND PROTECTION

A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive sodding.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Excavating for building, footings and slabs-on-grade.
2. Excavating for utilities within the building.

B. Related Sections:

1. Section 31 22 00 - Grading: Rough and finish grading.
2. Section 31 23 24 - Fill and Backfill: Fill materials, filling, and compacting.
3. Section 31 23 16 - Excavation - Spread and Continuous Footings: Building foundation.
4. Section 31 23 33 - Trenching and Backfill: Excavating for utility trenches outside the building.
5. Section 31 63 31 - Drilled Concrete Piers and Shafts: Building foundation.

1.03 DEFINITIONS

A. Building Area Sub-grade Pad: Portion of site directly beneath and within a line 5 feet beyond building line indicated on Drawings.

1.04 REGULATORY REQUIREMENTS

A. Provide protection for workers within trench areas in accordance with local and state Occupational Safety and Health requirements and in conformance with Occupational Safety and Health Administration regulations contained in U.S. Department of Labor, Standard 29 CFR, Part 1926 “Safety and Health Regulations for Construction” and Contractor’s Site Safety Program.

1.05 PROJECT CONDITIONS

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Protect plants, lawns, rock outcroppings, and other features to remain.

C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Verify that survey bench mark and intended elevations for the Work are as indicated. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Stake and flag locations of known utilities before starting any grading or excavating work.

1. Contact Oklahoma One Call System at (800) 522-6543 for utility company location of existing lines on or adjacent to Project site.

C. Locate depth of existing building foundations and footings by excavation of test pits prior to excavating.

D. See Section 31 22 00 - Grading for additional requirements.

3.03 EXCAVATING

A. Strip and remove all vegetation, top soil, paving and any loose material below Building Area Subgrade Pad as specified in Section 31 10 00 - Site Clearing. Scarify and compact as specified in Section 31 23 24 - Fill and Backfill. Refer to Foundation and Excavation Notes on Structural Drawings.

B. Excavate to accommodate new structures and construction operations.

C. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

D. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Cut utility trenches wide enough to allow inspection of installed utilities.

G. Hand trim excavations. Remove loose matter.

H. Remove lumped subsoil, boulders and rock up to 1/3 cubic yard measured by volume. Notify Architect if larger rock is encountered.

I. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 24 - Fill and Backfill.

J. Grade top perimeter of excavation to prevent surface water from draining into excavation.

1. Do not allow water to accumulate in excavations.
2. Remove accumulated water in excavations.
3. Provide and maintain pumps, sumps, suction and discharge lines and other dewatering system components required to remove water from excavations.

K. Remove excavated material that is unsuitable for re-use from site.

L. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 22 00 - Grading.

M. Remove excess excavated material from site.

N. If it is required that footing excavations be left open for more than a 24 hour period, they should be protected to reduce evaporation or entry of soil moisture. Water should not be allowed to collect near the foundations or floor slab areas.

3.04 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Control: Contractor Quality Control Representative shall perform contractor quality control inspections.

1. Inspect excavation operations, excavations for building foundations and utilities, dimensions, depths and material stockpiles.
2. Document preparatory, initial and follow-up inspection in Contractor's Test and Inspection Reports.
3. Test and Inspection Reports shall be available to Architect upon request.

B. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.05 PROTECTION

A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Filling, backfilling, and compacting for building below grade, footings, slabs- on-grade and site structures.
2. Building Area Subgrade Pad preparation.

B. Related Documents:

1. Geotechnical Report: Geotechnical Engineer observations and recommendations.

C. Related Sections:

1. Section 01 45 33- Testing Laboratory Services: Testing requirements.
2. Section 31 22 00 - Grading: Rough grading.
3. Section 31 23 33 - Trenching for Site Utilities: Trenching for utilities outside the building.
4. Section 31 32 16 - Excavation: Excavating for rough grading.
5. Section 32 12 16 - Asphalt Concrete Pavement: Asphalt pavement and base.
6. Section 32 13 13 - Portland Cement Concrete Pavement: Concrete pavement and base.

1.03 REFERENCES

(Current Edition at Date of Bid)

A. American Society for Testing and Materials (ASTM):

1. ASTM C 33 - Standard Specification for Concrete Aggregates.
2. ASTM D 698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
4. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil- Aggregate in Place by Nuclear Methods (Shallow Depth).

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Assurance/Control Submittals:

1. Test and Inspection Reports: Submit the following test and inspection reports in conformance with Section 01 45 33.
   a. Compaction density testing and evaluations.
2. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

1.05 QUALITY ASSURANCE

A. Backfill Placement Qualifications: Company specializing in the Work of this Section with minimum 5 years documented experience.

1.06 PROJECT CONDITIONS

A. Provide sufficient quantities of fill to meet project schedule and requirements. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

C. Verify that survey bench marks and intended elevations for the Work are as indicated.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.

1. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
2. Conforming to ASTM D 2487, Group Symbol GW, GM, GC, SW, SP, SM, CL and ML.

B. Structural Fill: Inspected and approved by Independent Testing Laboratory.

1. Low volume change cohesive soil with liquid limit less than 35, a plasticity index between 9 and 13.
2. Graded, containing at least 15 percent fines (material passing the No. 200 sieve, based on dry weight).
3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
4. Sandy Clays conforming to ASTM D 2487, Group Symbol SC or Clayey Sands conforming to ASTM D 2487, Group Symbol CL.
    a. Gravel, free of sharp corners or edges, natural stone; washed, free of clay, shale, organic matter; 1/4 inch minimum size, 5/8 inch maximum size.

C. Aggregate Fill: Clean crushed concrete aggregate conforming to ASTM C 33.

D. Limestone Screening Fill: Inspected and approved by Independent Testing Laboratory.

1. Non-expansive with plasticity index less than 12.

E. Concrete for Fill: As specified in Section 03 30 00; compressive strength of 3000 psi.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Identify required lines, levels, contours, and datum locations.
2. See Section 31 22 00 for additional requirements.
3. Determine actual groundwater levels at start of earthwork operations.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Prior to placement of fill in Building Area, Geotechnical Engineer-of-Record to inspect and Independent Testing Agency to evaluate moisture content of exposed soils and make recommendations.

B. Proof roll exposed subgrade with moderately loaded dump truck.

C. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill.

D. Scarify subgrade surface to a depth of 6 inches to identify soft spots.

E. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

F. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill up to subgrade elevations unless otherwise indicated.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. General Fill: Place and compact material in equal continuous layers not exceeding 9 inches of loose material.

F. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

G. Correct areas that are over-excavated.

1. Load-Bearing Foundation Surfaces: Use structural fill, flush to required elevation and compaction.
2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density and moisture 2 percent above optimum moisture content.

H. Compaction Density Unless Otherwise Specified or Indicated:

1. Under concrete paving, site concrete slabs-on-grade, and similar construction: 95 percent of maximum dry density and moisture content 3 percent above optimum moisture content.
2. Compact using a vibratory sheeps foot having a minimum drum size of 60 inches.

I. Compaction Density for Utility Trenches within Building Area Subgrade Pad Area:

1. 95 percent of maximum dry density and moisture content 3 percent above optimum moisture content.
2. Compact using a vibratory sheeps foot having a minimum drum size of 60 inches.

3.04 FIELD QUALITY CONTROL

A. Section 01 45 33 - Quality Co Requirements: Contractor Quality Control Representative shall perform contractor quality control inspections.

1. Inspect fill placement operations and compaction.
2. Document preparatory, initial and follow-up inspection in Contractor Test and Inspection Reports and submit to Architect.

B. Geotechnical Engineer Inspection Services: Perform geotechnical inspections.

1. Inspection of areas exposed by excavation that will receive structural fill.
2. Inspection of structural fill placement.

C. Perform the following tests and inspections.

1. Inspection and approval of structural fill material.
2. Determine actual groundwater levels at start of earthwork operations.
3. Perform compaction density testing on compacted fill in accordance with ASTM D 2922.
4. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 (Standard Proctor).
5. If tests indicate work does not meet specified requirements, remove work, replace and retest.
6. Frequency of Tests:
    a. For structural fill areas at Building Area Subgrade Pad: 1 per every lift of fill per 2500 square feet, minimum 2 tests.
    b. For structural fill areas at Paved Areas: 1 per every lift of fill per 5000 square feet, minimum 2 tests.

D. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.05 CLEAN-UP

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stock pile area to prevent standing surface water.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Temporary and permanent erosion control systems.
2. Slope protection systems.
3. Stormwater pollution prevention plan.

B. Related Documents:

1. The Contract Documents, as defined in Section 00 72 00 - General Conditions and modifications thereto, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:

1. Section 31 10 00 - Site Clearing: Removal of trees, shrubs and other plants.
2. Section 31 22 00 - Grading: Rough grading.

1.03 REFERENCES

A. United States Environmental Protection Agency (EPA): National Pollutant Discharge Elimination System.

B. Oklahoma Department of Transportation (ODOT): ODOT - State of Oklahoma Department of Transportation Standard Specifications for Highway Construction, Section 735 - Material for Roadside Development and Erosion Control.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with the following ODOT standards:

1. Section 220 - Temporary Erosion, Sedimentation and Stormwater Pollution Prevention and Control.
2. Section 222 - Temporary Sediment Control Bale Barriers.
3. Section 223 - Temporary Silt Fence.
4. Section 224 - Temporary Sediment Control Filters.
5. Section 226 - Temporary Sediment Removal.
6. Section 230 - Sodding and Sprigging.

B. Regulatory Requirements: Conform to requirements of local Authority Having Jurisdiction for prevention of erosion and sediment control.

1. Conform to NPDES requirements where required.

1.05 PROJECT CONDITIONS

A. Environmental Requirements: Protect adjacent properties and water resources from erosion and sediment damage throughout Work. Take all necessary measures to prevent sedimentation from construction operations to enter adjacent property. Offsite discharge of sedimentation is not permitted.

B. Stormwater Pollution Prevention Plan: Maintain plan at Project site at all times available for inspection during contract duration.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Quick Growing Grasses: Wheat, rye, or oats.

B. Straw Bales: Free of weed seed.

C. Fencing for Siltation Control: UV resistant geotextile fabric.

D. Slab Sod: Rectangular slabs of Bermuda grass.

E. Temporary Mulches: Loose straw, netting, wood cellulose, or agricultural silage free of seed.

F. Bale Stakes:

1. Minimum 3 feet length.
2. 2 No. 4 steel reinforcing bars or,
3. 2 steel pickets or,
4. 2 - 2x2 inch hardwood stakes driven 18 inches to 24 inches into ground.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 EROSION CONTROL AND SLOPE PROTECTION

A. Provide erosion control and slope protection measures to prevent sediment from site entering adjacent property or public right-of-way to include but not be limited to:

1. Temporary silt fences.
2. Straw bales placed around culvert openings or inlets.
3. Diked area with earth berm and silt trap for draining dredged material.

B. Install erosion control and slope protection in accordance with ODOT standards.

C. Place all erosion and siltation control measures before start of earthwork and grading construction operations.

D. Mulch and seed all storm and sanitary sewer trenches not in streets no later than 10 days after backfill. Do not permit more than 500 feet of trench to be open at any one time.

E. Place all excavated material on uphill side of trenches where possible. Do not place materials in stream beds. Seed any stockpiled material which remains in place longer than 30 days with temporary vegetation and mulch.

F. Mulch and seed all temporary earth berms, diversions, erosion barriers and temporary stockpiles with temporary vegetative cover with 10 days after grading.

G. Do not stockpile or otherwise place dredged, excavated or other material, at any time, in or near stream bed which may increase turbidity of water. If turbidity producing materials are present, hold surface drainage from cuts and fills within construction area and from borrow and waste disposal areas in suitable sedimentation ponds or grade surface drainage to control erosion within acceptable limits. Provide and maintain temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required, until permanent damage and erosion control facilities are completed and operative. Hold to minimum area of bare soil exposed at any one time by construction operations.

H. Drain dredged material minimum 7 days. Store material for drainage to maximum 4 foot height.

I. Owner's Representative may direct Contractor to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and may direct Contractor to provide immediate permanent or temporary erosion control measures.

J. Maintain temporary erosion control systems as directed by Owner's Representative to control siltation during construction. Provide maintenance or additional Work directed by Owner's Representative immediately upon notification by Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Concrete pavement parking areas, and driveways.
2. Aggregate subgrade base

B. Related Sections:

1. Section 03 11 00 - Concrete Forming: Forms for site concrete.
2. Section 03 20 00 - Concrete Reinforcing: Reinforcement for site concrete.
3. Section 03 30 00 - Cast-In-Place Concrete: Concrete for site work.
4. Section 07 90 00 - Joint Sealers: Sealant for joints.
5. Section 31 22 00 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
6. Section 31 23 24 - Fill and Backfill: Compacted subbase for paving.
7. Section 32 17 23 - Pavement Markings: Parking lot stripping.
8. Section 32 17 13 - Parking Bumpers: Precast concrete bumpers.
9. Section 32 13 14 - Concrete Walks and Pads: Sidewalks, stoops and equipment pads.

1.03 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 305.1 – Specification for Hot Weather Concreting.
3. ACI 306.1 – Standard Specification for Cold Weather Concreting.

B. ASTM International (ASTM):

1. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

C. Oklahoma Department of Transportation (ODOT):

1. ODOT - State of Oklahoma Department of Transportation Standard Specifications for Highway Construction.

1.04 SUBMITTALS

A. Submit as part of submittal for Section 01 33 00.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ODOT standards.

1. Section 303 - Aggregate Base.
2. Section 414 - Portland Cement Concrete Pavement.

B. Perform work in accordance with ACI 301.

C. Follow requirements of ACI 305.1 when concreting during hot weather.

D. Follow requirements of ACI 306.1R when concreting during cold weather.

E. Construct Work within public right-of-way in accordance with requirements of the Authority Having Jurisdiction.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Specified in Section 03 11 00.

B. Plywood, metal metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

C. Joint Filler: ASTM D 1751 preformed; non-extruding bituminous type.

1. Thickness: 1/2 inch.

2.02 REINFORCEMENT

A. Reinforcing: Types specified in Section 03 20 00 and indicated on Drawings.

2.03 CONCRETE MATERIALS

A. Concrete Materials: Specified in Section 03 30 00.

B. Concrete Strength: Minimum compressive strength of 4000 psi at 28 days with air-entraining admixture providing minimum 4 percent and maximum 6 percent air by volume.

2.04 BASE MATERIALS

A. Aggregate: Provide Type A aggregate base conforming to ODOT Section 303, thickness indicated on Drawings.

2.05 ACCESSORIES

A. Joint Sealer: Specified in Section 07 90 00.

B. Herbicide: Commercial non-selective soil sterilant chemical for weed control, registered by the U.S. Environmental Protection Agency. Use type of herbicide approved by the local office of the County Extension Agent or local authority having jurisdiction.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.

1. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

2. Verify gradients and elevations of base are correct.

C. Report in writing to Architect and Owner's Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions are corrected.

D. By starting Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.03 BASE COURSE

A. Place aggregate base course in accordance with ODOT requirements.

B. Apply herbicide to soil areas under aggregate base to inhibit growth of weeds. Apply in accordance with manufacturer's recommended rates and published instructions. Apply to dry, prepared subgrade surface before placement of aggregate base.

C. Spread aggregate over prepared subgrade to total thickness indicated.

D. Level and contour surfaces to elevations and gradients indicated on Drawings.

E. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

F. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Notify Architect minimum 24 hours prior to commencement of concreting operations.

3.05 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.06 REINFORCEMENT

A. Reinforce pavement as indicated on Drawings.

B. Place dowels to achieve pavement and curb alignment as detailed.

3.07 PLACING CONCRETE

A. Place concrete as specified in Section 03 30 10; thickness indicated on Drawings.

B. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

C. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.08 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.

1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.

2. Secure to resist movement by wet concrete.

C. Provide scored joints:

1. Between sidewalks and curbs.

2. Between curbs and pavement.

D. Provide keyed joints as indicated.

E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.09 FINISHING

A. Area Paving: Light broom, texture perpendicular to pavement direction.

B. Curbs and Gutters: Light broom, texture parallel to pavement direction.

3.10 JOINT SEALING

A. See Section 07 90 00 for joint sealer requirements.

3.11 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.

3.12 FIELD QUALITY CONTROL

A. Section 014500 - Quality Control: Perform contractor quality control inspections.

1. Inspect concrete pavement installation, type, dimensions, thickness and finish.

2. Document preparatory, initial and follow-up inspection in Contractor Test and Inspection Reports and submit to Architect.

B. Independent testing agency will perform concrete tests as specified in Section 03 30 00.

C. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.13 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Concrete sidewalks.
2. Concrete equipment pads.

B. Related Sections:

1. Section 03 11 00 - Concrete Forms and Accessories: Forms for site concrete.
2. Section 03 20 00 - Concrete Reinforcement: Reinforcement for site concrete.
3. Section 03 30 00 - Concrete: Concrete for sitework.
4. Section 07 90 00 - Joint Sealers: Sealant for joints.

1.03 REFERENCES

A. Americans With Disabilities Act (ADA):

1. ADA; Americans with Disabilities Act; Federal Register, Volume 56, No. 144 28 CFR part 36.

B. American National Standards Institute (ANSI):

1. ANSI/ICC A117.1 - American National Standard for Accessible and Useable Buildings and Facilities; International Code Council.

C. American Concrete Institute (ACI):

1. ACI 301 - Specifications for Structural Concrete for Buildings.
2. ACI 302.1R - Guide for Concrete Floor and Slab Construction.
3. ACI 305R - Hot Weather Concreting.
4. ACI 306R - Cold Weather Concreting.
5. ACI 308 - Standard Practice for Curing Concrete.

D. American Society for Testing and Materials (ASTM):

1. ASTM A 185 - Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
2. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. ASTM C 94 - Standard Specification for Ready-Mixed Concrete.
4. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
5. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
6. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (nonextruding and Resilient Bituminous Types).

1.04 SUBMITTALS

A. Submit as part of submittal for Section 03 30 00.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Follow recommendations of ACI 305R when concreting during hot weather. C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Specified in Section 03 11 00.

B. Wood form material, profiled to suit conditions.

C. Joint Filler: ASTM D 1751 preformed; non-extruding bituminous type.

1. Thickness: 1/2 inch.

2.02 REINFORCEMENT

A. Reinforcing: Specified in Section 03 20 00.

B. Reinforcing Bars: ASTM A 615, Grade 60, deformed billet bars, unfinished, sizes indicated on Drawings.

C. Welded Wire Fabric: ASTM A 185, Grade 65, steel spot welded at intersections; sizes indicated on Drawings.

2.03 CONCRETE

A. Concrete Materials: Specified in Section 03 30 00.

B. Concrete Materials: ASTM C 94; Normal Portland Cement.

C. Compressive Strength: Minimum compressive strength of 3,500 psi at 28 days with air-entraining admixture providing minimum 4 percent and maximum 6 percent air by volume.

2.04 ACCESSORIES

A. Joint Sealer: Specified in Section 07 90 00.

B. Joint Sealer: Polyurethane, self-leveling; ASTM C 920, Class 25, traffic grade, gray color.

C. Sand Cushion: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Verify compacted subgrade is acceptable and ready to support walks, pads and imposed loads.

2. Verify gradients and elevations of base are correct.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Subgrade: Prepare by compacting the top 8 inches of subgrade to 95 percent optimum density with moisture content between 2 percent below and 2 percent above optimum moisture density.

B. Sand Cushion: Place minimum 2 inch thick sand cushion on subgrade and compact.

3.03 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient. Set forms with upper edge true to line and grade held in place with stakes spaced maximum 48 inches on center.

B. Set forms to provide smooth surface water flow over finished walk or pad. Finished walks or pads shall not create ponding either on or behind finished walk or pad.

C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

D. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 REINFORCEMENT

A. Place reinforcement as indicated on Drawings.

B. Place dowels to achieve pavement and curb alignment as indicated on Drawings.

3.05 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R and ACI 302.1R.

B. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

C. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

D. After concrete placement, use strike-off guided by side forms to bring surface to proper level and consolidate. Correct irregularities.

E. Curing:

1. Moisture cure sidewalk and pad surfaces in accordance with ACI 308.

2. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep concrete surfaces continually moist by water ponding, spraying or absorptive mat.

a. Ponding: Maintain 100 percent coverage of water over concrete slab areas, continuously for 4 days.

b. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

c. Absorptive Mat: Saturate burlap-polyethylene with water and place burlap-side down over floor slab areas, lapping ends and sides minimum 4 inches sealed with waterproof tape; maintain in place for 7 days.

3. Begin final curing after initial curing but before surface is dry by absorptive mat.

3.06 JOINTS

A. Sidewalks:

1. Align curb, gutter, and sidewalk joints.

2. Divide surfaces into square areas using contraction joints spaced not more than the width of walk and maximum 10 feet on center, unless indicated otherwise on Drawings.

3. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate walks from vertical surfaces and other components and in pattern indicated on Drawings.

a. Form joints with joint filler extending from bottom of concrete to within 1/2 inch of finished surface.

b. Secure to resist movement by wet concrete.

4. Provide scored joints:

a. At 3 feet intervals.

b. Between sidewalks and curbs.

5. Provide keyed construction joints as indicated on Drawings or when there is an interruption of concrete placement.

6. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

B. Pads:

1. Divide pad surfaces into square areas using contraction joints spaced not more than the width of pad and maximum 10 feet on center, unless indicated otherwise on Drawings.

2. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate pads from vertical surfaces and other components and in pattern indicated on Drawings.

a. Form joints with joint filler extending from bottom of concrete to within 1/2 inch of finished surface.

b. Secure to resist movement by wet concrete.

3.07 HANDICAPPED RAMPS

A. Form, place and finish handicapped ramps in compliance with ADA, ANSI/ICC A117.1 and as indicated on Drawings.

3.08 FORMED CONCRETE STAIRS

A. Form concrete stairs as indicted on Drawings.

B. Place metal stair nosing at each tread as specified in Section 05 50 00.

3.09 FINISHING

A. Non-Slip Broom: Immediately after float finishing, slightly roughen concrete suface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

B. Edging: Finish sidewalk and pad edges, including those at formed joints, with edging tool having 1/4 inch radius. Edge transverse joints before brooming.

3.10 JOINT SEALING

A. Clean and prime joints, and install sealant in accordance with manufacturer's published instructions and ASTM C 1193.

B. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

3.11 CONSTRUCTION

A. Site Tolerances:

1. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.

3.12 FIELD QUALITY CONTROL

B. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.13 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over site concrete for 7 days minimum after finishing.

END OF SECTION

PART 1- GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Concrete integral curbs and gutters.
2. Concrete curb handicapped ramps.

B. Related Sections:

1. Section 03 11 00 - Concrete Forming: Forms for site concrete.
2. Section 03 20 00 - Concrete Reinforcing: Reinforcement for site concrete.
3. Section 03 30 00 – Cast-in-place Concrete: Concrete for sitework.
4. Section 07 92 00 - Joint Sealants: Sealant for curb and gutter joints.
5. Section 31 22 00 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
6. Section 31 23 24 - Fill and Backfill: Compacted subbase for paving.
7. Section 32 12 16 - Asphalt Pavement: Asphalt paving.
8. Section 32 13 13 - Concrete Pavement: Concrete paving.
9. Section 32 13 14 - Concrete Walks and Pads: Sidewalks, stoops and equipment pads.

1.03 REFERENCES

A. Americans with Disabilities Act (ADA):

1. ADA; Americans with Disabilities Act; Federal Register, Volume 56, No. 144 28 CFR part 36.

B. American National Standards Institute (ACI):

1. ANSI/ICC A117.1 - American National Standard for Accessible and Useable Buildings and Facilities; International Code Council.

C. American Concrete Institute (ACI):

1. ACI 301 - Specifications for Structural Concrete for Buildings.
2. ACI 305R - Hot Weather Concreting.
3. ACI 306R - Cold Weather Concreting.

D. American Society for Testing and Materials (ASTM):

1. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (nonextruding and Resilient Bituminous Types).

1.04 SUBMITTALS

A. Submit as part of submittal for Section 03 30 00.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301 standards.

B. Follow recommendations of ACI 305R when concreting during hot weather. C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not place concrete when base surface temperature is less than 40°F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Form Materials: Specified in Section 03 11 00.

B. Wood or metal, clean, straight, of sufficient strength to resist springing during placement of concrete and of height equal to full depth of curb section.

2.02 REINFORCEMENT

A. Reinforcing: Specified in Section 03 20 00 and indicated on Drawings.

2.03 CONCRETE MATERIALS

A. Concrete Materials: Specified in Section 03 30 00.

B. Concrete Strength: Minimum compressive strength of 4,000 psi at 28 days with air-entraining admixture providing minimum 4 percent and maximum 6 percent air by volume.

2.04 ACCESSORIES

A. Joint Filler: ASTM D 1751 preformed; non-extruding bituminous type.

1. Thickness: 1/2 inch.

B. Joint Sealer: Polyurethane; ASTM C 920, class 25, traffic grade, grey color.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution Requirements: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive work.

C. Report in writing to Architect and Owner's Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions are corrected.

D. By starting Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.02 PREPARATION

A. Subgrade: Prepare subgrade to uniform composition and compaction of material as specified in Section 31 22 00.

B. Establish lines and grades indicated for curbs and gutters using line and grade stakes.

C. Remove impounded water and debris from forms before placing concrete.

D. Wet wood forms before placing concrete.

3.03 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient as indicated on Drawings.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.04 REINFORCEMENT

A. Place reinforcement as indicated on Drawings.

B. Place dowels to achieve pavement and curb alignment as detailed.

3.05 PLACING CONCRETE

A. Place concrete as specified in Section 03 30 10.

B. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

C. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.06 JOINTS

A. Align curb, gutter, sidewalk and paving joints.

B. Place 1/2 inch wide expansion joints at indicated intervals and to separate curbs and gutters from vertical surfaces and other components.

1. Space joints at maximum 30 foot intervals.

2. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.

3. Secure to resist movement by wet concrete.

C. Form control or contraction joints at two times the curb section thickness in inches (i.e. 2 x 5 inches

equals 10 feet). Maximum spacing 15 feet.

D. Provide joints in locations to aid and control cracking. Complete joints before uncontrolled shrinkage cracking occurs.

3.07 HANDICAPPED RAMPS

A. Form, place and finish handicapped ramps in compliance with ANSI/IIC A117.1, ADA and as indicated on Drawings.

3.08 FINISHING

A. Light broom; curb and flow lines of gutters finished by use of steel trowel to contour of required grades and then cross brushed.

3.09 CONSTRUCTION

A. Site Tolerances:

1. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.

3.10 FORM REMOVAL

A. Keep forms in place minimum 12 hours after placing concrete.

B. Do not use bars of heaving tools against concrete when removing forms.

C. Remove and repair defective concrete as specified in Section 03 30 00.

3.11 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Contractor Quality Control Representative shall perform contractor quality control inspections.

1. Inspect curb and gutter installation, type, dimensions, thickness and finish.

2. Document preparatory, initial and follow-up inspection in Contractor Test and Inspection Reports and submit to Architect.

B. Section 01 45 33 - Code-Required Special Inspections and Procedures: Independent testing agency will perform concrete tests as specified in Section 03 30 00.

C. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.12 PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over concrete for 7 days minimum after finishing.

END OF SECTION

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Precast concrete parking bumpers and anchorage.

B. Related Sections:

1. Section 32 12 16 - Asphalt Pavement: Parking area pavement.
2. Section 32 13 13 - Concrete Pavement: Parking area pavement.
3. Section 32 17 23 - Pavement Markings: Parking space markings.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
2. ASTM C 33 - Standard Specification for Concrete Aggregates.
3. ASTM C 150 - Standard Specification for Portland Cement.
4. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Parking Bumpers: Precast concrete, conforming to the following.

1. Nominal Size: 5 inches high, 9 inches wide, 6 feet long.
2. Profile: Manufacturer's standard.
3. Cement: ASTM C 150, Portland Type I - Normal; white color.
4. Concrete Materials: ASTM C 33 aggregate, water, and sand.
5. Reinforcing Steel: ASTM A 615/A 615M, deformed steel bars; unfinished finish, strength and size commensurate with precast unit design.
6. Air Entrainment Admixture: ASTM C 260.
7. Concrete Mix: Minimum 4000 psi, 28 day strength, air entrained to 5 to 7 percent.
8. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
9. Embed reinforcing steel, and drill or sleeve for two dowels.
10. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
11. Minor patching in plant is acceptable, providing appearance of units is not impaired.

B. Dowels: Cut reinforcing steel, 1/2 inch diameter, 24 inch long, pointed tip.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable

conditions encountered at no additional cost to the Owner.

3.02 INSTALLATION

A. Install units at locations indicated on Drawings.

B. Install units without damage to shape or finish. Replace or repair damaged units.

C. Install units in alignment with adjacent work.

D. Fasten units in place with 2 dowels per unit.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Driveway and parking lot striping.
2. Painted pavement markings at handicapped parking stalls.
3. Pavement Markings Schedule, at end of Section.

B. Related Sections:

1. Section 32 12 16 – Asphalt Pavement: Paving substrate for marking application.
2. Section 32 13 13 - Concrete Pavement: Paving substrate for marking application.

1.03 REFERENCES

A. Americans with Disabilities Act (ADA):

1. ADA - Americans with Disabilities Act; Federal Register, Volume 56, No. 144 28 CFR part 36.

B. American National Standards Institute (ANSI):

1. ANSI/ICC A117.1 - American National Standard for Accessible and Useable Buildings and Facilities; International Code Council.

C. U.S. General Services Administration (GSA):

1. GSA FS TT-P-115E - Traffic Paint.

1.04 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

1. Product Data: Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content.

B. Section 01 78 00 - Closeout Submittals: Requirements for closeout submittals.

1. Installation Certification: Submit written certification of installation on form located at end of Section.

1.05 QUALITY ASSURANCE

A. Application Qualification: Provide qualified technician to supervise equipment and application of marking.

B. Regulatory Requirements:

1. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

C. Manufacturer Installation Instructions: Contractor shall maintain current copy of pavement marking paint manufacturer published installation instructions in Project Field Office and refer to instructions at all times during installation.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Section 01 60 00 - Product Requirements: Deliver, store, protect and handle products.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Deliver Material Safety Data Sheet (MSDS) for each material to Project Field Superintendent for Contractor Records.

E. Accept Products on site in manufacturer’s packaging. Inspect for damage. Return damaged Products and replace with undamaged Products.

F. Project Field Superintendent shall inspect Products immediately upon delivery to Project Site, determine Product conformance with specified requirements and reject Products not complying with specifications. Project Field Superintendent shall direct that non-complying Products be removed from Project Site

immediately.

G. Paint Materials: Store at minimum ambient temperature of 45°F and a maximum of 90°F, in ventilated area, and as required by manufacturer's instructions.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Aexcel Corporation: www.aexcelcorp.com.

B. Ennis Paint, Incorporated: www.ennispaint.com

C. Trantex, Incorporated: www.trantexinc.com.

D. Section 01 25 00 - Substitutions Procedures: For substitutions.

2.02 TRAFFIC PAINT

A. Chlorinated Rubber VOC Compliant Zone Marking Paint conforming to GSA FS TT-P-115E Type III, white, yellow, blue or red, lead free.

B. Application Dry Film Thickness (DFT): 15 mils.

C. Drying Time: 15 minutes at 77°F.

D. Application Equipment: Airless spray.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

1. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

C. Report in writing to Architect prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Remove dust, dirt and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.

B. Remove rubber deposits, residual curing compounds and other coatings adhering to pavement by water blasting.

C. Allow new paving to cure for minimum 30 days before application of pavement markings.

D. Testing for Moisture: Test pavement surface for moisture before beginning marking application after each period of rainfall, fog, high humidity, or cleaning, or when ambient temperature has fallen below dew point.

1. Plastic Wrap Test Method:

a. Cover pavement with 12 inch x 12 inch section of clear plastic wrap and seal edges with tape.

b. After 15 minutes, examine plastic wrap for any visible moisture accumulation inside plastic.

c. Do not begin pavement marking until test can be performed with no visible moisture accumulation inside plastic wrap.

E. Layout pavement markings using guide lines, templates and forms.

F. Clean, test and check application equipment for proper film thickness and adjust pressure or speed to obtain specified mil thickness and uniform line thickness.

G. Protect adjacent curbs, walks, fences and other items from pavement marking application.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's instructions using application procedures approved for application and substrate.

B. Do not apply finishes to surfaces that are not dry and if rain is expected within 24 hours.

C. Apply materials at not less than manufacturer’s recommended spreading rate. Provide minimum dry film thickness (DFT) of entire coating system as specified.

D. Apply stripes straight and even with sharp edges.

E. Apply stripes and other markings in widths and colors indicated in Schedule.

3.04 CLEANING AND PROTECTION

A. Remove overspray, spills, or drips from surfaces.

B. Barricade marked areas until marking paint is dry and ready for traffic.

3.05 WASTE DISPOSAL

A. Dispose of all paint and related materials in conformance with all State and local environmental and waste disposal regulations at approved waste disposal location.

3.06 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Perform contractor quality control inspections.

1. Inspect pavement marking application for material, color, sheen, specified mil thickness, coverage, dimensions and layout.

2. Document preparatory, initial and follow-up inspection in Contractor Test and Inspection Reports and submit to Architect.

B. Correct deficiencies in products and installation found not to be in compliance with Contract Documents.

3.07 SCHEDULE - PAVEMENT MARKINGS

A. Paint the following items at locations and spacings indicated on Drawings per ODOT traffic signing standard.

1. Parking Stall Stripping: 4 inch wide, White.

2. Directional Arrows and Graphics: Yellow, configuration as indicated on Drawings.

3. Handicapped Parking Stall Striping: 4 inch wide with diagonals where indicated, International Handicapped Blue in accordance with ADA and ANSI/ICC A117.1.

4. Handicapped Parking Stall Symbol: International Symbol of Accessibility, white graphic on 36 inch x 36 inch on International Handicapped Blue background in accordance with ADA and ANSI/ICC A117.1.

5. Curbs Marked as Fire Lane: Paint curbs red with white text markings NO PARKING FIRE LANE (Or as directed by Authorities Having Jurisdiction).

END OF SECTION

PAVEMENT MARKINGS INSTALLATION CERTIFICATION

ARCHITECT'S PROJECT NUMBER: 2303

LOCATION: _____

OWNER: _____

CONTRACTOR: _____

PAVEMENT MARKINGS APPLICATOR:

Name: _____

Address: _____

Telephone Number: _____

UPON COMPLETION OF APPLICATION PAINT APPLICATOR CERTIFIES THAT:

A. Applicator obtained a current copy of the manufacturer's published surface preparation and traffic paint application instructions for the specific surface and product being applied.

B. Applicator reviewed and discussed manufacturer's published surface preparation and traffic paint application instructions and requirements with Project Field Superintendent before start of application.

C. Applicator checked moisture content of substrates and found them in compliance with specified requirements.

D. Installer applied specified traffic paint in accordance with the Contract Documents.

E. Applicator applied traffic paint to dry film thickness (DFT) in compliance with specified requirements.

EXECUTED AND DELIVERED This _____ Day of _____, 20____.

_____
(company name)

BY: _____
(authorized signature)

Subscribed and sworn to before me This _____ Day of _____, 20____

_____
Notary Public

_____
My Commission Expires: Affix Seal

END OF CERTIFICATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 Section Includes

A. Electric radiant snow melting mats or cables embedded in outdoor concrete or asphalt slabs, or buried under brick/stone pavers within a sand, stone dust, or mortar bed.

B. Controls, sensors, and relay panels.

C. Electric radiant snow melting system components, accessories, and associated installation materials.

1.03 Related Sections

A. Section 01 33 00 – Submittal Procedures

B. Section 01 41 00 – Regulatory Requirements

C. Section 01 40 00 – Quality Requirements

D. Section 0170 00 – Execution and Closeout

E. Section 03 30 00 – Cast-in-Place Concrete

F. Section 32 13 13 – Concrete Paving

L. Section 31 23 16 – Excavation/Fill

1.04 References

A. National Electrical Code (NEC)

B. Canadian Standards Association (CSA)

C. Underwriter's Laboratory (UL)

D. American Society of Concrete Contractors (ASCC)

E. Warmup Snow Melting System Installation Manual

1.05 Performance Requirements

A. Electric snow melting mats/cables must generate 37-58 watts per square foot depending on application and voltage supply. Mat/cable heaters that generate less than 37 w/sq ft, will not be acceptable. Cable jacket must be reinforced for commercial environments and asphalt temperatures.

B. Heating wire must be at least ¼" diameter, 2-conductor resistance heating element and withstand up to 474°F asphalt pours.

C. All mats/cables shall include 16ft cold leads. This connection is factory joined in a water resistant joint assembly. Cold leads must be tagged with a regulatory label (showing ohms, voltage, amps, length).

1.06 Submittals

A. Submit under provisions of Section 01 33 00

B. Provide General Contractor, Architect, MEP Engineer, and Owner with all the Manufacturer's product data sheets, warranty, and installation instructions.

C. Provide General Contractor, Architect, MEP Engineer, and Owner with all relevant Shop Drawings, Samples, Mock-Ups, and Electrical Schematics.

1.07 Quality Assurance

A. Manufacturer Qualifications & Services:

1. 20 years of experience (minimum) with deicing systems.
2. Heating cable, controls, sensors, relays, and related items shall be provided by one supplier.
3. Supplier must be able to provide outsite field support, 24/7 technical install support, and free design assistance.

B. Installer Qualifications:

1. Must have verifiable experience successfully completing projects of similar size, and /or has been trained or certified by a manufacturer's representative.
2. A licensed electrician shall complete all electrical rough-in, and electrical connections required to

complete the system installation.

C. Regulatory Requirements and Approvals - Electric Snow Melting Systems

1. Snow melting cables/mats for installation in concrete, asphalt, or under pavers shall be Listed to UL 1673, UL 515, ANSI/IEEE 515.1 and CAN/CSA -C22.2 No. 130-30.

D. Pre-Installation Meetings:

1. Coordinate work with other trade representatives (general, electrical, paving, and other trade contractors) to verify areas of responsibility (scope of work).

2. Review project timeline and construction deadlines to ensure project will comply with all manufacturer's installation instructions and warranty requirements.

1.08 Delivery, Storage and Handling

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store materials protected from exposure to harmful site conditions, and in an area protected from vandalism and theft.

PART 2 - PRODUCTS

2.01 Manufacturer

A. Warmup Inc., a division of Warmup PLC (UK)
US +1 (888) 927-6333 / CA 1+ (888) 592-7687
52 Federal Road, Unit 1F, Danbury, CT 06810
www.warmup.com/www.warmup.ca

B. Substitution requests must be approved 5 days prior to bid due date.

1. Alternative equipment manufacturer must provide all relevant product data sheets, warranty, installation instructions, shop drawings, samples, and electrical schematics. Alternative equipment must meet specified material standards.

2.02 Electric Radiant Snow Melting Mat/Cable

A. The Snow melting system must consist of Twin Conductor resistance heating cable having Flouropolymer as primary insulation, covered with metal sheathing to provide extra mechanical strength and provide a ground path. A final outer jacket of Zero Halogen Polyolefin is added to provide corrosive protection.

B. The Snow Melting Mat/Cable shall be rated 208-277V, producing 37-58 watts per square foot and be CSA listed. Multiple mat systems must be wired in parallel by the installer. Each mat/cable heater must carry a minimum 10 yr manufacturers warranty.

2.03 Controls, Sensors & Accessories

A. AirSense: Outdoor moisture and temperature sensor, supplied with mounting bracket.

B. Nameplate: Branded Name Plate for use with Snow Melt Heater installations (NEC426-13). Dimensions 4" by 6".

C. Alligator: Warmup Digital Multimeter

PART 3 - EXECUTION

3.01 Manufacturer's Instructions

A. Comply with manufacturer's product data, including product technical bulletins, installation instructions and design drawings.

3.02 Examination & Preparation

A. Installer shall verify field measurements are as shown on Shop Drawing(s). The installing contractor is responsible for verifying accurate dimensions are used on drawings.

B. Any revisions needed to Shop Drawing(s), or product provided, must be corrected prior to proceeding with the installation.

C. Prepare the base, as per the standard guidelines set forth by the American Society of Concrete Contractors. Remove any debris that may damage the heating mat.

D. Installer shall verify that the required power is available in proper location, and ready for use.

3.03 Installation

A. Complete installation must conform to appropriate manufacturer's installation instructions, National Electrical Code, and appropriate local codes.

3.04 Field Quality Control

A. Monitor ohms with Alligator and report readings on warranty card before, during and after the installation.

B. Test each heating cable for insulation resistance with a 500 VDC Meg-Ohm Meter. Heater cable should have a minimum insulation resistance of 20 megohms. Record these values on the warranty form provided at the end of the Warmup Installation Manual.

C. Start-up (first-time activation) must wait for the mortar, concrete or asphalt to be fully cured

D. During “Start-Up”, voltage and amps should be tested by a licensed electrician

E. All testing records should be copied, and provided to the Owner.

END OF SECTION

KINGFISHER COUNTY COMMISSIONERS

Jeff Moss, District 1
Ray Alan Shimanek, District 2
Heath Dobrovolny, District 3

Phone: (405) 375-3808
Fax: (405) 375-2366

Kingfisher County Courthouse
101 S. Main, Room #9
Kingfisher, OK 73750

January 19, 2023

Bid # 17-22-23

NOTICE TO BIDDERS

Notice is hereby given that the Board of County Commissioners of Kingfisher County will receive sealed bids for labor and materials needed to build a new parking lot at the Kingfisher County Courthouse. Bids will be accepted at the Kingfisher County Courthouse in the Office of the County Clerk until 4:00pm on the 26th day of May, 2023 to be opened at their regular meeting of May 30th, 2023.

Statement of Work and Specifications, plans and manual of the project to be bid are **located online at Kingfisher.okcounties.org under the bids tab.** The Pre-Bid meeting will be at 10:00am on Thursday, May 11th, 2023 at the project site/ Commissioners office @ 101 S Main St, Kingfisher, OK 73750.

The successful bidder is required to produce a performance bond upon request and to show certificates of Insurance, its limits, and Workers Compensation Insurance. This will be detailed in the Statement of Work and general requirements.

The Board of County Commissioners reserves the right to reject any or all bids. All bidders must complete a statement of non-collusion and a Cashier's Check, a certified check, or a surety bid bond in the amount of five percent (5%) of the gross amount of base bid as a guaranty, shall accompany the sealed proposal of each bidder. Deposits will be returned to the unsuccessful bidders and successful bidders, upon approval of the contract and submission of a 100% Performance Bond, a 100% Statutory Bond, and a 100% Maintenance Bond. Please contact Kingfisher County Clerk's office for bid results at 405-375-3887.

Board of County Commissioners
Kingfisher County Courthouse
Kingfisher, Oklahoma

CHAIRMAN: _____
Heath Dobrovolny

MEMBER: _____
Jeff Moss

MEMBER: _____
Ray Shimanek

ATTEST:

Jeannie Bowers

COUNTY CLERK

COUNTY CLERK SEAL KINGFISHER COUNTY, OK