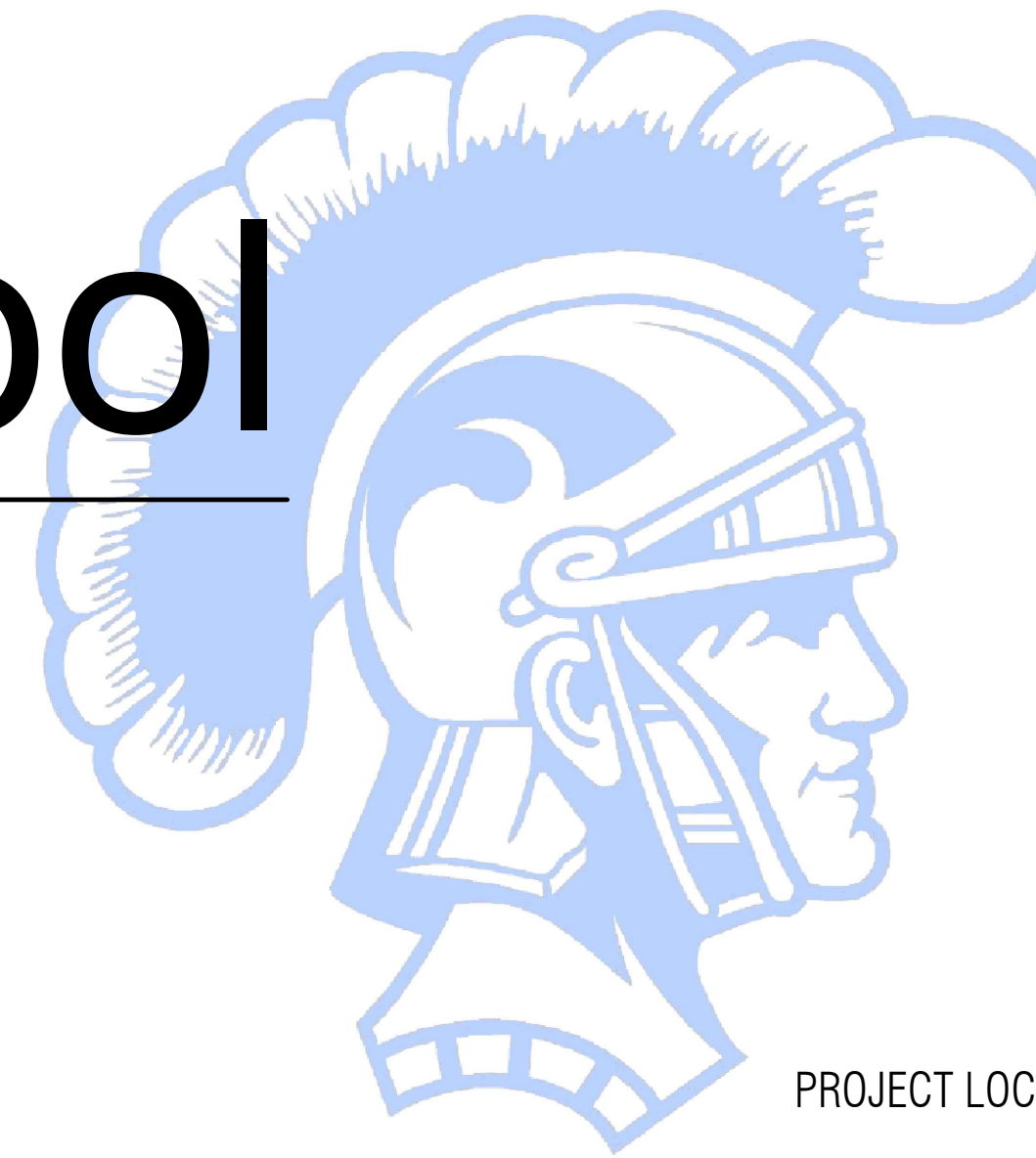


Proposed Re-roof for Portions of

Auburn Elementary School

CUUSD #10

445 North 5th Street
Auburn, Illinois 62615



LOCATION MAP Auburn, Illinois



PROJECT LOCATION

PROJECT TEAM

OWNER

Board of Education
606 West North Street
Auburn, Illinois 62615
Contact: Darren Root, Superintendent
Phone: (217) 438-6164
Fax: (217) 438-6483
E-mail: droot@auburn.k12.il.us

ARCHITECT

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ABBREVIATIONS & LEGENDS

ACOUS - ACOUSTIC	DISP - DISPENSER	HTG - HEATING	OP - OP HAND - OPPOSITE HAND	STL - STEEL
ACT - ACOUSTIC CEILING TILE	DN - DOWN	ID - INSIDE DIAMETER	O, OZ, OX - OXYGEN	STO, STOR - STORAGE
ALUM - ALUMINUM	DWG - DRAWING	IN - INCH	PLAS, LAM, PLAM - PLASTIC	STR, STRUCT - STRUCTURAL
AB - ANCHOR BOLT	EA - EACH	INCL - INCLUDED	LAMINATE	SUSP - SUSPEND OR SUSPENDED
ANCH - ANCHOR	ELEC - ELECTRIC	INFO - INFORMATION	PLAS - PLASTER	STA - STATION
ARCH - ARCHITECTURAL	EW - ELECTRIC WATER COOLER	INSUL - INSULATION	PL - PLATE	TB - TACKBOARD
AUTO - AUTOMATIC	EL, ELEV - ELEVATION	INT - INTERIOR	PLYWD - PLYWOOD	TEL - TELEPHONE
AFF - ABOVE FINISH FLOOR	ELEV - ELEVATOR	ISO - POLYISOCYANURATE	POL - POLISH	TV - TELEVISION
BM - BEAM	EPS - EXPANDED POLYSTYRENE	JC - JANITOR CLOSET	PORT - PORTABLE	TH - THICKNESS
BIT, BITUM - BITUMINOUS	EQ - EQUAL	JT - JOINT	RAD, R - RADIUS	THK - THICK
BLK - BLOCK	EQUIP - EQUIPMENT	LAT - LAY-IN ACOUSTICAL TILE	REC - RECESS	TOIL - TOILET
BL - BORROWED LIGHT	EX, EXST, EXIST - EXISTING	LAM - LAMINATED	RECP - RECEPTACLE	T/C - TOP OF CURB
BOT - BOTTOM	EJ - EXPANSION JOINT	LAV - LAVATORY	REF - REFERENCE	TRANS - TRANSFORMER
B.O. - BOTTOM OF	FT - FEET OR FOOT	LK - LOCKER	REFRIG - REFRIGERATOR	TRD - TREATED
BLDG - BUILDING	FIN - FINISH	LP - LOW POINT	REINF - REINFORCE OR REINFORCING	TYP - TYPICAL
CB - CHALKBOARD	FEC - FIRE EXTINGUISHER CABINET	MFR, MANUF - MANUFACTURER	REQD - REQUIRED	UL - UNDERWRITERS LABORATORIES
CC - CUBICLE CURTAIN	FHC - FIRE HOSE CABINET	MAS - MASONRY	RESIL - RESILIENT	UNO - UNLESS OTHERWISE NOTED
CEM - CEMENT/CEMENTITIOUS	FHV - FIRE HOSE VALVE	MO - MASONRY OPENING	REV - REVISION	VAC - VACUUM
CJ - CONTROL JOINT	FLASH - FLASHING	MAT, MATL - MATERIAL	RD - ROOF DRAIN	VERT - VERTICAL
CG - CORNER GUARD	FL, FLR - FLOOR	FL, FLR - FLOOR	RM - ROOM	VEST - VESTIBULE
CLR - CLEAR	FD - FLOOR DRAIN	MECH - MECHANICAL	R - RUBBER	VB - VINYL FLOOR BASE
CL - CENTER LINE	FTG - FOOTING	MED - MEDICINE	RT - RUBBER TILE	V - VINYL
CLOS - CLOSET	FDN - FOUNDATION	MET, MTL - METAL	VCT - VINYL COMPOSITION TILE	VF - VINYL FABRIC
CMU - CONCRETE MASONRY UNIT	FR, FRM - FRAME	ML - METAL LATH	W - WIDTH	W - WIDTH
CO - CASED OPENING/CLEANOUT	FURR - FURRING	MET STUD, MT STUD - METAL STUD	W/ - WITH	W/O - WITHOUT
(PLUMBING)	FS - FULL SIZE	MW - MILLWORK	WC - WATER CLOSET	WD - WOOD
COL - COLUMN	F.V. - FIELD VERIFY	MIN - MINIMUM	WP - WATERPROOF OR	WATERPROOFING
CONC - CONCRETE	GALV - GALVANIZED	MISC - MISCELLANEOUS	WP - WATERPROOF OR	WATERPROOFING
CONT - CONTINUOUS	GA - GAUGE	MTD - MOUNTED	WP - WATERPROOF OR	WATERPROOFING
CONTR - CONTRACT OR CONTRACTOR	GL - GLASS	NOM - NOMINAL	WP - WATERPROOF OR	WATERPROOFING
CTR - COUNTER	GYP BD, GWB - GYPSUM WALL BOARD	N - NORTH	WP - WATERPROOF OR	WATERPROOFING
CTR FLASH - COUNTER FLASHING	HC - HOLLOW CORE	NIC - NOT IN CONTRACT	WP - WORKING POINT	WRB - WATER RESISTANT BARRIER
CRT - COMPUTER READOUT TERMINAL	HFS - HALF FULL SIZE	NTS - NOT TO SCALE	WWR - WELDED WIRE REINFORCEMENT	WT - WEIGHT
CSS - CLINICAL SERVICE SINK	HM - HOLLOW METAL	NO, # - NUMBER	XPS - EXTRUDED POLYSTYRENE	
DET, DTL - DETAIL	HP - HIGH POINT	OC, O/C - ON CENTER		
DIA - DIAMETER	HT - HEIGHT	OPNG - OPENING		
DIM - DIMENSION		OD - OUTSIDE DIAMETER		

	STEEL		RIGID INSULATION		KEYED NOTE		REVISION TAG
	CONCRETE		BATT INSULATION		PARTITION TYPE		COLUMN LINE
	EARTH		WOOD BLOCKING		DOOR/OPENING NUMBER		STRUCTURAL LINE
	GYPSUM BOARD		FINISHED WOOD		INTERIOR ELEVATION TAG		CEILING HEIGHT
	CONCRETE MASONRY UNIT		PLYWOOD		SECTION TAG		
	BRICK						

BUILDING CODE SUMMARY

GOVERNING CODES

2006	International Building Code (IBC)
2006	International Fire Code (IFC)
2006	International Property Maintenance Code (PMC)
2006	International Mechanical Code (IMC)
2006	International Fuel Gas Code (IFGC)
2005	National Electrical Code (NEC)
2014	Illinois State Plumbing Code (ISPC)
2018	Illinois Accessibility Code (IAC)
2010	Americans with Disabilities Act (ADA)

SCHEDULE OF DRAWINGS

G1.0	Cover Sheet
D1.0	Existing/Demolition Partial Roof Plan
A1.0	Proposed Partial Roof Plan
A3.0	Partial Sections & Details
A5.1	Details

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general notes

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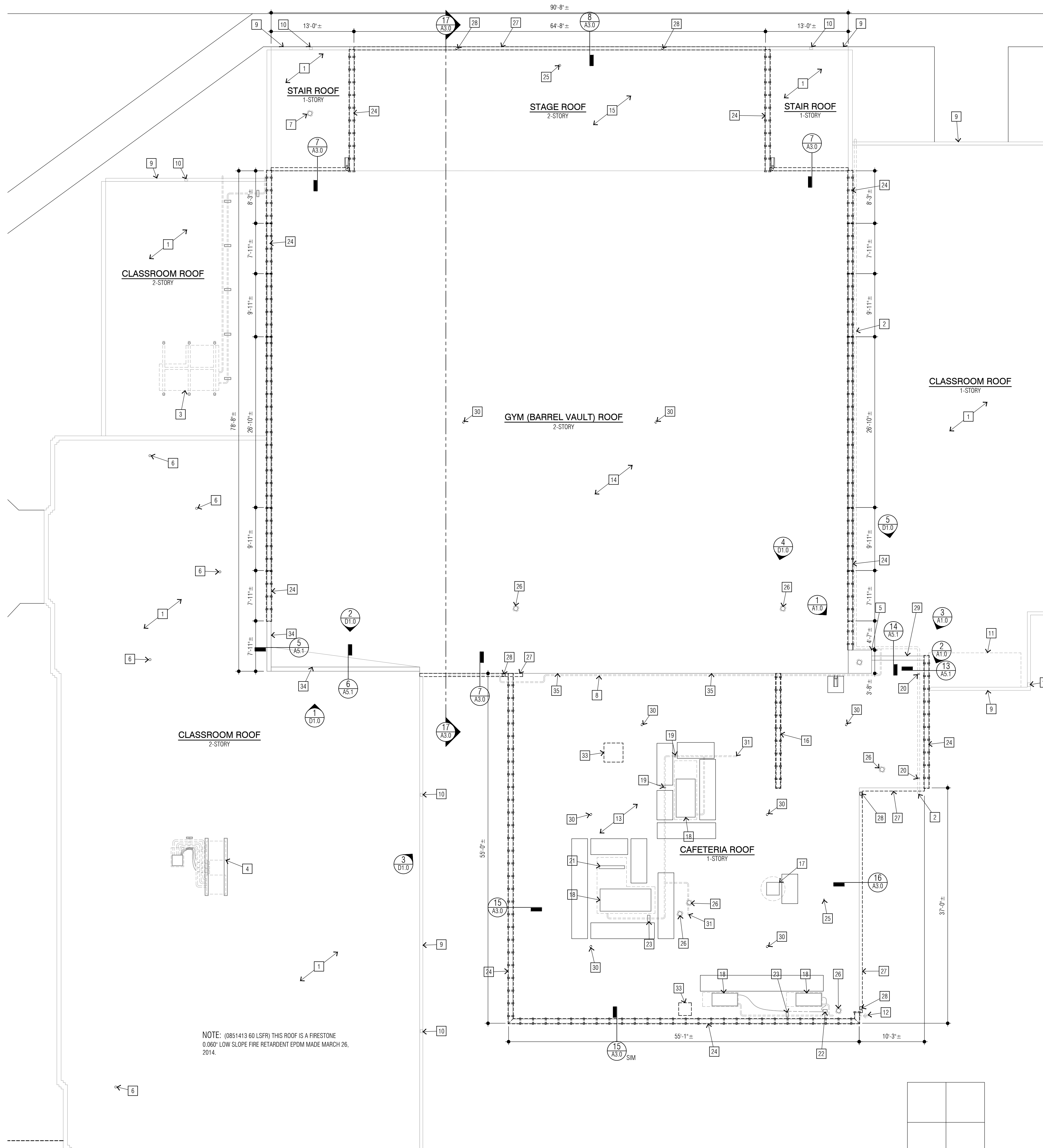
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sheet title
COVER SHEET

sheet number
G1.0

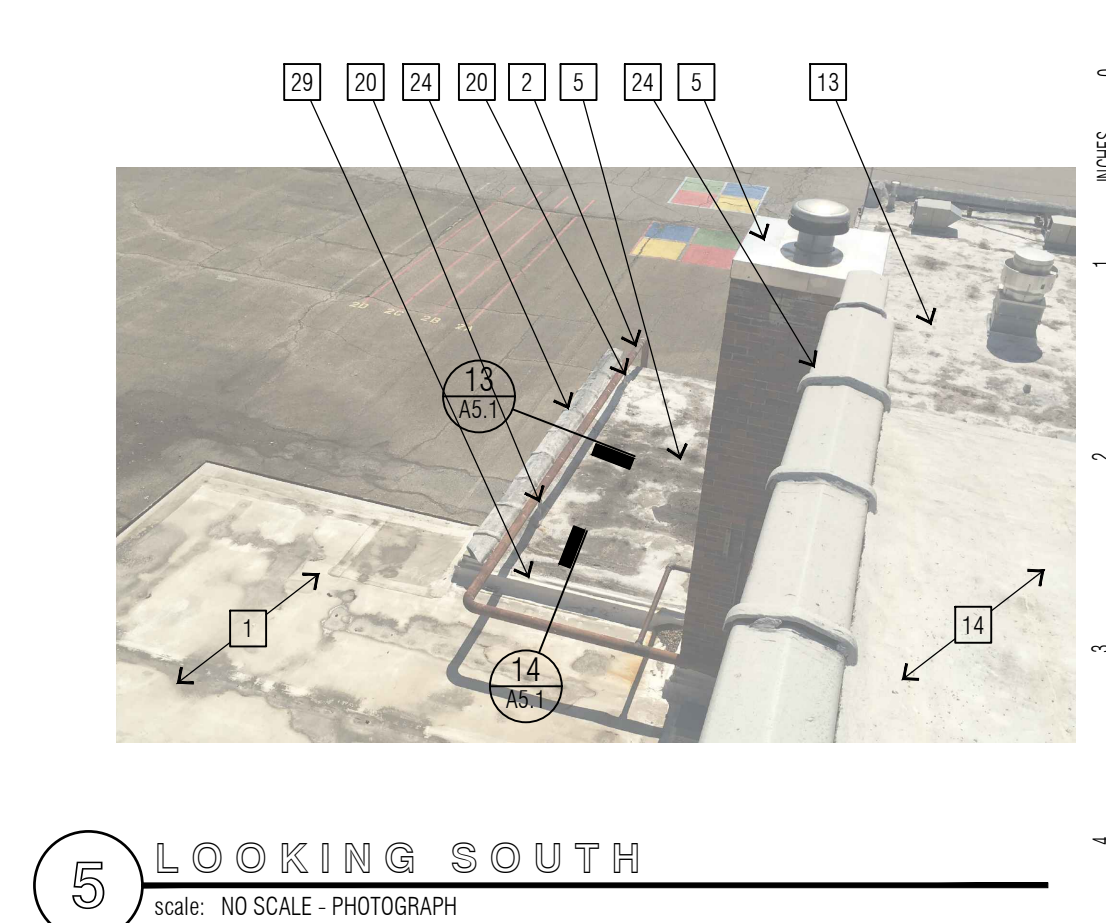
project number 2019-007 date 10JAN2020

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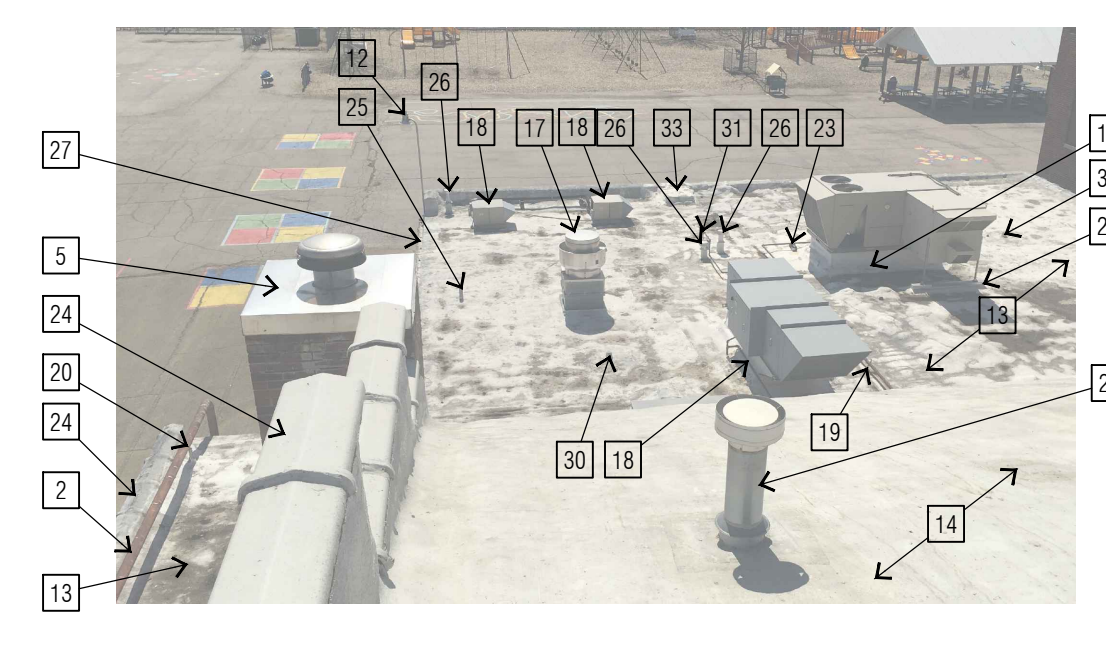


KEYNOTES - DEMOLITION

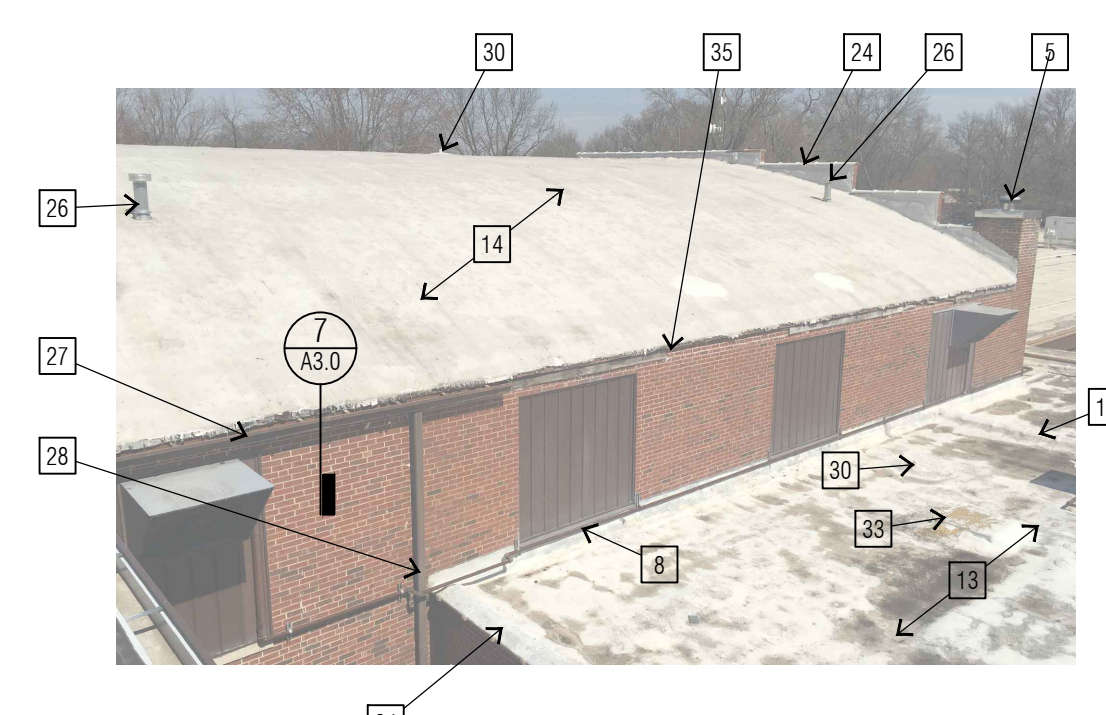
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- 1 EXISTING ROOF - PROTECT
 - 2 3"Ø GAS LINE PROTECT
 - 3 HVAC CHILLER ON DUNNAGE
 - 4 CONDENSERS
 - 5 CHIMNEY WITH FLUE
 - 6 PLUMBING VENT PIPE
 - 7 FLUE
 - 8 2"Ø GAS LINE MOUNTED ON WALL ABOVE THE ROOF. PROTECT
 - 9 METAL GUTTER
 - 10 DOWNSPOUT
 - 11 OUTLINE OF WALL UNDER OVERHANG
 - 12 WALL MOUNTED LIGHT FIXTURE - PROTECT
 - 13 REMOVE ROOF AND INSULATION DOWN TO STRUCTURAL DECK (FROM EXTERIOR TO DECK):
REMOVE SPRAY POLYURETHANE FOAM (SPF)
REMOVE EPDM MEMBRANE
REMOVE 2" POLYISOCYANURATE INSULATION
REMOVE 3-PLY COAL TAR ROOF MEMBRANE
REMOVE 1" PERLITE INSULATION
REMOVE 1/2" BASE SHEET
TO GYPSUM DECK - REPAIR DAMAGED PORTIONS OF THE DECK.
 - 14 REMOVE ROOF AND INSULATION DOWN TO STRUCTURAL DECK (FROM EXTERIOR TO DECK):
REMOVE SPRAY POLYURETHANE FOAM (SPF)
REMOVE EPDM MEMBRANE
REMOVE 1/2" POLYISOCYANURATE INSULATION
REMOVE 6-PLY COAL TAR ROOF & GRAVEL MEMBRANE
TO LIGHT WEIGHT CONCRETE DECK - REPAIR DAMAGED PORTIONS OF THE DECK.
 - 15 REMOVE ROOF AND INSULATION DOWN TO STRUCTURAL DECK (FROM EXTERIOR TO DECK):
REMOVE SPRAY POLYURETHANE FOAM (SPF)
REMOVE EPDM MEMBRANE
REMOVE 1" POLYISOCYANURATE INSULATION
REMOVE 6-PLY COAL TAR ROOF & GRAVEL MEMBRANE
TO LIGHT WEIGHT CONCRETE DECK - REPAIR DAMAGED PORTIONS OF THE DECK.
 - 16 REMOVE SPF EMBEDDED TILE COPING AND BRICK MASONRY SO ALL WILL BE COVERED OVER BY PROPOSED ROOF
 - 17 EXHAUST FAN - REMOVE ROOF MEMBRANE FLASHING
 - 18 EQUIPMENT CURB - REMOVE ROOF MEMBRANE FLASHING.
 - 19 REMOVE ROOF PIPE MOUNTS EMBEDDED INTO EXISTING ROOF. BEARING ON STRUCTURAL DECK. TEMPORARILY KEEP PIPING BRACED FOR INSTALLATION OF PROPOSED ROOFING.
 - 20 ROOF PIPE MOUNTS EMBEDDED INTO EXISTING ROOF. BEARING ON STRUCTURAL DECK - REMOVE FLASHING.
 - 21 MECHANICAL EQUIPMENT RAIL - REMOVE ROOF MEMBRANE FLASHING.
 - 22 CURB WITH COWL FOR PIPING AND CONDUIT - REMOVE ROOF MEMBRANE FLASHING.
 - 23 PIPE BLOCKING ON ROOF - TO REMAIN, BUT WILL REQUIRE TEMPORARY RELOCATION OR REMOVAL.
 - 24 REMOVE TILE COPING AND CLEAN AWAY MORTAR TO BRICK WALL.
 - 25 PLUMBING VENT PIPE - REMOVE LEAD FLASHING.
 - 26 FLUE - REMOVE ROOF FLASHING
 - 27 REMOVE METAL EDGE AND METAL GUTTER
 - 28 REMOVE DOWNSPOUT
 - 29 REMOVE EXPANSION JOINT COVER AND FLASHINGS (ON SIDE ROOF IS BEING REMOVED FROM
 - 30 REMOVE REMOVE ROOF INSULATION VENTS
 - 31 GAS PIPE ROOF PENETRATION - REMOVE ROOF MEMBRANE FLASHING
 - 32 GAS PIPE ROOF PENETRATION - REMOVE ROOF MEMBRANE FLASHING
 - 33 REMOVE CAPPED CURB. COVER OPENING WITH 1/2" FIBER REINFORCED GYPSUM BOARD.
 - 34 REMOVE METAL EDGE FLASHING AND EPDM ROOF MEMBRANE FLASHING.
 - 35 REMOVE WOOD FASCIA BOARD AND REPLACE DAMAGED WOOD BLOCKING BEHIND. REPLACE ALL WOOD BLOCKING WHERE NO GUTTER IS PRESENT - APPROXIMATELY 52'-0".



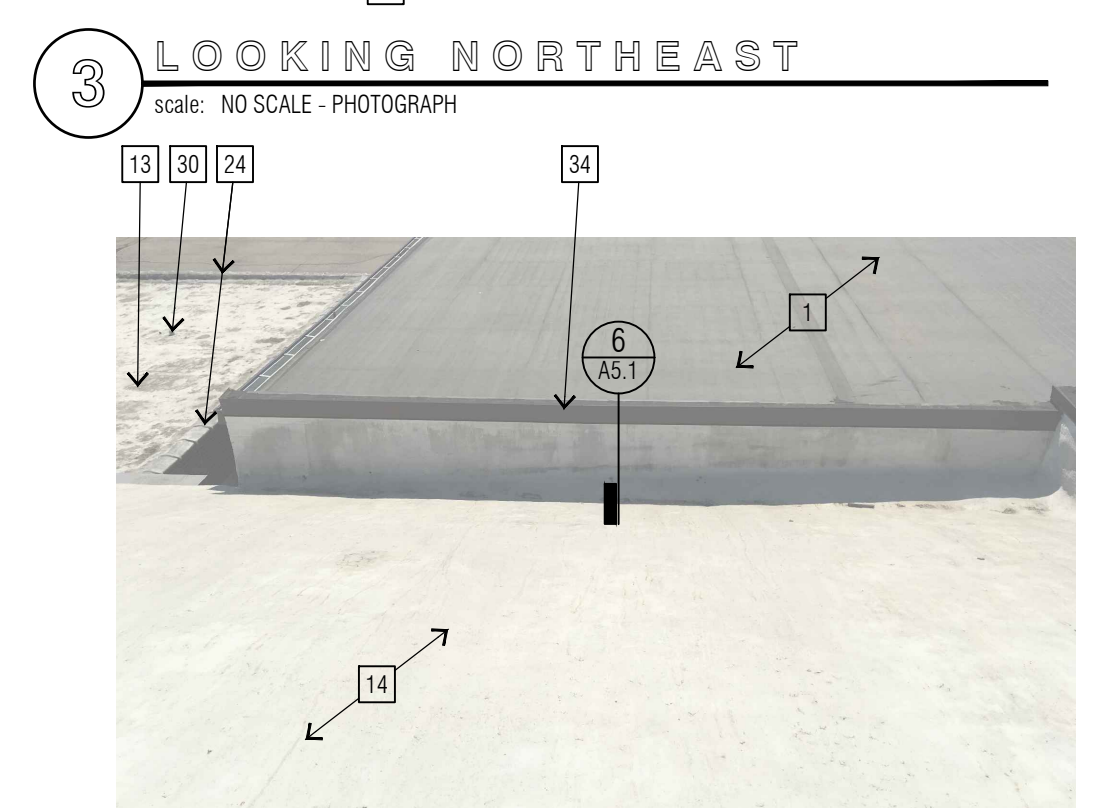
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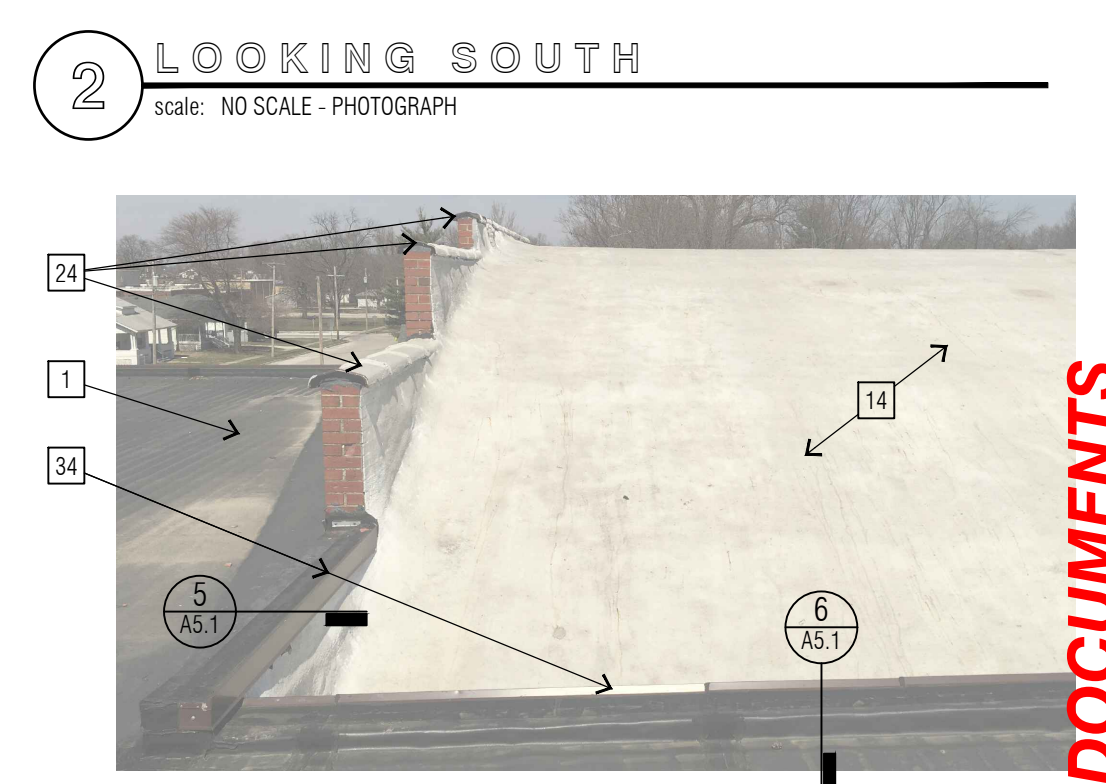
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2 LOOKING SOUTH
scale: NO SCALE - PHOTOGRAPH



3 LOOKING NORTHEAST
scale: NO SCALE - PHOTOGRAPH



1 LOOKING NORTH
scale: NO SCALE - PHOTOGRAPH

general notes

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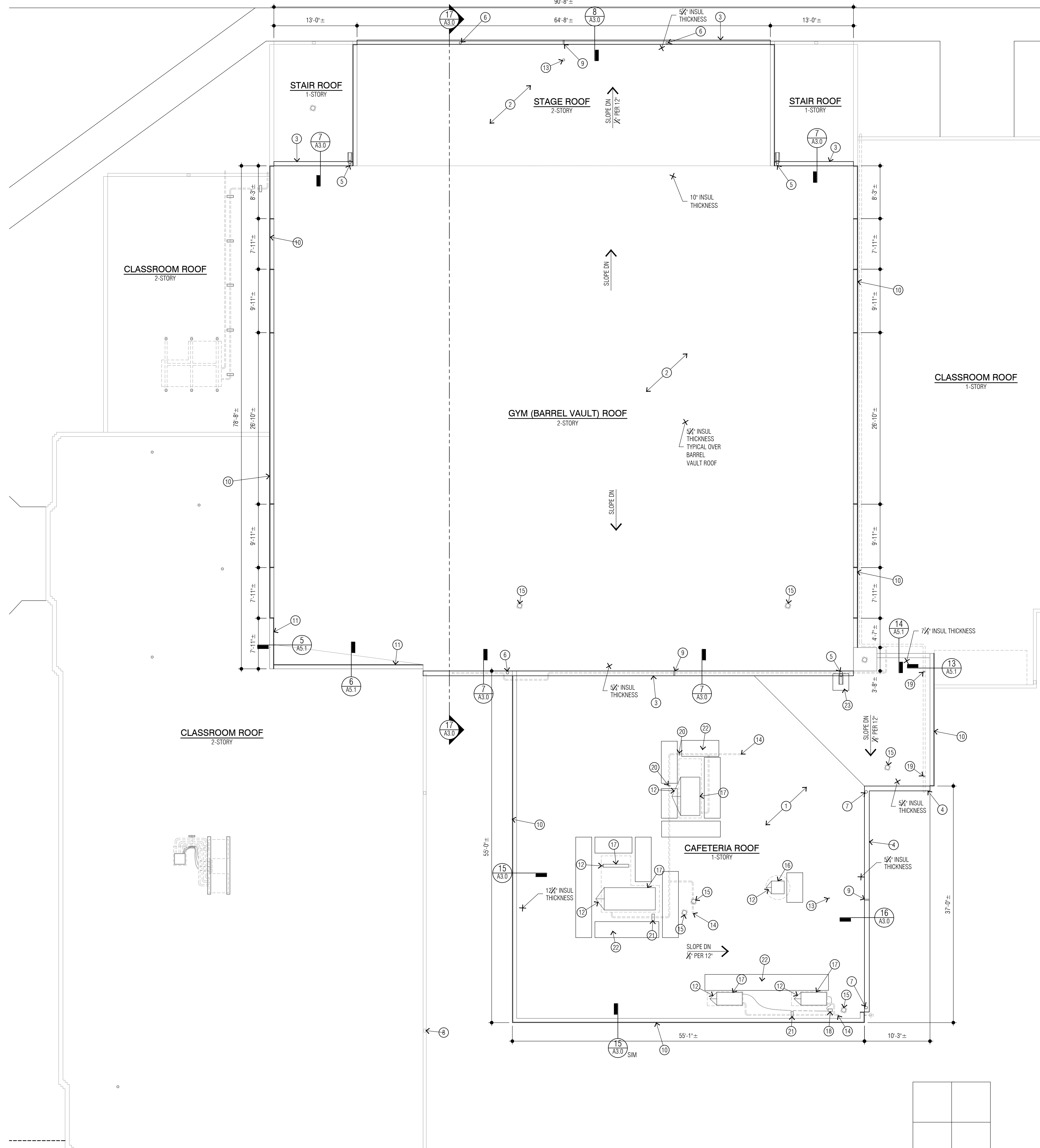
sheet title
EXISTING/DEMOLITION
PARTIAL ROOF PLAN

sheet number
D1.0

project number 2019-007 date 10JAN2020

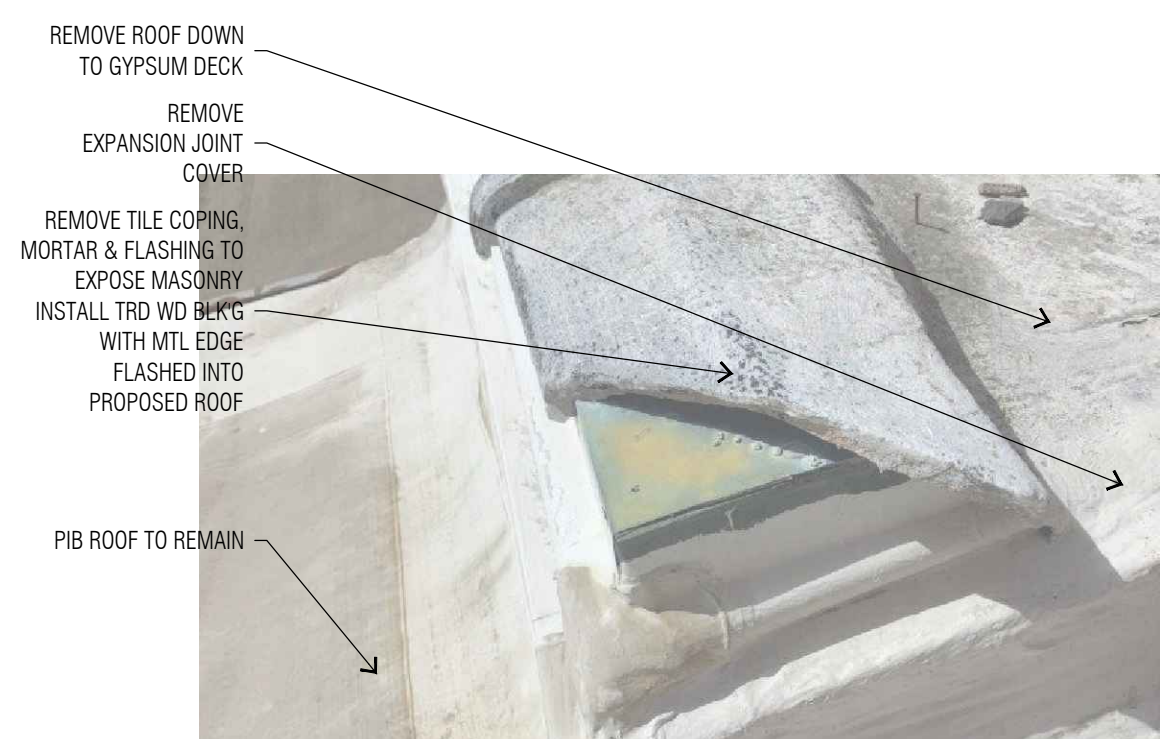
BID DOCUMENTS

17 EXISTING/DEMOLITION PARTIAL ROOF PLAN
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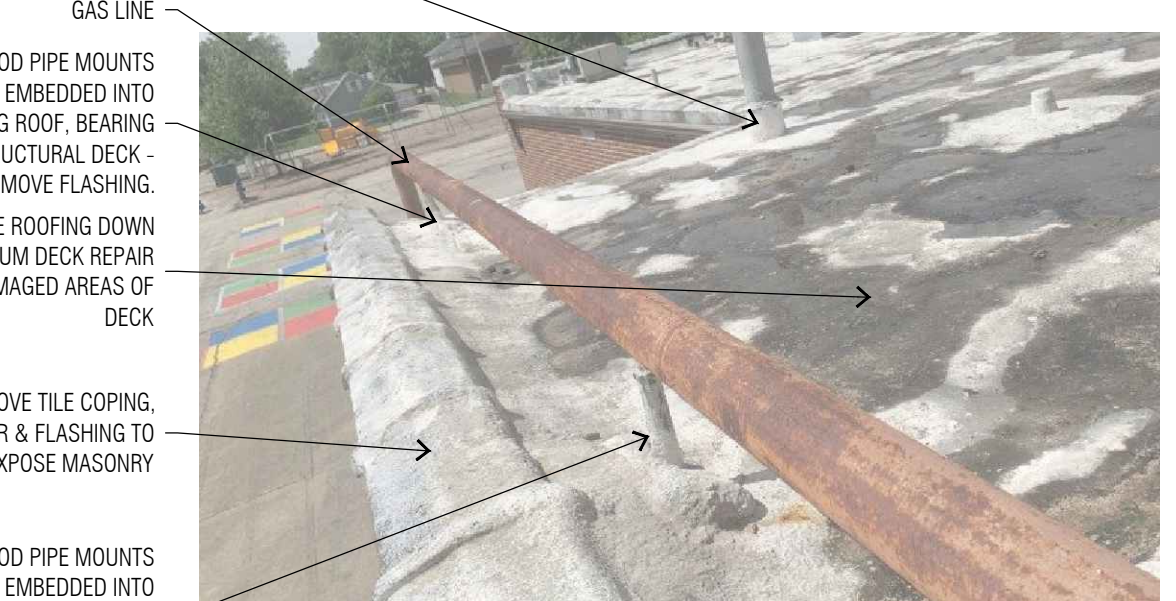


KEYNOTES - PROPOSED

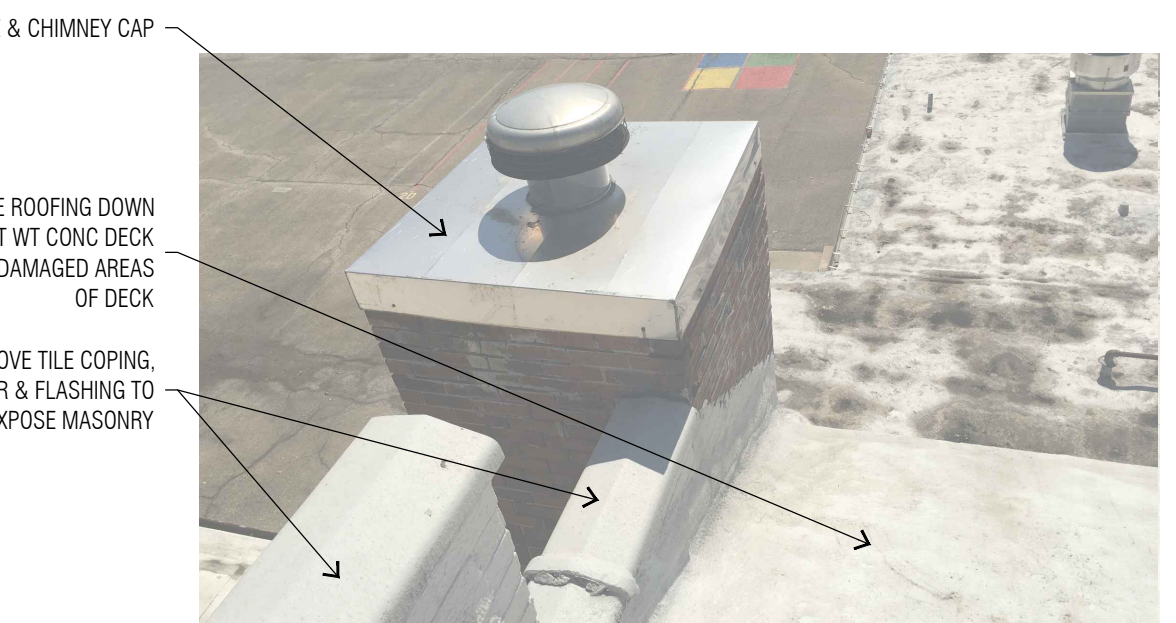
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 - EXISTING CURBS WILL NOT BE TALL ENOUGH TO ACCOMMODATE PROPOSED ROOF THICKNESS. REMOVE FANS, VENTS, ROOF TOP UNITS AND RAISE EXISTING CURBS WITH TREATED WOOD BLOCKING. SIZE TO MATCH INSULATION THICKNESS. CURBS SHALL BE A MINIMUM HEIGHT OF 8" ABOVE THE ROOF MEMBRANE. SOME OF THE FANS MAY NOT HAVE ENOUGH SLACK ELECTRICAL WIRE TO ACCOMMODATE THE RAISED CURB. REWIRE FROM EXISTING CONNECTIONS - DO NOT ADD SPLICES.
 - EXISTING PLUMBING VENT PIPES AND FLUES MAY NOT BE TALL ENOUGH TO ACCOMMODATE PROPOSED ROOF THICKNESS. EXTEND HEIGHTS OF PIPES BY ADDING REQUIRED LENGTHS TO THE EXISTING. VERIFY.
 - THE GAS MAY REQUIRE EXTENDING AS WELL DUE TO THE THICKNESS OF THE PROPOSED ROOF WILL INCREASE. VERIFY.
- INSPECT EXPOSED GYPSUM DECK AND MAKE NECESSARY REPAIRS. INSTALL A MECHANICALLY FASTENED BASE SHEET, FOAM ADHERED TAPERED ISO INSULATION LAYERS. GLUE DOWN FINAL WHITE SINGLE PLY MEMBRANE ROOF WITH HEAT WELDED JOINTS AND FLASHINGS.
 - INSPECT EXPOSED LIGHT WEIGHT CONCRETE DECK AND MAKE NECESSARY REPAIRS. INSTALL FOAM ADHERED ISO INSULATION LAYERS (TAPERED AND CURVED). GLUE DOWN FINAL WHITE SINGLE PLY MEMBRANE ROOF WITH HEAT WELDED JOINTS AND FLASHINGS. WHERE INSULATION IS CURVED KEF THE UNDERSIDE OF BOARDS.
 - 8" WIDE x 6" TALL METAL GUTTER
 - 9" WIDE x 6" TALL METAL GUTTER
 - 4"Ø CORRUGATED METAL DOWNSPOUT WITH KICK-OUT TO CONCRETE SPLASH BLOCK ON ROOF BELOW.
 - 4"Ø CORRUGATED METAL DOWNSPOUT TO EXISTING PVC BOOT AT GRADE
 - 5"Ø CORRUGATED METAL DOWNSPOUT TO PVC BOOT AT GRADE. NOTE THAT BELOW GRADE STORM DRAIN PIPING AND BOOTS ARE PROVIDED AND INSTALLED IN ANOTHER PROJECT.
 - REMOVE SMOOTH METAL RECTANGULAR DOWNSPOUT KICK-OUT AT GRADE AND INSTALL ADAPTER FOR PVC BOOT. NOTE THAT BELOW GRADE STORM DRAIN PIPING AND BOOTS ARE PROVIDED AND INSTALLED IN ANOTHER PROJECT.
 - GUTTER EXPANSION JOINT PER SMACNA (1993) LAP TYPE PLATE 1-6.
 - RUN ROOF MEMBRANE UP THE MASONRY PARAPET AND OVER THE TOP OF ADDED TREATED WOOD BLOCKING. INSTALL A METAL DRIP EDGE WITH A CONTINUOUS CLEAT ON EXTERIOR. NOTE BLOCKING WILL NEED TO BE ADDED TO INSURE THAT THE ROOF IS EQUAL TO OR BELOW THE TOP OF BLOCKING.
 - PULL BACK EXISTING EPDM ROOFING AND INSTALL PROPOSED ROOF MEMBRANE OVER EXISTING WOOD BLOCKING. REINSTALL EPDM ROOF MEMBRANE OF PROPOSED AND INSTALL METAL DRIP EDGE WITH CONTINUOUS CLEAT. FLASH EXISTING EPDM MEMBRANE. DO NOT VOID THE EXISTING FIRESTONE WARRANTY.
 - CRICKET (SLOPED 1/2" PER 12") TO DIVERT WATER AROUND CURB.
 - PLUMBING VENT: EXTEND PIPE SUFFICIENT TO FLASH ABOVE ROOF. FLASH WITH PRE-MANUFACTURED BOOT.
 - GAS PIPING PENETRATING ROOF: EXTEND PIPE SUFFICIENT TO FLASH ABOVE ROOF. FLASH WITH ROOF MEMBRANE FLASHING UP PIPE AND CLAMP WITH STAINLESS STEEL CLAMPING RING. INSTALL FIELD FABRICATED METAL HOOD (UMBRELLA).
 - FLUE PIPE PENETRATING ROOF: EXTEND PIPE SUFFICIENT TO FLASH ABOVE ROOF. FLASH WITH ROOF MEMBRANE FLASHING UP PIPE AND CLAMP WITH STAINLESS STEEL CLAMPING RING. INSTALL FIELD FABRICATED METAL HOOD (UMBRELLA).
 - EXHAUST FAN: REMOVE FAN. BUILD UP CURB SUFFICIENT TO FLASH. FLASH INTO SINGLE PLY ROOFING.
 - MECHANICAL EQUIPMENT: LIFT OR REMOVE EQUIPMENT TO BUILD UP CURB OR RAIL SUFFICIENT TO FLASH. FLASH INTO SINGLE PLY ROOFING.
 - PIPING COWLING: REMOVE EXISTING COWLING TO BUILD UP CURB SUFFICIENT TO FLASH. FLASH INTO SINGLE PLY ROOFING. NOTE PIPING AND WIRING MAY NOT HAVE ENOUGH SLACK TO RISE THE CURB - SEE GENERAL NOTE 3 ABOVE.
 - PIPING SUPPORT ROD PENETRATING ROOF: FLASH WITH ROOF MEMBRANE FLASHING UP PIPE AND CLAMP WITH STAINLESS STEEL CLAMPING RING. INSTALL FIELD FABRICATED METAL HOOD (UMBRELLA).
 - PIPING SUPPORT ROD PENETRATING ROOF: REPLACE ROD WITH ONE SUFFICIENT TO FLASH INTO ROOF. FLASH WITH ROOF MEMBRANE FLASHING UP PIPE AND CLAMP WITH STAINLESS STEEL CLAMPING RING. INSTALL FIELD FABRICATED METAL HOOD (UMBRELLA).
 - REINSTALL PIPING SUPPORT BLOCK.
 - WALK WAY MATTING
 - INSTALL WALK WAY MAT UNDER SPLASH BLOCK.



3 LOOKING NORTHEAST
scale: NO SCALE - PHOTOGRAPH



2 LOOKING SOUTH
scale: NO SCALE - PHOTOGRAPH



1 LOOKING NORTH
scale: NO SCALE - PHOTOGRAPH

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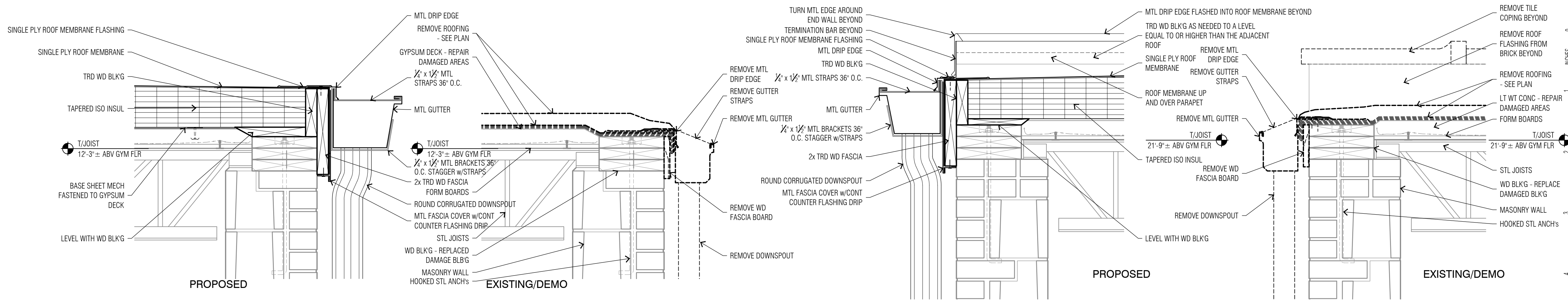
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PROPOSED
PARTIAL ROOF PLAN

sheet number
A1.0

project number 2019-007 date 10JAN2020

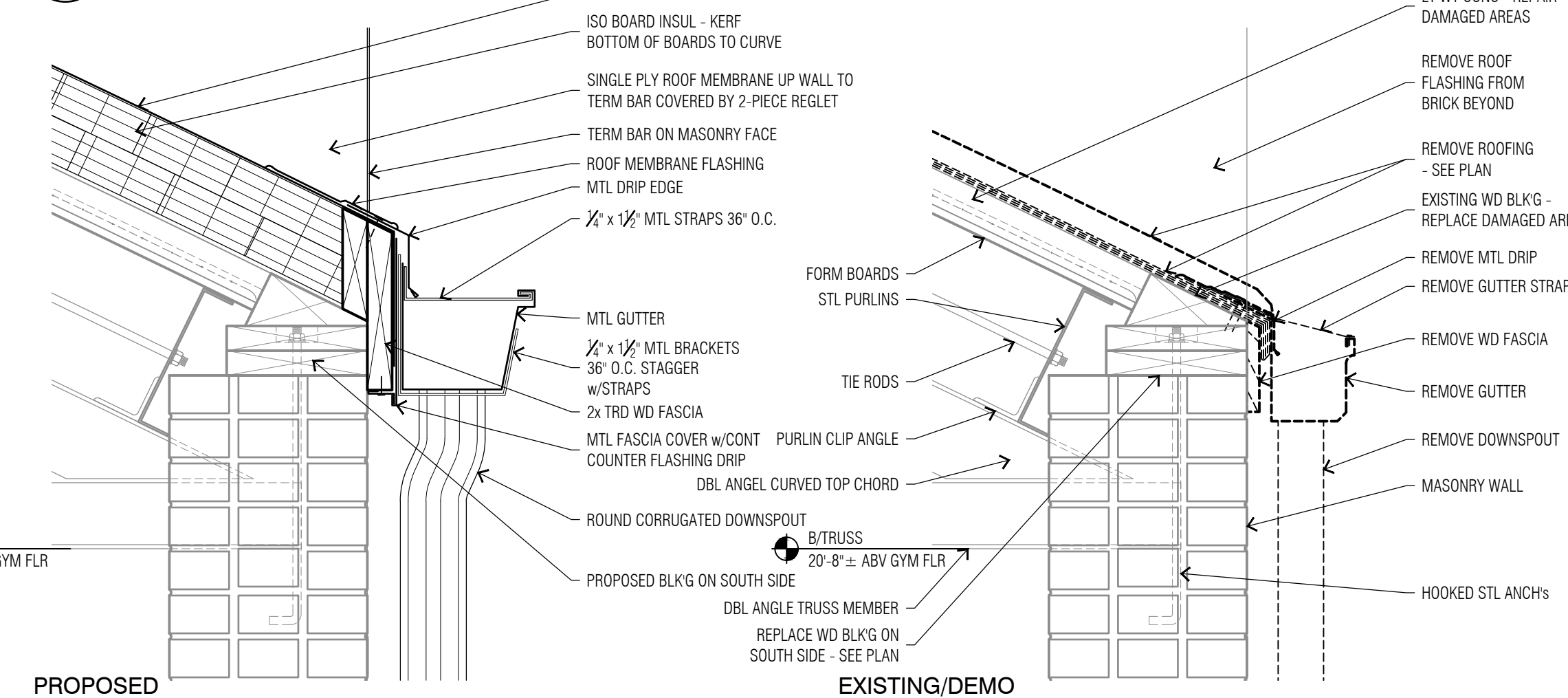
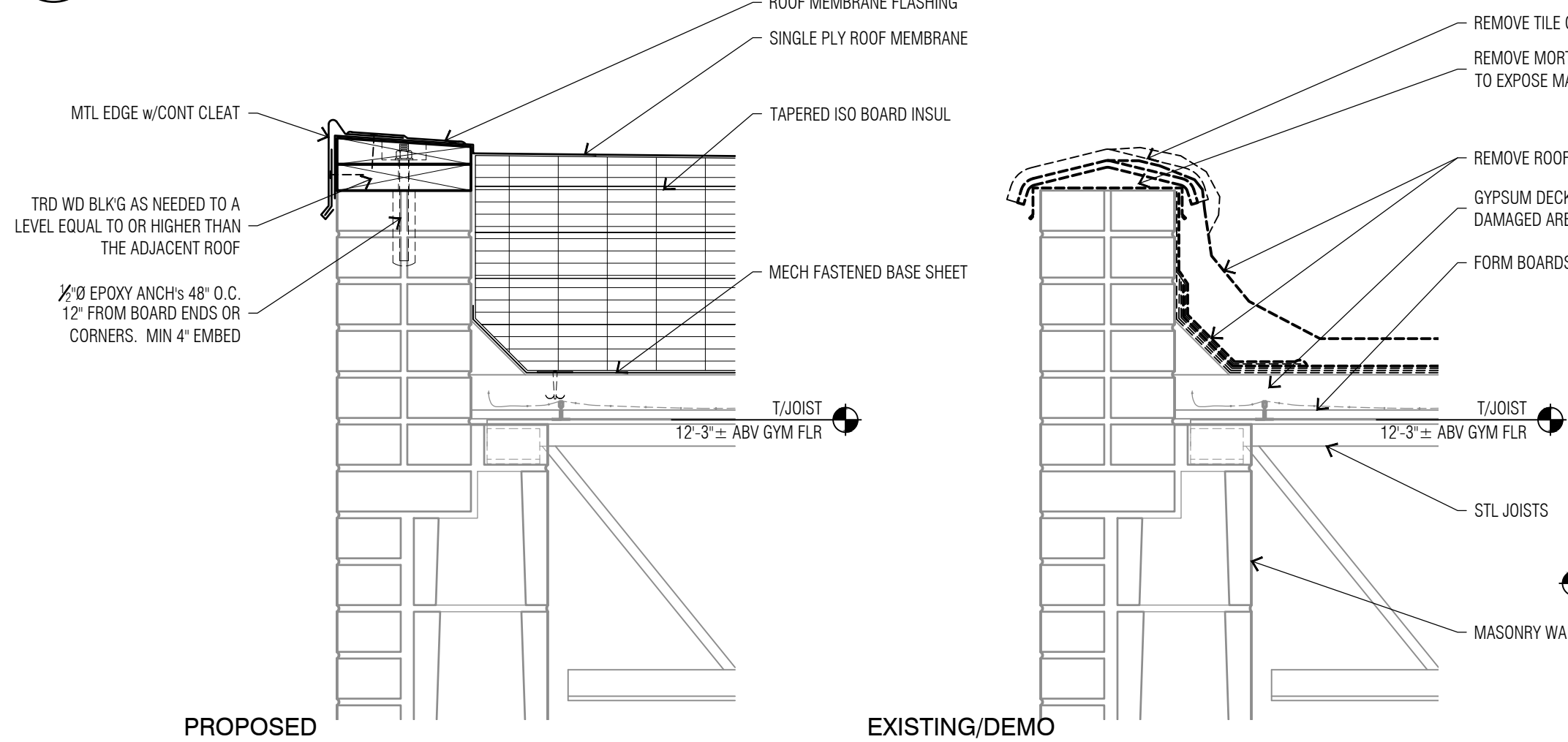
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17 PARTIAL ROOF PLAN
scale: 1/8" = 1'-0"



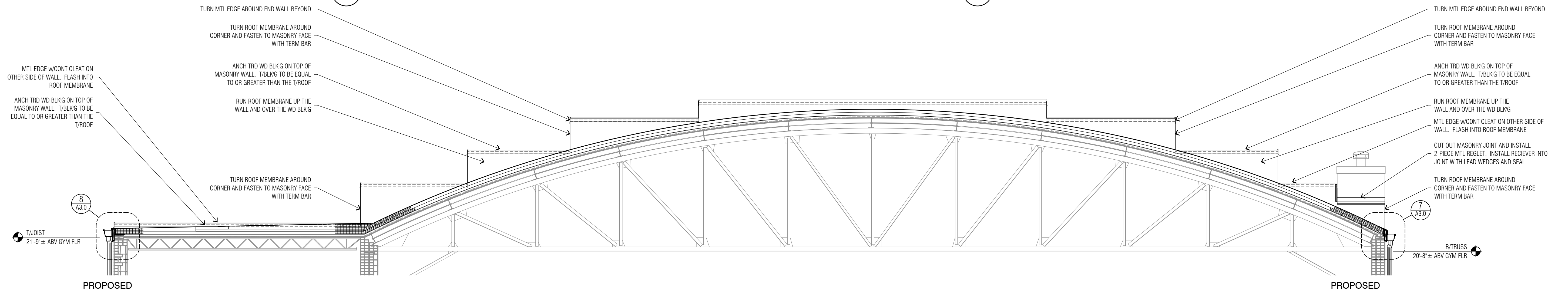
16 GUTTER DETAIL
scale: 1 1/2" = 1'-0"

8 GUTTER DETAIL
scale: 1 1/2" = 1'-0"

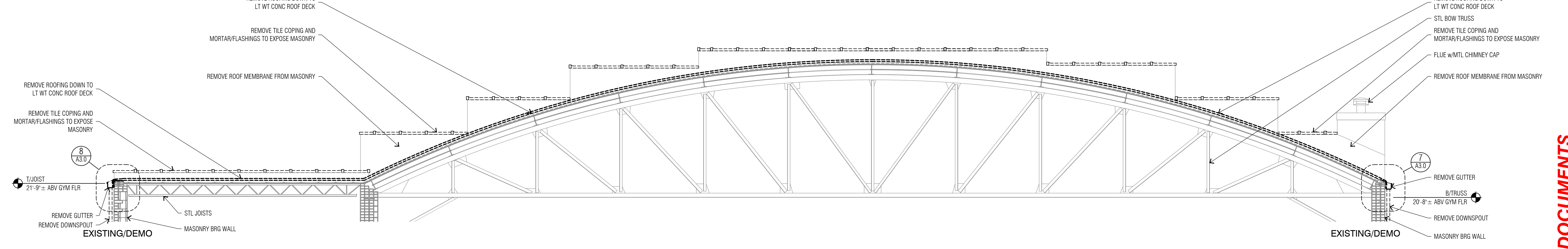


15 PARAPET DETAIL
scale: 1 1/2" = 1'-0"

7 GUTTER DETAIL
scale: 1 1/2" = 1'-0"



17 PARTIAL ROOF SECTION
scale: 1/4" = 1'-0"



general notes

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sheet title
PARTIAL SECTIONS & DETAILS

sheet number

A3.0

project number 2019-007 date 10JAN2020

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ph: 217.787.2844 fax: 217.787.2855

revisions

no.	date	description

job title
Proposed Re-roof for Portions of
Auburn Elementary School
CUSD #10

445 North 5th Street
Auburn, Illinois 62615

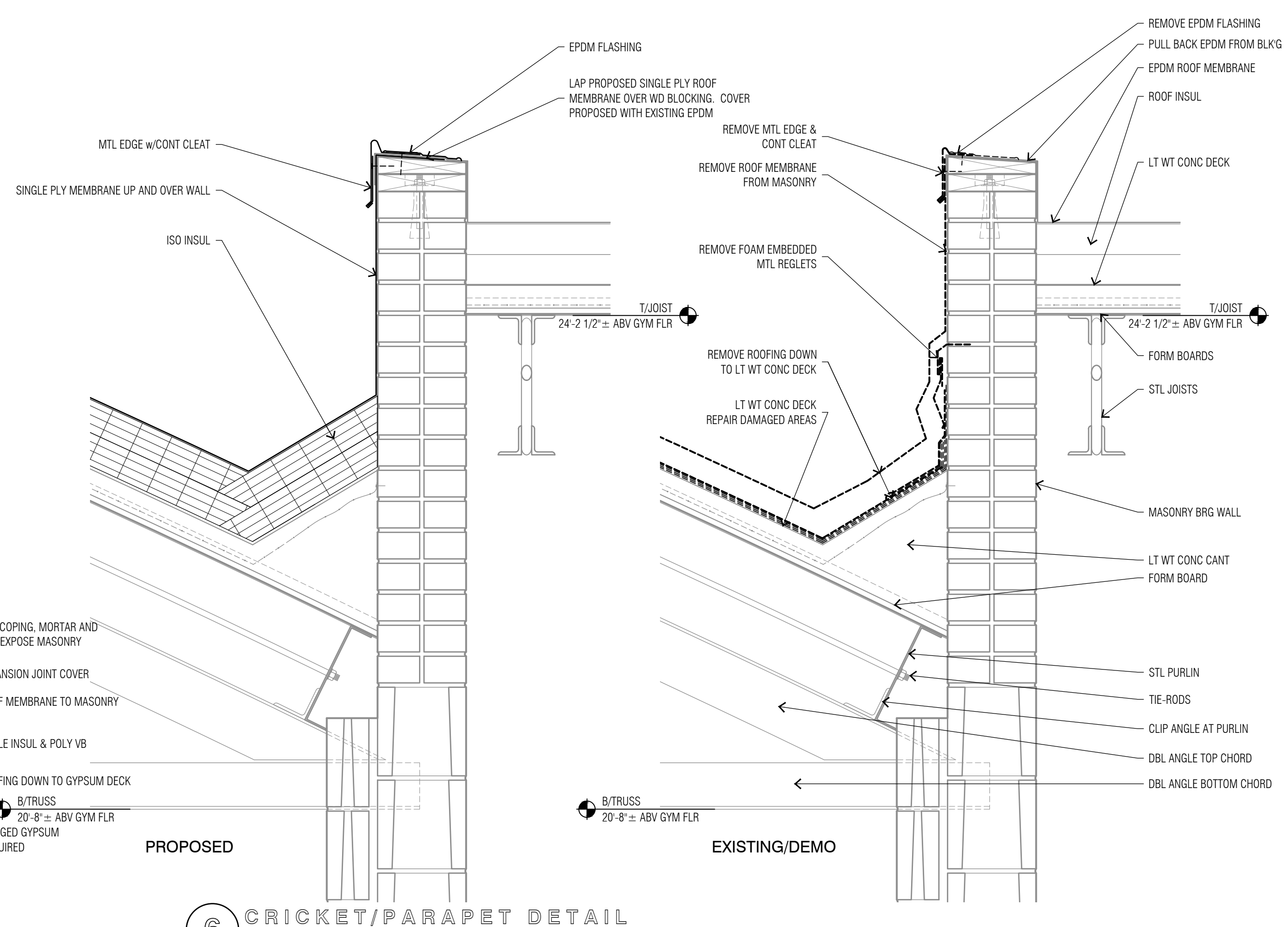
sheet title
DETAILS

sheet number

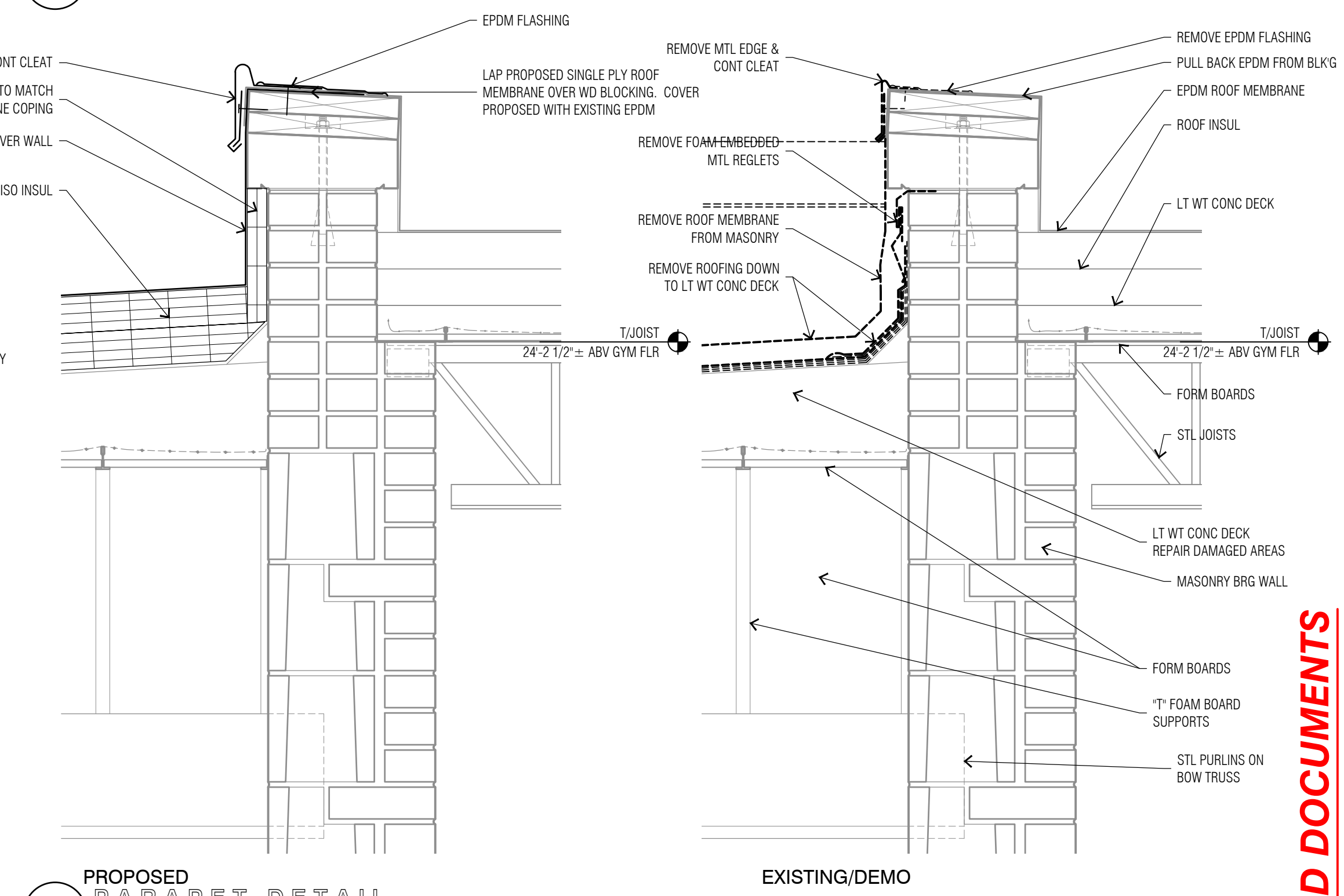
project number 2019-007 date 10JAN2020

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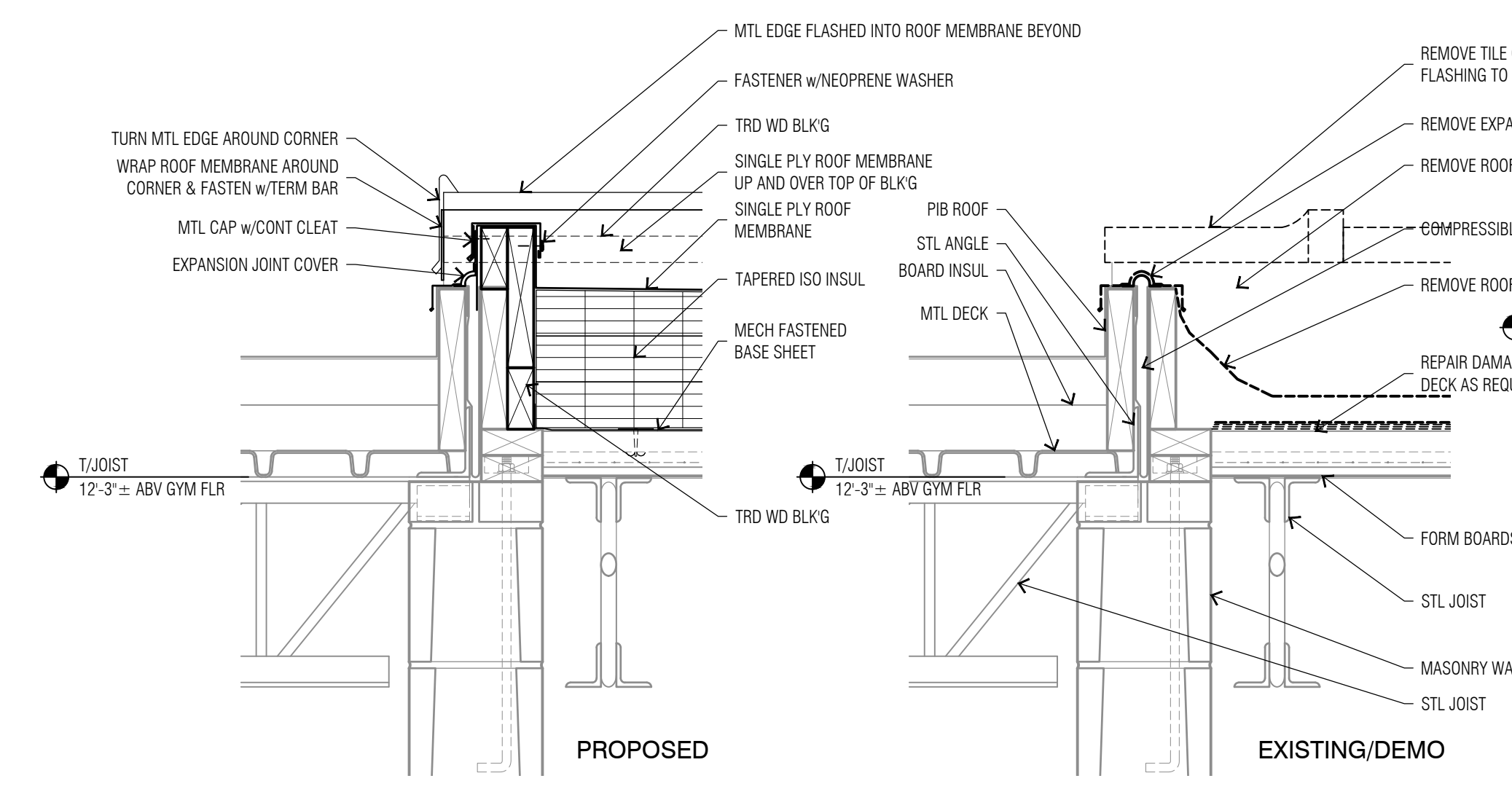
BID DOCUMENTS



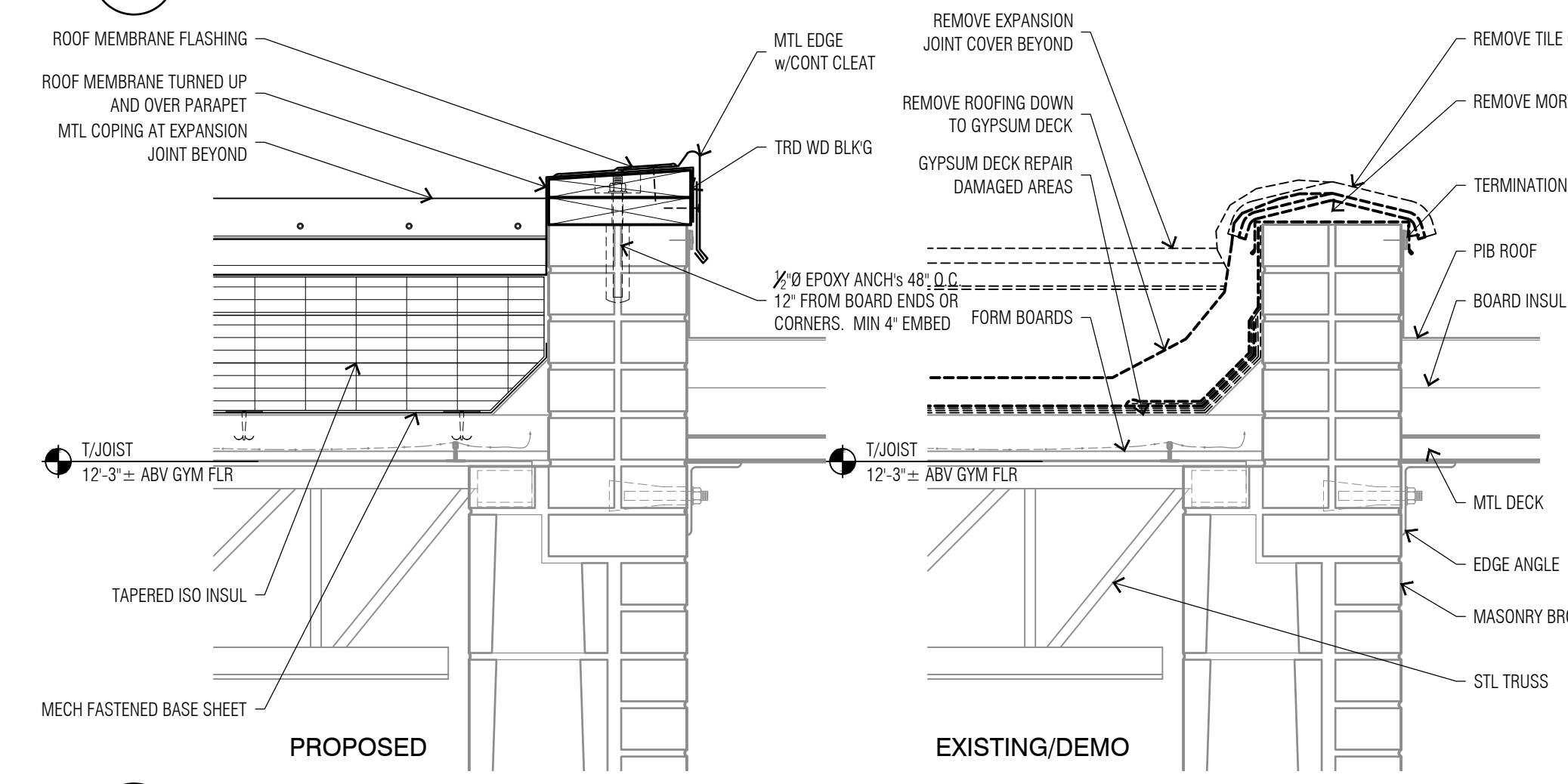
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5 PROPOSED PARAPET DETAIL
scale: 1 1/2" = 1'-0"



14 EXPANSION JOINT DETAIL
scale: 1 1/2" = 1'-0"



13 PARAPET DETAIL
scale: 1 1/2" = 1'-0"

PROJECT MANUAL

**Proposed Re-roof for Portions of
Auburn Elementary School
445 North 5th Street
Auburn, Illinois 62615**

CONTRACT: All Work

FOR:

**The Board of Education
Auburn Consolidated Unit School District 10
606 West North Street
Auburn, Illinois 62615**

By:

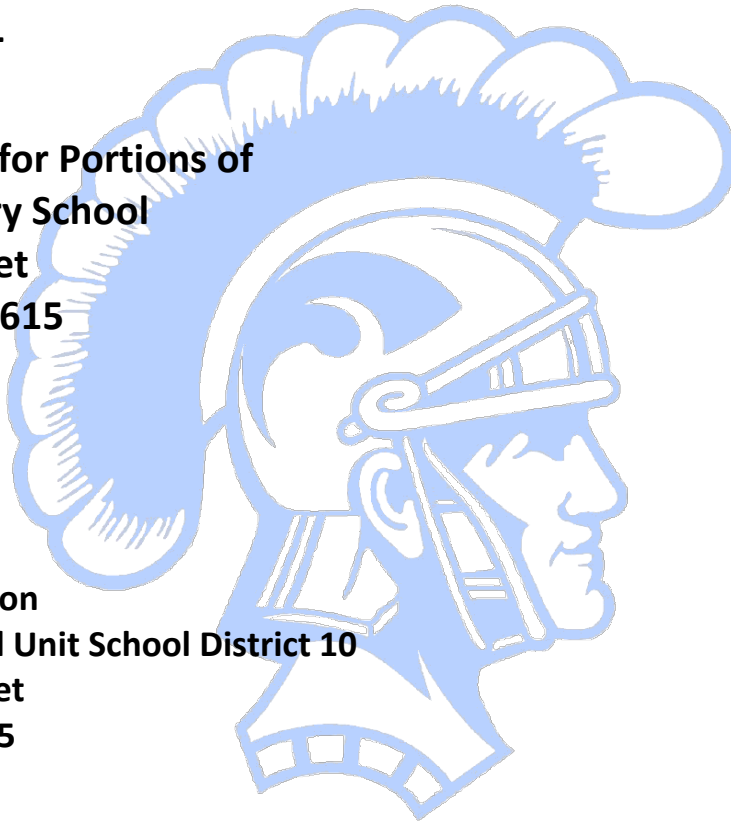
jh petty & associates, ltd. architects
3220 Executive Park Drive
Springfield, Illinois 62703

JHPA Project #2019-007

January 2020

DATE SIGNED: _____

EXPIRATION DATE: _____



PROJECT MANUAL

Proposed Re-roof for Portions of
Auburn Elementary School
445 North 5th Street
Auburn, Illinois 62615
January 2020

j.h. petty & associates, Ltd. architects
3220 Executive Park Drive
Springfield, Illinois 62703
(217) 787-2844

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- A3.0 Partial Sections & Details
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ADVERTISEMENT FOR BID

The Board of Education for Auburn C.U.S.D. No.10 will receive sealed bids at the office of the Superintendent, Darren Root, 606 West North Street, Auburn, Illinois 62615 for

PROPOSED Re-roof for Portions of Auburn Elementary School

445 North 5th Street, Auburn, Illinois 62615

Bids shall be delivered in a sealed bid envelope to the Office of the Superintendent, Darren Root, 606 West North Street, Auburn, Illinois 62615 prior to **2:00 p.m. prevailing time, Thursday, February 13, 2020.**

Generally, the work includes removal of the existing foam roof and built up roof beneath down to the existing gypsum or light weight concrete deck and installing the proposed single ply roofing membrane.

1. Properly completed Proposal Form in duplicate.
2. Bid Deposit in the amount of 10% of Bid.
3. Not less than the prevailing wage rate as determined by the Illinois Department of Labor pursuant to Illinois Revised Statutes, Ch. 489, Sec. 39s-1 et. seq.

Specifications and Drawings are available upon request from the Office of the Architect, j.h. petty & associates, ltd. architects, 3220 Executive Park Drive, Springfield, Illinois 62703, (217) 787-2844 (usj@jhpa.biz).

A non-mandatory **pre-bid conference** will be held at Auburn Elementary School on **Wednesday January 29, 2020 at 10:00 a.m.** for all prospective bidders.

All Bidders are advised that all work of this Contract shall be subject to the provisions of the "Illinois Prevailing Wage Act". Prevailing wage rates have been determined and are on file at the Office of the State of Illinois Department of Labor, telephone (217) 782-6206.

All Bidders shall submit and enclose with their bid a notarized certification that the Contractor is not barred from bidding on the Contract as a result of a violation of either Section 33 E-3 or 33 E-4 of Article 33E, Public Act 85-1295 (Senate Bill 2002) effective January 1, 1989. Certification is located on the Bid Form, Section 00 50 00, of the Project Manual.

Bids shall be accompanied by a bid bond, bank draft, certified check or cashier's check in the amount of 10% of Bid, made payable to The Board of Education Auburn C.U.S.D. No. 10. Failure of Bidders to submit bid bond, certified check or cashier's check in amount to cover proposals bid upon is cause for rejection of bid.

Successful Bidder will be required to provide Surety Performance Bond and Labor and Material Payment Bond, each equal to 100% of the contract cost on prescribed forms within ten (10) days after notice of acceptance is issued by Owner. Surety on bond shall be by a duly authorized U.S. Treasury Backed company licensed to do business in the State of Illinois, acceptable to Owner.

The Auburn Board of Education reserves the right to reject any or all bids and reserves the right to waive any irregularity in bidding, which in their considered opinion

is warranted. No bid shall be withdrawn for sixty (60) days after opening of bids without written consent of the Owner.

Documents also on file at:

Central Illinois Plan Room
1620 S. 5th Street
Springfield, Il. 62703
(217) 679-1077
www.ciplanroom.com

SECTION 00 50 00 – BID FORM

Proposed Re-roof for Portions of
Auburn Elementary School
445 North 5th Street
Auburn, Illinois 62615

NON-MANDATORY PRE-BID CONFERENCE: Wednesday January 29, 2020 at 10:00 a.m. local time

DUE DATE: Thursday February 13, 2020 at 2:00 p.m. local time

DELIVERED TO: The Board of Education for Auburn C.U.S.D. No. 10, Office of the Superintendent, Darren Root, 606 West North Street, Auburn, Illinois 62615

BIDDER:

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: () _____ FAX: () _____

Having examined all bidding documents and project manual prepared by J.H. Petty & Associates, Ltd., 3220 Executive Park Drive, Springfield, Illinois 62703 for the project entitled above, dated June 2019. Visited the site and examined all conditions affecting work, the undersigned proposes to furnish all labor, materials, equipment required by said work for the stipulated sum of:

BASE BID (TPO roof):

_____ Dollars (\$ _____)

ALTERNATE BID 1 (TPA roof) ADD or DEDUCT (circle one) from the BASE BID:

_____ Dollars (\$ _____)

UNIT PRICE 1 (Repair light weight concrete decking):

_____ Dollars (\$ _____) per Square Foot

UNIT PRICE 2 (Repair gypsum decking)

_____ Dollars (\$) _____) per Square Foot

UNIT PRICE 3 (Replace deteriorated wood blocking)

_____ Dollars (\$) _____) per Board Foot

The bidder acknowledges receipt of the following addenda:

Addendum #1 _____

Addendum #2 _____

Addendum #3 _____

Taxes

This project is tax exempt for all materials and equipment purchased. The Superintendent will provide a tax-exempt identification number.

Agreement:

If undersigned is notified of bid acceptance within 60 days after the bid opening date, he agrees to execute a Contract for the above work, for the stated compensation, in the form of American Institute of Architects Owner – Contractor Agreement, AIA Document A101.

Time of Completion:

If undersigned negotiates above mentioned Agreement with the Owner, he agrees to begin work within ten (10) days after notice to proceed and he agrees to final completion of work within forty-five (45) calendar days in accordance with the terms and conditions of the bidding documents.

Insurance Requirements

It shall be the responsibility of the contractor to furnish the owner with Certificates of Insurance, showing the owner as additional named insured, as its interests may appear, evidencing that the contractor has obtained the following insurance coverage from companies holding a General Rating of “A” or better as set forth in the most current issue of Best’s Key Rating Insurance Guide. Such certificates will provide that the owner will receive at least thirty (30) days prior written notice of any material change in, or cancellation of, such insurance:

1. Comprehensive General Liability Insurance including a Broad Form endorsement and a Broad Form Property Damage endorsement with limits not less than \$2,000,000.00 Combined Single Limit.

2. Worker's Compensation Insurance in accordance with applicable state requirements.
3. Employer's Liability Insurance in an amount not less than \$1,000,000.00.
4. Comprehensive Automobile Liability Insurance including owned, non-owned and hired coverage in an amount not less than \$1,000,000.00 Combined Single Limit.
5. Contractor shall also satisfy any insurance requirements necessitated by any pertinent governmental authority.
6. Contractor shall maintain scaffolding and demolition insurance if scaffolding or demolition is required to complete the Work.

Identification of Proposed Supervisory Personnel

Superintendent / Coordinator for all work shall be the following:

Name: _____

Address: _____

Date: _____

Firm: _____

Signed: _____

Title: _____

Witness: _____

PUBLIC ACT 85-1295 (720 ILCS 5/33E-3, 33E-4)

The undersigned provider certifies that it has not been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, or any unit of government in the State of Illinois, nor has the provider made an admission of guilt of such conduct which is a matter of record, nor has an official, agent, or employee of the provider committed bribery or attempted bribery on behalf of the firm and pursuant to the direction or authorization of a responsible official of the provider. The undersigned provider further certifies that it is not barred from submitting a proposal or entering into a Contract as a result of a conviction of Illinois State Laws prohibiting bid-rigging or bid-rotating.

BIDDER: _____ WITNESS: _____

NOTARY PUBLIC

END OF SECTION

SECTION 00 60 00 – INSTRUCTIONS FOR BIDDERS

1. **GENERAL:**

A. Proposals entitled to consideration must be in accordance with the following instructions:

1. Proposals shall be made upon the form provided herein, and all blank spaces in the form shall be fully filled, numbers shall be stated both in writing and in figures. All signatures shall be in longhand and the completed form shall be without alteration or erasure.
2. Proposals shall not contain any capitulation of the work to be done. No oral, telegraphic, or telephonic proposals or modifications will be considered.
3. Proposals shall be addressed to the Owner and shall be delivered as described in the Advertisement for Bids, sealed within the envelope furnished, and bearing the title of the work, trade, and name of Bidder.

2. **DEFINITIONS:**

- A. Definitions set forth in the General Conditions of the Contract Documents are applicable to these Instructions to Bidders.
- B. Bidding documents include the Advertisement for Bids, Instructions to Bidders, the Bid Proposal Form, Project Drawings and Specifications and any Addenda issued prior to opening of bids.
- C. Addenda are written, or graphic instructions issued prior to the award of the bid which modify or interpret the bidding documents with deletions, clarifications or corrections. Addenda will become part of the Contract Documents as though it had been issued at the same time and incorporated integrally therein.
- D. When the word Owner occurs in the contract documents, it shall apply to The Board of Education, Auburn Consolidated Unit School District No. 10, or its authorized representatives.
- E. Where the word Contractor occurs, it shall apply to any firm or individual having a direct contract with the Owner.
- F. Where the word Subcontractor occurs, it shall apply to any firm or individual having a direct contract with the Contractor.

3. **BIDDER'S REPRESENTATION:**

- A. By submitting a proposal, each Bidder represents that he has carefully examined the drawings and specifications, including those of other trades for work which must be coordinated with his work or might come under his contract.
- B. Each Bidder, by submitting his bid, represents that he has visited the site and familiarized himself with all existing conditions and limitations under which the work is to be performed.

4. **BIDDING PROCEDURES:**

- A. A bid is invalid if it has not been deposited at the designated location prior to the time and date for receipt of bids indicated in the Invitation to Bid, or prior to any extension thereof issued to the bidders.
- B. Prior to the receipt of bids, Addenda will be emailed, mailed or delivered to each person or firm recorded by the Architect as having received the bidding documents and will be made available for inspection wherever the bidding documents are kept available for that purpose.
- C. Unless otherwise provided no Bidder shall modify, withdraw or cancel his bid or any part thereof for a period of sixty (60) days after the opening of bids.

5. **EXAMINATION OF BIDDING DOCUMENTS:**

- A. Each Bidder shall examine the bidding documents carefully and, not later than ten (5) days prior to the date for receipt of bids, shall direct his requests to the Architect for the interpretation or correction of any ambiguity, inconsistency or error therein which he may discover. Any interpretation or correction will be issued in an Addendum by the Architect, published and circulated to all prospective bidders who have requested bid packets. Only a written interpretation or correction by Addendum shall be binding. No interpretation or correction shall be given by any other method. Where such provisions differ from those of the original contract documents, any addenda shall govern and take precedence. A Request for Clarification Form is attached at the end of this Section.

6. **SUBSTITUTIONS:**

- A. Each bidder represents that his bid is based upon the materials and equipment described in the bidding documents.
- B. See Section 01 63 00 Substitutions and Product Options
- C. If the Architect approves any proposed substitution, such approval will be set

forth in an Addendum.

7. **QUALIFICATION OF BIDDERS:**

- A. If required, a Bidder shall submit to the Architect a properly executed Contractor's Qualification Statement, AIA Document A305, dated March 1979.
- B. The competency and responsibility of a Contractor and of his proposed subcontractors may be considered in making an award of contract.

8. **REJECTION OF BIDS:**

- A. The Bidder acknowledges the right of the Owner to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the Bidder recognizes the right of the Owner to reject a bid if the Bidder fails to furnish the required bid security, or to submit the data required by the bidding documents, or if the bid is in any way incomplete or irregular.

9. **ACCEPTANCE OF BIDS:**

- A. If at the time a Contract is to be awarded, the lowest Base Bids, including listed alternates, submitted by responsible bidders, do not exceed the amount of funds then estimated by the Owner as available to finance the Contract, the Contract will be awarded based upon the Base Bids and the listed alternates. If, however, the lowest Base Bids and listed alternates exceed such amount, the Owner may reject all bids, or delete alternate.

10. **SUBMISSION OF POST-BID INFORMATION:**

- A. Upon acceptance of a bid by the Owner the successful Bidder shall within ten (10) days thereafter, submit the following:
 - 1. A schedule of values for each major item of work included in the contract.
 - 2. A designation of the work to be performed by the successful Bidder with his own forces.
 - 3. A verified list of names of the Subcontractors or other persons or organizations proposed for such portions of the work as may be designated in the Bidding Documents, or if no portions are so designated, the names of the Subcontractors proposed for the principal portions of the work. The successful Bidder will be required to establish to the satisfaction of the Architect and the Owner the reliability and responsibility of the proposed Subcontractors to furnish and perform the

work described in the sections of the specifications pertaining to such proposed contractor's respective trades. Prior to the award of the contract, the Architect will notify the bidder in writing if either the Owner or the Architect, after due investigation, has reasonable objection to any person or organization on such list. If the Owner or Architect refuses in writing to accept such person or organization, the Bidder may, at his option, withdraw his bid without forfeiture of.

4. If the Bidder cannot submit an acceptable substitution of subcontractor which does not result in an increase in his bid price to cover the difference in cost occasioned by such substitution, the Owner, shall reject all bids. The accepted list of proposed Subcontractors, persons or organizations must be used on the work for which they were assigned and shall not be changed except with the written approval of the Owner and the Architect.

11. **BID SECURITY:**

- A. The Owner shall require each Bidder to furnish a bid security in the form of a certified check, bank draft, or bid bond in the amount of 10% of the base bid. This security will be forfeited if the successful Bidder does not execute a contract with the Owner or fails to provide satisfactory Performance and Payment Bonds within ten (10) days after notice of acceptance of his bid by the Owner.

12. **PERFORMANCE BOND/LABOR AND MATERIAL PAYMENT BOND:**

- A. The Owner shall require the successful Bidder to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising there under. The Bidder shall deliver the required bonds to the Owner not later than the date of execution of the Contract, or if the work is commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the work, submit evidence satisfactory to the Owner that such bonds will be issued.
- B. The successful Bidder shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney indicating the monetary limit of such power.

13. **LABOR STATUTES, RECORDS, RATES:**

- A. All Contractors shall familiarize themselves with all provisions of all Acts, referred to in this paragraph and in addition shall make an investigation of labor conditions and all negotiated labor agreements which may exist or are contemplated at this time. Nothing in the Acts referred to in this paragraph shall be construed to prohibit the payment of more than the prevailing wage scale.

- B. In the employment and use of labor, the Contractor shall conform to all Illinois Statutory requirements regarding labor, including, but not limited, to the following Acts:
1. Equal Employment Opportunity-Applicable Laws: State of Illinois policy and law, set out in the Illinois Constitution, Article 1, Section 17, requires that employment opportunities be free from discrimination. The Equal Employment Clause contained in the Contract Documents is intended to insure compliance with the applicable laws and with the Illinois Human Rights Commission's Rules and Regulations for Public Contracts.
 - a. The Fair Employment Practices Act, as amended (775 ILCS 5/1-101)
 - b. An Act to prohibit discrimination and intimidation on account of race, creed, color, sex or national origin in employment under contracts for public buildings or public works, as amended (775 ILCS 10/1)
 - c. An Act to prohibit unjust discrimination in employment because of age and providing penalties, as amended.(775 ILCS 5/1-101)
 2. An Act to give preference to veterans of the United States Military and Naval Service in appointments and employment upon public works by, or for the use of, the State or its political subdivision, as amended (330ILCS 55/1.)
 3. The Service Men's Employment Tenure Act, as amended (330 ILCS 60/1).
 4. An Act regulating wages of laborers, mechanics, and other workmen employed in any public works by the State, County, City, or any public body or any political subdivision or by anyone under contract for public works, as amended (820 ILCS 130/1)) which provides in part that the contractor, subcontractors, etc., shall pay to all laborers, workmen and mechanics performing work under the contract, not less than the prevailing rate of wages as determined by the Illinois Department of Labor. The contractor shall continually update and prominently post the current Schedule of Prevailing Wages at the project site for the duration of the work. The Illinois Department of Labor Prevailing Wages for Sangamon County
 5. In no event shall minors be employed except as authorized under an Act to regulate the employment of children and to repeal an Act herein named, as amended (820 ILCS 205/1).

6. In no event shall convict labor be employed except as authorized under Unified Code of Corrections, as amended (730ILCS 5/1-1-1.).

C. Pursuant to Illinois Compiled Laws, Chapter 820, Section 130/5 the Contractor and each subcontractor shall make and keep, for a period of not less than 3 years, records of all laborers, mechanics, and other workers employed by them on the project; the records shall include each worker's name, address, telephone number when available, social security number, classification or classifications, the hourly wages paid in each pay period, the number of hours worked each day, and the starting and ending time of work each day, which records shall be open at all reasonable hours to inspection by the Owner, its officers and agents and to agents of the Illinois Department of Labor. In addition, the Contractor and each subcontractor shall submit monthly in person, by mail, or electronically a certified payroll to the owner.

14. The plans and Specifications for the above referenced project are available for review at the following locations:

Central Illinois Plan Room
1620 S. 5th Street
Springfield, Il. 62703
(217) 679-1077
www.ciplanroom.com

END INSTRUCTIONS TO BIDDERS.

REQUEST FOR CLARIFICATION

(Request for Clarifications shall be sent to the Architect via fax: (217) 787-2855 or email: jhp@jhpa.biz)

Proposed Re-roof for Portions of Auburn Elementary School, 445 North
5th Street, Auburn, Illinois 62615

Jhpa# 2019-007

THIS PORTION TO BE COMPLETED BY TRADE CONTRACTOR/BIDDER

Date of
Request: _____
Name of bidder requesting clarification:

Company

Phone Number

Contact Person

Fax Number

Please check one of the following Clarification Categories:

- Information not shown on Contract Documents
- Interpretation of Contract Requirements
- Conflict in Contract Requirements
- Coordination Issues
- Substitution (see Spec. Section 01 63 00 – Substitutions and Product Options)

Description of Request for Clarification:

THIS PORTION TO BE COMPLETED BY ARCHITECT/ENGINEER

Architect’s reply to Request for Clarification:

- The above reply will **not** be included in an Addendum.
- The above reply **will** be included in Addendum No. _____

SECTION 00 70 00 – GENERAL CONDITIONS

1. General

- a. The general condition of the contract for Construction, AIA document A201, 2007 Edition, Articles 1 through 15 inclusive, is a part of the contract document, is incorporated herein as fully as if here set forth and is referred to as “The General Conditions”.

END OF SECTION

DIVISION 0 – BIDDING AND CONTRACT REQUIREMENTS
SECTION 00 80 00 – SUPPLEMENTARY CONDITIONS
(AIA A201)

The following supplements modify AIA Document A201, *General Conditions of the Contract for Construction* (2007 Edition). Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered provisions remain in effect.

ARTICLE 1
GENERAL PROVISIONS

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add following Subparagraphs:

- 1.2.4 In event of conflicts or discrepancies among Contract Documents, interpretations will be based on following priorities:
- .1 Agreement.
 - .2 Addenda, with those of later date having precedence over those of earlier date.
 - .3 Supplementary Conditions.
 - .4 General Conditions of the Contract for Construction.
 - .5 Drawings and Specifications.
- 1.2.5 If Drawings and Specifications are not in concurrence regarding quantity or quality, Contractor shall request interpretation from Architect.
- 1.2.6 Drawings are generally to scale; however they should not be scaled to determine dimensions. Symbols are used to indicate connections, fittings, and fastenings included as part of the Work. Diagrammatic indications of piping, ducts, conduit, and other similar items are subject to adjustment to obtain required grading, passage over, under or around obstructions, to avoid exposure in finished areas, or unsightly, obstructing conditions. Contractor shall be responsible for coordination of these adjustments and recommending alternate solutions whenever design details affect construction feasibility, costs, or schedules.
- 1.2.7 Execution of the Construction Contract by the Contractor is a representation that he has carefully reviewed the Contract Documents and clarified with the Owner all conflicts, uncertainties and discrepancies. Those found after execution of the Contract shall be brought to the Owner's attention for clarification before proceeding, the Owner's decision being final.

**ARTICLE 3
CONTRACTOR**

3.1 GENERAL

Add following Subparagraph:

- 3.1.4 Direct communication between Owner and Contractor that affect performance or administration of the Contract shall be made or confirmed in writing with copies forwarded to Architect.

3.4 LABOR AND MATERIALS

Delete Subparagraph 3.4.2 and substitute the following:

- 3.4.2 The Contractor may make substitutions only after evaluation by Architect and written approval by the Owner. After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the Specifications, Section 01 63 00. A request for substitution constitutes representation that Contractor:
- .1 Has investigated proposed product and determined that it is equal or superior in all respects to specified product.
 - .2 Shall provide identical warranty as required for specified product.
 - .3 Shall coordinate installation and make changes to other Work which may be required.
 - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
 - .5 Certifies that proposed product will not affect or delay Construction Progress Schedule.
 - .6 Shall pay for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

Add following Subparagraph:

- 3.10.4 See Section 01 33 00 - Submittal Procedures for additional requirements.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add following Subparagraph:

3.11.1 See Section 01 78 00 - Project Record Documents for additional requirements.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.10 Delete third sentence and substitute the following: "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 performance and design criteria that such services must satisfy."

3.12.10 Delete sixth sentence and substitute the following: "The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and the Architect specified to the Contractor performance and design criteria that such services must satisfy."

Add following Subparagraph:

3.12.11 See Section 01 33 00 - Submittal Procedures for additional requirements.

3.14 CUTTING AND PATCHING

Add following Subparagraph:

3.14.3 See Section 01 73 10 - Cutting and Patching for additional requirements.

3.15 CLEANING UP

Add following Subparagraph:

3.15.3 See Section 01 74 00 - Cleaning for additional requirements.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4.2 ADMINISTRATION OF THE CONTRACT

4.2.1 Add the following to Subparagraph 4.2.1: "The Architect's services and administration of the Contract shall be limited in accordance with the executed agreement between the Owner and the Architect. Certification under the Contract by the Architect shall not be considered a warranty or guarantee by the Architect but shall be construed as the reasonable exercise of professional judgment."

- 4.2.2 Replace the first sentence with: "The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner as stipulate in the Owner-Architect Agreement, 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 bringing performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents."
- 4.2.3 Replace the second sentence with: "The Architect will not be responsible for the Contractor's schedules, or the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents."
- 4.2.7 Insert the following ahead of the last sentence of Subparagraph 4.2.7: "The Architect's review of a submittal that includes a warranty statement within Product Data or a Shop Drawing shall not constitute an acceptance or approval of the warranty statement unless otherwise specifically stated in writing by the Architect."

ARTICLE 8 TIME

8.1 DEFINITIONS

Delete Subparagraph 8.1.4 and substitute following:

- 8.1.4 Except where specifically indicated as "working day" in Contract Documents, the term "day" shall mean "calendar day".

8.2 PROGRESS AND COMPLETION

Add the following subparagraphs:

- 8.2.4 The Contractor must agree to commence work within seven (7) days following receipt of a written "Notice to Proceed."
- 8.2.5 Owner and Contractor recognize that time is of the essence and that the Owner will suffer financial loss and substantial damages if the work is not completed within the time stated in the Agreement, such time commencing from the Notice to Proceed, plus any extensions thereof allowed by Change Order.

ARTICLE 9 PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Add following Subparagraph:

9.2.1 See Section 01 29 00 - Payment Procedures for additional requirements.

9.6 PROGRESS PAYMENTS

9.6.1 Add the following to Subparagraph 9.6.1: "The Owner shall make such progress payments until the scheduled time (including time extensions made by change order) for Substantial Completion. If the Work is not substantially complete at this time, the Owner will not make further progress payments until the Work is substantially complete."

9.8 SUBSTANTIAL COMPLETION

Add new sentences at end of Subparagraph 9.8.2 as follows:

Operation and maintenance data shall have been submitted and approved, system demonstrations have been performed, and certificate of occupancy have been issued before Substantial Completion can be achieved. See Section 01 77 00 - Closeout Procedures for additional requirements.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.3 WRITTEN NOTICE

Add following Subparagraph:

13.3.1 Proposals, approvals, instructions, requests, claims, demands, and other notices shall be made in writing.

ARTICLE 15 CLAIMS AND DISPUTES

15.1 CLAIMS

15.1.2 Change "21 days" to read "10 days."

15.1.5.3 Add the following to Subparagraph 15.1.5.3: "Delays will be allowed on a tentative basis only and a final decision will be reserved until the Project is substantially completed. Weather conditions prevailing throughout the entire contract period will be incorporated, including consideration for abnormally mild conditions to offset abnormally severe."

END OF SECTION

SECTION 01 10 00 – PROJECT SUMMARY

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work includes (see the drawings and specifications for specifics):
 - 1. Remove the foam and built-up roof down to the gypsum or light weight concrete roof deck and repair decks via unit price.
 - 2. Replace the gutters and downspouts.
 - 3. Install proposed roof: base sheet, recovery board and single ply roof membrane with roof membrane flashings, metal flashings and install gutters.

1.2 IDENTIFICATION

- A. Owner's Representative: Throughout the specifications, the term "Owner's Representative" has been used instead of the term "Architect."

1.3 CONTRACTOR'S DUTIES

- A. Except as specifically noted, provide and pay for:
 - 1. Labor, materials and equipment.
 - 2. Tools, construction equipment and machinery.
 - 3. Water, heat, and utilities required for construction.
 - 4. Other facilities and services necessary of proper execution and completion of work.
- B. Secure and pay for, as necessary for proper execution and completion of Work, and as applicable at time of receipt of bids:
 - 1. Government Fees including inspection fees.
 - 2. Licenses.
- C. Give required notices.
- D. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of Work.
- E. Promptly submit written notice to Owner's Representative of observed variance of Contract Documents from legal requirements. Assume responsibility for Work known to be contrary to such requirements, without notice.

1.4 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for Work, for storage, and for access, to allow for:
 - 1. Work by other contractors.
- B. Coordinate use of premises under direction of Owner.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.

- D. Obtain and pay for use of additional storage or work areas needed when required for operations under this Contract.

PART 2 PRODUCTS and PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 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.

1.2 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. Types of allowances include the following:
 - 1. Contingency allowance.
- C. Related Requirements:
 - 1. Section 01 22 00 "Unit Prices" for procedures for using unit prices.

1.3 SELECTION AND PURCHASE

- A. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- B. Purchase products and systems selected by Architect from the designated supplier.

1.4 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 CONTINGENCY ALLOWANCES

- 1. Allowance to be added to the bid price for use by the Owner to pay for repairing deteriorated conditions uncovered during construction, unit price work, or any other work deemed necessary.

1.7 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 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 work.

3.3 SCHEDULE OF ALLOWANCES

- A. Contingency Allowance: \$5,000.00

END OF SECTION

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 01 25 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 01 45 00 "Quality Control" for general inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price 1: Remove deteriorated light weight concrete roof deck and replace with new.
 - 1. Description: Remove deteriorated light weight concrete roof deck and replace with new Unit of Measurement: Square foot
 - 2. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."
- B. Unit Price 2: Remove deteriorated poured gypsum deck and replace with new.
 - 1. Description: Remove deteriorated poured gypsum deck and replace with new
 - 2. Unit of Measurement: Square foot
 - 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."
- C. Unit Price 3: Remove deteriorated wood blocking and replace with new treated wood blocking
 - 1. Description: Remove deteriorated wood blocking and replace with new treated wood blocking
 - 2. Unit of Measurement: Board foot
 - 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 01 21 00 "Allowances."

END OF SECTION

SECTION 01 25 00 – CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 SUBMITTALS

- A. Submit name of individual authorized to accept changes, and to be responsible for informing others in Contractor's employ of changes in the Work.
- B. Submit names of individuals responsible for informing Contractor's employees and affected subcontractors of Contract clarifications and modifications.
- C. Change Order Forms: AIA G701 Change Order.

1.2 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

- A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with enough data to allow evaluation of the quotation.
- C. On request, provide additional data to support computations:
 - 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.
- D. Support each claim for additional costs, and for work done on a time and material basis, 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.

1.3 CHANGE PROCEDURES

- A. Minor Changes in Work:
 - 1. Owner's Representative will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 2007 Edition, Paragraph 7.4 by issuing supplemental instructions on AIA Form G710, Architect's Supplemental Instructions, 1992 Edition.
 - 2. Procedure: Document is prepared and signed by Owner's Representative and distributed to Owner, and Contractor. Architect's Supplemental Instructions are effective upon receipt.
- B. Proposal Request:

1. Form: AIA Document G709, Proposal Request.
 2. Description: Written proposed change of Work within Contract scope consisting of additions, deletions, and other revisions. Proposal Request is for information only and does not authorize changes in Contract Sum or Contract Time. Contractor evaluates proposal for pricing and scheduling impact.
 3. Procedure:
 - a. Document is prepared and signed by Project Manager. Copies are sent to Owner, Owner's Representative, and Contractor.
 - b. Contractor shall review Proposal Request and submit Change Order Request and Proposal Worksheet Detail and Summary Forms with proposed changes in Contract Sum and Contract Time.
 - c. Prepare and submit Change Order Request and Proposal Worksheet Detail and Summary Forms to Owner's Representative within 20 days of Proposal Request receipt. Proposed Contract Sum and Contract Time changes quoted by Contractor shall remain valid for 30 days from receipt by Owner.
- C. Change Order Request:
1. Form of Request:
 - a. Change Order Request: Describes and summarizes Contractor's proposed changes. Indicates changes in Contract Sum and Contract Time.
 - b. Proposal Worksheet Summary: Summarizes labor, materials, overhead and profit, bonds, and insurance of proposed Contract additions and deductions.
 - c. Proposal Worksheet Detail: Summarizes labor and material costs of each subcontractor involved in proposed change.
 2. Description: Written proposed change of Work consisting of additions, deletions, and other revisions. Submit Change Order Request to Owner's Representative for conditions which require Contract Document modifications. Include proposed changes in Contract Sum and Contract Time.
 3. Procedure:
 - a. Proposed changes are documented by Contractor on Change Order Request, Proposal Worksheet Summary, and Proposal Worksheet Detail forms. Documents include description of proposed changes and summary of changes in Contract Sum and Contract Time are prepared and signed by Contractor. Submit copies to Owner's Representative.
 - b. Comply with requirements of Section 01 60 00 for proposed changes in Work that includes products or systems not contained in Contract Documents.
 - c. Owner's Representative and Owner will review Change Order Request and evaluate proposed changes. Owner's Representative and Owner may accept or reject Change Order Request. Upon acceptance, Owner's

Representative will prepare Change Order to document Contract change.

- D. Change Order:
 - 1. Form: Change Order, AIA Document G701, 2001 Edition.
 - 2. Description: Written change of Work within Contract scope consisting of additions, deletions, and other revisions, including proposed basis for adjustment to Contract Sum and Contract Time. Change Orders are signed by Owner, Contractor, and Owner's Representative. Owner's signature authorizes change.
 - 3. Procedure: Document is prepared by Owner's Representative and signed by Owner's Representative; sent to Contractor for acceptance and signature; approved and signed by Owner; distributed to Owner's Representative and Contractor. Contractor shall perform changes upon receipt.
- E. Construction Change Directive:
 - 1. Form: AIA Document G714, Construction Change Directive, 2007 Edition.
 - 2. Description: Written change of Work within Contract scope consisting of additions, deletions, and other revisions, including a proposed basis for adjustment to Contract Sum and Contract Time. Document is used in absence of agreement on terms of Change Orders.
 - 3. Procedure:
 - a. Document is prepared by Owner's Representative and signed by Owner's Representative and Owner. Contractor shall perform changes upon receipt.
 - b. Adjustments to Contract Sum should be per contract.
 - c. Owner's Representative will determine proposed method, time, and amount of Contract adjustment based on reasonable expenditures, and allowance for overhead, profit, and time.
 - d. Contractor's signing of Construction Change Directive acknowledges agreement with proposed method for adjusting Contract Sum and Contract Time and is recorded as Change Order.
 - e. Contractor disagreement or no response to proposed method for adjusting Contract Sum or Contract Time does not relieve Contractor from responsibility to perform Work.
 - f. Payment for Construction Change Directives will be made in accordance with AIA Document A201 Subparagraph 9.3.1.1.

1.4 IN CONTRACT SUM. The Contractor shall prepare a price proposal for the specified changes in the work upon receipt of a request for proposal and change order.

- A. Accepted unit prices shall be used as the basis for adjustments in the contract sum when a proposed change affects work covered by contract unit prices.

- B. The Contractor shall prepare a detailed proposal for the changed work for work not covered by contract unit prices. The proposal shall itemize the changes to the work and show the direct cost of all labor, material, and equipment for each item with appropriate documentation of the costs. Costs such as general supervision, liability insurance, etc., are considered overhead. Subcontractors shall prepare similar proposals for inclusion in the Contractor's proposal.
1. Contractors and subcontractors may add 15% for overhead and profit only to the direct costs of the work performed by their firm. A minimum fee for overhead and profit of \$100 is allowed on work performed by their firm.
 2. The Contractor and subcontractors may add a minimum fee of \$50 or 6% of the total cost of lower tier subcontractor work to the cost of the change order for their administrative costs.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 29 00 – PAYMENT PROCEDURES

PART 1 GENERAL

1.1 APPLICATION FOR PAYMENT

- A. General:
 - 1. Maintain consistency with previous applications for payments as certified by Owner's Representative and paid by Owner.
 - 2. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
 - 3. Payment Application Times: Each progress payment date is as indicated in Agreement. Work covered by each Application for Payment is period indicated in Agreement.
 - 4. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 - 5. Temporary facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values.
 - 6. Schedule Updating: List Change Orders as a separate line item when Change Orders or Construction Change Directives result in a change in the Contract Sum.
- B. Format:
 - 1. AIA G702 - Application and Certificate for Payment.
 - 2. AIA G703 - Continuation Sheet.
- C. Preparation of Applications:
 - 1. Type required information or use media-driven printout.
 - 2. Execute certification by signature of authorized officer.
 - 3. Use data on accepted Schedule of Values. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
 - 4. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
 - 5. Prepare Initial Application for Payment and Application for Payment at time of Substantial Completion as specified below.
 - 6. Prepare Application for Final Payment as specified below and in Section 01 77 00.
- D. Submittal Procedures:

1. Application for Payment to Owner's Representative at times stipulated in Agreement ensuring receipt within 24 hours.
 2. Include waivers of lien and similar attachments with one copy to Owner's Representative.
 3. Submit under transmittal letter specified in Section 01 33 00.
 4. Payment Period: Submit at intervals stipulated in the Agreement.
 5. Submit waivers and release of liens when directed by Owner.
- E. Waivers of Mechanics Lien:
1. With each Application for Payment submit waivers of mechanics liens from subcontractors and suppliers for construction period covered by previous application.
 2. Submit partial waivers on each item for amount requested, prior to deduction for retainage, on each item.
 3. When application shows completion of item, submit final or full waivers.
 4. Owner reserves right to designate which entities involved in Work must submit waivers.
 5. Waiver Forms: Submit waivers of lien on properly executed AIA Document G706A, Contractor's Affidavit of Release of Liens, or forms included in the Agreement.
- F. Other Attachments: Along with each application for payment, attach the following other documents:
1. Invoices for stored materials for which payment is being requested.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Construction Progress Schedule (preliminary if not final).
 5. Copies of building permits.
 6. Certificates of insurance and insurance policies.
 7. Partial release of liens.
- H. Application for Payment at Substantial Completion:
1. Following issuance of Certificate of Substantial Completion, submit Application for Payment reflecting Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work.
 2. Required administrative actions and submittals that precede or coincide with this application include:
 - a. Occupancy permits and similar approvals.
 - b. Warranties and maintenance agreements (dated to commence on date of Substantial Completion).

- c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Start-up performance reports.
 - g. Change-over information related to Owner's occupancy, use, operation and maintenance.
 - h. Advice on shifting insurance coverages.
 - i. Final progress photographs.
 - j. Comprehensive list of incomplete or non-complying Work (initial punch list).
 - k. Partial release of liens.
- I. Final Payment Application: Required administrative actions and submittals which precede or coincide with submittal of final payment Application for Payment include following:
- 1. Completion of Project Closeout requirements.
 - 2. Completion of items specified for completion after Substantial Completion.
 - 3. Assurance that unsettled claims will be settled.
 - 4. Assurance that Work not complete and accepted will be completed without undue delay.
 - 5. Final cleaning.
 - 6. Transmittal of required Project construction records to Owner.
 - 7. Certified property survey.
 - 8. Proof that taxes, fees and similar obligations have been paid.
 - 9. Removal of temporary facilities and services.
 - 10. Removal of surplus materials, rubbish and similar elements.
 - 11. Change of door locks to Owner's access.
 - 12. Evidence of Payment and Release of Liens: In accordance with Conditions of the Contract (AIA forms G706 & G706a respectively).
 - 13. Consent of Surety to Final Payment (AIA form G707)

1.2 SCHEDULE OF VALUES

- A. Format:
- 1. Type Schedule on AIA Document G703 - Continuation Sheet for Application and Certificate for Payment, or use media driven printout upon prior approval.
 - 2. Follow Table of Contents of Project Manual for listing component parts. Identify each line item by number and title of major Specifications section.
- B. Content:
- 1. List installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for Progress Payments. Round off values to nearest dollar.

2. For each major subcontract, list products and operations of that subcontract as separate line items.
 3. List allowances in the specified monetary amount for each allowance.
 4. Coordinate listings with Progress Schedule.
 5. Include a directly proportional amount of Contractor's general office overhead and profit for each component listing. Use separate line for bonds, insurance, temporary facilities and controls, and superintendence.
 6. Sum of values listed equals total Contract Sum.
- C. Submittal:
1. Submit 3 copies of Schedule 10 days prior to first Application for Payment.
 2. Transmit under Owner's Representative accepted form transmittal letter. Identify Project by title and number.

1.3 SUBSTANTIATING DATA

- A. When Owner's Representative requires substantiating information, submit data justifying line item amounts in question.
- B. 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.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.

1.2 GENERAL COORDINATION PROVISIONS

- A. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Owner's Representative of any error, inconsistency, omission, or apparent discrepancy discovered.
- B. Allot time in construction scheduling for liaison with Owner's Representative, establish procedures for handling queries and clarifications. Use standard "Request for Interpretation", form as approved by Owner's Representative for requesting information.
- C. In addition to meetings specified herein, hold coordination meetings and conferences with personnel and subcontractors to ensure coordination of Work.
- D. Coordinate scheduling, submittals, and Work of various Specification sections to avoid conflicts and ensure efficient and orderly sequence of installation of interdependent construction elements.
- E. Coordinate Work of various Specification sections having interdependent responsibilities for installation, connection, and operation.
- F. Verify that characteristics of operating equipment are compatible with building utilities and services.
- G. Except as otherwise indicated, conceal pipes, ducts, conduit and wiring in construction. Coordinate locations of fixtures and outlets with finish elements.
- H. Make provision to accommodate items scheduled for later installation.

1.3 MEETINGS

- A. In addition to progress meetings, hold coordination meetings and pre-installation conferences with personnel and subcontractors to assure coordination of Work.

1.4 COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals specified in Section 01 33 00.
- B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and affect on work of other sections.

1.5 COORDINATION OF SPACE

- A. Coordinate use of Project space and sequence of installation of mechanical and electrical work which is indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- B. In finished areas except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- C. In finished areas except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. Layout of plumbing, fire protection, mechanical, and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on Drawings is diagrammatic. Variations in alignment, elevation, and details required avoiding interferences and satisfying architectural and structural limitations are not necessarily shown.
- E. Prior to installation of material and equipment, review and coordinate Work with Architectural and Structural Drawings to establish exact space conditions. Where available space is inadequate or where reasonable modifications are not possible, request information from Owner's Representative before proceeding.
- F. Coordinate installation to prevent conflicts and cooperate in making, without extra charge, reasonable modifications in layout as needed.
- G. Provide clear access to control points, valves, strainers, control devices, and specialty items of every nature related to such systems and equipment to obtain maximum head room. Provide adequate clearances as necessary for operation and maintenance.

1.6 COORDINATION OF CONTRACT CLOSEOUT

- A. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion of portions of Work designated for Owner partial occupancy.
- B. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- C. Assemble and coordinate closeout submittals specified in Section 01 78 00.

1.7 PRECONSTRUCTION CONFERENCE

- A. Owner's Representative will schedule conference within 15 days after notice of award.
- B. Attendance: Architect, Contractor, Owner's Representative, and representatives of major subcontractors, and others as appropriate.

- C. Owner's Representative presides over meeting and is responsible for recording and distributing minutes.

1.8 PROGRESS MEETINGS

- A. Schedule and administer bi-weekly construction progress meetings, throughout progress of Work or as work requires.
 - 1. Prepare agenda and distribute notice of each meeting to participants.
 - 2. Make physical arrangements.
 - 3. Preside at meetings, record minutes, and distribute copies after meeting to participants, and to entities affected by decisions at meetings.
 - 4. Distribute one copy of minutes to Owner's Representative.
 - 5. Maintain in field office one copy of agenda and minutes for each conference and meeting.
- B. Location of Meetings: Auburn Elementary School as agreed upon at the pre-construction meeting.
- C. Attendance: Contractor, job superintendents, subcontractors, and suppliers as appropriate to agenda; Owner's Representative, and professional consultants as appropriate.

1.9 PRE-INSTALLATION CONFERENCES

- A. Schedule pre-installation conferences required in individual Specification sections. Convene at Project site prior to commencing Work of the section.
- B. Review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

REQUEST FOR INTERPRETATION

Contractor:

Project: Proposed Re-roof for Portions of
Auburn Elementary School

Question
to:

From: Contractor

Date: _____

Signed: _____ RFI Number: _____

RE:

Specification Section Reference	Paragraph Number	Drawing References	Details

Response:

Answer as Above	From: Owner	To: Contractor	Date Transmitted: _____	Date Received: _____

Other

Signed: _____

Copies: Owner _____ _____ _____

SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 PROGRESS SCHEDULES

- A. Format:
 - 1. Submit a computer-generated horizontal bar chart with separate line for each section of Work, identifying first workday of each week. Refer to sample provided by Owner's Representative for additional information.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Minimum 11 by 17 inches.
- E. Content:
 - 1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction, including duration.
 - 2. Identify each item by major Specification section number.
 - 3. Show delivery dates for Owner furnished products and products specified under Allowances, if applicable.
- F. Revisions to Schedules:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- G. Distribution:
 - 1. Distribute copies of Schedules reviewed by Owner's Representative to job site file, subcontractors, suppliers, and other concerned entities.
 - 2. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in Schedules.

1.2 CONSTRUCTION PHOTOGRAPHS

- A. Provide digital photographs of site and construction throughout progress of Work.
- B. Take photographs on cutoff date for each Application for Payment, and delivery electronically to Owner's Representative and Owner via email.
- C. Take a minimum of 20 photographs at maximum 2-week intervals throughout the progress of the work,
- D. Identify each photo electronically by listing name of project, phase, orientation of view, and date and time of view.

1.3 SUBMITTALS

- A. Progress Schedule:
 - 1. Submit initial Schedules within 15 days from Notice to Proceed. After review, resubmit required revised data within 15 days.
 - 2. Submit revised Progress Schedules with each Application for Payment.
- B. Construction Photographs:
 - 1. Deliver electronic photo files with application for payment with a transmittal letter as specified under Section 01 33 00.

PART 2 PRODUCTS and PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Submit number of copies of product data and manufacturer's instructions the Contractors require, plus 2 copies which will be retained by Owner's Representative and 1 copy for the Owner.
- B. Apply Contractor's stamp, sign or initial and date certifying that review, verification of products, field dimensions, adjacent construction Work, and coordination of information, is in accordance with requirements of Work and Contract Documents.
- C. Submittals will be returned without processing if they have not been reviewed and stamped by Contractor for coordination of work and conformance with the Drawings and Specifications prior to submission to Owner's Representative, if they are not initialed or signed by authorized person, if they are not dated, or if it becomes evident that they have not been properly reviewed. Delays resulting therefrom are not responsibility of Owner's Representative.
- D. Clearly identify on submittals, or in writing at time of submission, deviations in submittals from requirements of Contract Documents.
- E. Do not perform Work on any element requiring submittal and review of shop drawings, product data, samples, or other similar submittals until respective submittal has been approved by Owner's Representative.
- F. Maintain in field office a copy of submittal schedule and log of submittals indicating current status of each item.

1.2 SHOP DRAWINGS

- A. Show layout, details, materials, dimensions, thicknesses, methods of assembly, attachments, relation to adjoining Work, wiring diagrams, rough-in requirements, and other pertinent data and information. Submit detail drawings of special accessory components not included in manufacturer's product data.
- B. Identify field dimensions; show relation to adjacent or critical features of Work or products.
- C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- D. Revise and resubmit submittals as required, identify all changes made since previous submittal.

1.3 CONTRACTOR REVIEW

- A. Review submittal prior to transmittal; determine and verify field measurements, field construction criteria, quantities and details, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
- B. Coordinate submittal with requirements of Work and of Contract Documents.
- C. Sign or initial in a rubber-stamped review block format, each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify Owner's Representative in writing at time of submittal of any deviations from requirements of Contract Documents.
- D. Do not fabricate products or begin work which requires submittal until return of submittal with Owner's Representative acceptance.
- E. Responsibility for errors and omissions in submittal is not relieved by Owner's Representative's review of submittal.
- F. Responsibility for deviations in submittal from requirements of Contract Documents is not relieved by Owner's Representative's review of submittal, unless Owner's Representative gives specific written acceptance of deviations. Owner's Representative will review submittal for general conformance to design intent only.

1.4 OWNER'S REPRESENTATIVE AND ENGINEER REVIEW

- A. Owner's Representative will review construction progress schedules, and submittal schedules. Owner's Representative will review product lists, shop drawings, product data, and samples and return within 10 working days of receipt.
- B. Owner's Representative's review of submittals is for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents. Owner's Representative's review is not conducted for purpose of determining accuracy and completeness of items such as dimensions and quantities, which remain responsibility of Contractor.
- C. Owner's Representative's review and approval of submittals does not relieve Contractor of responsibility for deviations from Contract Document requirements, unless Owner's Representative is informed in writing of deviations and approval is received in writing from Owner's Representative for such deviation.
- D. Owner's Representative's review and acceptance of submittals does not indicate acceptance of changes in Contract time or cost.
- E. Submittals stamped "No Exception Taken": No corrections or re-submittal required; fabrication may proceed.
- F. Submittals stamped "Make Corrections Noted": Comply with noted corrections and modifications; and resubmit. Fabrication may proceed. If for any reason noted corrections and modifications can not be fully complied with, resubmit for review requesting clarification; do not proceed with fabrication.
- G. Submittals stamped "Rejected" or "Revised/Resubmit": Revise and resubmit for review; do not proceed with fabrication. Clearly indicate revisions, including

corrections, to previous submittal. Disapproved submittals will not be considered valid cause for construction delay.

- H. Submittal approval does not authorize changes to Contract requirements unless accompanied by a Change Order, Owner's Representative's Supplemental Instruction, or Construction Change Directive.
- I. Owner's Representative will transmit 1 copy of Approved or Approved as Noted submittals to Owner.

PART 2 PRODUCTS and PART 3 EXECUTION

Not used

END OF SECTION

SECTION 01 42 00 – REFERENCES

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. Comply with association, trade, federal, commercial, standards generating organization (such as ANSI and ASTM), and other similar standards referenced within Specification sections, except where more explicit or stringent requirements are indicated or required by Specification or applicable codes.
- B. Reference standards include their associated amendments and supplements.
- C. Except where a specific date is indicated, date of standard is latest edition in effect at date of Contract Documents, or date of standard required by code.
- D. Reference standards have same force and effect as if bound into or copied directly into Contract Documents; standards are made a part of Contract Documents by reference.
- E. Contractual relationship of parties to the Contract shall not be altered from Contract Documents by mention or inference otherwise in reference standards.
- F. Should specified reference standards conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

1.2 EXPLANATION OF PROJECT MANUAL CONTENT

- A. Specifying Methods: Techniques or methods of specifying varies throughout text and may include "prescriptive," "generic-descriptive," "compliance with standards," "performance," "proprietary," or a combination of these.
- B. Language:
 - 1. Imperative mood of sentence structure is generally used which places verb as first word in sentence. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor.
 - 2. In certain circumstances, the language of specifications and other contract documents are of abbreviated type. It implies words and meanings that will be appropriately interpreted. Words such as "the," "shall," "shall be," "Contractor shall," "a," "all," "an," "any," and other similar words are eliminated.
 - 3. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of Contract Documents so indicates.
 - 4. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.
- C. Minimum Quality and Quantity: In every instance, quality level or quantity shown or specified is intended to be minimum for Work to be performed or provided. Except as otherwise specifically indicated, actual Work may either comply exactly with that minimum within specified tolerances, or may exceed that minimum within

reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted, or as appropriate for context of requirements. Refer instances of uncertainty to Owner's Representative for decision before proceeding.

1.3 DEFINITIONS

- A. Custom Color: Refers to color selection by Owner's Representative that is not limited to a manufacturer's standard color or a manufacturer's color that is designated by the manufacturer as "custom", "premium" or any other designation. Custom color means any color selected by Owner's Representative.
- B. Directed, Requested: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect," "requested by Architect," and similar phrases. However, no such implied meaning shall be interpreted to extend Owner's Representative's responsibility into area of construction supervision.
- C. Finish: The manner or method of completion. The final appearance of a surface, including texture, smoothness, sheen, and color, after finishing operations have been performed. Finishing operations include preparation of substrate and application, curing, and protection of specified finish materials.
- D. Furnish: Means to supply, purchase, procure and deliver complete with related accessories, ready for assembly, application, installation, and similar operations, as applicable in each instance.
- E. Indicated: Refers to graphic representations, notes, or schedules on Drawings, or other paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help reader locate the reference. Location is not limited.
- F. Install: Means to construct, assemble, erect, mount, anchor, place, connect, apply and similar operations, complete with related accessories, as applicable in each instance, connected, operable, and ready for service or intended use.
- G. Installer: Entity (person or firm) engaged to perform a particular unit of Work at Project site, including installation, erection, application, repair, patching, and similar required operations. Such entities must be experienced in operations they are engaged to perform.
- H. Or: Used to introduce any of the possibilities in a series. Items in the series are not required to be taken jointly. It does not mean that individual items in the series are optional requirements.
- I. Product: Includes natural and manufactured materials, components, machinery, fixtures, equipment, devices, furnishings, systems, and their associated accessories to be incorporated into the Work.
- J. Provide: Means to furnish and install, complete and ready for operations and use for purpose intended.

- K. Regulations: Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within construction industry that control performance of the Work.
- L. Similar: Interpreted in its general sense and not as meaning identical. Elements defined as "similar" shall be coordinated in relationship to their location and connection with other parts of the Work.
- M. True To Line, Plumb, Level, and Flat: Install Work within following tolerances, except where indicated otherwise:
 - 1. True to line: Allowed deviation from straight line within plus or minus 1/16 inch in 1 foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 3/8 inch in lengths over 20 feet.
 - 2. Level: Allowed deviation from horizontal plane within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 1/2 inch in lengths over 20 feet.
 - 3. Plumb: Allowed deviation from vertical plane within plus or minus 1/16 inch in one foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 1/2 inch in lengths over 20 feet.
 - 4. Flat: Allowed deviation from flat plane in any planar direction within plus or minus 1/16 inch in 1 foot; plus or minus 1/8 inch in 10 feet; plus or minus 1/4 inch in 20 feet; and plus or minus 3/8 inch in lengths over 20 feet.
 - 5. Tolerances are not accumulative.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 45 00 – QUALITY CONTROL

PART 1 GENERAL

1.1 DESCRIPTION

- A. Maintain quality control over supervision, subcontractors, suppliers, manufacturers, products, services, workmanship, and site conditions, to produce Work in accordance with Contract Documents.

1.2 DEFINITIONS

- A. Field Samples: Partial installation of selected materials installed at Project site for Owner's Representative's review and approval of visual features and workmanship.
- B. Mock-ups: Full size assemblies that incorporate several materials or elements of construction erected for Owner's and Owner's Representative's review and approval of visual features and workmanship. Mock-ups represent quality of materials and workmanship required for Work.

1.3 PERFORMANCE REQUIREMENTS

- A. Workmanship:
 - 1. Comply with industry standards of the region except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
 - 2. Provide suitably qualified personnel to produce Work of specified quality.
 - 3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
 - 4. Provide finishes to match approved samples.
- B. Manufacturer's Instructions:
 - 1. Require compliance with instructions in full detail, including each step-in sequence. Do not omit preparatory steps or installation procedures unless specifically modified or exempted by Contract Documents.
 - 2. Maintain one complete set of instructions at Project Site during installation and until completion.
 - 3. Should instruction conflict with Contract Documents, request clarification from Owner's Representative/Engineer before proceeding.
- C. Manufacturer's Certificates:
 - 1. When required in individual Specifications section, submit manufacturer's certificate, in duplicate, certifying that products meet or exceed specified requirements, executed by responsible officer.
- D. Manufacturer's Field Services and Reports:
 - 1. Submit reports in accordance in accordance with Section 01 33 00.

2. Submit qualifications of field observer 30 days in advance of required observations; observer is subject to approval of Owner's Representative.
3. When specified in individual Specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces, quality of workmanship, and conditions of installation as applicable, and to initiate instructions when necessary.
4. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
5. Submit reports within 7 days of observation. Distribute copies to Owner's Representative, Owner, Project site file, subcontractor, and other entities requiring information.
6. Provide one additional copy of reports for record documents file; refer to Section 01 78 00.

1.4 QUALITY ASSURANCE

- A. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- B. Ensure that persons performing Work are qualified to produce workmanship of specified quality.
- C. Monitor quality control over products, suppliers, manufacturers, services, site conditions, and workmanship to ensure Work complies with Contract Documents.
- D. Comply with specified reference standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.5 EXAMINATION OF CONDITIONS

- A. Examine substrates and conditions under which Work is to be performed. Do not commence work over unsatisfactory conditions detrimental to proper and timely execution of Work.
- B. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. Commencement of installation constitutes acceptance of conditions and cost of any corrective measures are responsibility of Contractor.

1.6 MOCKUPS

- A. General:

1. Use materials, fabrication and installation methods identical with those indicated for Work. Simulate actual construction conditions as accurately as possible.
2. Provide mock-ups required by individual Specification sections.
3. Approval:
 - a. Obtain Owner's Representative's written approval for each mock-up.
 - b. Do not start production of materials for final Project site erection until Project Manager's approval of mock-ups has been obtained.
 - c. Approved mock-ups will serve as standard of quality and workmanship of Work; maintain mock-ups until completion of relevant Work.
4. Upon completion of relevant Work or when directed by Project Manager, demolish and remove mock-ups.

1.7 FIELD SAMPLES

- A. General:
 1. Provide field samples at site required by individual Specification sections.
 2. Erect at location acceptable to Owner's Representative; perform Work in accordance with applicable Specification sections.
 3. Construct complete, including Work of related trades required in finished Work.
 4. Make adjustments necessary to obtain approval from Owner's Representative. Do not proceed with further work until sample installation has been approved by Owner's Representative.
 5. Approved samples will serve as standard of quality and workmanship of Work; maintain samples until completion of relevant Work.
 6. Upon completion of Work or when directed by Owner's Representative, demolish field samples and remove from site, unless accepted by Owner's Representative as part of completed Work.

1.8 TESTING LABORATORY SERVICES

- A. General:
 1. Where terms "Laboratory", "Inspector", "Inspection Laboratory", "Laboratory" or "Testing Laboratory" are used, they mean and refer to officially designated and accredited testing laboratory.
 2. Provide testing laboratory with one set of Contract Documents and relevant approved submittals.
- B. Selection and Payment:
 1. Owner will employ services of an independent testing laboratory to perform specified inspection and testing.
 2. Employment of testing laboratory in no way relieves obligation to perform Work in accordance with requirements of Contract Documents. Contractor will pay testing required by local authorities having jurisdiction.

3. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
- C. Laboratory:
1. Cooperate with Owner's Representative, Owner, and Contractor.
 2. Comply with requirements of ANSI/ASTM E 329 and ANSI/ASTM D 3740.
 3. Maintain a full-time registered Engineer on staff to review services.
 4. Authorized to operate in State where the project is located.
 5. Calibrate testing equipment once each year with devices of an accuracy traceable to either NBS Standards or accepted values of natural physical constants.
 6. Test samples of mixes submitted by Contractor.
 7. Provide qualified personnel at site. Cooperate with Contractor and Owner's Representative in performance of services.
 8. Perform specified inspection, sampling, and testing of products in accordance with specified standards.
 9. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 10. Promptly notify Owner's Representative, Owner, and Contractor of observed irregularities or non-conformance of Work or products.
 11. Perform additional inspections and tests required by Owner's Representative.
 12. Attend Preconstruction Conference.
- D. Laboratory Reports:
1. After each inspection and test, promptly submit 2 copies of laboratory report to Owner's Representative and one to the applicable consultant and one to Contractor.
 2. Include: Date issued, project title and number, name of inspector, date and time of sampling or inspection, identification of product and Specifications section, location in the Project, type of inspection or test, date of test, results of tests, and conformance with Contract Documents.
 3. When requested by Owner's Representative, provide interpretation of test results.
- E. Limits on Testing Laboratory Authority:
1. May not release, revoke, relax, alter, or enlarge on requirements of Contract Documents.
 2. May not approve or accept any portion of the Work.
 3. May not assume any duties of Contractor.
 4. Has no authority to stop Work.

1.9 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location adequate samples of materials proposed to be used which require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel and provide access to Work and to manufacturer's facilities.
- C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify laboratory of material sources and furnish necessary quantities of representative samples of materials proposed for use which are required to be tested.
- E. Notify Owner's Representative and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.
- F. Advise laboratory in a timely fashion to complete required inspection and testing prior to subsequent work being performed.
- G. Pay for subsequent re-testing of products or systems found to be defective or otherwise not in accordance with specification requirements. Remove rejected products and replace with products of specified quality.
- H. Furnish copies of product tests or mill test reports as specified or required.
- I. Furnish incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at Project site or at source of product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- J. Notify Owner's Representative, Owner, and laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
- K. When inspections or tests can not be performed after proper notification and at no fault of laboratory, reimbursement costs for laboratory expenses incurred will be charged to Contractor by deducting charges from Contract Sum.

1.10 SUBMITTALS

- A. Provide submittals in accordance with Section 01 33 00.
- B. Laboratory Reports:
 - 1. Submit test reports within 2 weeks of test date.
 - 2. After each inspection and test, promptly submit copies of written reports as follows:
 - a. Owner: One copy.
 - b. Owner's Representative: 3 copies.
 - c. Code Officials: One copy.
 - d. Contractor: 3 copies.

3. When requested by Owner's Representative, provide interpretation of test results and suggested remedies.

1.11 FAILURES AND RETESTING

- A. When initial inspections and tests indicate Work does not comply with Contract Documents, subsequent testing will be performed by same Testing Agency and will be done at Contractor's expense and deducted from Contract Sum.
- B. Removal and replacement of Work necessitated by such non-compliance of Contract Documents shall be at Contractor's expense.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from Utility source. Ensure proper grounding.
- B. Provide temporary electric feeder from electrical service at location as directed.
- C. Provide power outlets for construction operations, with branch wiring and distribution boxes. Provide flexible power cords as required.
- D. Provide and maintain lighting for construction operations.

1.2 TEMPORARY HEAT AND VENTILATION

- A. Provide and pay for heat devices and heat as required to maintain specified conditions for construction operations.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.3 TEMPORARY TELEPHONE SERVICE

- A. Provide telephone service to field office, minimum of 2 lines, one for voice, and one for fax/data.

1.4 TEMPORARY WATER SERVICE

- A. Provide service required for construction operations.

1.5 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures.

1.6 TEMPORARY FIRE PROTECTION

- A. Remove combustible refuse from building daily.
- B. Provide fire extinguishers as required by the local fire department and city ordinances.

1.7 BARRIERS

- A. Provide as required to prevent public entry to construction areas.
- B. Provide barriers around trees and plants designated to remain.

1.8 PROTECTION OF INSTALLED WORK

- A. Provide temporary protection for installed products.

1.9 FIELD OFFICES AND SHEDS

- A. Weather-tight, with lighting, electrical outlets, telephone, heating, and air conditioning equipment. Equip with minimum of one layout table.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.

PART 2 PRODUCTS AND PART 3 EXECUTION - not used

END OF SECTION

SECTION 01 60 00 – MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.1 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Matching of Colors:
 - 1. When a product is listed in the specifications with an accompanying color, pattern, texture, or sheen, provide only that product, or one that is identical in color, pattern, texture, and sheen to the product specified, regardless if the color, pattern, texture, or sheen of the alternate manufacturer's product is a standard or option.
 - 2. On finished materials and products, verify that colors, patterns, textures, and sheens are identical for the entire project and that there are no visual differences between batches, packages, bundles, or shipments, due to differing production runs. Owner's Representative reserves the right to reject products and materials installed, which have, in the sole opinion of the Owner's Representative, a significant enough difference in color, pattern, texture, or sheen, from other products on the project, so as to be visually distracting.

PART 2 PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 - 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
2. Semi-Proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements.
4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
 - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes and Regulations: Where the Specifications only requires compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Owner's Representative's decision will be final on whether a proposed product matches satisfactorily.
8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with specified requirements. The Owner's Representative will select the color, pattern and texture from the product line selected.

PART 3 EXECUTION

3.1 PACKAGING AND TRANSPORTATION

- A. Require supplier to package products in boxes or crates for protection during shipment, handling, and storage. Protect sensitive products against exposure to elements and moisture.

- B. Protect sensitive equipment and finishes against impact, abrasion, and other damage.

3.2 DELIVERY, RECEIVING, AND HANDLING

- A. Deliver, receive, and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
- B. Delivery:
 - 1. Arrange deliveries of products in accordance with construction progress schedules. Allow time for inspection prior to installation.
 - 2. Clearly mark partial deliveries of component parts of equipment to identify equipment and contents to permit easy accumulation of parts and to facilitate assembly.
- C. Receiving and Handling:
 - 1. Immediately on delivery, inspect shipment to assure:
 - a. Product complies with requirements of Contract Documents and reviewed submittal.
 - b. Quantities are correct.
 - c. Accessories and installation hardware are correct.
 - d. Containers and packages are intact and labels legible.
 - e. Products are protected and undamaged.

3.3 STORAGE

- A. General:
 - 1. Store products, immediately on delivery, in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.

END OF SECTION

SECTION 01 63 00 – SUBSTITUTIONS & PRODUCT OPTIONS

PART 1 GENERAL

1.01 Requirements Include:

- A. Base all bids on providing all products exactly as specified by the Bid Documents.
- B. For products specified only by reference or performance standards, select any product that meets or exceeds standards, by any manufacturers, subject to the Architect/Engineer's approval.
- C. For products specified by naming several products or manufacturers, select any product and manufacturer name.

1.02 Substitutions, Bidder/Contractor Options

- A. Prior to Bid Opening: The Architect/Engineer will consider written requests to amend the bidding documents to add products not specified provided such requests are received at least 5 calendar days prior to bid opening date. Requests received after that time will not be considered. When a request is approved, the Architect/Engineer will issue an appropriate addendum not less than seven calendar days prior to the bid opening date.
- B. With Bid: A bidder may propose substitutions with his bid via a Volunteer Alternate. The bidder must bid the project as defined by the Bid Documents. The volunteer alternate must, at a minimum, meet submission requirements of this section. The Architect/Engineer will evaluate the volunteer alternates before the Award of Contract. Bids will be evaluated based on the ALL ACCEPTED alternates.

1.03 Substitution Requirements

- A. Submit six copies of each request for substitution, including the following information:
 - 1. Complete data substantiating compliance of proposed substitutions with contract documents.
 - 2. For Products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature
 - 1. Product description

- 2. Performance and test data
 - 3. Reference standards
 - c. Samples
 - d. Name and address of similar projects on which product was used and date of installation.
 - 3. For construction methods:
 - a. Detailed description of proposed method
 - b. Drawings illustrating methods.
 - 4. Itemized comparison of proposed substitution with product or method specified.
 - 5. Data relating to changes in construction schedule
 - a. Identifying any changes or coordination required and any affects on any other contracts.
 - b. Accurate cost data on proposed substitutions in comparison with product or method specified.
- B. In making requests for substitution, bidder/contractor represents:
- 1. It has personally investigated proposed product or method and determined that it is equal or superior in all respects to that specified.
 - 2. It will provide the same guarantee for substitutions as for product or method specified.
 - 3. It will coordinate installation of accepted substitutions into work, making all changes for work to be completed in all respects.
 - 4. Cost data is complete and includes all related costs under its contract, but excludes:
 - a. Architect/Engineer's redesign
 - b. Administrative costs of Architect/Engineer
 - c. Costs under separate contracts also affected.
 - 5. It will pay all additional costs and expenses for Owner, Architect/Engineer and other contractors.
- C. Substitutions will not be considered when:
- 1. They are indicated or implied on shop drawings or product data submittals without formal request submitted in accordance with this specification
 - 2. Acceptance will require substantial revision of contract documents.

PART 2 PRODUCTS & PART 3 EXECUTION Not Used

END OF SECTION

SECTION 01 73 10 – CUTTING AND PATCHING

PART 1 GENERAL

1.1 GENERAL

- A. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical work.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 INSPECTION

- A. Beginning of cutting or patching means acceptance of existing conditions.

3.2 CUTTING AND PATCHING

- A. Execute cutting, fitting, and patching (including excavation and fill) to complete work.
- B. Fit products together, to integrate with other work.
- C. Uncover work to install ill-timed work.
- D. Remove and replace defective or non-forming work.
- E. Remove samples of installed work for testing when requested.
- F. Provide openings in the work for penetration of mechanical and electrical work.
- G. Uncover work to allow for Owner's Representative's observation of covered work which has been covered up prior to required observation by Owner's Representative.

3.3 PERFORMANCE

- A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- B. Execute in manner which does not void required or existing warranties.

- C. Restore work with new products in accordance with requirements of Contract Documents.
- D. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- E. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- F. Install products and materials to complete Work in accordance with requirements of Contract Documents.

3.4 CLEANING

- A. Restore surfaces to its original condition.

END OF SECTION

SECTION 01 74 00 – CLEANING

PART 1 GENERAL

1.1 CLEANING DURING CONSTRUCTION

- A. Keep site and construction areas clean on a weekly basis.

1.2 FINAL CLEANING

- A. Execute cleaning prior to inspection for Substantial Completion of the Work.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEANING

- A. Cleaning during Construction:
 - 1. Execute periodic cleaning to keep building, site, and adjacent properties free of accumulations of waste materials, debris, rubbish, and wind-blown debris resulting from construction operations.
 - 2. Remove all mud or dirt from adjacent roadways during site work.
- B. Final Cleaning: In addition to cleaning during construction, prior to Substantial Completion provide the following:
 - 1. Remove temporary protection and labels not required to remain.
 - 2. Clean finishes free of dust, stains, films and other foreign substances.
 - 3. Clean transparent and glossy materials to a polished condition; remove foreign substances. Polish reflective surfaces to a clear shine.
 - 4. Clean, damp mop, wax, and polish resilient and hard-surface floor as specified.
 - 5. Clean surfaces of equipment; remove excess lubrication.
 - 6. Clean plumbing fixtures, and food service equipment, to a sanitary condition.
 - 7. Clean permanent filters of ventilating equipment and replace disposable filters when units have been operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.
 - 8. Clean light fixtures and lamps.

9. Remove waste, debris, and surplus materials from site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.

END OF SECTION

SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 PREREQUISITES TO SUBSTANTIAL COMPLETION

- A. Conduct inspection to substantiate basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or non-conforming work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
- B. Submit statement showing accounting of changes to Contract Sum.
- C. Advise Owner's Representative of pending insurance change-over requirements at final payment.
- D. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
- E. Submit project record documents in compliance with Section 01 78 00, maintenance manuals, negatives of construction photographs, and other similar final record data.
- F. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner's Representative.
- G. Comply with requirements of Section 01 50 00 for restoring permanent systems operated prior to Substantial Completion.
- H. Complete facility startup, testing, adjusting, and balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel.
- I. Discontinue or change over and remove temporary facilities and services from Project site, along with construction tools, mock-ups, and similar elements.
- J. Perform final cleaning in accordance with Section 01 74 00.
- K. Touch-up and otherwise repair and restore marred exposed finishes.

1.2 SUBSTANTIAL COMPLETION

- A. When Contractor considers Work or designated portion of Work is substantially complete, submit written notice with list of items to be completed or corrected.
- B. Should Owner's Representative inspection find Work is not substantially complete; he will promptly notify Contractor in writing, listing observed deficiencies.
- C. Contractor shall remedy deficiencies and send a second written notice of substantial completion.

- D. When Owner's Representative finds Work is substantially complete he will prepare a Certificate of Substantial Completion in accordance with provisions of General Conditions.

1.3 PREREQUISITES FOR FINAL COMPLETION

- A. Complete items in following paragraphs before requesting final acceptance and final payment. List known exceptions, if any, in request.
- B. When Contractor considers Work to be complete, submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been examined for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Work is completed and ready for final inspection.
- C. Submit final punch list indicating all items have been completed or corrected.
- D. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
- E. Submit specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
- F. Submit updated accounting statement for final changes to Contract Sum.
- G. Submit consent of surety to final payment.
- H. Perform final cleaning for Contractor soiled areas in accordance with Section 01 74 00.

1.4 FINAL COMPLETION

- A. When Contractor considers Work is complete, submit written certification
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
 - 4. Equipment and systems have been tested, adjusted and balanced, and are fully operational.
 - 5. Operation of systems has been demonstrated to Owner's personnel.
 - 6. Work is complete and ready for final inspection.
- B. Should Owner's Representative inspection find Work incomplete, he will promptly notify Contractor in writing listing observed deficiencies.
- C. Contractor shall remedy deficiencies and send a second certification of final completion.

- D. When Owner's Representative finds the work is complete, Owner's Representative will consider closeout submittals.

1.5 CLOSEOUT SUBMITTALS

- A. Evidence of Compliance with Requirements of Governing Authorities
 - 1. Certificate of Occupancy.
- B. Project Record Documents: Under provisions of Section 01 78 00.
- C. Operation and Maintenance Data: Under provisions of Section 01 78 00.
- D. Warranties and Bonds: Under provisions of Section 01 78 00.
- E. Spare Parts and Maintenance Materials: Under provisions of Section 01 78 00.
- F. Certificates of Insurance for Products and Completed Operations: In accordance with Supplementary Conditions.

1.6 STATEMENT OF ADJUSTMENT OF ACCOUNTS

- A. Submit final statement reflecting adjustments to Contract Sum indicating
 - 1. Original Contract Sum.
 - 2. Previous change orders.
 - 3. Changes under allowances.
 - 4. Deductions for uncorrected work.
 - 5. Other adjustments to Contract Sum.
 - 6. Total Contract Sum as adjusted.
 - 7. Previous payments.
 - 8. Sum remaining due.
- B. Architect will issue a final Purchase Order Change reflecting approved adjustments.

PART 2 PRODUCTS and PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 78 00 – CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.2 PROJECT RECORD DOCUMENTS

- A. Maintenance of Documents and Samples:
 - 1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
 - a. Contract Drawings.
 - b. Specifications.
 - c. Addenda.
 - d. Change Orders and other modifications to the Contract.
 - e. Reviewed shop drawings, product data, and samples.
 - f. Field test records.
 - g. Inspection certificates.
 - h. Manufacturer's Warranty certificates.
 - 2. Store Record Documents and samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
 - 3. Label and file Record Documents and samples in accordance with Section number listings in Table of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
 - 4. Maintain Record Documents in a clean, dry and legible condition. Do not use Record Documents for construction purposes.
 - 5. Keep Record Documents and samples available for inspection by Owner's Representative.
- B. Recording:
 - 1. Record information on a set of blue line opaque drawings, and in a copy of a Project Manual.
 - 2. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.
 - 3. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
 - 4. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - a. Field changes of dimension and detail.
 - b. Changes made by Modifications.

- c. Details not on original Contract Drawings.
- d. References to related shop drawings and Modifications.
- 5. Specifications: Legibly mark each item to record actual construction, including:
 - a. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
 - b. Changes made by Addenda and Modifications.
- 6. Other Documents: Maintain manufacturer's certifications, inspection certifications, field test records, and other documents required by individual Specifications sections.

1.3 OPERATION AND MAINTENANCE MANUALS

A. Contents

- 1. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Owner's Representative and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- 2. For Each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- 3. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- 4. 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.
- 5. Warranties and Bonds: Bind in copy of each.

B. Manual for Materials and Finishes:

- 1. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
- 2. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- 3. Moisture-protection and Weather-exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- 4. Additional Requirements: As Specified in individual Specifications sections.
- 5. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

C. Submittals:

1. Submit 2 copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner's Representative will review draft and return one copy with comments.

1.4 WARRANTIES AND BONDS

A. Preparation

1. 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.
2. Verify that documents are in proper form, contain full information, and are notarized.
3. Co-execute submittals when required.
4. Retain warranties and bonds until time specified for submittal.

1.5 SPARE PARTS, OVERAGES, AND MAINTENANCE MATERIALS

A. Products Required:

1. Provide quantities of products, spare parts, maintenance tools, and maintenance materials specified in individual sections to be provided to Owner, in addition to that required for completion of Work.
2. Products: Identical to those installed in the Work. Include quantities in original purchase from manufacturer to avoid variations in manufacture.

B. Storage, Maintenance:

1. Store products with products to be installed in the Work, under provisions of Section 01 60 00.
2. Maintain spare products in original containers with labels intact and legible, until delivery to Owner.

C. Delivery:

1. Coordinate with Owner: Deliver and unload spare products to Owner at Project site and obtain receipt prior to final payment.

PART 2 PRODUCTS and PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 82 00 – DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.1 QUALITY ASSURANCE

- A. When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstrations and instructions have been completed.
- B. Owner will provide list of personnel to receive instructions and will coordinate their attendance at agreed-upon times.

1.2 SUBMITTALS

- A. Submit preliminary schedule for Owner's approval, listing times and dates for demonstration of each item of equipment and each system, 2 weeks prior to proposed dates.
- B. Submit reports within one week after completion of demonstrations, that demonstrations and instructions have been satisfactorily completed. Give time and date of each demonstration, with a list of persons present.

PART 2 PRODUCTS – not used

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify equipment/system is approved and fully operational.
- B. Have copies of completed operation and maintenance manuals at hand for use in demonstrations and instructions.

3.2 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of equipment and systems to Owner's personnel on or about the date of substantial completion. For equipment requiring seasonal operation, perform instructions for other seasons within 6 months.
- B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

END OF SECTION

SECTION 03 50 00.10 – GYPSUM ROOF DECK REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Repair of gypsum roof deck per Unit Price. This includes form board, reinforcing mesh, poured gypsum concrete and all other items required for a complete and proper installation.

1.3 SUBMITTALS

- A. Product Data: For each type of product (formboard, wire mesh and poured gypsum)

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum three year of experience.
- B. Comply with Nation Roof Deck Contractors Association (NRDCA) publication NRDCA 500 "Gypsum Roof Deck Replacement Procedures" for all repair work.

1.5 FIELD CONDITIONS

- A. Do not install gypsum products when conditions exceed those stated in manufacturer's printed literature.
- B. Do not place lightweight insulating concrete during rain or snow or on surfaces covered with standing water, snow, or ice.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver all products to project site in manufacturer's original unopened packaging.
- B. Store gypsum products under cover and elevated above grade.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Gypsum concrete or other lightweight gypsum-concrete patch material:
 - 1. United State Gypsum; Gypsum-Concrete Patch
 - 2. Elastizell; Cell-Patch
 - 3. Siplast; Zono-Patch
- B. Permanent Formboard 0.625-inch thick, 6-pound density:
 - 1. United States Gypsum; SECUROCK Gypsum-Fiber roof Board
 - 2. Temple-Inland: GreenGlass Roof Board
 - 3. Georgia-Pacific: DensDeck Roof Board
- C. Wire Reinforcement, hexagonal mesh, 19-gauge wire, 2-inch spacing, galvanized:
 - 1. Keydeck 2160-2-1619 galvanized wire mesh
- D. Substitutions: per Section 01 63 00 - Substitutions & Product Options

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify section of deck requiring replacement by visually surveying the underside of the deck for sagging or water damaged, stained or we formboard. Look for areas of structural damage such as broken formboards, delamination of the formboard, or excessively cracked gypsum concrete. Based on survey results, mark off the top surface of the roof to denote possible areas of concern.

3.2 REMOVAL OF EXISTING MATERIALS

- A. When removing the roofing in the marked areas, install $\frac{3}{4}$ inch minimum thickness plywood of the barked area. Each 4 x 8 sheet of plywood must span over 3 bulb tees to provide a structurally safe walking surface.
- B. Protection of the in-Place Conditions: Protect all adjacent property scheduled to remain. Replace or repair damaged areas at no cost to the owner.
- C. Starting the wettest or most damaged gypsum, remove top surface of the gypsum to expose the wired mesh. If any of the wires are rusted through, then the entire area of gypsum including the mesh and full thickness of gypsum concrete and formboard must be replaced. Continue removing the top surface of gypsum in all directions down to the wire mesh until wire mesh that has not rusted through is found.
- D. Remove the existing gypsum fill from inside on one complete formboard panel. Cut the wire mesh and remove both the wire mesh and formboard. Leave at least a 3-inch length of wire mesh next to the bulb tees to allow tie into the new mesh after installing the new formboards.

3.3 INSTALLATION

- A. Replace the existing formboards with new formboard sprayed on both sides with 50/50 bleach and water solution. Install galvanized cross tees at the end of boards that do not fall on joists for support.
- B. Tie new reinforcing mesh into the 3-inch wire mesh at each bulb tee. Place reinforcing mesh with 16-gauge wires at right angles to sub-purlins. Lap mesh ends at least 6 inches but do not lap sides of mesh.
- C. Mix gypsum or concrete patch material in accordance with manufacturers mixing instructions. Use heated water when the temperature is below 40 degrees Fahrenheit. Install slurry on flanges of bulb tees and cross tees. Keep equipment clean and avoid flash set of gypsum or concrete patch.
- D. Add a 2-inch wide line of slurry across the diagonals of each formboard. After the slurry and diagonal pattern has set, mix additional gypsum or concrete patch material. Slowly pour the wet mix onto the new formboard and screed off the desired thickness. Maintain a minimum pour of 2-inches above the formboard.
- E. New roofing operation may begin as soon as the gypsum has set.

3.4 PROTECTION

- A. Protect installed gypsum deck from subsequent construction operations.

END OF SECTION 03 50 00.10

SECTION 03 52 16 - LIGHTWEIGHT INSULATING CONCRETE REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Repair of cast-in-place lightweight insulating concrete per Unit Price.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each lightweight insulating concrete mixture.

1.4 INFORMATIONAL SUBMITTALS

- A. Once the contractor can verify the type of light weight concrete was used, submit a compatible material to use for repairs.
- B. Product Certificates: For the following:
 - 1. Cementitious materials.
 - 2. Lightweight aggregates.
 - 3. Foaming agents.
 - 4. Admixtures.
- C. Evaluation Reports: For lightweight insulating concrete, from ICC-ES.
- D. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. NRDCA Installer Qualifications: A firm that has been evaluated by UL and found to comply with requirements of NRDCA's Lightweight Insulating Concrete Roof Deck Contractors Accreditation Program.

1.6 FIELD CONDITIONS

- A. Do not place lightweight insulating concrete unless ambient temperature is at least 40 deg F (4.4 deg C) and rising.
 - 1. When air temperature has fallen or is expected to fall below 40 deg F (4.4 deg C), heat water to a maximum 120 deg F (49 deg C) before mixing so lightweight insulating concrete, at point of placement, reaches a temperature of 50 deg F (10 deg C) minimum and 80 deg F (27 deg C) maximum.
- B. Do not place lightweight insulating concrete during rain or snow or on surfaces covered with standing water, snow, or ice.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- B. FM Global Listing: Lightweight insulating concrete along with other roofing components shall comply with requirements in FM Global 4454 as part of a roof assembly and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable.

2.2 AGGREGATE LIGHTWEIGHT INSULATING CONCRETE

- A. Produce aggregate lightweight insulating concrete using the minimum amount of water necessary to produce a workable mix.

1. Do not exceed maximum air content recommended by aggregate manufacturer.
- B. The contractor is to determine which mix is most appropriate to use for repairs – Perlite or Vermiculite – based on what is existing.
- C. Perlite Aggregate Mix: Lightweight insulating concrete produced from cementitious materials, water, air-entraining admixture, and perlite mineral aggregates complying with ASTM C332, Group I.
1. As-Cast Unit Weight: 38 to 44 lb/cu. ft. (610 to 705 kg/cu. m) at point of placement, when tested according to ASTM C138/C138M.
 2. Oven-Dry Unit Weight: 24 to 30 lb/cu. ft. (385 to 480 kg/cu. m), when tested according to ASTM C495.
 3. Compressive Strength: Minimum 125 psi (860 kPa), when tested according to ASTM C495.
 4. Cement-to-Aggregate Ratio, by Volume: 1:6.
- D. Vermiculite Aggregate Mix: Lightweight insulating concrete produced from cementitious materials, water, air-entraining admixture, and vermiculite mineral aggregates complying with ASTM C332, Group I.
1. Asbestos Content: No detectable asbestos as determined by method specified in 40 CFR 763, Subpart E, Appendix E, Section 1, "Polarized Light Microscopy."
 2. As-Cast Unit Weight: 45 to 49 lb/cu. ft. (720 to 785 kg/cu. m) at point of placement, when tested according to ASTM C138/C138M.
 3. Oven-Dry Unit Weight: 23 to 26 lb/cu. ft. (370 to 416 kg/cu. m), when tested according to ASTM C495.
 4. Compressive Strength: Minimum 140 psi (965 kPa), when tested according to ASTM C495.
 5. Cement-to-Aggregate Ratio, by Volume: 1:6.

2.3 MATERIALS

- A. Cementitious Material: Portland cement, ASTM C150/C150M.
- B. Water: Clean, potable.
- C. Joint Filler: ASTM C612, Class 2, glass-fiber type; compressing to one-half thickness under a load of 25 psi (172 kPa).

- D. Steel Wire Mesh: Cold-drawn steel wire, galvanized, 0.041-inch (1.04-mm) diameter, woven into 2-inch (50-mm) hexagonal mesh, and reinforced with a longitudinal 0.062-inch- (1.57-mm-) diameter wire spaced 3 inches (75 mm) apart.

2.4 DESIGN MIXTURES

- A. Prepare design mixtures for each type and strength of lightweight insulating concrete by laboratory trial batch method or by field-test data method. For trial batch method, use a qualified independent testing agency for preparing and reporting proposed mixture designs.
 - 1. Limit use of fly ash to not exceed 25 percent of portland cement by weight.
- B. Limit water-soluble chloride ions to the maximum percentage by weight of cement or cementitious material permitted by ACI 301 (ACI 301M).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Control Joints: Install control joints at perimeter of roof deck and at junctures with vertical surfaces, including curbs, walls, and vents, for full depth of lightweight insulating concrete. Fill control joints with joint filler.
 - 1. Provide 1-inch- (25-mm-) wide control joints for roof dimensions up to 100 feet (30 m) in length; 1-1/2-inch- (38-mm-) wide control joints for roof dimensions exceeding 100 feet (30 m).
- B. Wire Mesh: Place steel wire mesh with longest dimension perpendicular to steel deck ribs. Cut mesh to fit around roof openings and projections. Terminate mesh at control joints. Lap sides and ends of mesh at least 6 inches (150 mm).

3.2 MIXING AND PLACING

- A. Mix and place lightweight insulating concrete according to manufacturer's written instructions, using equipment and procedures to avoid segregation of mixture and loss of air content.

- B. Deposit and screed lightweight insulating concrete in a continuous operation until an entire panel or section of roof area is completed. Do not vibrate or work mix except for screeding or floating. Place to depths and slopes indicated.
- C. Finish top surface smooth, free of ridges and depressions, and maintain surface in condition to receive subsequent roofing system.
- D. Begin curing operations immediately after placement, and air cure for not less than three days, according to manufacturer's written instructions.
- E. If ambient temperature falls below 32 deg F (0 deg C), protect lightweight insulating concrete from freezing and maintain temperature recommended by manufacturer for 72 hours after placement.

END OF SECTION 03 52 16

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood blocking, and nailers.
 - 2. Wood fasciae.

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Wood-preservative-treated wood.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
- B. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
 - 2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
 - 3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.

- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 as appropriate for the substrate.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.5 MISCELLANEOUS MATERIALS

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Do not splice structural members between supports unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
- E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.

- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. ICC-ES evaluation report for fastener.

- H. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
 - 1. Comply with approved fastener patterns where applicable.
 - 2. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

END OF SECTION

SECTION 07 01 50.19 - PREPARATION FOR REROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Full tear-off of entire roof. The surrounding roofs are to remain – see the drawings. Protect the remaining roofs per this specification.
2. Removal of base flashings – see the drawings.

B. Related Requirements:

1. Section 01 10 00 "Project Summary" for use of the premises and phasing requirements.
2. Section 01 50 00 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.

1.3 UNIT PRICES

- A. Work of this Section is affected by structural deck repair per unit price.

1.4 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.
- B. Roof Re-Cover Preparation: Existing roofing system is to remain and be prepared for new roof installed over it.
- C. Full Roof Tear-Off: Removal of existing roofing system from wood deck.

1.5 ACTION SUBMITTALS

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

- B. Shop Drawings: Include plans, sections, and details.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
 - 1. Include certificate that Installer is approved by warrantor of existing roofing system.
 - 2. Include certificate that Installer is licensed to perform asbestos abatement.
- B. Fastener pull-out test report.
- C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Must meet the criteria outlined within the roofing specifications.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.8 FIELD CONDITIONS

- A. Existing Roofing Systems:
 - 1. Gym roof – a description from exterior to existing light weight concrete structural deck:
 - a. Spray Foam Polyurethane
 - b. EPDM roof membrane
 - c. 1.5-inch (38 mm) Polyisocyanurate board insulation
 - d. Smooth 6-ply Coal Tar built-up roof
 - 2. Stage roof - a description from exterior to existing light weight concrete structural deck:
 - a. Spray Foam Polyurethane
 - b. EPDM roof membrane

- c. 1-inch (25.4 mm) Polyisocyanurate board insulation
 - d. 6-ply Coal Tar built-up roof with gravel
- 3. Cafeteria Roof - a description from exterior to existing poured gypsum structural deck:
 - a. Spray Foam Polyurethane
 - b. EPDM roof membrane
 - c. 2-inch (51 mm) Polyisocyanurate board insulation
 - d. 3-ply Coal Tar built-up roof
 - e. 1-inch (25.4 mm) Perlite insulation board
 - f. Base Sheet.
- B. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 24 hours' notice of activities that may affect Owner's operations.
 - 1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
 - 2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.
- C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- E. Limit construction loads on roof for rooftop equipment wheel loads and for uniformly distributed loads.
- F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
 - 1. Remove only as much roofing in one day as can be made watertight in the same day.
- G. Hazardous Materials: It is not expected that hazardous materials, such as asbestos-containing materials, will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work. Existing roof will be left no less watertight than before removal.
 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- H. Hazardous Materials: A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
1. Do not disturb hazardous materials or items suspected of containing hazardous materials except according to procedures specified elsewhere in the Contract Documents.
 2. Coordinate reroofing preparation with hazardous material remediation to prevent water from entering existing roofing system or building.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

- A. As the old roof is removed, follow up with wood roof deck repair (unit price) and installation of new roof. Do not remove any more of the existing roof than cannot be installed new in one day.
- B. Wood blocking, curbs, and nailers are specified in Section 06 10 00 "Rough Carpentry."
- C. Plywood roof sheathing is specified in Section 06 16 00 "Sheathing."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Shut off rooftop utilities and service piping before beginning the Work.
- B. Protect existing roofing system that is not to be reroofed.
 1. Loosely lay 1-inch- (25-mm-) minimum thick, expanded polystyrene (EPS) insulation over existing roofing in areas where access is required to area of work. Loosely lay 15/32-inch (12-mm) plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 1 inch (25 mm).
 2. Limit traffic and material storage to areas of existing roofing that have been protected.

3. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- C. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
 - D. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation new roof in the event of unexpected rain.
- 3.2 ROOF TEAR-OFF
- A. Full Roof Tear-Off: Remove existing roofing and other roofing system components down to the deck.
 1. Remove foam roofing and built-up roofing to expose the existing wood roof deck.
 2. Remove wood blocking, curbs, and nailers.
- 3.3 DECK PREPARATION
- A. Inspect deck after tear-off of roofing system.
 - B. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.
 - C. Repair structural roof deck as directed by Architect. Roof deck repairs will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
- 3.4 DISPOSAL
- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 1. Storage or sale of demolished items or materials on-site is not permitted.
 - B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION

**SECTION 07 54 55 - THERMOPLASTIC TRI-POLYMER ALLOY (TPA) ROOFING
BID ALTERNATE 1**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. This membrane roofing system is BID ALTERNATE 1.

1.2 SUMMARY

- A. Section includes:
 - 1. Mechanically fastened Base Sheet into Gypsum Deck (No base sheet over concrete deck)
 - 2. Adhered Tapered Roof Insulation, with Tapered Crickets and Saddles.
 - 3. Adhered Thermoplastic Tri-polymer Alloy (TPA) roof membrane.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
 - 2. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:
 1. Layout and thickness of insulation.
 2. Base flashings and membrane termination details.
 3. Flashing details at penetrations.
 4. Tapered insulation layout, thickness, and slopes.
 5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples for Verification: For the following products:
 1. Roof membrane and flashings, of color required.
 2. Walkway pads or rolls, of color required.

- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Manufacturer Certificates:
 - 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of compliance with performance requirements.
 - 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.
- B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of

manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 WARRANTY

- A. Warranty, General: Warranties specified 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.
- B. Special Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
 - 1. Special warranty includes roofing membrane, insulation, insulation adhesive, fasteners, flashings, asphalt, felts, mastics, pipe vents, caulking, termination

strips, etc. as well as all metal work, wood nailers, cants, etc. The warranty coverage will include all wind damage up to 74 mph.

2. Manufacturer will provide the following as part of the warranty, at years 2, 5, 10 and 15.
 - a. Inspection by a Technical Service Representative and delivery of a written inspection report documenting roof conditions.
 - b. Preventative maintenance and necessary repairs, including splits, tears, or breaks in the roof membrane system and flashings that could inhibit sound roof performance and are not exempt due to neglect, negligence, vandalism, or some other exclusion.
3. General housekeeping and cleanup, subject to limits, but generally including removal of debris from the roof membrane, roof drains, and scuppers.
4. Warranty Period: 20 years from date of Substantial Completion.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

A. Basis-of-Design Manufacturer/Product: The roof system specified in this Section is based upon Tremco, Inc. products named in other Part 2 articles. Subject to compliance with requirements, provide the named product or an approved comparable product meeting the performance requirements.

2.2 THERMOPLASTIC ROOF MEMBRANE

A. Thermoplastic Tri-Polymer Alloy (TPA) Sheet, Fleece-Backed: ASTM D 4434, Type IV, internally fabric reinforced and fleece-backed, uniform, flexible TPA sheet; Energy Star qualified, CRRC listed and California Title 24 Energy Code compliant.

1. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6509: 350 lbf/in (61 kN/m).

2. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6509: 100 lbf (0.44 kN).
3. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D 6509: machine direction, 35 percent; cross machine direction, 33 percent.
4. Thickness: 60 mils (1.5 mm), nominal.
5. Exposed Face Color: White.
6. Dynamic Puncture Resistance: 117.7 ft-pdl (5 J) minimum; ASTM D 5635.

2.3 MECHANICALLY FASTENED BASE SHEET

- A. Base Sheet: BURmastic Glass Ply Composite 28lb. Nonperforated, asphalt-coated, polyester/fiberglass/polyester reinforced sheet dusted with fine mineral surfacing on both sides which meets the requirements of ASTM D 4601, Type II, and the following properties:
 1. Breaking Strength, minimum, ASTM D 146: machine direction, 90 lbf/in (15.76 kN/m); cross machine direction, 70 lbf/in (12.26 kN/m).
 2. Pliability, ½-insh radius, ASTM D146: No Failures
 3. Mass of desaturated flass, ASTM D228: 1.7 lb/100 sq ft (83 g/sq.m)
 4. Thickness, minimum, ASTM D 146: 0.05 inch (1.3 mm).
 5. Surfacing & Stabilizer, maximum, ASTM D 4601: 65%
 6. Ash (glass mat only), ASTM D 4601: 70-88%
 7. Weight, minimum, ASTM D 228: 28 lb/100 sq. ft. (1.37 kg/sq. m.).
- B. Base sheet fasteners:
 1. Equal to Trufast: Twin Lok-Nail Preassembled Fastener

2.4 ROOF INSULATION AND ACCESSORIES

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 3, felt or glass-fiber mat facer on both major surfaces.
 1. Compressive Strength: 25 psi (172 kPa).
 2. Size: 48 by 96 inches (1219 by 2438 mm).

3. Thickness:

- a. Base Layer: 2.6 inches (66 mm).
- b. Upper Layer: varies due to tapering. Minimum thickness of second layer is 2.6 inches (66 mm). Total thickness is 5.2-inches (132 mm)
- c. Minimum thickness of tapered insulation is 0.5-inch (12.7 mm)
- d. Design insulation layers to create thermal breaks between layers of insulation. Where overall insulation thickness is 2.6-inches (66 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6-inches (150 mm) in each direction.
- e. Layers shall be approximately half the total thickness. Examples:
 - 1) One flat layer of 2.6-inch (66 mm), then one flat layer of 2.1-inch (53.3 mm) then a tapered insulation layer where the minimum taper is 0.5-inch (12.7 mm) thick.
 - 2) One flat layer of 2.6-inch (66 mm), then one tapered insulation layer where the minimum taper is 2.6-inch (66 mm) thick.A flat layer of 4.7-inch (119.3 mm) then a tapered insulation layer where the minimum taper is 0.5-inch (12.7 mm) thick is NOT ACCEPTABLE.
- f. Crickets, diverting water around roof curbs: 0.5-inch/12-inch (12.7 mm/304.8 mm) slope.

- C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.5 INSULATION ADHESIVE

- A. Insulation Adhesive: Two-component, solvent-free, low odor, elastomeric urethane adhesive formulated to adhere roof insulation to substrate, with the following physical properties:
1. Flame Spread Index, ASTM E 84: 10.
 2. Smoke Developed Index, ASTM E 84: 30.
 3. Asbestos Content, EPA 600/R13/116: None.
 4. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 0 g/L.
 5. Tensile Strength, minimum, ASTM D 412: 250 psi (1724 kPa).
 6. Peel Adhesion, minimum, ASTM D 903: 17 lbf/in (2.98 kN/m).
 7. Flexibility, 70 deg. F (39 deg. C), ASTM D 816: Pass.

2.6 AUXILLARY MEMBRANE ROOFING MATERIALS

- A. General: Furnish auxiliary materials recommended by roofing manufacturer for intended use and compatible with roof membrane.
 - 1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Single Ply Membrane Adhesive, Water-Based Elastomeric, low-VOC water-based contact-type adhesive for bonding fleece-backed single ply membranes and flashings to substrates.
 - 1. Asbestos Content, EPA/600/R-93/116: None.
 - 2. VOC, maximum, ASTM D 3960: 180 g/L.
- C. Sheet Flashing: Thermoplastic, internally fabric reinforced, uniform, flexible sheet, CRRC listed and California Title 24 Energy Code compliant.
 - 1. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6509: 300 lbf/in (52 kN/m).
 - 2. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6509: 100 lbf (0.44 kN).
 - 3. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D 6509: machine direction, 25 percent; cross machine direction, 25 percent.
 - 4. Thickness: 45 mils (1.5 mm) nominal.
- D. Single Ply Flashing Bonding Adhesive: Elastomeric, solvent-based contact-type adhesive for bonding TPA fleece-backed single ply membranes and flashings to substrates.
 - 1. Asbestos Content, EPA/600/R-93/116: None.
 - 2. Density at 77 deg. F (25 deg. C), minimum, ASTM D 1475: 7.0 lb/gal (0.84 kg/L).
 - 3. Percent solids: 25 percent minimum.
 - 4. VOC, maximum, ASTM D 3960: 612 g/L.
- E. Roofing and Sheet-Flashing Accessories: Provide sealants, pourable sealers, termination reglets, clamps, compression bars, tapes, preformed cone and stack flashings, and other accessories recommended by roofing manufacturer for intended use.

- F. Metal Termination Bars: Manufacturer's standard stainless-steel or aluminum bars, prepunched, with noncorrosive fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Verify that blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 BASE SHEET INSTALLATION (GYPSUM DECK ONLY)

- A. Fasten base sheet using Twin-loc 1.8” Fasteners – Fasten every nine inches on laps, two rows staggered every 18” in the field.

3.4 INSTALLATION, GENERAL

- A. Install thermoplastic roofing system in accordance with manufacturer’s recommendations.
- B. Coordinate installing membrane roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
- C. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

3.5 INSULATION INSTALLATION

- A. Install tapered insulation under area of roofing to conform to slopes indicated.
- B. Install insulation under area of roofing to achieve required thickness. Install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6-inches (150 mm) in each direction.
 - 1. Install insulation at average overall thickness of minimum 5.2 inches (132 mm).
- C. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- E. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel. Follow manufacturer's written guidelines.
- B. Install thermoplastic roof system in accordance with roofing manufacturer's written guidelines and as follows:
 - 1. Thermoplastic cap sheet.
- C. Install thermoplastic sheet over area to receive roofing per roofing system manufacturer's written instructions. Unroll sheet and allow to relax for a minimum of 30 minutes.
 - 1. Install sheet per ASTM D 5036.
- D. Start installation of sheet in presence of roofing system manufacturer's technical personnel.
- E. Accurately align thermoplastic roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- F. Mix WB Bonding adhesive thoroughly before use.
- G. Surface to received WB Bonding adhesive must be clean, dry and free from oil, grease, or other contaminants.
- H. Apply WB bonding adhesive to insulation at a rate of 80 to 100 sq. ft./gal. Allow adhesive to become tacky prior to placing membrane into the adhesive. Do not apply bonding adhesive to seam area of sheet.
- I. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.
- J. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- K. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings per manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- L. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- M. Install adhered thermoplastic sheet and auxiliary materials to tie in to existing roofing.

3.7 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates per membrane roofing system manufacturer's written instructions.
- B. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- C. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- D. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 FIELD QUALITY CONTROL

- A. Roofing Inspector: Contractor shall engage a qualified roofing inspector for the entire duration of the project to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and per warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: Auburn CUSD #10 Board of Education
2. Address: 606 West North Street, Auburn, Illinois 62615
3. Building Name/Type: Auburn Elementary School CUSD #10
4. Address: 445 North 5th Street
5. Area of Work: Gymnasium, Stage and Cafeteria/Kitchen Roofs
6. Acceptance Date: _____.
7. Warranty Period: Two (2) years from the date of Substantial Completion.
8. Expiration Date: _____.

- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing

Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding 55 mph (1,475.23 m/sec);
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 07 54 55

SECTION 07 54 23 - THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Adhered thermoplastic polyolefin (TPO) roofing system.
2. Tapered Roof insulation.
3. Mechanically fastened Base Sheet (gypsum deck only)
4. Walkways.

- B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:
 - 1. Layout and thickness of insulation.
 - 2. Base flashings and membrane termination details.
 - 3. Flashing details at penetrations.
 - 4. Tapered insulation layout, thickness, and slopes.
 - 5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples for Verification: For the following products:
 - 1. Roof membrane and flashings, of color required.
 - 2. Walkway pads or rolls, of color required.
- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Manufacturer Certificates:
 - 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of compliance with performance requirements.
 - 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.
- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Sample Warranties: For manufacturer's special warranties.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.
- B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, and other components of roofing system.

2. Warranty Period: 20 years from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, and walkway products, for the following warranty period:
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.
1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D 3746, ASTM D 4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:
- D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
1. Fire/Windstorm Classification: Class 1A-90.
 2. Hail-Resistance Rating: SH.
- E. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

- F. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.
- G. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- H. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- A. TPO Sheet: ASTM D 6878/D 6878M, internally fabric- or scrim-reinforced, TPO sheet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. Cooley Engineered Membranes.
 - c. Firestone Building Products.
 - d. GAF.
 - e. GenFlex Roofing Systems.
 - f. Mule-Hide Products Co., Inc.
 - g. Tremco Roofing, Inc.
 - h. Versico Incorporated.
 - 2. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.
 - 3. Thickness: 60 mils (1.5 mm), nominal.
 - 4. Exposed Face Color: White.

2.3 MECHANICALLY FASTENED BASE SHEET (GYPSUM DECK ONLY)

- A. Base Sheet: Glass Ply Composite 28lb. Nonperforated, asphalt-coated, polyester/fiberglass/polyester reinforced sheet dusted with fine mineral surfacing on both sides which meets the requirements of ASTM D 4601, Type II, and the following properties:
 - 1. Breaking Strength, minimum, ASTM D 146: machine direction, 90 lbf/in (15.76 kN/m); cross machine direction, 70 lbf/in (12.26 kN/m).
 - 2. Pliability, ½-inch radius, ASTM D146: No Failures

3. Mass of desaturated glass, ASTM D228: 1.7 lb/100 sq ft (83 g/sq.m)
4. Thickness, minimum, ASTM D 146: 0.05 inch (1.3 mm).
5. Surfacing & Stabilizer, maximum, ASTM D 4601: 65%
6. Ash (glass mat only), ASTM D 4601: 70-88%
7. Weight, minimum, ASTM D 228: 28 lb/100 sq. ft. (1.37 kg/sq. m.).

B. Base sheet fasteners:

1. Equal to Trufast: Twin Lok-Nail Preassembled Fastener

2.4 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 3, felt or glass-fiber mat facer on both major surfaces.

1. Compressive Strength: 25 psi (172 kPa).
2. Size: 48 by 96 inches (1219 by 2438 mm).
3. Thickness:
 - a. Base Layer: 2.6 inches (66 mm).
 - b. Upper Layer: varies due to tapering. Minimum thickness of second layer is 2.6 inches (66 mm). Total thickness is 5.2-inches (132 mm)
 - c. Minimum thickness of tapered insulation is 0.5-inch (12.7 mm)
 - d. Design insulation layers to create thermal breaks between layers of insulation. Where overall insulation thickness is 2.6-inches (66 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6-inches (150 mm) in each direction.
 - e. Layers shall be approximately half the total thickness. Examples:
 - 1) One flat layer of 2.6-inch (66 mm), then one flat layer of 2.1-inch (53.3 mm) then a tapered insulation layer where the minimum taper is 0.5-inch (12.7 mm) thick.
 - 2) One flat layer of 2.6-inch (66 mm), then one tapered insulation layer where the minimum taper is 2.6-inch (66 mm) thick.
A flat layer of 4.7-inch (119.3 mm) then a tapered insulation layer where the minimum taper is 0.5-inch (12.7 mm) thick is NOT ACCEPTABLE.
 - f. Crickets, diverting water around roof curbs: 0.5-inch/12-inch (12.7 mm/304.8 mm) slope.

2.5 INSULATION ADHESIVE

- A. Insulation Adhesive: Two-component, solvent-free, low odor, elastomeric urethane adhesive formulated to adhere roof insulation to substrate, with the following physical properties:
1. Flame Spread Index, ASTM E 84: 10.
 2. Smoke Developed Index, ASTM E 84: 30.
 3. Asbestos Content, EPA 600/R13/116: None.
 4. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 0 g/L.
 5. Tensile Strength, minimum, ASTM D 412: 250 psi (1724 kPa).
 6. Peel Adhesion, minimum, ASTM D 903: 17 lbf/in (2.98 kN/m).
 7. Flexibility, 70 deg. F (39 deg. C), ASTM D 816: Pass.

2.6 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.
1. Size: Approximately 36 by 60 inches (914 by 1524 mm).
 2. Color: Contrasting with roof membrane.

2.7 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Furnish auxiliary materials recommended by roofing manufacturer for intended use and compatible with roof membrane.
1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Single Ply Membrane Adhesive, Water-Based Elastomeric, low-VOC water-based contact-type adhesive for bonding fleece-backed single ply membranes and flashings to substrates.
1. Asbestos Content, EPA/600/R-93/116: None.
 2. VOC, maximum, ASTM D 3960: 180 g/L.
- C. Sheet Flashing: Thermoplastic, internally fabric reinforced, uniform, flexible sheet, CRRC listed and California Title 24 Energy Code compliant.

1. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6509: 300 lbf/in (52 kN/m).
 2. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6509: 100 lbf (0.44 kN).
 3. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D 6509: machine direction, 25 percent; cross machine direction, 25 percent.
 4. Thickness: 45 mils (1.5 mm) nominal.
- D. Single Ply Flashing Bonding Adhesive: Elastomeric, solvent-based contact-type adhesive for bonding TPA fleece-backed single ply membranes and flashings to substrates.
1. Asbestos Content, EPA/600/R-93/116: None.
 2. Density at 77 deg. F (25 deg. C), minimum, ASTM D 1475: 7.0 lb/gal (0.84 kg/L).
 3. Percent solids: 25 percent minimum.
 4. VOC, maximum, ASTM D 3960: 612 g/L.
- E. Roofing and Sheet-Flashing Accessories: Provide sealants, pourable sealers, termination reglets, clamps, compression bars, tapes, preformed cone and stack flashings, and other accessories recommended by roofing manufacturer for intended use.
- F. Metal Termination Bars: Manufacturer's standard stainless-steel or aluminum bars, prepunched, with noncorrosive fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.
- C. Install roof membrane and auxiliary materials to tie into existing roofing to maintain weathertightness.

3.4 BASE SHEET INSTALLATION (GYPSUM DECK ONLY)

- A. Fasten base sheet using Twin-loc 1.8" Fasteners – Fasten every nine inches on laps, two rows staggered every 18" in the field.

3.5 INSULATION INSTALLATION

- A. Install tapered insulation under area of roofing to conform to slopes indicated.
- B. Install insulation under area of roofing to achieve required thickness. Install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6-inches (150 mm) in each direction.
 - 1. Install insulation at average overall thickness of minimum 5.2 inches (132 mm).
- C. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

- D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- E. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 ADHERED ROOF MEMBRANE INSTALLATION

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- D. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- H. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
 - 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 - 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

- I. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 WALKWAY INSTALLATION

A. Flexible Walkways:

1. Install flexible walkways at the following locations:
 - a. Perimeter of each rooftop unit.
 - b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
 - d. Top and bottom of each roof access ladder.
 - e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - f. Locations indicated on Drawings.
 - g. As required by roof membrane manufacturer's warranty requirements.
2. Provide 6-inch (76-mm) clearance between adjoining pads.
3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
- B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.11 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

- 1. Owner: Auburn CUSD #10 Board of Education
- 2. Address: 606 West North Street, Auburn, Illinois 62615
- 3. Building Name/Type: Auburn Elementary School CUSD #10
- 4. Address: 445 North 5th Street
- 5. Area of Work: Gymnasium, Stage and Cafeteria/Kitchen Roofs
- 6. Acceptance Date: _____.
- 7. Warranty Period: Two (2) years from the date of Substantial Completion.
- 8. Expiration Date: _____.

- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding 55 mph (1,475.23 m/sec);
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall

have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

- 5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
- 6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
- 7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

- 1. Authorized Signature: _____.
- 2. Name: _____.
- 3. Title: _____.

END OF SECTION 07 54 23

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Formed reglets with counterflashing.
2. Formed gutters
3. Formed downspouts
4. Formed fasciae
5. Formed piping, flue flashings

- B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood nailers.
2. Section 07 54 00 "Thermoplastic Tri-polymer Membrane Roofing" for materials and installation of sheet metal flashing and trim integral with roofing.
3. Section 07 54 23 "Thermoplastic Polyolefin (TPO) Roofing" for materials and installation of sheet metal flashing and trim integral with roofing.
4. Section 07 95 13.16 "Exterior Expansion Joint Cover Assemblies" for manufactured expansion-joint cover assemblies for exterior building walls, soffits, and parapets.

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 in.

C. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches (300 mm) long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.
4. Anodized Aluminum Samples: Samples to show full range to be expected for each color required.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.
 - 1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
 - 2. Protect stored sheet metal flashing and trim from contact with water.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.8 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C).

2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying
- B. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
 - 1. Finish: ASTM A480/A480M, No. 2D dull, cold rolled
- C. Metallic-Coated Steel Sheet: Provide aluminum-zinc alloy-coated steel sheet in accordance with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation, Grade 40 (Grade 275) prepainted by coil-coating process to comply with ASTM A755/A755M.
 - 1. Surface: Smooth
 - 2. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As selected by Architect from manufacturer's full range.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

D. Lead Sheet: ASTM B749 lead sheet.

2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.
- B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum.

2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 2. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
 3. Fasteners for Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

- E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

2.5 FABRICATION, GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
 - 1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
 - 4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances:
 - 1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

G. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- (2400-mm-) long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than 1/4" x 1 1/2" (6.35 mm x 38.1 mm).
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Shop fabricate ends & corners.
5. Gutter Profile: Style F in accordance with cited sheet metal standard.
6. Expansion Joints: Lap type.
7. Gutters with Girth 21 to 25 Inches (410 to 510 mm): Fabricate from the following materials:
 - a. Metallic-Coated Steel: 22 gauge, 0.034 inch (0.85 mm) thick.

B. Downspouts: Fabricate corrugated round downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricated Hanger Style: Fig. 1-35E in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Fabricate from the following materials:
 - a. Metallic-Coated Steel: 20 gauge, 0.040 inch (1.01 mm) thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Joint Style: Overlapped, 4 inches (100 mm) wide.
2. Fabricate from the following materials:

- a. Metallic-Coated Steel : 24 gauge, 0.028 inch (0.71 mm) thick.
- B. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.]
1. Coping Profile: Fig. 3-4B in accordance with SMACNA's "Architectural Sheet Metal Manual."
 2. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, concealed backup plate.
 3. Fabricate from the following materials:
 - a. Metallic-Coated Steel: 20 gauge, 0.040 inch (1.02 mm) thick.
- C. Reglets in masonry: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with interlocking counterflashing on exterior face, of same metal as reglet.
1. Material: Stainless Steel, 26 gauge, 0.019 inch (0.477 mm) thick.
 2. Masonry Type: Provide with offset top flange for embedment in masonry mortar Before retaining "Finish" Subparagraph below, verify availability of finishes with manufacturers.
 3. Finish: With manufacturer's standard color coating.
- D. Fasciae: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections. Fabricate joint plates of same thickness as fascia. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on cleat. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.
1. Fasciae Profile: See Drawings
 2. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, concealed backup plate.
 3. Fabricate from the following materials:
 - a. Metallic-Coated Steel: 20 gauge, 0.040 inch (1.02 mm) thick.
- E. Roof-Penetration Flashing: Fabricate from the following materials:
1. Metallic-Coated Steel: 24 gauge, 0.028 inch (0.71 mm) thick.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

- A. Equipment Support Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 26 gauge, 0.019 inch (0.477 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
 - 1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
 - 3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
 - 5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
 - 6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
 - 7. Do not field cut sheet metal flashing and trim by torch.
 - 8. Do not use graphite pencils to mark metal surfaces.

- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 - 1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
 - 1. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
- D. Fasteners: Use fastener sizes that penetrate wood blocking less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
 - 1. Use sealant-filled joints unless otherwise indicated.
 - a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
 - b. Form joints to completely conceal sealant.
 - c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
 - d. Adjust setting proportionately for installation at higher ambient temperatures.
 - 1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
 - 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

- A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters:
 - 1. Join sections with joints sealed with sealant.
 - 2. Provide for thermal expansion.
 - 3. Attach gutters at eave or fascia to firmly anchor them in position.
 - 4. Provide end closures and seal watertight with sealant.
 - 5. Slope to downspouts.
 - 6. Fasten gutter spacers to front and back of gutter.
 - 7. Anchor gutter with gutter brackets and straps spaced not more than 36 inches (910 mm) apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead. Stagger brackets with straps.
 - 8. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) apart. Install expansion-joint caps.
- C. Downspouts:
 - 1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
 - 2. Provide hangers with fasteners designed to hold downspouts securely to walls.
 - 3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.

3.4 INSTALLATION OF ROOF FLASHINGS

- A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.
 - 1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
 - 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing:
 - 1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
 - 2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch (75-mm) centers.

C. Copings:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.
 - a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 16-inch (400-mm) centers.
 - b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch (600-mm) centers.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches (100 mm) over base flashing.
3. Lap counterflashing joints minimum of 4 inches (100 mm).
4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.

3.5 INSTALLATION OF MISCELLANEOUS FLASHING

A. Equipment Support Flashing:

1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
2. Weld or seal flashing with elastomeric sealant to equipment support member.

3.6 INSTALLATION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

3.8 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 07 62 00

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Certifications:

1. Manufacturer's certification that products:
 - a. Furnished for the specific project meet or exceed specified requirements.
 - b. Assembled for each joint are compatible with each other and with joint substrates under conditions of service and application.
 - c. Are suitable for the indicated use.
2. Manufacturer's certification that sealants, primers, and cleaners, comply with local regulations controlling the use of volatile organic compounds.
3. Contractor's and installer's certification that products are installed in accordance with Contract Documents, based on inspection and testing specified as part of Field Quality Control.

1.2 SEQUENCING

- A. Coordinate installation of sealants with substrates to which they are applied.

1.3 WARRANTY

- A. Provide warranties under provisions of Section 01 78 00.
- B. Warrant installed products to be free from defects in material, labor, or installation techniques for 2 years.
- C. Include coverage for installed sealants and accessories which:
 1. Fail to achieve airtight seal.
 2. Fail to achieve watertight seal.
 3. Exhibit loss of adhesion.
 4. Exhibit loss of cohesion.
 5. Do not cure.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Silicone - General Purpose (Designation S-GP):
 1. Description:
 - a. ASTM C 920:
 - 1) Type: S
 - 2) Grade: NS
 - 3) Class: 25
 - 4) Uses: NT, M, G, A, O

- b. Low modulus, single component, neutral curing, non-staining, non-bleeding silicone sealant.
 - c. Joint movement range without cohesive/adhesive failure: Plus 50 percent to minus 50 percent of joint width.
 - d. Color: Selected by Owner's Representative from manufacturer's full color range.
2. Acceptable Products:
- a. 795, Dow Corning.
 - b. Silpruf, General Electric.
 - c. 864, Pecora.
 - d. Rhodorsil 5C, Rhone-Poulenc.
 - e. Spectrum 1, Tremco.

2.2 ACCESSORIES

- A. Joint Cleaner, Primer, Backing Rods: As recommended by sealant manufacturers.
- B. Masking Tape: Non-staining, non-absorbent material compatible with sealants and surfaces adjacent to joints.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Ensure that concrete and masonry have cured minimum of 28 days.
- B. Verify that sealant backing is compatible with sealant.
- C. Verify that substrate surface:
 - 1. Is within manufacturer's moisture content range.
 - 2. Complies with manufacturer's cleanliness and surface preparation requirements.
- D. Joint Width:
 - 1. Verify joints are greater than minimum widths required by manufacturer.
 - 2. If joints are narrower than minimum required widths, widen narrow joints to indicated width.
 - 3. Do not place sealant in joints narrower than manufacturer's required minimum.

3.2 PREPARATION

- A. Prepare, clean, and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and matter which might impair adhesion of primer and sealant to substrate.
- C. Remove form release agents, laitance, and chemical retarders, which might impair adhesion of primer and sealant to concrete and masonry surfaces.
- D. Comply with ASTM C 1193.
- E. Protect elements adjoining and surrounding work of this Section from damage and disfiguration.
- F. Priming:

1. Prime joint substrates unless priming is not required by manufacturer's sealant-substrate compatibility and adhesion test.

3.3 APPLICATION

A. General:

1. Comply with results and recommendations from:
 - a. "Manufacturer's compatibility and adhesion test.
2. Provide compatible sealant system between dissimilar assemblies and adjacent construction.
3. Seal locations necessary to create and secure continuous enclosure even though Drawings may not indicate all locations; do not seal weep holes.
4. Seal to prevent migration of water, vapor, and air through joints.
5. Comply with manufacturer's required application temperature and relative humidity ranges. Consult manufacturer when sealant cannot be applied within these ranges.

B. Sealant Backing Bond Breaker:

1. Measure joint dimensions and size materials to achieve manufacturer-required width-to-depth ratios.
2. Install to achieve sealant depth and sealant contact depth no greater than distance required by manufacturer for sealant material, joint width, and joint movement range.
3. Install using blunt instrument to avoid puncturing.
4. Install to provide optimum joint profile and in manner to provide not less than 6 mm (1/4 inch) sealant depth when tooled.
5. Install tape where insufficient joint depth makes use of rod not possible. Match tape width to joint width to prevent three-side adhesion. Do not wrap tape onto sides of the joint.

C. Sealant:

1. Install sealants at same time as installation of backing bond breaker materials.
2. Comply with manufacturer's requirements for applying different sealant materials in direct contact with each other.
3. Install sealant with pressure-operated devices to form uniform continuous bead.
4. Use sufficient pressure to fill voids and joints full.
5. Install to adhere to both sides of joint.
6. Install to not adhere to back of joint; provide sealant backing.
7. Install sealant free of air pockets and embedded matter.
8. Recess sealant 3 mm (1/8 inch) from surface of pavements and horizontal surfaces.

D. Sealant Tooling:

1. Comply with manufacturer's tooling method requirements.
2. Tool sealant within manufacturer's tooling time limits.
3. Remove excess sealant from surfaces adjacent to joint.

4. Allow acrylic latex sealant to achieve firm skin before paint is applied.

3.4 SCHEDULE

A. Sealant Schedule:

1. Exterior locations:
 - a. Wall joints: S-GP
 - b. Perimeter of penetrations through walls: Designation S-GP
 - c. Expansion joints in ceilings, soffits, and overhead surfaces: Designation S-GP
 - d. Control joints and perimeter of penetrations in ceilings, soffits, and overhead surfaces: Designation: S-GP
 - e. Wall and ceiling joints between frames and their rough opening: Designation S-GP
 - f. Wall and ceiling joints between frames and adjoining surfaces: Designation S-GP
 - g. Joints in Section 07 62 00: Designation S-GP.

END OF SECTION 07 92 00

DIVISION 7 – THERMAL AND MOISTURE PROTECTION
SECTION 07 95 13.16 - EXTERIOR EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes exterior building expansion joint cover assemblies.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Section 07 54 23 "Thermoplastic-Polyolefin (TPO) Roofing" or 07 54 00 "Thermoplastic Tri-polymer Alloy (TPA) Roofing" for materials and installation of sheet metal flashing and trim integral with roofing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
- B. Shop Drawings: For each expansion joint cover assembly.
 - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
 - 2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- C. Samples: For each exposed expansion joint cover assembly and for each color and texture specified, full width by 6 inches (150 mm) long in size.
- D. Samples for Initial Selection: For each type of exposed finish.
 - 1. Include manufacturer's color charts showing the full range of colors and finishes available for each exposed metal and elastomeric seal material.

- E. Samples for Verification: For each type of expansion joint cover assembly, full width by 6 inches (150 mm) long in size.
- F. Expansion Joint Cover Assembly Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:
 - 1. Manufacturer and model number for each expansion joint cover assembly.
 - 2. Expansion joint cover assembly location cross-referenced to Drawings.
 - 3. Nominal, minimum, and maximum joint width.
 - 4. Movement direction.
 - 5. Materials, colors, and finishes.
 - 6. Product options.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

2.2 PERFORMANCE REQUIREMENTS

- A. Expansion Joint Design Criteria:
 - 1. Type of Movement: Thermal.
 - a. Nominal Joint Width: Match existing. verify existing conditions.

2.3 EXTERIOR EXPANSION JOINT COVERS

- A. Exterior Elastomeric-Seal Joint Cover: Assembly consisting of elastomeric seal anchored to surface-mounted frames fixed to sides of joint gap.
 - 1. Manufacturers:
 - a. Johns-Mansville: Expando-O-Flash expansion joint cover CF/EJ (basis of specification)
 - b. BASF: WaboFlash EEJ/EWC
 - c. JointMaster/InPro Corporation: 674 Series Bellows

- d. Equal approved by architect during bidding.
- 2. Application: Curb to Curb.
- 3. Installation: Surface-mounted.
- 4. Exposed Metal:
 - a. Aluminum: 0.032" Mill finish.
- 5. Seal: Preformed elastomeric membrane or extrusion.
 - a. EPDM (type E), black in color.

2.4 MATERIALS

- A. Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063-T5 for extrusions; ASTM B 209 (ASTM B 209M), Alloy 6061-T6 for sheet and plate.
 - 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.

2.5 ALUMINUM FINISHES

- A. Mill finish.

2.6 ACCESSORIES

- A. Moisture Barriers: Manufacturer's standard continuous, waterproof membrane within joint and attached to substrate on sides of joint.
 - 1. Provide where indicated on Drawings.
- B. Manufacturer's stainless-steel attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
 - 1. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
 - 2. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
 - 3. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
 - 4. Install frames in continuous contact with adjacent surfaces.
 - a. Shimming is not permitted.
 - 5. Locate anchors at interval recommended by manufacturer, but not less than 3 inches (75 mm) from each end and not more than 24 inches (600 mm) o.c.

- C. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
 - 1. Provide in continuous lengths for straight sections.
 - 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
 - 3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- E. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.

3.4 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections.

END OF SECTION 07 95 13.16