

GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES

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DEPARTMENT OF PROPERTY AND PROCUREMENT

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INVITATION FOR BIDS

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Invitation No. IFB011DOEC17(C)

Date: April 10, 2017

Pursuant to Laws of the Government of the Virgin Islands sealed bids in Quintuplicate (5) copies ((1) original and (4) copies) for the work described herein will be received until **Tuesday, May 9, 2017 at 10:00 a.m. at the Department of Property & Procurement Conference Room.** And at this time **publicly** open.

Description of Work and Project Number: IFB011DOEC17(C) Roof Resurfacing at the John Woodson Junior High School Located in the St. Croix District

Pre-Bid Conference: A Pre-Bid Conference will be held on **Wednesday, April 26, 2016 at 10:00 a.m.**

Cost Per Set: \$50.00 NON REFUNDABLE

Liquidated Damage: \$100.00

Completion Time of Work: 120 calendar days

Information regarding bidding documents

Bidding Documents include the Public Notice, this Invitation to Bid, Instruction to Bidders, Contractor's Qualification Statement, the Contract, Performance and Payment Bonds, General Provisions, Special Provision, Supplemental Specifications, Plan and Specifications. All documents may be obtained from the Department of Property and Procurement.

Each bid must be accompanied by a Bid Guarantee as provided for in Form No. P&P-ITB-CC-16-73 (Instruction to Bidders) which is hereby made a part of this Invitation and by this reference incorporated herein as fully and effectively as if set forth in detail. Bid Guarantee for Preferred Bidders will be as specified in 31 V.I.C. 236a (Act No. 2995 approved April 16, 1971) if Preferred Bidders Act applies. If Preferred Act does not apply, failure to provide a five (5%) percent bond will render the bid unresponsive. It is the Bidder's responsibility to determine if the Act Applies.

The Bid Guarantee for bidders not claiming or having the status of a preferred bidder will be Five (5%) per cent of the bid price. Bid Guarantee will be in the form of a Bond (Corporate or Individual Surety), Money Order, Certified Check, Irrevocable Letter of Credit or Cash.

No Bidder will be allowed to withdraw his bid within a period of thirty (30) calendar days following the date set for the opening thereof.

Preferred Bidder:

Any bidder claiming eligibility as a "preferred bidder" under the provision of the Preferred Bidder's Act (31 VIC 236a – Act No. 2995, approved April 16, 1971) must request that his name be added to a preferred bidder's list to be maintained by the Commissioner of Property and procurement.

If a bidder has not previously filed a notarized Certificate with the Commissioner of Property and Procurement, copies thereof may be obtained from the Department of Property and Procurement, Division of Procurement, Building No. 1, Sub Base, Third Floor, St. Thomas, Virgin Islands and/or from 3274 Estate Richmond, Christiansted, St. Croix, Virgin Islands.

Certificate must be fully completed, notarized and filed in the Division of Procurement before the day and hour set for bid opening.

Contractor's Qualification Statement

Each bidder must submit with his bid an executed copy of Contractor's Qualification Statement which is hereby made a part of this Invitation and by this reference incorporated herein as fully and effectively as if set forth in detail.

BONDS:

A Bid Bond, Performance Bond and Payment each are required as follows:

Bid Bond:	5% of the Contract
Performance Bond:	100% of the Contract
Payment Bond:	100% of the Contract

**Government of the Virgin Islands
Department of Education
Differed Maintenance Reduction Program**

Facility: John Woodson Junior High School
Project I.V10202100

District
St. Thomas/St. John (STT/STJ)
St. Croix

ITEMIZED BID SHEET

ACCT NO.	ITEM NO.	DESCRIPTION	QTY.	UNITS	UNIT PRICE	TOTAL PRICE
		BUILDINGS NOS 1, 2, 3, 4 and 5				
233461	1	Pressure wash and prep entire roof area including auditorium stage. Per product manufacturer's Specs.	100,000	S.F.		
233593	2	Carefully examine all areas of the roof to uncover lifted screws, screws with worn or destroyed washers; corroded areas, displaced flashing or pre-formed foam deterioration. All these areas are to be corrected. Intact but rusted screws are to be treated with a rust cleaning agent and two coats of rust inhibiting paint applied.	100,000	SF		
233593	3	Patch, seal, coat (with silicone membrane), all areas that are repaired, and primed.	1	LS		
		GYMNASIUM BUILDING NO 1				
233461	4	Examine caulking at hips, valleys and ridge and repair where needed. Apply 2 coats of liquid silicon coating these areas.	600	SF		
233461	5	Clean all guttering, repair joint where leaking or corroded, provide new inserts at downspouts, repair or replace downspouts where damaged or missing and ensure that all guttering drains freely through the building's drainage system.	550	LF		
		BUILDING NO 4 WALL FACING COURTYARD				
233969	6	Install 3/4 " cement board on 2x4 wood framing. Caulk, tape and apply two coats of silicone liquid membrane throughout. See construction details.	520	SF		
233885	7	Prep and patch wall where required and apply two coats of Sherwin Williams epoxy polymer sealer, color to match existing.	2,800	SF		
		CANOPY AREAS				
233734	8	Remove wood and metal panels from canopy roof throughout; remove wood ceiling from main canopy connecting BLDGS #5,3 and 4; remove lighting fixtures, clean and store; remove guttering and discard.	5,920	SF		
233734	9	Restructure canopy frame where required to achieve positive drainage.	5,920	SF		
233734	10	Reinstall new canopy using prepainted 26 ga metal panels for roof and 1/2 cement board for ceiling. Caulked tape and finished ceiling with textured stucco.	5,920	SF		

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ITEMIZED BID SHEET

ACCT NO.	ITEM NO.	DESCRIPTION	QTY.	UNITS	UNIT PRICE	TOTAL PRICE
233734	11	Install 2x8 inch fascia with plastic closure strip, 5 inch aluminum guttering and downspout.	300	LF		
233734	12	Reinstall ceiling fixtures; replace metal electrical conduits and junction boxes. Reuse existing wiring.	18	EA		
		CAFETERIA BUILDING NO 2 EASTERN WALL				
234101	13	Excavate a 2'-0"x 4'-0" trench along the eastern wall of the cafeteria to uncover the building foundation wall conditions. Compact after excavation.	54	Cy		
234101	14	Prep foundation wall and apply 60 mil Tam-pro sheet (18 inch) waterproofing membrane; secure membrane with Tam-pro coating adhesive.	540	SF		
234101	15	Install 20 mil vapor barrier throughout trench and inlay 8 inch sch 40 drain lines; fill with #5 gravel and compact. End drain lines with concrete bulkhead downhill from the building.	200	LF		
234101	16	Install 6 inch reinforced concrete slab along wall area. See drawing for details.	600	SF		
233615	17	Saw cut 1/2" x 4" deep horizontal channel below existing windows frame along an area of the wall, fabricate and imbed 4 x 4 inch angle aluminum flashing under windows. Anchor and caulk with Sika anchoring and caulking system or approved equal	60	LF		
233621	18	Replace existing exterior ceiling fixtures.	4	EA		
233621	19	Remove and replace corroded 36x80 inch metal doors and frames.	5	EA		
233621	20	Prep and patch exterior east wall and apply two coats of Sherwin Williams epoxy polymer sealer. Color match existing.	2,100	SF		
234101	21	Repair existing inwall 12x12 x16'-0 columns. Contractor to retain a Liscensed Structural Engineer to evaluate existing columns conditions and provide design for structural repairs.	6	EA		

**Government of the Virgin Islands
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District
St. Thomas/St. John (STT/STJ)
St. Croix

ITEMIZED BID SHEET

ACCT NO.	ITEM NO.	DESCRIPTION	QTY.	UNITS	UNIT PRICE	TOTAL PRICE
233593	22	Clean all guttering, repair joint where leaking or corroded; provide new inserts at downspouts, repair or replace downspouts where damaged or missing and ensure that all guttering drains freely through the building's drainage system.	550	LF		
233621	23	Remove soil and vegetation from planter box that frames the court yard adjacent to the auditorium, waterproof south and western inside walls and core 3 inch weep holes on all other sides. Replace soil and landscape with ixora hedge.	1	LS		
		BUILDING NO 2 AUDITORIUM				
233593	24	Caulk, flash and refinish cricket at the juncture of the stage and auditorium roofs. Connect water run-off into the building's drainage system.	80	LF		
					Subtotal	
		General conditions 10%				
					Total	

The undersigned vendor, service provider, contractor hereby certifies that he/she has thoroughly examined the entire scope of work, visited the project site(s) and familiarized himself/herself with all conditions, and hereby proposed to furnish all labor and tools.

All work and services provided herein shall conform in all project plans, specifications, written Scopes of Work and applicable local, federal, construction trade, and or Manufacturers' Product Specifications; equipment current applicable codes, standards and procedures.

The vendor, service provider, contractor, pledges to complete all work herein within ONE HUNDRED TWENTY (120) calendar days.

The total contracted cost of project:

DATE:

Vendor's Signature

Company Name/Mailing Address

INVITATION FOR BID

INSULAR ABC'S INITIATIVE DEFERRED MAINTENANCE REDUCTION PROGRAM

IFB NO. DMRP-IFB-STX-

JOHN H. WOODSON JUNIOR HIGH SCHOOL ROOF REPAIRS PROJECT

ST. CROIX, UNITED STATES VIRGIN ISLANDS

SCOPE OF WORK AND BID SHEET

Invitation for Bids (IFB) Contents

Section 1	Scope Overview
Section 2	General Fluid Applied Membrane Specifications
Section 3	Repair of Concrete Columns
Attachment-1	Site map
Attachment 2	Bid Sheets
Attachment 3	Architectural Detail

1. Section 1 Scope Overview:

John Woodson School is a cluster of five building built of post and beam concrete systems with infill masonry walls; metal paneled hip roofs cover the main buildings. The clusters are joined together through a series of flat wood roofed covered walkways (see attached Site Map). The buildings have several persisting problems. The building's 40 year old metal roofs are old for this corrosive air environment. Examination shows spot corrosion, lifting screws and hip, valley and ridge caulking deterioration. The exterior wall of areas facing the weather have developed surface cracks and window flashing has become corroded; in many areas, flooding and poor drainage conditions contribute by allowing water to infiltrate onto floor areas; in one area of note, all classrooms on the first floor of building #3, have been closed due to mold infestation resulting from water penetration through porous and separating wall surfaces.

The extent of work to be performed at this school includes removal and replacement of existing sheathing in all canopy walkways; repairing leaking guttering systems, cleaning and repairing all existing roof areas with special treatment at hips, ridges and valleys over the gymnasium; roofing balconies that contribute to moisture infiltration at building #3, installation of new drainage system to alleviate a drainage problem at the cafeteria building and general sealing and repainting of porous exterior walls where there is evidence of moisture intrusion. Estimates to be submitted using the attached Bid Sheet. Architectural details provided in Attachment 3.

1.2 General Bidder's Instructions and Requirements. The selected licensed General Contractor shall be responsible for thoroughly inspecting all relevant existing conditions associated with

INVITATION FOR BID

JOHN H. WOODSON JUNIOR HIGH SCHOOL ROOF REPAIRS PROJECT

the roof. It is the contractor's responsibility to establish exact quantities and existing circumstances based upon the documents, instructions issued herein and his site visits.

1. The selected general contractor shall be disqualified if any bid sheet is not legible or fully complete. The government shall not be responsible to interpret any omission or illegible entries on bid sheets.
2. The contractor's prices submitted for work to be done shall include all possible costs, including overhead, taxes and profit.
3. Unit prices submitted on the itemized bid sheet shall be utilized by the Government of the Virgin Islands in its discretion and at its sole benefit to determine any credits and/or debits to the project; which, if necessary, shall be addressed only in the form of a formal Change Order to the Project.
4. All bidders are required to attend a mandatory Pre-Bid conference and site walkthrough. Failure on the part of a bidder to attend the scheduled site walkthrough shall be grounds to disqualify a bidder.
5. Bidders are encouraged to bring to the attention of the government any and all areas or issues of concerns during the period open for questions and clarifications. Failure on the part of a bidder to raise any questions regarding any unusual or known circumstances during the bid preparation period shall not relieve or give cause for a bidder to subsequently advance a claim or cause for changes to the scope of work.
6. When applicable, the selected General Contractor shall be responsible to file for and secure any and all permits and /or inspections which may be required prior to, during or at the completion of the work installed.
7. All work to be performed on this project shall be furnished only during normal (regular) business hours, 7:00 AM to 5.00 PM, Monday through Friday. If contractor elects to perform work outside these days and times he/she shall be responsible to make all necessary arrangements with the school Administrators at their convenience.
8. Bidders shall furnish one original and four copies of its bid response which must include the bid sheet signed by the bidder.
9. A mandatory pre-bid conference and site walk-through will be conducted and must be attended by all prospective bidders as follows:
 - a. MANDATORY SITE VISIT AT: **John H. Woodson Junior High School**
 - b. Date:
 - c. Time:
10. BID SUBMISSION DATE:
11. BID SUBMISSION TIME:

**PLEASE SUBMIT FIVE (5) COPIES OF YOUR PROPOSAL. PROPOSALS SHALL BE
SUBMITTED IN A SEALED ENVELOPE ADDRESSED AS FOLLOWS:**

**Honorable Randolph Bennett
Commissioner of the Virgin Islands Government
Department of Property & Procurement
Building No. 1, Sub Base
St. Thomas, U.S. Virgin Islands 00802**

CONTRACTUAL REQUIREMENTS:

All bid proposals and subsequent contract and supporting documents (if selected) must reflect the legal name of entity. Supporting documents that must be submitted prior to contract execution and within the time established by the Government shall include, but not be limited to, the following:

1. Certificate of Resolution, as to the authorized negotiator and signer of a contract.
2. Current Virgin Islands Business License issued to the legal name of record of the entity by the Government of the Virgin Islands, Department of Licensing and Consumer Affairs.
3. Current original Certificate(s) of Good Standing/Existence, in legal name of the Contractor by the Virgin Islands Office of the Lt. Governor, Division of Corporations and Trademarks.
4. Certificate of Issuance or Renewal of Trade Name issued by the Virgin Islands Office of the Lt. Governor, Division of Corporations and Trademarks, if applicable.
5. Articles of Incorporation or Organization, as applicable; or documents governing operation.
6. Certificate of Liability Insurance indicating proof of coverage of Professional Liability Insurance and General Liability/Public Liability Insurance – no less than double the amount of the project cost. The Contractor must provide a Certificate of Liability Insurance and Declaration/Endorsement pages that indicating that the Government of the Virgin Islands, Department of Education is as “certificate holder” and an “additional insured” on the General Liability/Public Liability Insurance. The Professional Liability Insurance must cover the services to be provided under the contract.
7. Certificate of Government Insurance/Copy of Certificate providing firm/agents are covered by Workers’ Compensation Employee’s Liability.

Please note the above-referenced documents are subject to modification at the Government’s discretion.

Any silence, absence, or omission from the contract specifications concerning any point shall be regarded as meaning that only the best commercial practices are to prevail.

All contractual documents including insurance certificates/policies must be kept updated and maintained throughout the term of the contract.

2 Section 2 General Fluid Applied Roof Installation Scope.

SCOPE OF WORK

Furnish all labor, materials, tools and equipment, including accessory items subject to the general provisions of the contract, necessary for the installation of this Roofing System.

DESCRIPTION OF WORK

Roof system is to be repaired as outlined in the bid documents.

Gutters and roof, mechanical equipment, ducts, vents etc. when indicated in bid documents are to be cleaned, primed and waterproofed.

QUALITY ASSURANCE

Manufacturer's Ten (10) year warranty covering material and workmanship shall be issued within 30 days of successful 3rd party independent Warranty Inspection and final payment.

This roofing system must be installed by an Authorized Roofing Applicator in compliance with specifications approved by a qualified Technical Service.

Provide written proof of required licenses prior to job start-up.

Provide copy of Approved Request for Warranty Application, submitted by the contractor.

SUBMITTALS

Submit samples of product: two (2) 1x2 inch samples of membrane to be installed.

Submit additional and specific installation procedures unique to the project.

Submit all product data with physical properties, requirements for preparation, limitations etc.

SITE CONDITIONS

All air intake vents, blowers, air conditioning units and evaporative coolers shall be disconnected to prevent fumes from entering the building or from contaminating the roof with condensate water.

Commencing work implies acceptance of existing conditions as satisfactory to the outcome of the work.

DELIVER AND STORAGE

Delivery of roofing materials and accessories in manufacturer's original protective containers, store materials in dry protected areas and do not expose to temperatures above 95 degrees.

EXAMINATION OF EXISTING SITE CONDITIONS

Contractor shall examine substrate for conditions that might detrimentally affect the application and shall report all unsatisfactory conditions to owner and will not proceed until these conditions have been corrected.

All warranties require wet roofing material to be removed and replaced.

ENVIRONMENTAL REQUIREMENT

Install all materials in accordance with manufacturer's environmental requirements.

Proceed with roofing work only when weather conditions comply with Manufacturers recommendations and other current published data.

Cooperate with Owner's Representative during construction operation to minimize conflicts, and to facilitate continued use of the facility.

Coordinate scheduling with the owner in order to arrange for a non- obstructive path to areas of the work and to relocate or protect vehicles, building occupants and building contents from damage during construction operation.

WARRANTY

Provide roof system material and workmanship warranties meeting specified requirements. Provide revision or amendment to standard membrane manufacturer's warranty as required to comply with the specified requirements.

ROOF MEMBRANE MANUFACTURER WARRANTY

Furnish the roof membrane manufacturer's 10 year roof system materials and installation workmanship warranty. The warranty must run directly to the government and commence at the time of government's acceptance of the roof work.

ROOFING SYSTEM INSTALLER'S WARRANTY

Warranty for a period of not less than two years that the roof system, as installed, is free from defects in Installation workmanship.

CONTINUANCE OF WARRANTY

Contractor's Warranty obligates him to conduct repairs or replacement work, acceptable to prevailing construction standards, that becomes necessary within the warranty period

PART II PRODUCT

COMPONENTS

Silicone roof membrane coating product

Water based Epoxy primer as recommended by manufacturer

Base Coat: high performance moisture cured silicone membrane with superior weathering and water resistance characteristics.

Topcoat: **high performance moisture cured silicone membrane with superior weathering and water resistance characteristics**

Reinforcing Fabric: Non-woven 100% Polyester, stitch bonded, heat set fabric.

Sealant: Single compound sealant as approved roof coating by manufacturer for sealing joints and voids.

ACCESSORY MATERIALS

Manufacturer's recommended sealants, flashing materials, microfiber additive, bio-degradable detergents and other compatible products.

PART III EXECUTION

PREPARATION FOR COATING

Clean roof surface to be coated as recommended by manufacturer. All surfaces are to be clean, dry, sound and free of dirt, grease, oil and other contaminants that might interfere with the adhesion of the fluid applied roofing system. Remove asphaltic based or other deteriorated patching/flashing materials if present that may adversely affect application.

On Metal systems, remove all loose rust by wire brushing, sandblasting, or mechanical abrasion as necessary. Metal panels that deteriorate to the point that their structural integrity is compromised shall be replaced. Prep bare metal or clean rusted metal with manufacturer approved rust primer.

Check mechanical installation of fasteners, re-tighten or replace "stripped out" fasteners as necessary, check all seams to ensure that they are tight and flush. Excessive gaps or deflection between panels shall be eliminated by installing additional screws or rivets as necessary to restrict deflection to meet manufacturer's specifications. Fill all gaps in substrate per manufacturer's instructions.

Be especially careful on flat roof where contaminants build-up is more acute. Apply a manufacturer's approved detergent diluted in water generally and full strength to areas having excessive grease. Use a

chlorine solution to treat areas of mildew, fungus or algae. Do not use harsh chemicals or solvents that may degrade the surface of the existing membrane.

Spent water from washing roof should be channeled to gutter collection system and not cascade from edges of roof onto the ground.

EXAMINATION

Inspect clean roof surface for delamination, puncture, tears, cuts and open or partially opened seams. Small tears and cuts or seams 2 inches or less should be repaired with product compatible fabric and sealant. Seams and other membrane damage determined to be more than 2 inches must be re-adhered and overlaid with minimum 6 inches wide peel and stick seam tape before priming the membrane surface for coating. All seams, flashing, coping caps and drains may be repaired using manufacturer approved compatible products.

Perform adhesion test on existing substrate as per ASTM D6677

APPLICATION

Surface primer

Apply approved surface primer per manufacturer's specifications to all chalking, rusting and any other surface conditions requiring primer by manufacturer.

Pre-Treatment

All exposed seams shall be polyester reinforced; all roof penetrations, roof-wall transitions, machine legs, air conditioner base and other structures, which sit on the roof, shall be flashed with smooth transition to roof surface. Flashing material shall be reinforced polyester and manufacturers recommended adhesive and caulking. Compatible silicone self-leveling filler should be used to fill cut-outs.

Examine roof surface for excessive ponding. The manufacturer's material should allow small incidental areas of ponding water without impact on the performance of the coating system. In accordance with industry standards, the roof surface when finished should not retain ponding water. If necessary, tapered edge strips, crickets or saddles are to be installed where periodic ponding may occur. Embed reinforcing fabric in base coat and follow with additional saturation coat to fully cover fabric per manufacturer's instructions. Allow pretreatment to fully cure prior to proceeding.

COATING SYSTEM

General

Do not apply coating when moisture is present on the substrate or if rain is expected before coating will properly cure.

Wind barriers shall be used if wind conditions could affect the quality of the material being applied.

Base coats and primers shall be allowed to cure before proceeding with subsequent applications. All coating and primers shall be coated within recommended time period. If application is delayed beyond the time specified, consult the manufacturer for primer recommendations. No traffic shall be permitted on the coated roof for a minimum of 3 days.

Minimum application thickness

Finished coating thickness shall be 22 minimum TDM (total dry Mils), (1 gallon per 100 sq.) **This is a 2 coat specification.** Application rates must be checked periodically to assure proper thickness. The total DMT of all coatings, as well as the total thickness shall meet minimum requirements.

Applications (Base and Top Coats)

Spray or roll each coat of contrasting color at an application rate designed to achieve the required 22 TDM for the project at minimum rate of 1 gal/100 sf per coat. Contractor needs to figure losses due to surface texture and substrate condition and increase estimated material requirement to compensate for losses. Pay special attention to over-spray, which can texture or discolor adjoining finished sections. Wind direction should conduct overspray away from finished surfaces. **See Technical Data Sheets provided by the product manufacturer for application equipment recommendations.**

A visual inspection of the Base Coat should take place before the application of the Top Coat to confirm an acceptable surface /substrate to accept the topcoat. Any deficiencies must be repaired prior to application to the Top Coat.

INSTALLATION OF WALKWAYS

High trafficked areas and areas around mechanical equipment to receive special texture and reinforcement.

FIELD QUALITY CONTROL

Maintain Job Progress Report/Daily Log of work completed as required to assure installation is in accordance with manufacturer's requirements.

JOB COMPLETION

Measure wet mil thickness for each coating application every 10 square meters 100 square feet during application by placing flat metal plates on the substrate or using a mil thickness gage especially manufactured for the purpose. Applicator shall correct areas that do not meet manufacturer's criteria.

Complete inspection of finished roofing system by looking for transparent or thin areas, delamination's, pin holes, lifting areas and blistering and skinning.

An independent 3rd party inspector must inspect the completed roofing system and notify the certify authority and the contractor of any defects in the application.

CLEANING

Maintain work and work area in this special (School Facilities) environment especially clean. Periodically, clean-up all debris, excess materials, and equipment and remove from site.

PROTECTION

Restrict construction traffic and equipment movement on the completed roofing system to only essential personnel. Provide appropriate protection against traffic and construction activities on completed roofs.

End of Section

3 Section 3 Repairs of Concrete Columns.

Columns may be repaired employing a number of methods:

- Encasement or enlargement of the column cross section (Jacketing).
- Cathodic protection to stop reinforcement steel corrosion.
- Re-alkalization of the reinforcing steel to stop corrosion.
- Confinement using steel plate, carbon, or glass fiber materials.
- Addition of shear collars to increase the shear capacity of intermediate.
- Supplemental columns.
- The application of a protective system to prevent future corrosion.

Before starting the repair of concrete columns, the axial loads and associated moments must be known.

The Contractor must determine whether the damage is surface or structural.

If the damage is significant and structural (10% or more material removed), large sections of the column must not be removed unless the column is unloaded. The proper shoring must be erected to avoid catastrophic failure.

SPECIFIC CONDITIONS

Redistribution of the Load

In case of corrosion of reinforcement and significant deterioration, the load distribution differs from the original design; as a result, the new distribution patterns must be considered before repairs are performed. Even the adjoining members may have been affected by the redistribution.

Supplemental Reinforcing Steel

The column ties cannot usually be disturbed during the repair as it may cause buckling of the longitudinal bars. Hence, the supplemental vertical bars may be placed outside the original cage with extra ties. When the supplemental bars are placed outside the ties bars, the column dimension should be increased to provide adequate cover. Hairpin ties, usually of stainless, are used to laterally support the supplemental bars.

Concrete Removal

The removal of concrete within a column cage must only be done if the column is unloaded. Otherwise, the longitudinal bars may buckle and compression failure of column may take place.

Corroded Reinforcement Steel

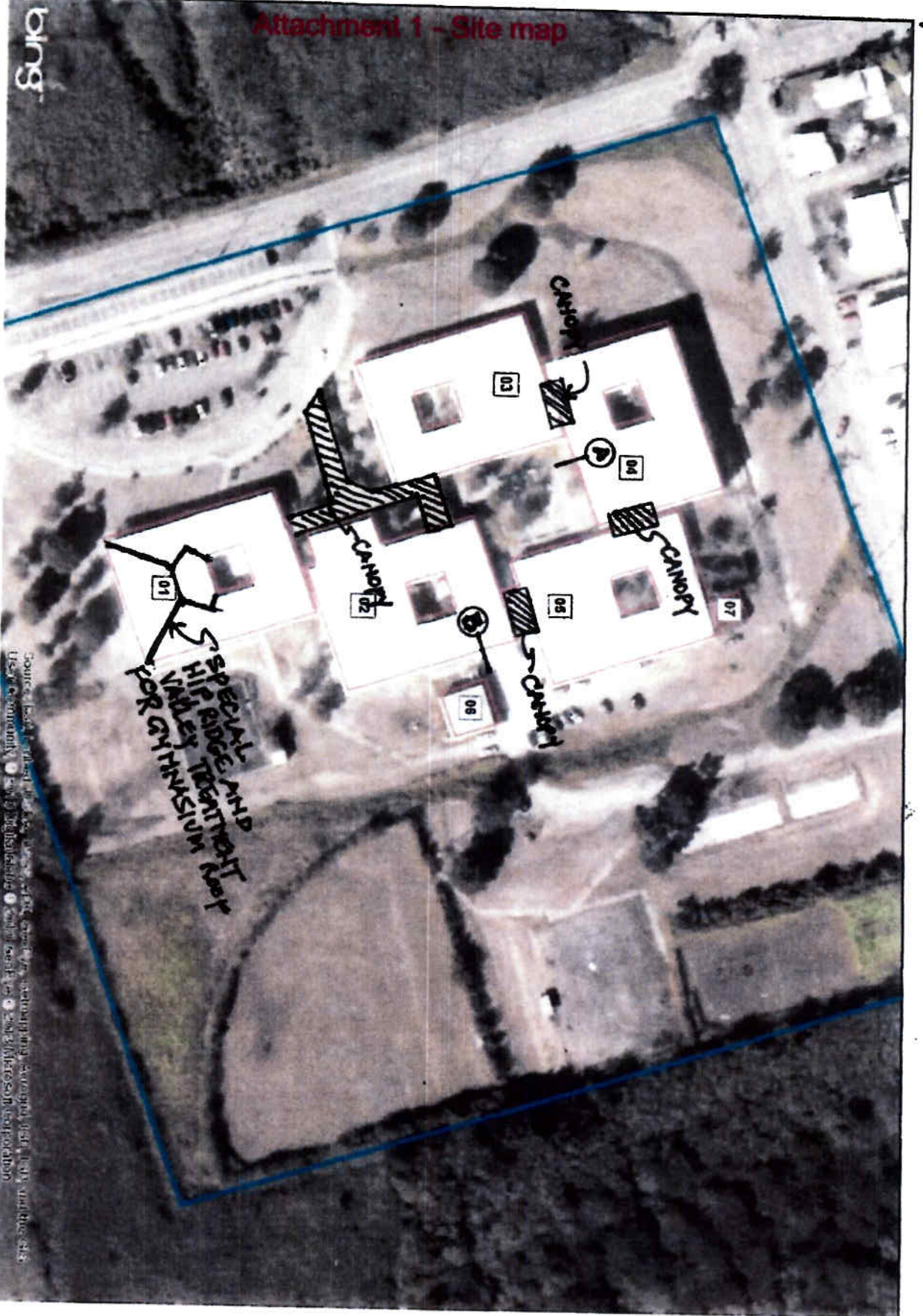
It is not necessary to remove the corroded steel bars with reduced cross-sectional area if the loss is supplemented with additional reinforcing bars. The lap length of such a splice must be provided corresponding to the area lost by corrosion of the corroded portion of the reinforcing bar that is supplemented.

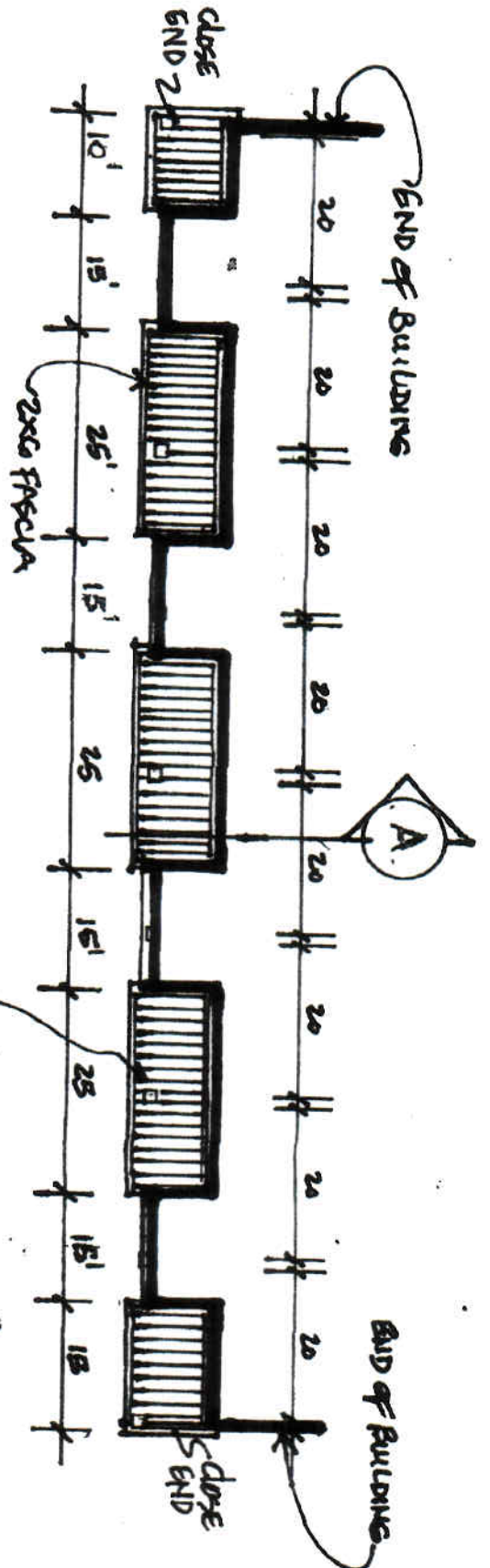
The partially corroded bars that are left in place must be thoroughly cleaned by sandblasting to obtain bare metal. The bars with excessive corrosion must be replaced with new reinforcement having full laps on both sides.

Corroded Ties.

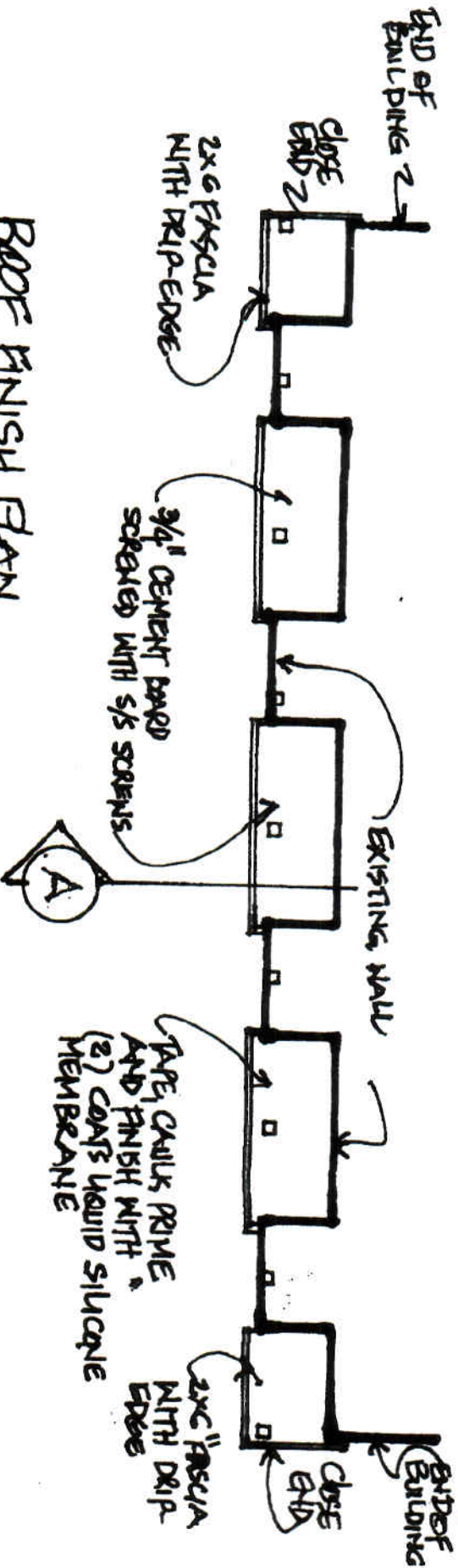
Corroded ties can be replaced by adding stainless steel hairpin ties that are anchored into the concrete. It is often necessary to deposit extra material around columns to provide adequate cover over the supplemental ties.

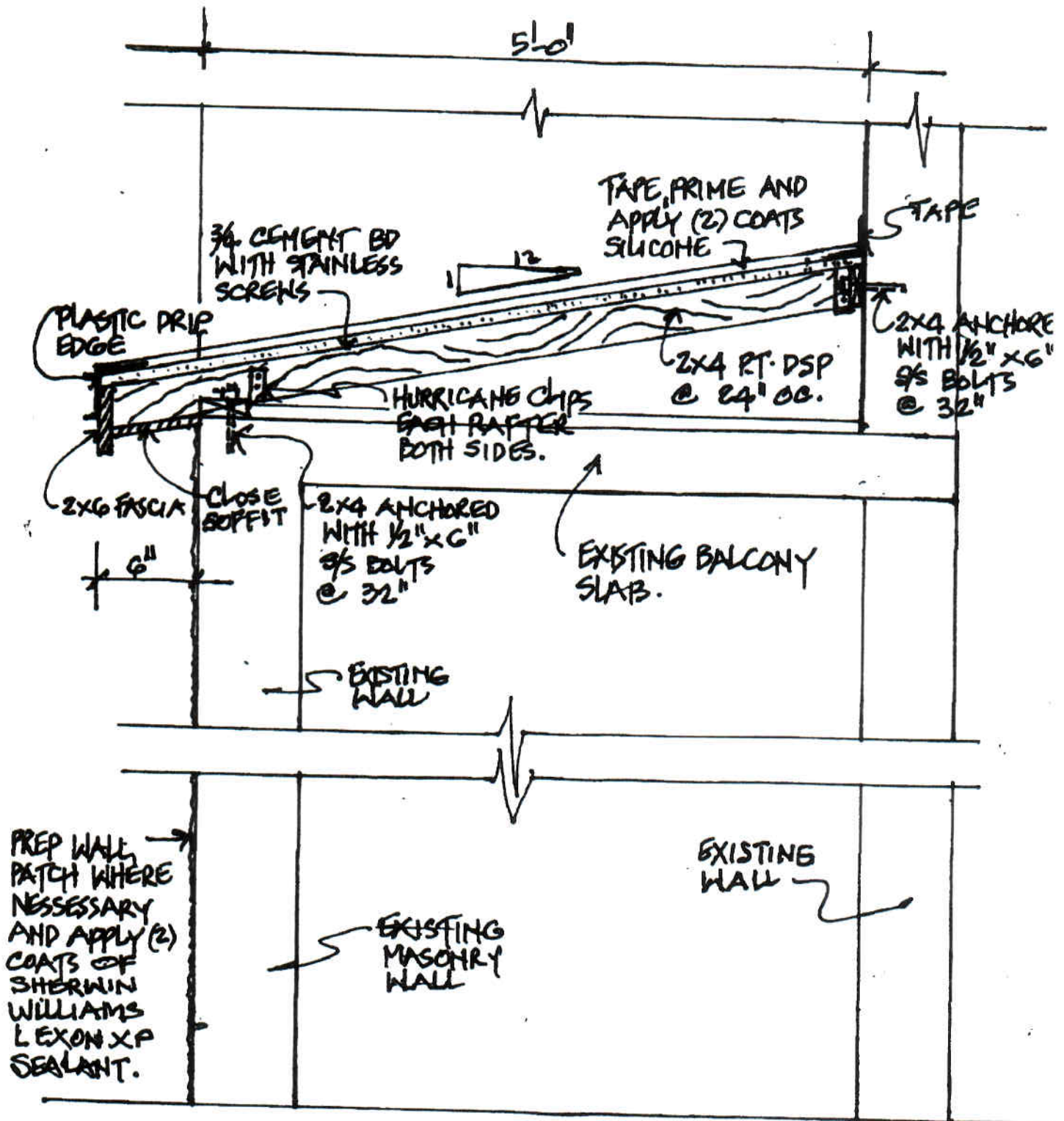
Attachment 1 - Site map



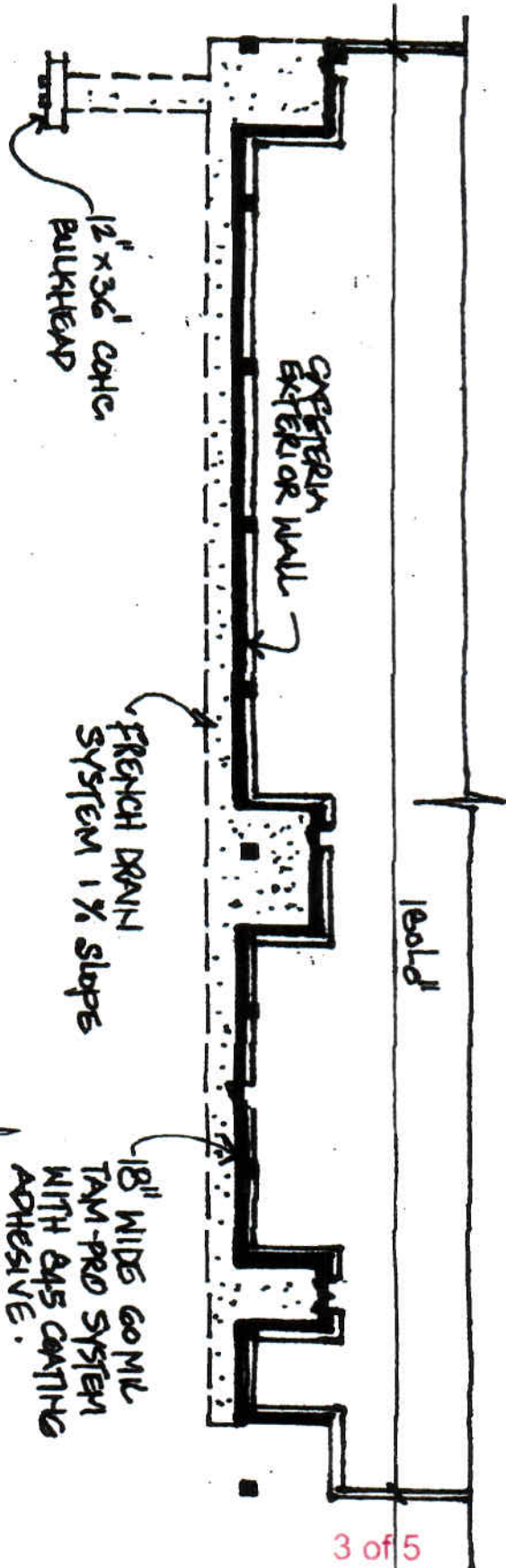
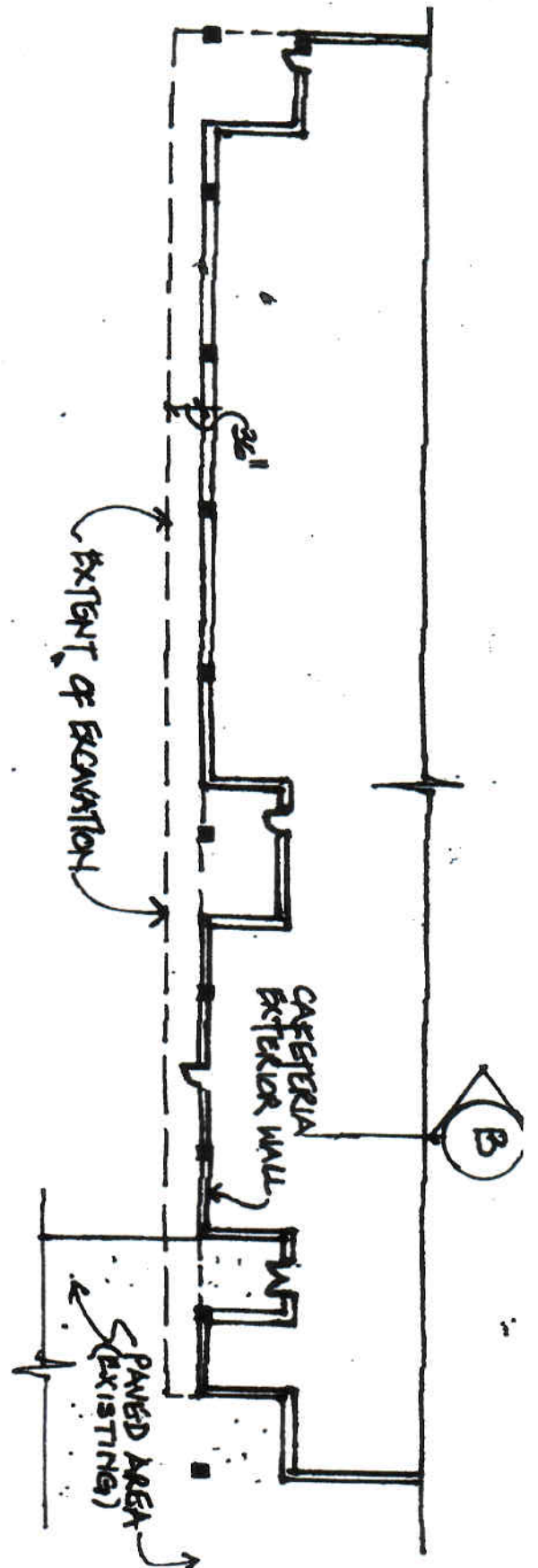


2x4 FRAMING @ 24" OC.
1/2 SLOPE

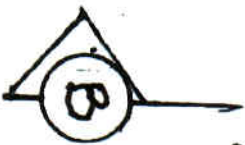


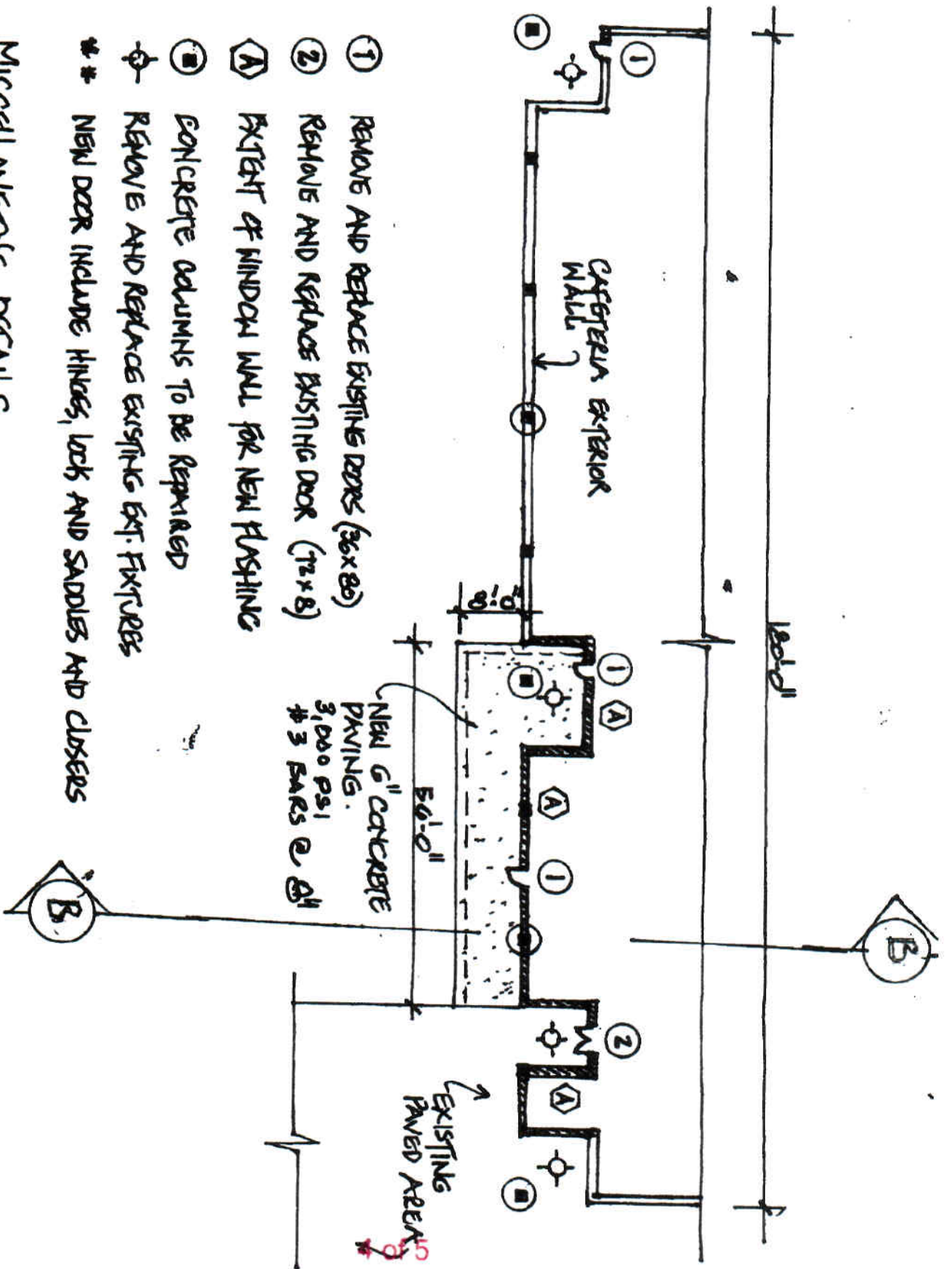


MOLD ABATEMENT WATERPROOFING DETAIL "A-A"
BUILDING NO 4 (SOUTH WALL)
 SCALE: 1" = 1'-0"



EXCAVATION AND WATER-PROOFING SYSTEMS
SCALE: 1" = 20'-0"

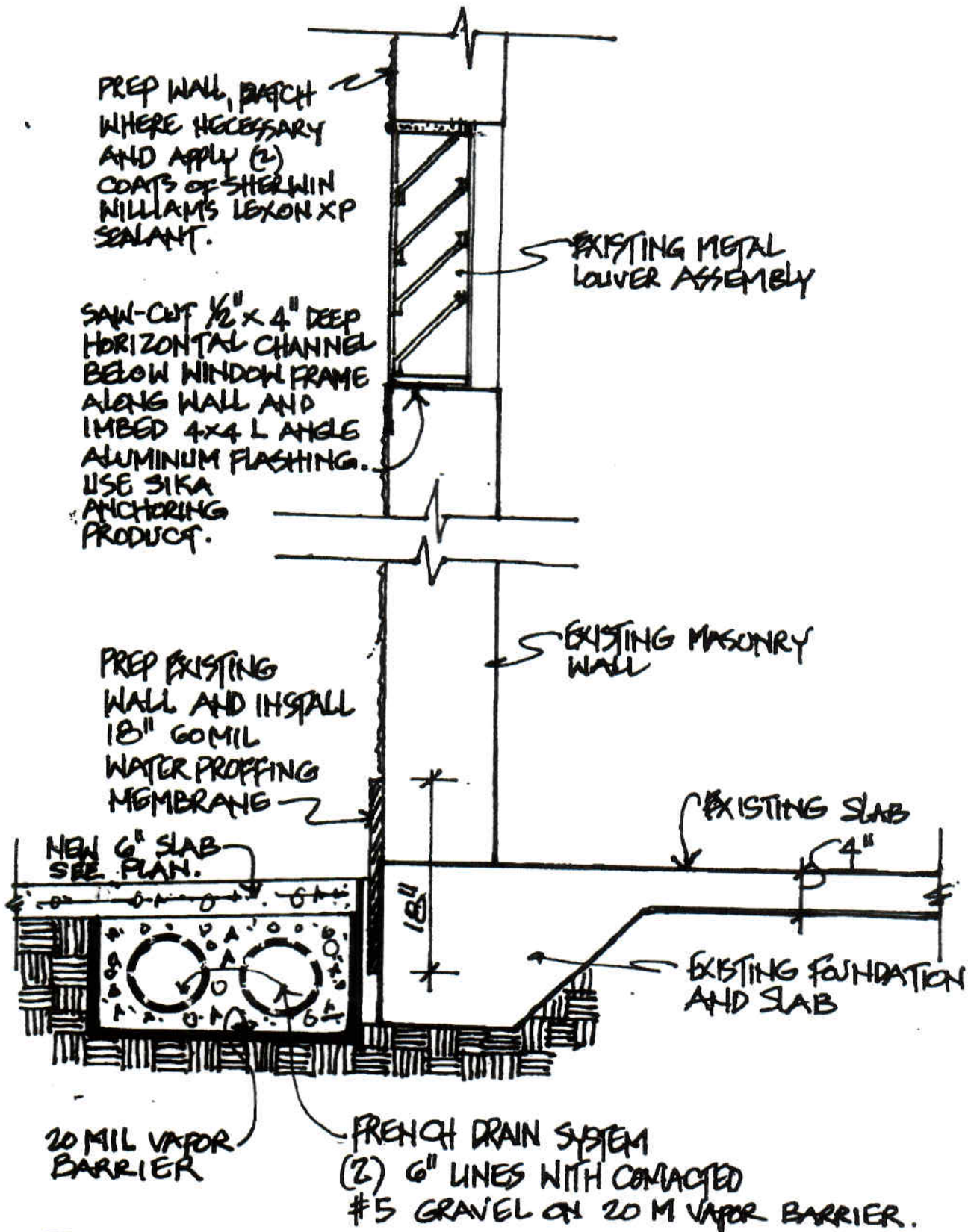




MISCELLANEOUS DETAILS
SCALE: 1" = 20'-0"

SCALE: 1" = 20' 0"

Attachment 3 - Architectural Detail



5

WALL SECTION - CAFETERIA WATER-PROOFING DETAIL "B-B"

SCALE: $\frac{1}{4}$ " = 1'-0"

5 of 5