AMES TRANSIT AGENCY BOARD OF TRUSTEES

CYRIDE CONFERENCE ROOM

April 12, 2012

1. CALL TO ORDER: 5:15 P.M.

2. Public Comments

3. CyRide Facility - Flood Protection Techniques

4. Set Time and Place of Next Meetings:
    - April 19 - 5:15 pm
    - May 10 - 5:15 pm

5. Adjourn

CITY OF AMES, Iowa

MEMO TO: Ames Transit Board of Trustees

FROM: Sheri Kyras

DATE: April 12, 2012

SUBJECT: CyRide Facility – Flood Protection Techniques

BACKGROUND: In December 2011-January 2012, The Transit Board of Trustees and City Council approved a contract with URS Corporation for the design of CyRide facility improvements as follows:

- Flood Protection
- Bus Storage Expansion
- Bus Storage Ceiling Height
- Structure Repairs

CyRide has secured federal and state grants to assist with funding of the above facility improvement projects as follows:

Funds Available	Dollars
Federal Funds (#IA-04-0111)	$2,588,165
State Funds (PTIG Expansion)	$800,000
State Funds (PTIG Bus Storage Ceiling)	$600,000
Local	$997,041
Total Available	**$4,985,206**

Local dollars are included in CyRide's capital budget.

INFORMATION: Since the design contract's approval, CyRide staff has been working the architectural and engineering firm from URS Corporation to begin work on the projects. The consultant team has reviewed existing facility documents and completed field surveys as a basis for determining potential changes that would be needed to protect and allow for a larger structure. As part of the discussions on the flood proofing options available to CyRide, two significant questions have been raised:

1. **To what level should flood protection be constructed to protect CyRide's facility?** - Currently, the City of Ames requires that flood protection be constructed to the 500 ft. level, which equates to an elevation level on CyRide's property of 902.5 ft. Iowa State University has also designed its flood protection to this 500 ft. level as well. However, FM Global, CyRide and the City of Ames' property insurance carrier, has indicated that they desire protection levels at the 500 ft. + 2 ft. level, which equates to a level of 904.5 ft. – 2 feet higher than the City of Ames and ISU standard. The cost to protect the facility to this higher standard is significantly greater.

2. **Are there flood protection measures that CyRide is not interested in pursuing?**
   Earthen berms are a lower cost method of protecting property from flooding; however, if a breach occurs in the berm, the loss is magnified with the "bathtub" effect where water levels can be higher and sustained for a longer period of time as the flood waters cannot escape as rapidly.

As a result of these two policy-level questions, URS Corporation will present information at the Transit Board meeting that addresses the above two issues. The information to be presented at the meeting is attached for Transit Board review prior to the meeting.

Staff requests direction from the Transit Board of Trustees on narrowing the possible flood protection options in order to complete the facility designs and move toward construction in late 2012.

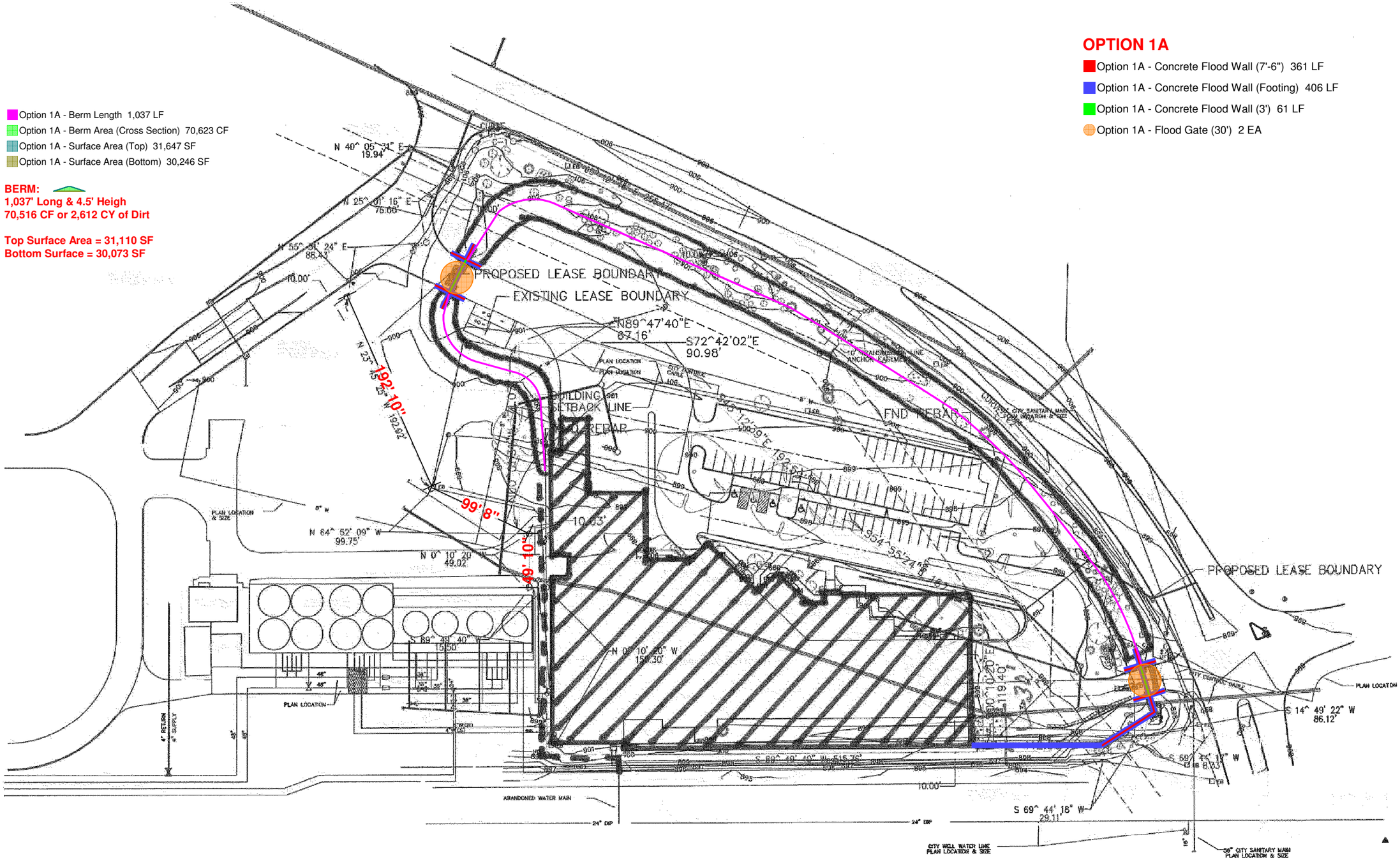
Option 1A - Berm Length 1,037 LF
Option 1A - Berm Area (Cross Section) 70,623 CF
Option 1A - Surface Area (Top) 31,647 SF
Option 1A - Surface Area (Bottom) 30,246 SF

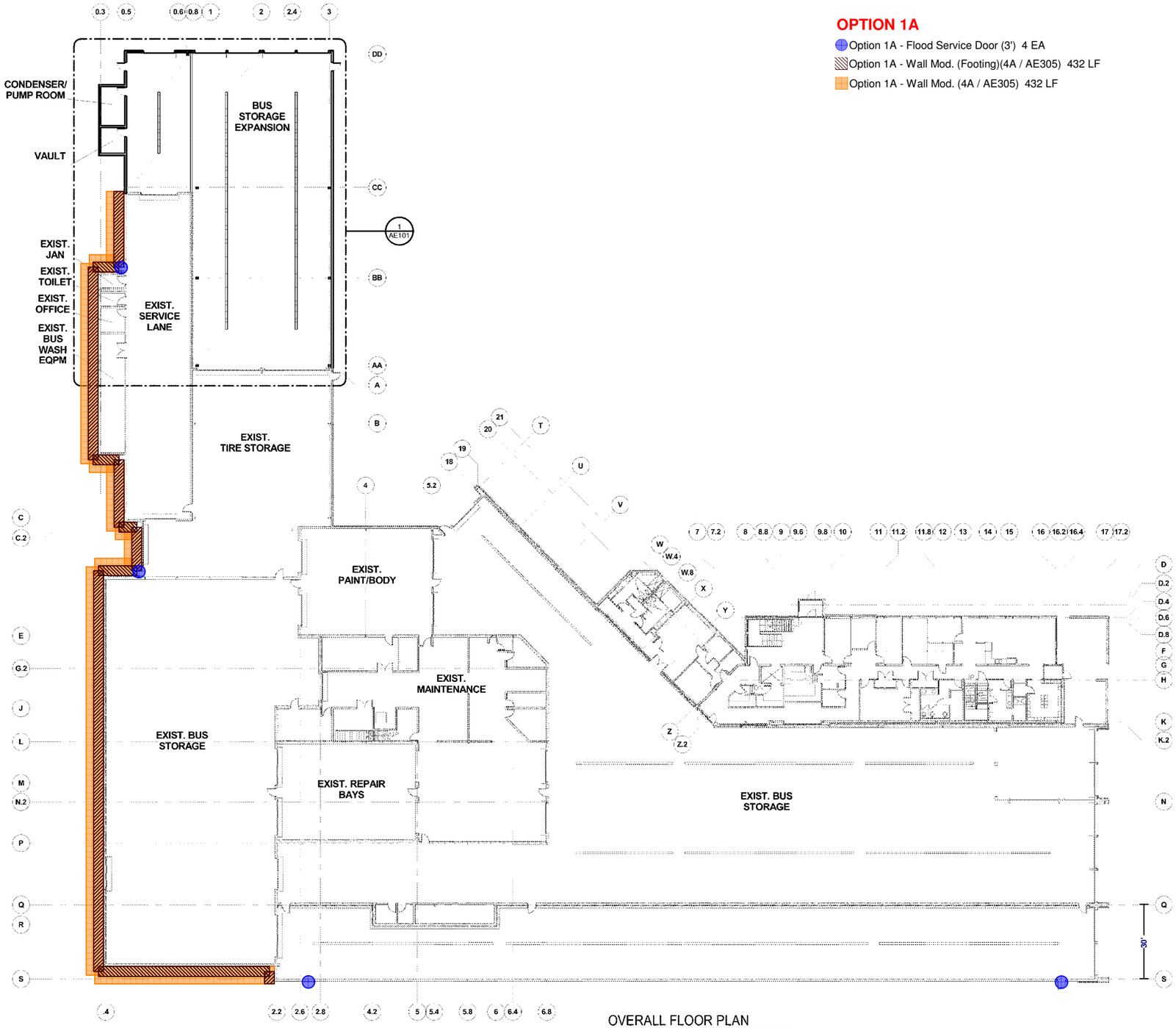
BERM:
1,037' Long & 4.5' Heigh
70,516 CF or 2,612 CY of Dirt

Top Surface Area = 31,110 SF
Bottom Surface = 30,073 SF

OPTION 1A

Option 1A - Concrete Flood Wall (7'-6") 361 LF
Option 1A - Concrete Flood Wall (Footing) 406 LF
Option 1A - Concrete Flood Wall (3') 61 LF
Option 1A - Flood Gate (30') 2 EA





OVERALL FLOOR PLAN
Scale: 3/64" = 1'-0"

OPTION 1A

- Option 1A - Flood Service Door (3') 4 EA
- Option 1A - Wall Mod. (Footing)(4A / AE305) 432 LF
- Option 1A - Wall Mod. (4A / AE305) 432 LF

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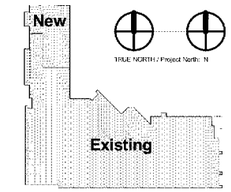

KEY PLAN

Sheet Revisions

Mark	Date	Description

CYRIDE
AMES, IA

CYRIDE BUS FACILITY EXPANSION

Project Issue Dates

01	2009	Schematic Design
02	2010.10.28	Design Development
03	2010.11.29	Construction Documents

drawn by	checked by	manager
Author	Checker	Designer

URS project no.	client project no.	file no.
14577878	CLIENT PROJECT NUMBER	

OVERALL FLOOR PLAN

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drawing scale: 3/64" = 1'-0"

AE100

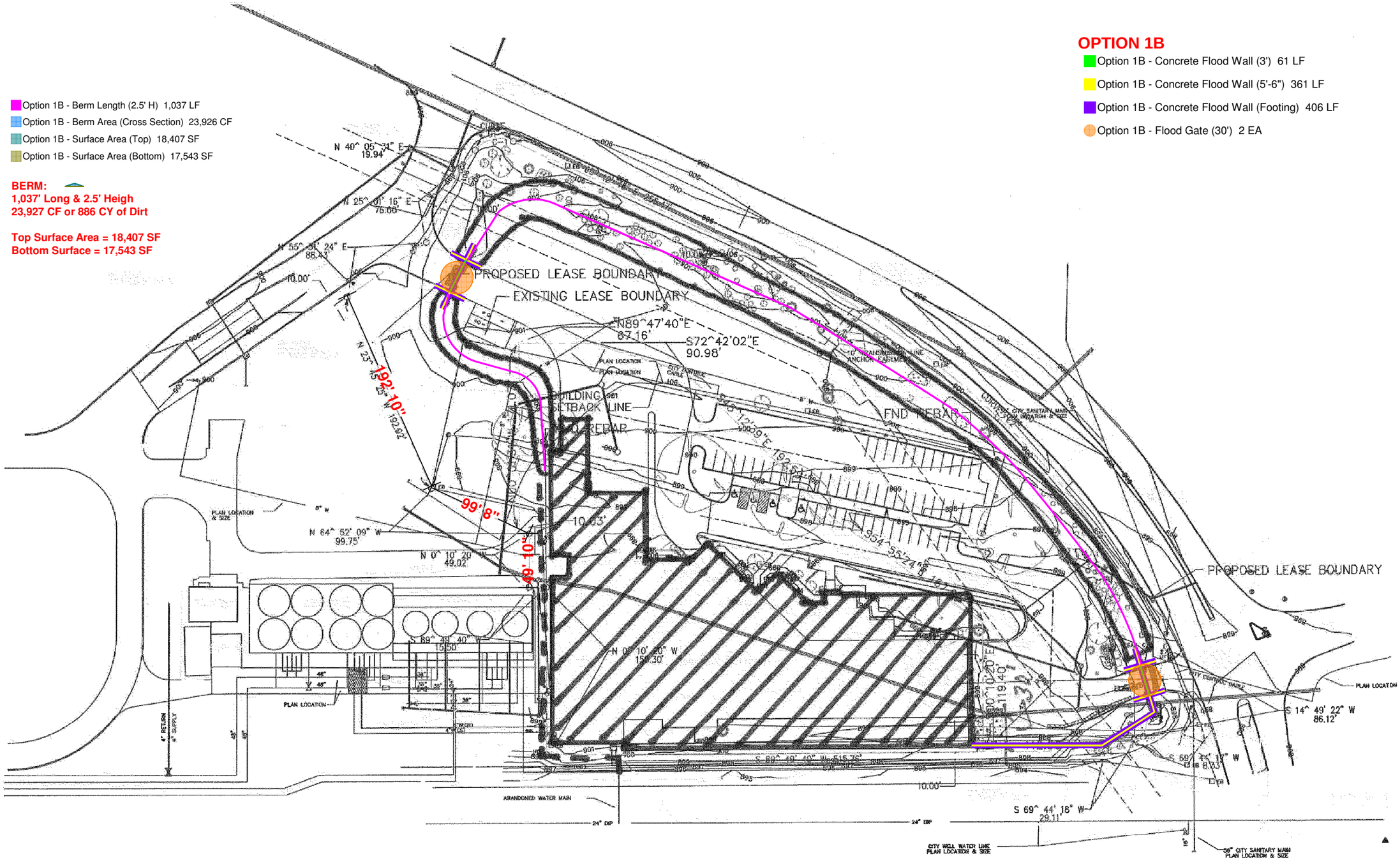
Option 1B - Berm Length (2.5' H) 1,037 LF
Option 1B - Berm Area (Cross Section) 23,926 CF
Option 1B - Surface Area (Top) 18,407 SF
Option 1B - Surface Area (Bottom) 17,543 SF

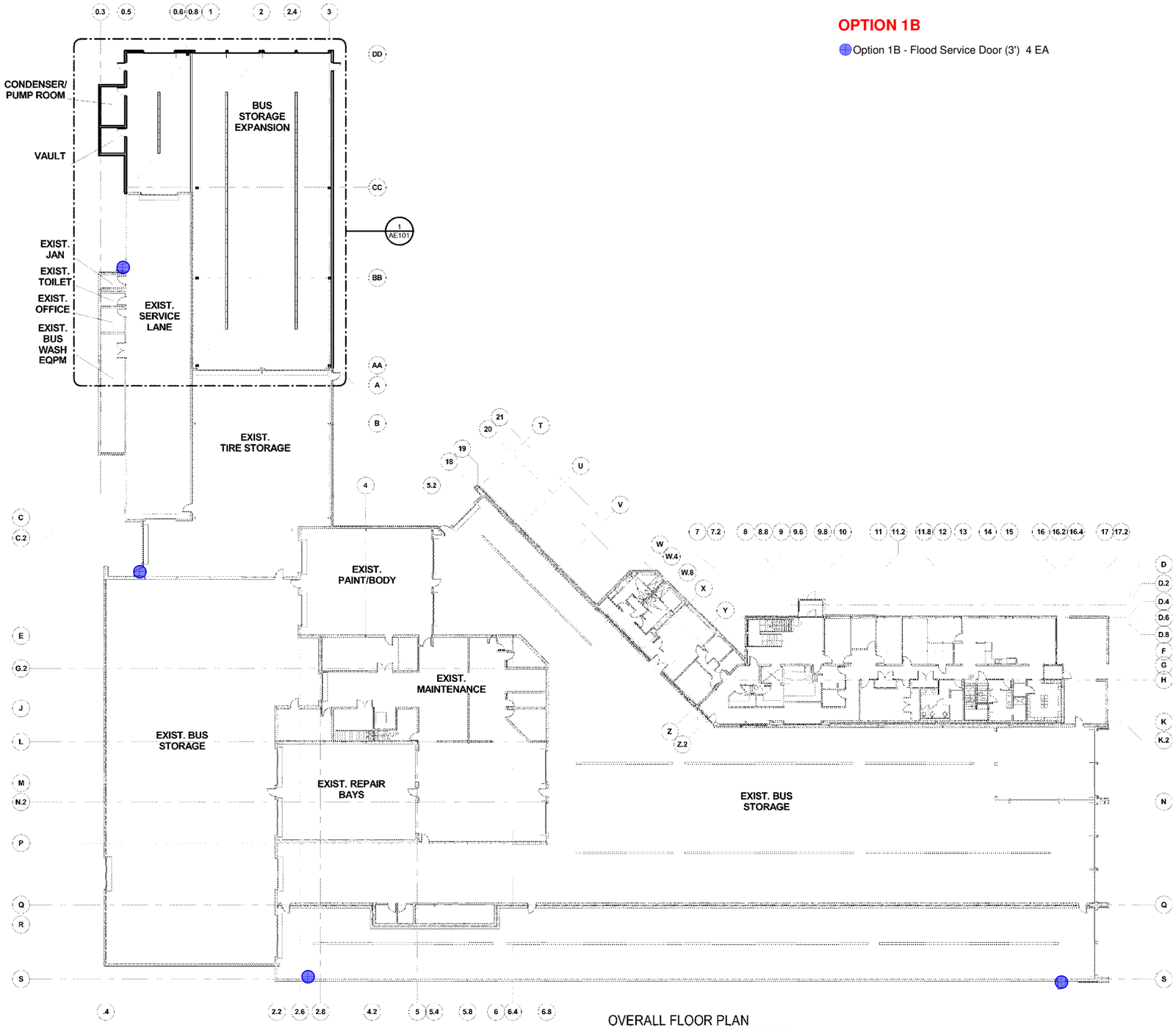
BERM:
1,037' Long & 2.5' Heigh
23,927 CF or 886 CY of Dirt

Top Surface Area = 18,407 SF
Bottom Surface = 17,543 SF

OPTION 1B

Option 1B - Concrete Flood Wall (3') 61 LF
Option 1B - Concrete Flood Wall (5'-6") 361 LF
Option 1B - Concrete Flood Wall (Footing) 406 LF
Option 1B - Flood Gate (30') 2 EA





OVERALL FLOOR PLAN
Scale: 3/64" = 1'-0"

OPTION 1B

Option 1B - Flood Service Door (3') 4 EA

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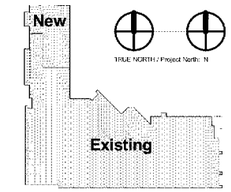

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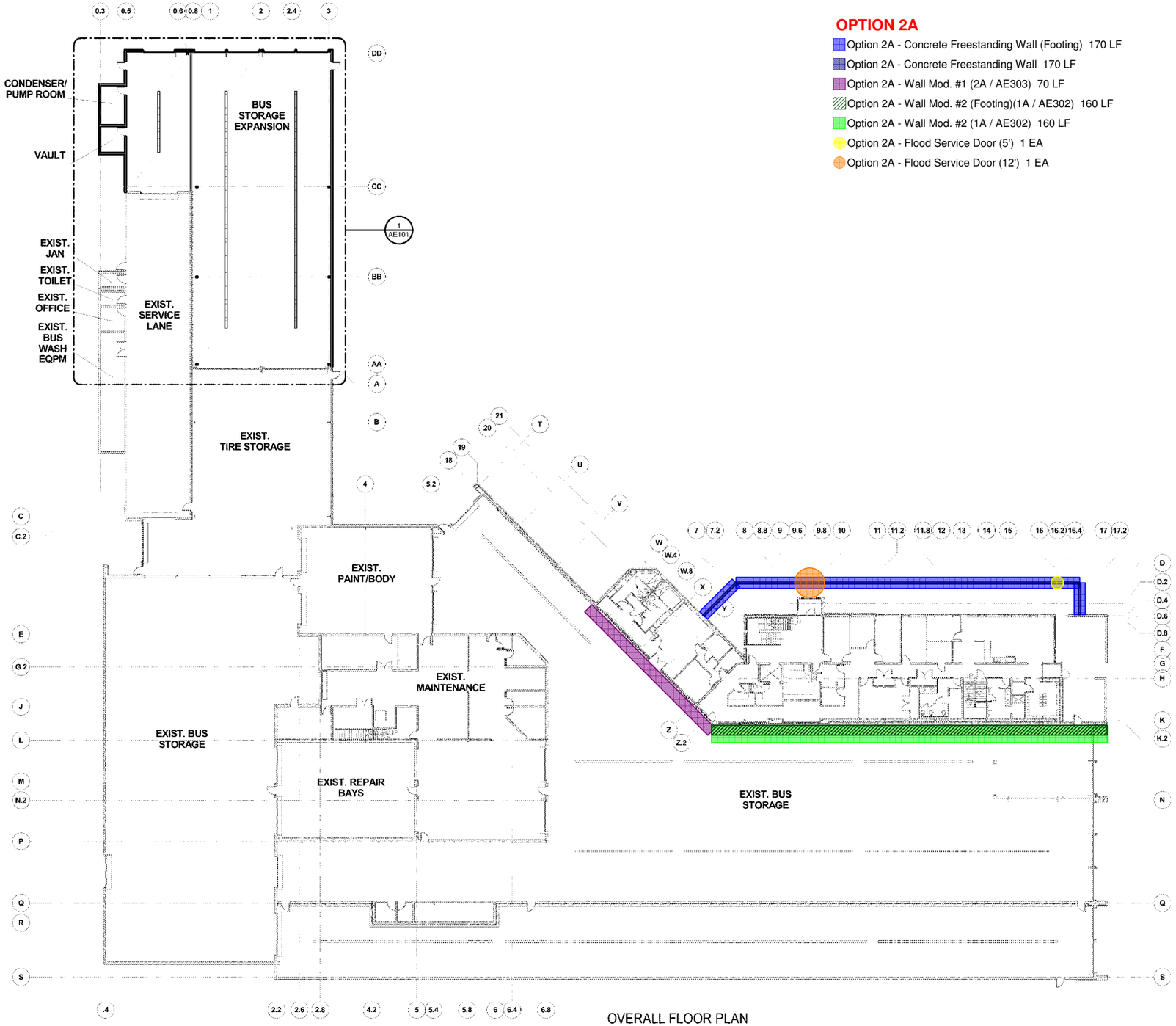

OVERALL FLOOR PLAN
Scale: 3/64" = 1'-0"

OPTION 2A

- Option 2A - Concrete Freestanding Wall (Footing) 170 LF
- Option 2A - Concrete Freestanding Wall 170 LF
- Option 2A - Wall Mod. #1 (2A / AE303) 70 LF
- Option 2A - Wall Mod. #2 (Footing)(1A / AE302) 160 LF
- Option 2A - Wall Mod. #2 (1A / AE302) 160 LF
- Option 2A - Flood Service Door (5') 1 EA
- Option 2A - Flood Service Door (12') 1 EA

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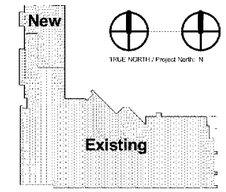

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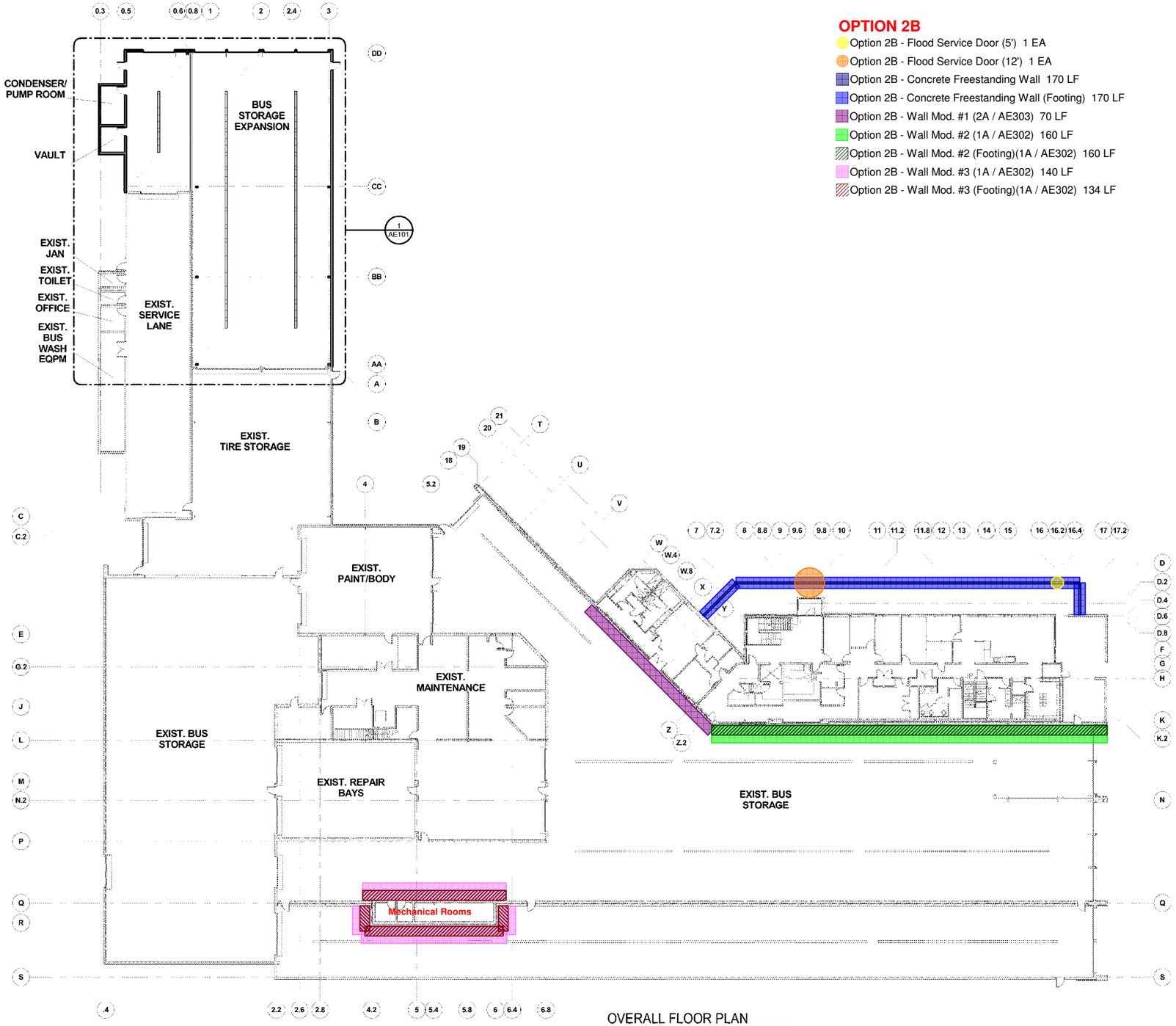

OVERALL FLOOR PLAN
Scale: 3/64" = 1'-0"

OPTION 2B

- Option 2B - Flood Service Door (5') 1 EA
- Option 2B - Flood Service Door (12') 1 EA
- Option 2B - Concrete Freestanding Wall 170 LF
- Option 2B - Concrete Freestanding Wall (Footing) 170 LF
- Option 2B - Wall Mod. #1 (2A / AE303) 70 LF
- Option 2B - Wall Mod. #2 (1A / AE302) 160 LF
- Option 2B - Wall Mod. #2 (Footing)(1A / AE302) 160 LF
- Option 2B - Wall Mod. #3 (1A / AE302) 140 LF
- Option 2B - Wall Mod. #3 (Footing)(1A / AE302) 134 LF

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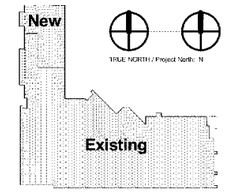

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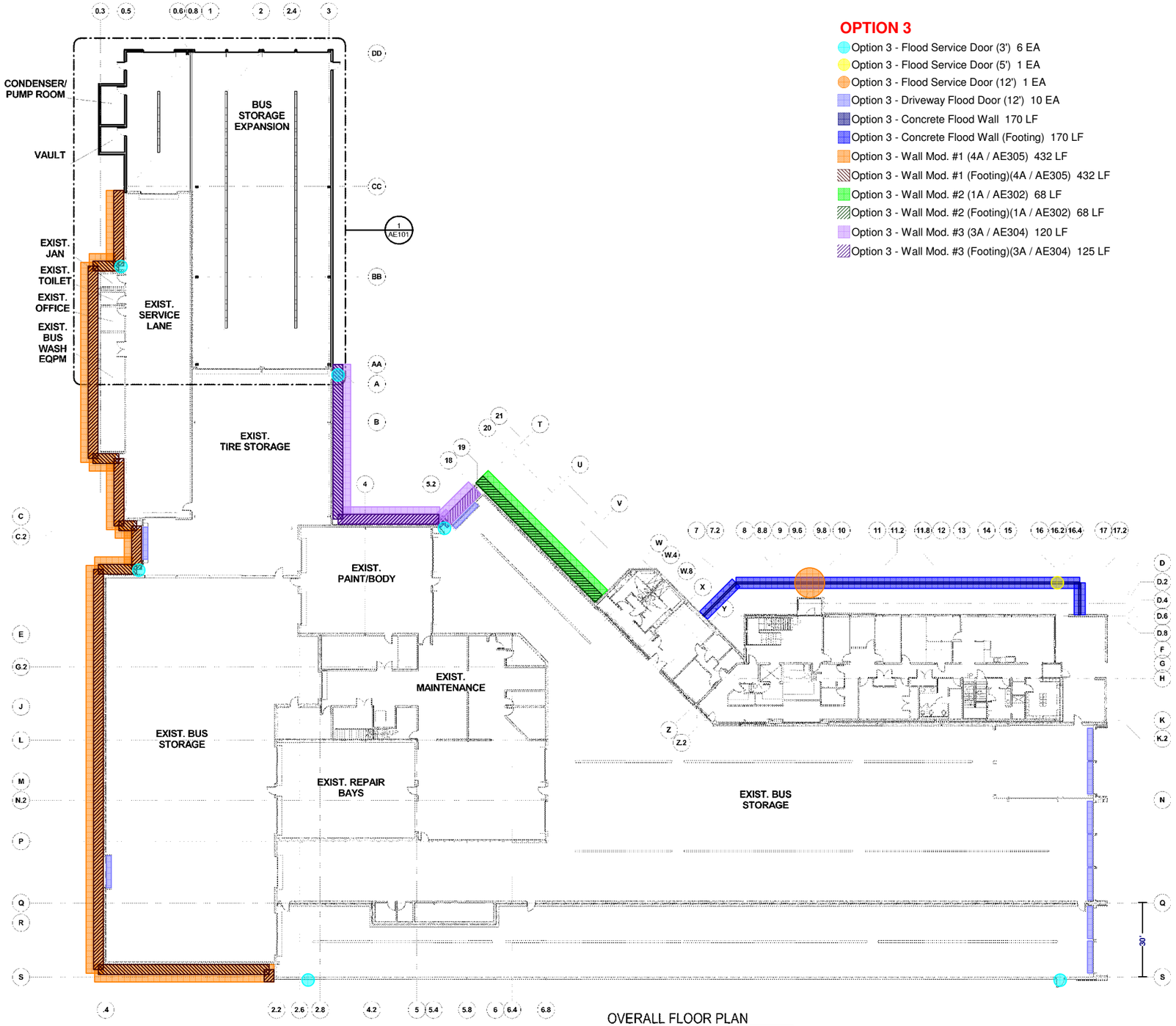

OVERALL FLOOR PLAN
Scale: 3/64" = 1'-0"

OPTION 3

- Option 3 - Flood Service Door (3') 6 EA
- Option 3 - Flood Service Door (5') 1 EA
- Option 3 - Flood Service Door (12') 1 EA
- Option 3 - Driveway Flood Door (12') 10 EA
- Option 3 - Concrete Flood Wall 170 LF
- Option 3 - Concrete Flood Wall (Footing) 170 LF
- Option 3 - Wall Mod. #1 (4A / AE305) 432 LF
- Option 3 - Wall Mod. #1 (Footing)(4A / AE305) 432 LF
- Option 3 - Wall Mod. #2 (1A / AE302) 68 LF
- Option 3 - Wall Mod. #2 (Footing)(1A / AE302) 68 LF
- Option 3 - Wall Mod. #3 (3A / AE304) 120 LF
- Option 3 - Wall Mod. #3 (Footing)(3A / AE304) 125 LF

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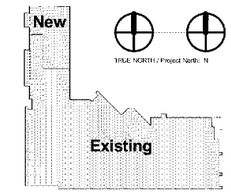

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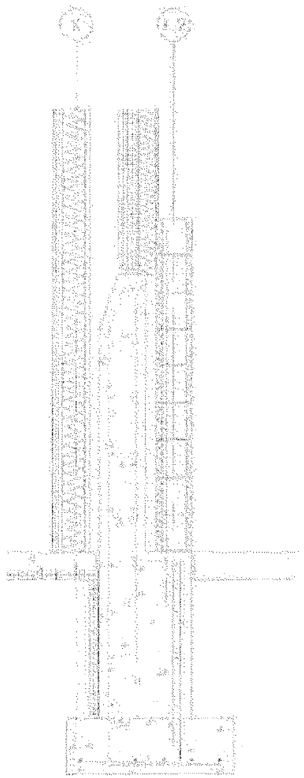

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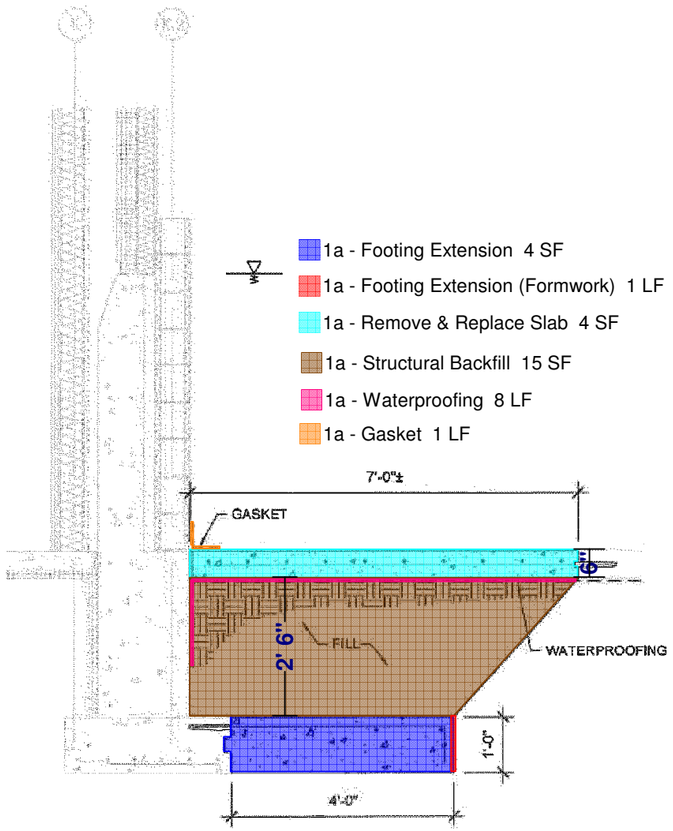
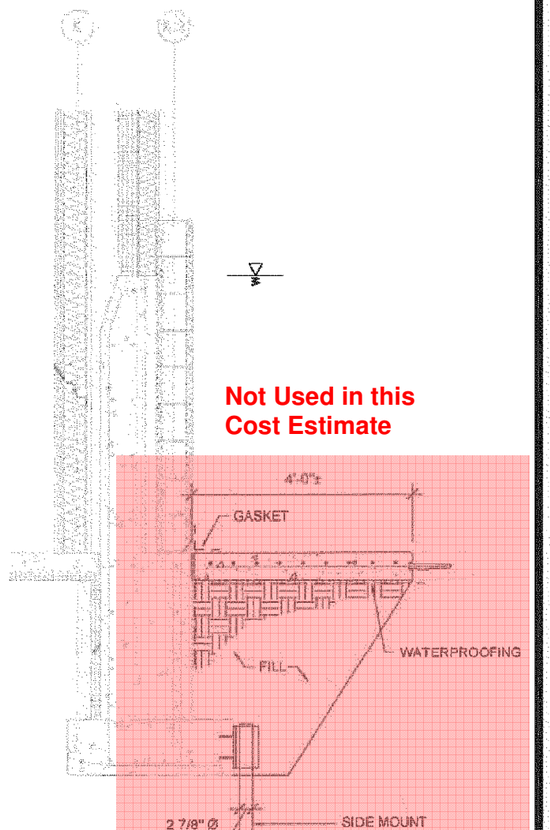


1a



1b

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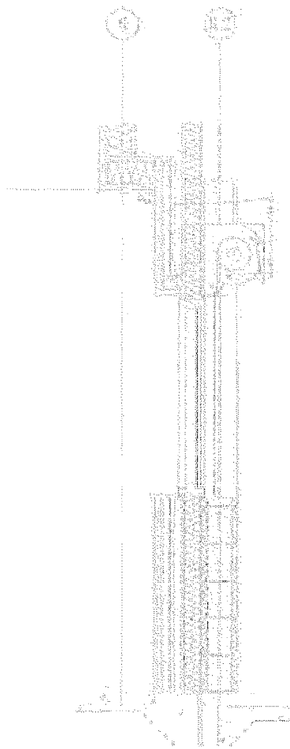
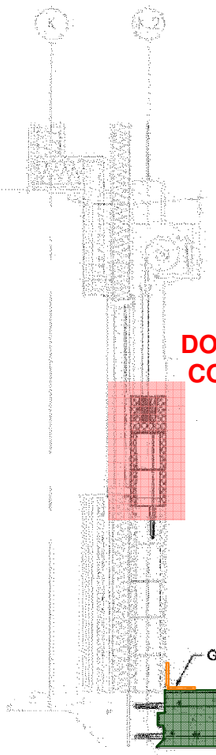
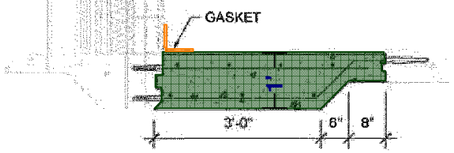
PROJECT	CYRIDE CYRIDE BUS FACILITY EXPANSION	DATE	02/29/12
		JOB NO.	14577878
SUBJECT	Wall Sections	SHEET NO.	AE302



2 - EXIST.

DO NOT PRICE IN THIS COST ESTIMATE.



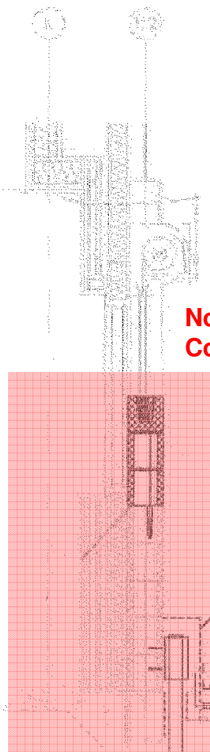


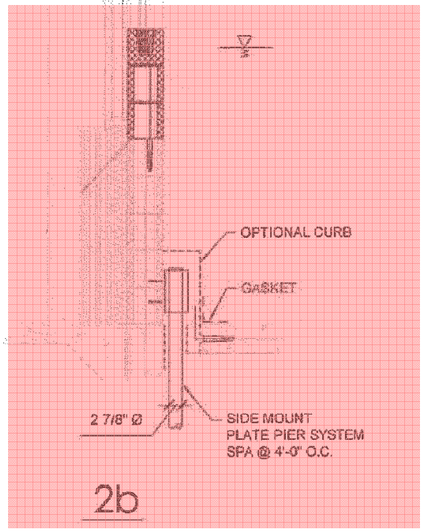
2a - Remove & Replace Slab 4 SF

2a - Gasket 1 LF

2a

Not Used in this Cost Estimate





2b

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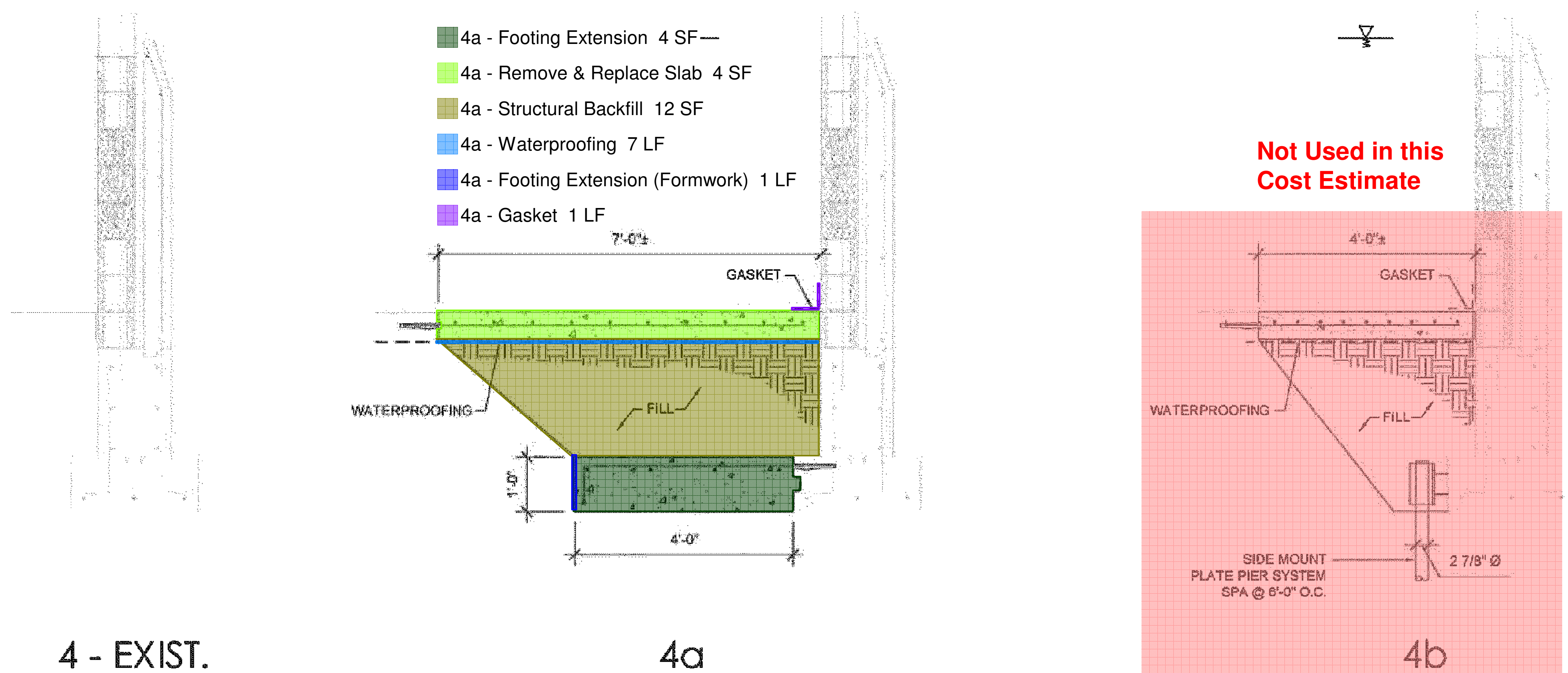
PROJECT	CYRIDE CYRIDE BUS FACILITY EXPANSION	DATE	02/29/12
		JOB NO.	14577878
SUBJECT	Wall Sections	SHEET NO.	AE303



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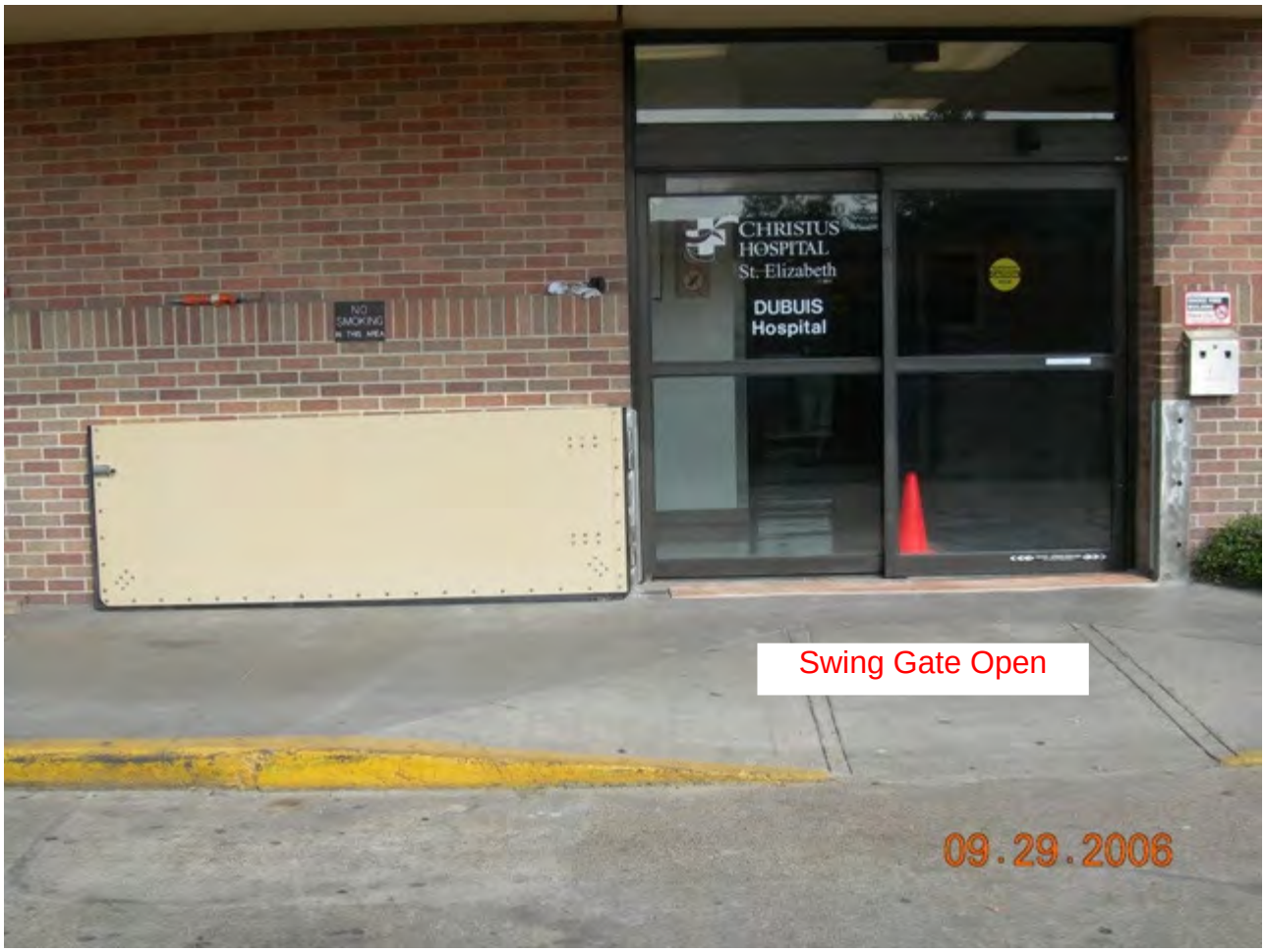
PROJECT	CYRIDE CYRIDE BUS FACILITY EXPANSION	DATE	02/29/2012
		JOB NO.	14577878
SUBJECT	Wall Sections	SHEET NO.	AE305

Roadway Gate
University of Houston
Houston, TX

Driveway Entrance:
2-30' x 2.5' = $100,000 EA.
or
2-30' x 4.5' = $115,500 EA.


Vehicle Gate:
2-12' x 4.5' = $46,200 EA.
1-14' x 4.5' = $53,900 EA.
2-28' x 4.5' = $107,800 EA.
1-40' x 4.5' = $154,000 EA.
Bus Entrance Type (Open)
Raises as the water does


Bus Entrance Type (Closed)
Raised as the water did



Swing Gate:
3' x 2.5' = $5,000
3' x 4.5' = $6,500
5' x 4.5' = $11,000
12' x 4.5' = $27.000


CHRIST S
HOSPITA
St. Elizabe n
DUBUIS
Hospita
SMOKE FREE BUILDING
Swing Gate Closed
09.29.2006

FloodBreak

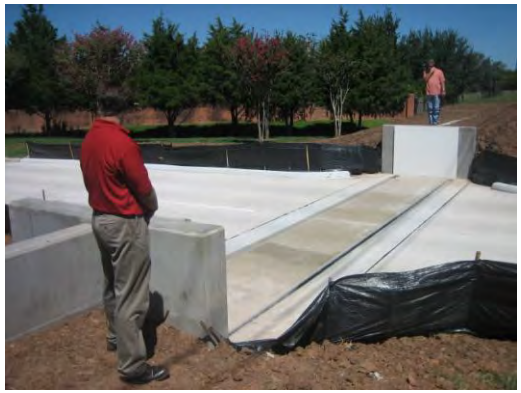
FloodBreak
REVOLUTIONARY FLOOD CONTROL

FloodBreak

- FloodBreak uses the incredible power of hydrostatic pressure to deploy the flood gates in virtually any vulnerable flood path.

- Since the gates are permanently installed in vulnerable flood paths, and the gates do not deploy without flood waters, you can have 24/7 access to your facility without disruption.

- Long-term training and maintenance is minimized. FloodBreak's solutions are designed to be installed… and forgotten…



FloodBreak
REVOLUTIONARY FLOOD CONTROL

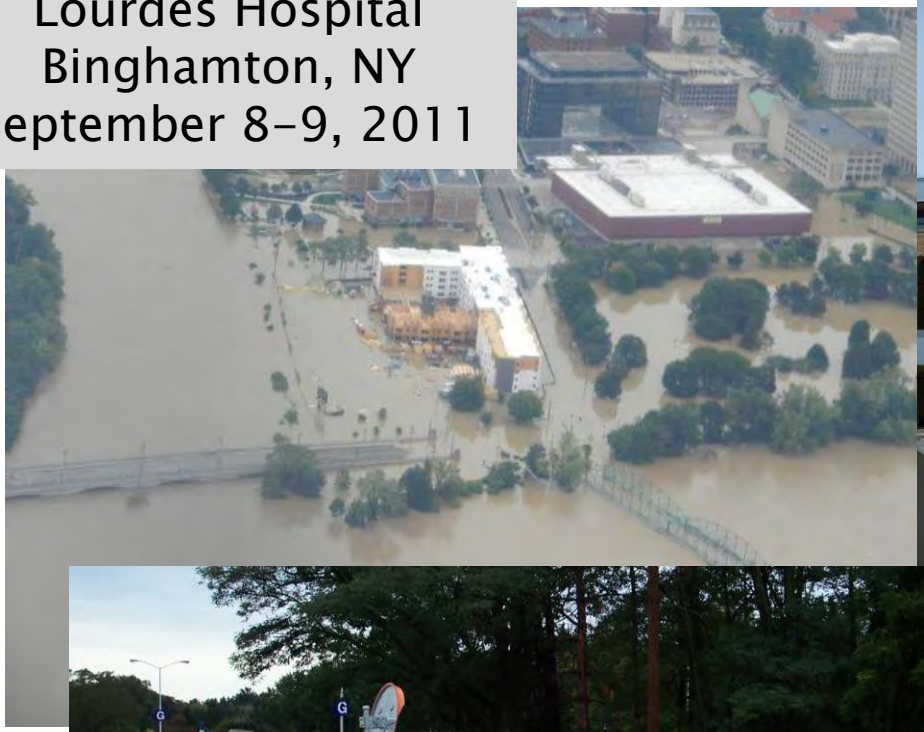
How It Works

- The design of the floodgate is built around the physics of hydrostatic pressure – in other words, it floats.
- When water rises and approaches the entrance, the floodgate floats and rotates upwards.
- The higher the water rises, the higher the gate rises in front of it. The hydrostatic pressure of the backed-up floodwater raises the barrier and activates the self-sealing rubber flange. The water is effectively working against itself.
- Once a flood has begun, the barrier is held shut by the water, and as the water recedes, the floodgate returns to its lowered position.

FloodBreak
REVOLUTIONARY FLOOD CONTROL

Just In – FloodBreak in Action!

Lourdes Hospital
Binghamton, NY
September 8-9, 2011



FloodBreak
REVOLUTIONARY FLOOD CONTROL

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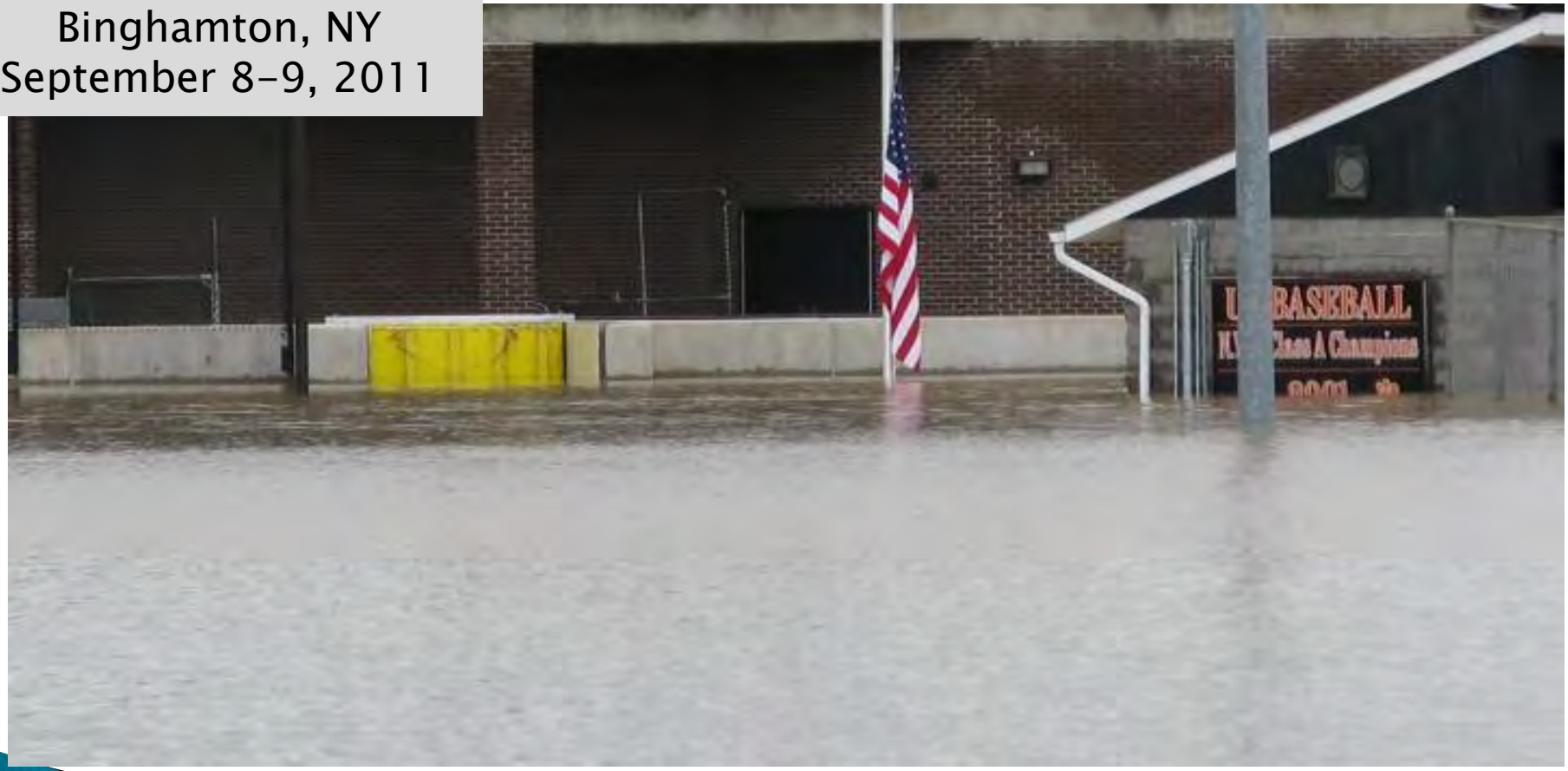
Union-Endicott Stadium
Binghamton, NY
September 8-9, 2011



FloodBreak
REVOLUTIONARY FLOOD CONTROL

FloodBreak in Action

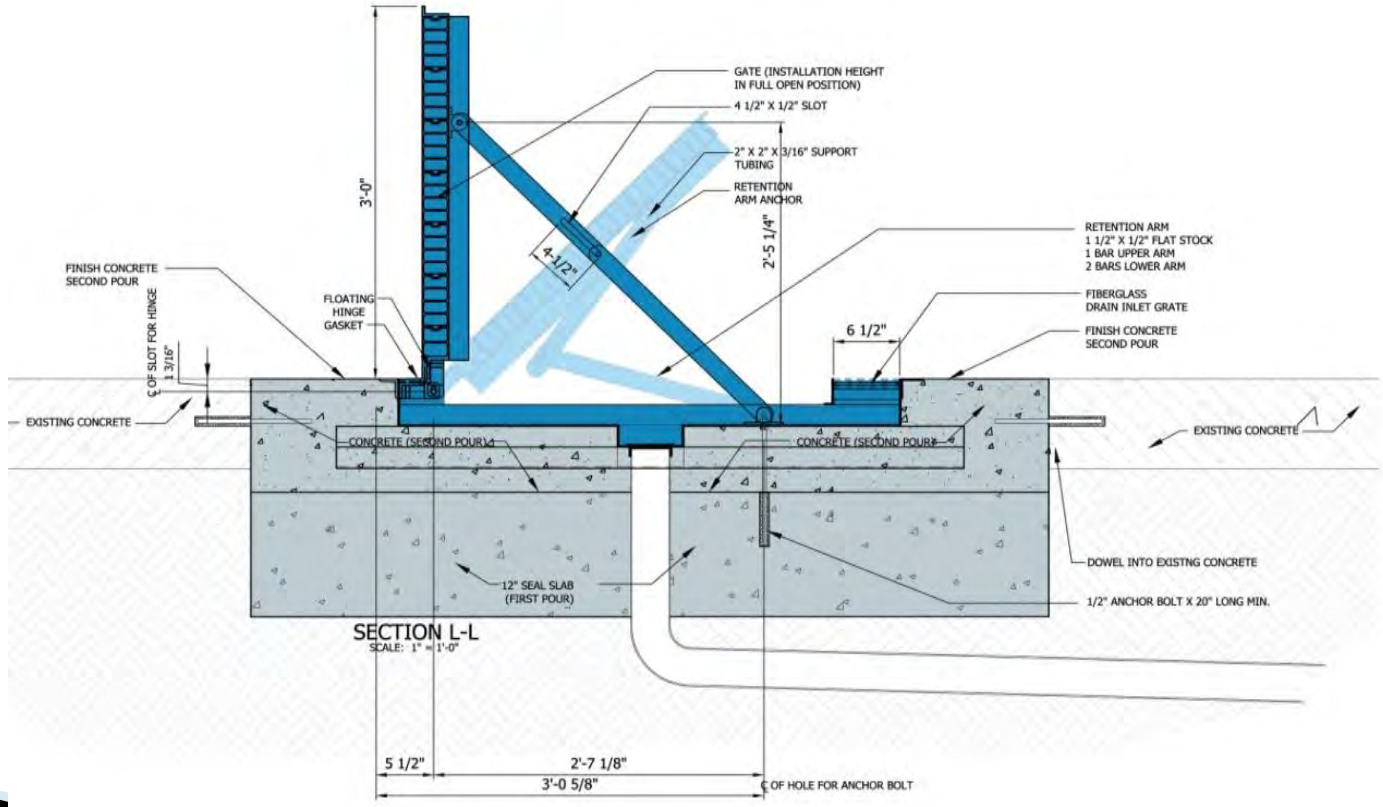
Apartment Garage
Great Neck, NY

Medical Center
Pasadena, TX

FloodBreak
REVOLUTIONARY FLOOD CONTROL

Engineering and Shop Drawings

- Each and every FloodBreak system comes with a comprehensive engineering report stamped by a certified, independent, third-party engineer who specializes in hydrodynamic forces and offshore structures.



FloodBreak
REVOLUTIONARY FLOOD CONTROL

Frequently Asked Questions

- ***Why does it float?***

  -The gate is actually a buoyant panel constructed of hollow aluminum extrusions. The extrusions are designed to be structural while also providing excellent flotation. Additionally, the extrusions are chambered so that even if an area of the panel is compromised, the overall panel will still float. This is similar to the design of a ship's hull, where bulkheads protect the ship even if the hull is locally damaged.

- ***How are these gates different from other gates that have been around for so long?***

  - FloodBreak® has revolutionized flood mitigation and dry floodproofing. We are setting a new standard in that the gates are "passive", therefore no one needs to be present to deploy the gates, and that is a huge step in protecting the assets that are so vulnerable.

- ***Does the gate need sidewalls?***

  - Yes, the system needs to have sidewalls that are as tall as the gates are when they are in the up (deployed) position. Without the sidewalls, the flood water would simply go around the gate.

- ***Does the gate have to be in the 90 degree, fully upright position to stop the flood?***

  - The FloodBreak system will rise with the flood, from initial activation all the way to the full deployment at 90 degrees angle, holding back the maximum amount of floodwater it is designed for. The higher the flood, the higher the gate rises, but you are always protected. This is quite significant because a majority of floods are less than one foot of water height.

- ***In the event of a flood, does the gate automatically go back down?***

  - Generally yes, although after a full-height flood the gate may rest in the fully open position. Some customers request that the gate have a lock to keep it in the open position after deployment so that the area can be checked and cleared after the flood recedes.

- ***Can debris cause the gate to malfunction?***

  - The design of the FloodBreak unit is such that it is nearly impossible for a gate to be obstructed by debris. The unit is design to catch floodwaters and any debris is washed through to the pan and out the drainage pipes.

FloodBreak
REVOLUTIONARY FLOOD CONTROL

OPTION- DESCRIPTION	LABOR COST	MATERIAL COST	EQP COST	TOTAL COST	UNIT COST
1A - FLOODWALL/BERM 4.5-FT	$239,159	$714,009	$71,307	$1,024,476	$1,024,476
1B - FLOODWALL/BERM 2.5-FT	$165,744	$553,066	$36,105	$754,915	$754,915
2A - WET/DRY PROTECTS OFFICE 4.5-FT	$85,162	$153,208	$5,026	$243,396	$243,396
2B - WET/DRY PROTECTS OFFICE & MECH ROOM 4.5-FT	$96,025	$173,062	$5,871	$274,958	$274,958
3 - PROTECTS BUILDING PERIMETER 4.5-FT	$214,848	$1,193,811	$24,588	$1,433,247	$1,433,247

URS