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2009 Condition Report for Northeast Plaza and Northwest Plaza and Barrier Wall Repair Options

for

**Milwaukee State Office Building
819 North 6th Street
Milwaukee, Wisconsin**

DSF Project No. 08C1A

November 2, 2009

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PROJECT: 2009 Condition Report for
Northeast Plaza and Northwest Plaza and
Barrier Wall Repair Options for
Milwaukee State Office Building
819 North 6th Street, Milwaukee, Wisconsin

DATE: November 2, 2009
FILE: 301045
DSF PROJECT NO:08C1A

REPORTED TO:
State of Wisconsin
Division of State Facilities
P.O. Box 7866
Madison, WI 53707-7866

COPIES TO:

Attn: Mr. Owen Landsverk

**2009 CONDITION REPORT FOR NORTHEAST PLAZA AND NORTHWEST PLAZA
AND BARRIER WALL OPTIONS FOR MILWAUKEE STATE OFFICE BUILDING**

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Attachments: Budget Spreadsheets
Sketch 1 – Site Plan Sketch

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Attachments Continued:

Sketch 2 – Leak Location Sketch

Sketch 3 – Northeast Plaza and East Plaza Recommended Repair Work Sketch

Sketch 4 – Northwest Plaza and West Plaza Recommended Repair Work Sketch

Sketch 5 – Schematic Detail of Northeast Plaza Transition at Stairs

Sketch 6 – Schematic Detail of Northeast Plaza Transition at Wall

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Sketch 8 – Schematic Detail of Barrier Wall Repairs – Option A

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Sketch 11 – Schematic Detail of Barrier Wall Repairs – Option D

Photos: 1 through 52

A. GENERAL

On September 2 and 9, 2009, our personnel participated in an investigation at the above-mentioned project. The purpose of the investigation for the northeast plaza and northwest plaza was to determine the nature and condition of the below grade water management system and its relationship to recurring leakage. In addition, the barrier walls were investigated with regards to recurring brick deterioration. Eight test openings were performed on the plazas and behind the barrier walls which removed the concrete wearing slab and waterproofing membrane down to the structural concrete. These test openings were performed to determine in-place (as-built) conditions at the most significant details. Isolated masonry wall repairs at the northeast plaza and east barrier wall were being performed in conjunction with the test cuts. The in-place conditions at these wall repair locations were documented as well.

B. BACKGROUND INFORMATION

The original building was constructed in 1962 (approximately) with exterior plaza areas with occupied space beneath. The east and west plazas have masonry barrier walls and staircases along the perimeter. Reportedly, the northeast plaza, northwest plaza, east plaza, and west plaza were rehabilitated in approximately 1985 with a new concrete wearing slab over waterproofing membrane over the existing structural concrete deck. Drawings of this work are not available.

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In 1988, per drawings dated February 1, 1988, the masonry barrier walls were to be removed and rebuilt with new brick with a mortar core. The cap stones were to be removed and reinstalled after the barrier walls were rebuilt. The face brick was to be inset 1" from the face of the cap stones. Masonry walls adjacent to the plazas and staircases were to be rebuilt with waterproofing on the backup wall and flexible flashings. The north wall facing the parking lot was to be cleaned and have isolated areas of deteriorated brick replaced. It is unclear if this work was ever performed since the existing barrier wall details (face brick flush with face of cap stone) doesn't match the detail in these drawings (face brick inset 1"). In addition, another set of masonry repair documents was issued in 1991 for masonry repair work of barrier walls and masonry walls adjacent to the plazas.

In approximately 1991, per drawings dated April 25, 1991, masonry repairs were performed on the barrier walls and masonry adjacent to all the exterior plazas. Granite cap stones were removed and reinstalled on new mortar. At the northeast plaza, the area around the drain was repaired with new waterproofing membrane over the existing and a new drain was installed. In addition the granite steps were removed along with the waterproofing membrane and new membrane was installed and the existing granite steps were reinstalled. At the northwest plaza the concrete ramp was removed and a new ramp installed. In addition the granite steps were removed along with the waterproofing membrane and new membrane was installed and the existing granite steps were reinstalled.

The purpose of this investigation was to:

1. Investigate the presence of, and evaluate the existing waterproofing system with respect to long term performance.
2. Determine a repair strategy to solve the water infiltration.
3. Provide opinions of probable construction cost for the waterproofing system rehabilitation/installation.
4. Evaluate and recommend repair and/or replacement options for the masonry walls that abut the plazas.

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5. Provide options for repairing the barrier walls and provide options for removing the barrier walls and replacing them with guardrails.
6. Provide opinions of probable construction cost for all repairs and/or replacement recommendations.
7. Provide approximate engineering fees to design the recommended repairs and/or replacement recommendations.

C. PROBLEM ISSUES

Presently, water is infiltrating the occupied space below the northeast plaza and the northwest plaza. Extensive active leakage is present in the northeast plaza and active leakage in the northwest plaza occurs only during heavy rainfalls. Evidence of past leakage is present below the northeast and northwest plazas as well. Active leakage was not reported under the east and west plazas. However, evidence of past leakage was observed under the west plaza. See Sketch 2 – Leak Location Sketch and photos 33 through 52.

The masonry walls adjacent to the plazas have deteriorated to a point they need to be replaced and proper waterproofing and detailing need to be performed. The damage to the masonry appears to be from the presence of significant amounts of water in the wall system. The barrier walls adjacent to the east and west plazas contain damaged masonry units at the level of the concrete structural deck. Areas of the north wall adjacent to the parking lot require maintenance and/or replacement as evidenced by severely deteriorated brick and a significantly rusted shelf angle for a portion of the wall at the planter.

D. THE INVESTIGATION

Our investigation of the aforementioned problem issues included the following:

1. We reviewed existing construction documents from the original building construction in 1962 and the maintenance/repair drawings from 1988 and 1991. These documents were given to us by facility personnel.
2. We interviewed site personnel and visually surveyed and inspected the occupied space below the northeast, northwest, and west plazas regarding previous and present water infiltration. The locations of active water infiltration and locations of evidence of past water infiltration documented (see sketch 2). Leakage under the east plaza was not reported by facility staff.

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3. Eight test openings were performed to investigate the existing plaza system components as well as document existing (as-built) conditions at various details including the barrier walls.

E. EXISTING CONDITIONS

Sketch 1 – Site Plan Sketch depicts the plazas and barrier walls. Photos 1 through 32 document exterior existing conditions. Photo locations are shown on Sketch 3 – Northeast Plaza and East Plaza Recommended Repair Work Sketch and on Sketch 4 – Northwest Plaza and West Plaza Recommended Repair Work Sketch. Photos 33 through 52 document interior existing conditions. Photo locations are shown on Sketch 2 – Leak Location Sketch. The typical existing conditions revealed by the test openings, visual inspections, and review of existing drawings are listed below.

1. Typical waterproofing system for the northeast plaza, northwest plaza, east plaza, and west plaza.
 - ✓ Cast-in-place structural concrete deck.
 - ✓ Northeast Plaza has structural slope draining toward the east
 - ✓ Northwest Plaza has structural slope draining toward the west
 - ✓ East and West Plazas' structural decks are flat
 - ✓ Single ply rubber waterproofing membrane. Membrane was not adhered/attached to the structural deck.
 - ✓ Drainage net (voids of drainage net were filled with concrete from wearing slab above)
 - ✓ Concrete wearing slab (walking surface). The northeast plaza had very widely spaced control joints leading to mid slab cracking. The average thickness of the concrete wearing slabs are listed below:
 - ✓ Northeast Plaza – Lower Portion: 4-1/2" thick at the drain to a maximum thickness of 7-3/4"
 - ✓ Northeast Plaza – Upper Portion: 3-3/4" thick
 - ✓ Northwest Plaza: 5" thick
 - ✓ East Plaza: 3-3/4" thick at the drains to a maximum thickness of 6"
 - ✓ West Plaza: assumed to match east plaza thicknesses
2. Typical waterproofing membrane configuration at perimeter.
 - ✓ At face brick masonry walls: The waterproofing membrane turns down the foundation wall and runs between the concrete foundation wall (back-up wall) and masonry face brick. See existing detail on Sketch 6 – Schematic Detail of Northeast Plaza Transition Detail at Wall and Sketch 7 – Schematic Detail of Existing Barrier Wall.

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- ✓ At staircases: The waterproofing membrane runs under the stone stair treads and then across lower structural deck or turns down onto the frost walls. See existing detail on Sketch 5 – Schematic Detail of Northeast Plaza Transition at Stairs.
 - ✓ At barrier walls: The waterproofing membrane runs under the barrier wall and then turns down the foundation wall and runs between the concrete foundation wall (back-up wall) and masonry face brick. See Sketch 7 – Schematic Detail of Existing Barrier Wall.
3. Typical detailing at plaza drains.
- ✓ The plaza drains accept water from the top of the concrete wearing slab (walking surface) only and do not accept water from the waterproofing membrane level. See Sketch 7 – Schematic Detail of Existing Barrier Wall.
4. Typical structural deck construction.
- ✓ The plaza decks are cast-in-place, reinforced with steel reinforcing, concrete structural decks supported by cast-in-place, reinforced with steel reinforcing, integral concrete beams.
5. Typical locations of water infiltration.
- ✓ The water infiltration as reported by facility personnel and as observed during the investigation appears to be entering the occupied space through the structural concrete deck and through the cold joints between the structural concrete deck and the foundation walls. Water infiltration further down the foundation walls below the cold joints were not observed or reported.

F. EVALUATIONS AND CONCLUSIONS

We were able to verify how water is infiltrating the occupied spaces below the northeast and northwest plazas. Water is entering the occupied space below the plazas through numerous cracks in the structural concrete deck and at the plaza drain penetration through the structural concrete deck. The presence of water is due to inadequate drainage of subsurface water at the waterproofing membrane level, an inadequate plaza drain configuration, and an inadequate waterproofing membrane.

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The existing drainage net (between the concrete wearing slab and the waterproofing membrane) does not have a geotextile fabric attached to keep the concrete from filling the voids of the drainage net during initial placement of the concrete wearing slab. These filled voids of the drainage net eliminate the possibility of subsurface water moving through the drainage net to the plaza drains. Water is trapped on the waterproofing membrane. Evidence of this was found in the test openings where the bottom ½” to 1” of concrete wearing slab had deteriorated into fine aggregate and this fine aggregate was wet.

The existing plaza drains are inadequate since they only drain surface water from the top of the concrete wearing slab and do not drain water at the membrane level. This results in subsurface water accumulating and being trapped at the drain. This is evidenced by a significant leakage in the area of the plaza drain.

The waterproofing membrane is inadequate since it is not fully adhered to the structural deck and a protection course is not present on top of the membrane to protect it from construction traffic and placement of the concrete wearing slab. Reportedly, the seams of the rubber waterproofing membrane were suspected of inadequate adhesion from the initial construction. Water is getting under the waterproofing membrane either at failed seams, failed detailing at transitions, punctures in the membrane, or all of these locations. Once the water is under the membrane it is free to move until it finds a crack or expansion joint and then enters the occupied space below.

We were able to verify the cause of the deteriorated brick at the masonry walls adjacent to the northeast plaza and northwest plaza. Water is infiltrating the masonry walls due to inadequate detailing of the waterproofing membrane. The waterproofing membrane is turned down the foundation walls and runs behind the face brick (similar to existing detail shown on sketch 6). Since the masonry is placed directly against the membrane without an air cavity, subsurface water is absorbed by the brick and mortar. Saturated bricks deteriorate quickly especially with the numerous freeze/thaw cycles that the walls are subjected to in this climate. Deteriorated brick at the planters is a combination of water entering the masonry through joints in the cap stones as well as face brick being present down to the concrete wearing slab surface and in some cases below the level of the top of the concrete wearing slab. Again this results in the brick being exposed to moisture for long periods of time leading to deterioration.

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We were able to verify the cause of the deteriorated brick at the barrier walls adjacent to the east and west plazas. Water is infiltrating the barrier walls due to inadequate detailing of the waterproofing membrane. The waterproofing membrane extends into the barrier wall and is turned down the foundation walls and runs behind the face brick (see sketch 7). Since the masonry is placed directly against the membrane without an air cavity, subsurface water is absorbed by the brick and mortar. Saturated bricks deteriorate quickly especially with the numerous freeze/thaw cycles that the walls are subjected to in this climate. The location of the worst deterioration of bricks is at the bottom of the interior face of the wall. The location of the worst deterioration of bricks for the exterior face of the wall is at the level of the waterproofing membrane and down several brick courses from there.

The spalling concrete and rusted reinforcement bars on the bottom side of the structural decks are a result of current and past leakage. The uncoated reinforcing bars when exposed to water and air corrode and rust. As the reinforcing bars rust, they expand causing the concrete to crack and spall.

G. RECOMMENDATIONS

Northeast and Northwest Plazas and Adjacent Masonry Walls:

In order to stop all current and future water infiltration associated with the plazas, we recommend removing the existing concrete wearing slab, drainage net, and waterproofing membrane and installing a new waterproofing system. The new waterproofing system would be applied on the structural deck, down approximately four feet on each foundation wall, and as shown in the schematic details. The new system will not extend all the way down the foundation walls to the footings due to the very high cost of installation and since leakage through the foundation walls was not observed or reported. The new plaza system would consist of a new concrete wearing slab over insulation (if enough system thickness is present) over a drainage mat over a protection layer over a fully adhered, fluid applied waterproofing membrane over the properly prepared structural concrete deck. In addition, proper waterproofing detailing is required at all walls, transitions, drains, and planters. The general design concept for improved detailing is to install concrete curbs at all locations where the existing waterproofing membrane turns down the foundation wall and runs behind the face brick. This will keep the water on the structural deck of the plaza and force it to run through the drainage mat to the drains. All drains will be replaced with bi-level drains that accept water from the surface as well as water at the membrane level. We are proposing adding three drains to the upper portion of the northeast plaza to eliminate the need for the subsurface water to run behind the face brick and down to the lower plaza. In order to install these drains over heated occupied space, we are proposing moving the staircases approximately five feet east and providing a five foot wide landing at the top of the staircases

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with a drain located in the center. New structural concrete will be required to support the new landing and relocated staircases. See Sketch 5 – Schematic Detail of Northeast Plaza Transition at Stairs and Sketch 6 – Schematic Detail of Northeast Plaza Transition at Wall.

In addition, the interior of the adjacent planters will be waterproofed, all cap stones will be removed and reinstalled over new mortar with rope weeps over a new stainless steel throughwall flashing and the east end of the north wall will have the face brick removed, a new waterproofing membrane installed, new throughwall flashing installed at the brick ledge and the waterproofing will extend below the brick ledge on the face of the foundation wall similar to the bottom portion of the detail shown on Sketch 8 – Schematic Detail of Barrier Wall Repairs – Option A. All of the above repair/replacement work plus additional repair/replacement items (fully described on the sketches) are called out and described on Sketch 3 – Northeast Plaza and East Plaza Recommended Repair Work Sketch and on Sketch 4 – Northwest Plaza and West Plaza Recommended Repair Work Sketch.

Emergency Repairs Only for Northeast Plaza:

If funding is not available for the full replacement of the Northeast Plaza and Northwest Plaza as discussed above, at a minimum, emergency repairs should be performed on the Northeast Plaza in 2010. These emergency repairs include replacing the concrete wearing surface and waterproofing system (described in key note 1 on sketch 3) over the eastern 65' of the Northeast Plaza (65' long by 45' wide). Interior repairs of the structural deck would focus on the most severely deteriorated concrete. Work described in key notes 2, 4, 5, 6, 7, 8, 12, 13, and 14 on sketch 3 would be performed as well. The remainder of the recommended work for the Northeast and Northwest Plazas should then be performed as soon as possible in 2011 or 2012.

Barrier Wall Repairs:

In order to restore the brick to good condition and minimize future deterioration of the face brick, we recommend terminating the waterproofing membrane on the interior face of the barrier wall and therefore directing the subsurface water to the drains in lieu of forcing the subsurface water into the barrier wall. Along with this work a five foot wide portion of existing plaza concrete wearing slab and waterproofing membrane will be removed, a new bi-level plaza drain installed, a new fully adhered, fluid applied waterproofing membrane installed, a drainage sheet installed, and new concrete wearing slab installed. See Sketch 8 – Schematic Detail of Barrier Wall Repairs – Option A.

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Additional repair work recommended at the barrier walls includes removing the cap stones and reinstalling them on a new bed of mortar with rope weeps over a new stainless steel throughwall flashing. The deteriorated face brick on the exterior face of the barrier wall should be removed, a waterproofing membrane installed on the brick and concrete back-up wall, and new face brick installed. We recommend the brick replacement extend down to the brick ledge with the waterproofing membrane extending down to and over the brick ledge and down below grade. A new throughwall flashing with cell vents in the mortar joints will be installed at the brick ledge level. See Sketch 8 – Schematic Detail of Barrier Wall Repairs – Option A.

In conjunction with the barrier wall repairs, the opportunity exists to remove the barrier walls and replace them with guardrails. Reportedly, people have taken up residence behind the barrier walls during night time hours. The barrier walls provide protection from being seen from public sidewalks along the streets. Three options for removing the barrier walls and installing guardrails have been presented for your consideration. These options are fully described on the attached sketches 9, 10, and 11 – Schematic Detail of Barrier Wall and Guard Rail Option B, C, and D. Options B, C, and D cost more than just repairing the existing barrier wall but due to security issues raised by facility staff, the investment for one of the guardrail options may be worthwhile.

Inspecc and a local guardrail manufacturer/fabricator like Option D the best of the guardrail options. This option has a shorter guardrail and a higher curb on the interior of the wall and more masonry on the exterior. This will minimize the aesthetic change from masonry to steel guardrail. The concrete curb can be colored to match one of the colors in the face brick to provide a more aesthetically pleasing appearance at a reasonable cost. The increased height of the curb also raises the bottom of the guardrail higher off of the concrete wearing slab where salt and other de-icing products are used during the winter. This will extend the life of the guardrail.

One limitation of Option C is the required cutting of the existing cap stones to allow for installing the columns as well as to provide a cap stone for the columns. We anticipated installing guardrail posts at each joint in the cap stones with the assumption it would be easier to construct the guardrail and reinstall the cap stones in lieu of coring through the middle of each stone and then sliding the stone over the top of each guardrail post and down into position.

Project Phasing:

If project funding is limited, we propose the following phasing:

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- Phase 1:** Perform all recommended work for the Northeast Plaza and adjacent masonry walls including the north wall. At a minimum, the emergency repairs for the Northeast Plaza should be performed 2010.
- Phase 2:** Perform all recommended work for the Northwest Plaza and adjacent masonry walls.
- Phase 3:** Perform barrier wall repairs and possible guardrail installation. Emergency repairs of the most severely deteriorated brick have been performed in September, 2009, by DSF.

H. PRELIMINARY OPINIONS OF PROBABLE CONSTRUCTION COST

The following opinions of probable construction cost include all recommended repairs/replacement for each area. A budget spreadsheet with a more detailed breakdown of these total costs is provided at the end of this report. Options for reducing the scope of work to fit into the available budget are also provided along with a discussion of assumed risks of not performing those items.

Northeast Plaza and associated work:	\$690,000.00
Northwest Plaza and associated work:	\$400,000.00
East Barrier Wall Repairs and associated work:	
Option A	\$155,000.00
Option B	\$205,000.00
Option C	\$230,000.00
Option D	\$210,000.00
West Barrier Wall Repairs and associated work:	
Option A	\$115,000.00
Option B	\$150,000.00
Option C	\$165,000.00
Option D	\$155,000.00

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Possible Scope Reduction Items:

Northeast Plaza and associated work:

- a. Reduce the amount of interior repair work to only the most severely spalled concrete and all exposed corroded reinforcing. DSF would need to budget for additional interior repairs in the near future. Possible savings (\$50,000.00).

Northwest Plaza and associated work:

- b. Reduce the amount of interior repair work to only the most severely spalled concrete and all exposed corroded reinforcing. DSF would need to budget for additional interior repairs in the near future. Possible savings (\$20,000.00).

Barrier Wall Repair Options:

- c. Reduce the amount of face brick replacement and throughwall flashing installation at the brick ledge. This option would leave in place the bottom six courses of face brick on the exterior face of the barrier walls. The disadvantage of this option is the discontinuous waterproofing membrane which will be behind the new face brick. In addition, should waterproofing be required in the future on the foundation walls, these six courses of face brick plus approximately three more would need to be removed to tie into the waterproofing membrane and continue it down the foundation wall. Possible savings (\$30,000.00) for East Barrier Walls and (\$20,000.00) for West Barrier Walls.

Barrier Wall – New Guardrail Options:

- d. For the East and West Barrier Wall Options B, C, and D where a new stainless steel guardrail would be installed, a painted steel guardrail can be installed at significant cost savings. The painted steel guardrail will not last as long as stainless steel. The possible savings for switching to painted steel guardrails are as follows:

East Barrier Wall Option B: (\$30,000.00)

East Barrier Wall Option C: (\$30,000.00)

East Barrier Wall Option D: (\$25,000.00)

West Barrier Wall Option B: (\$20,000.00)

West Barrier Wall Option C: (\$20,000.00)

West Barrier Wall Option D: (\$15,000.00)

Emergency Repairs Only for Northeast Plaza:

- e. As described in section G above, if funding is not available for the full replacement of the Northeast Plaza and Northwest Plaza, at a minimum, emergency repairs should be performed on the Northeast Plaza in 2010. The cost of these emergency repairs would be approximately \$365,000.00.

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These preliminary opinions of probable construction cost are “ballpark” numbers. During the schematic/final design, a more detailed and more accurate opinion of probable construction cost will be developed.

I. PRELIMINARY OPINION OF ENGINEER'S FEES

For waterproofing and masonry projects of this nature, we strongly recommend that the design firm provide detailed construction documents along with construction observation during construction. The approximate fees below assume all the recommendations for the Northeast and Northwest Plazas will be performed. The approximate fees also assume the barrier walls will be replaced with one of the guardrail options.

For design services including drawings, project manual (specifications), and assistance during bidding, our opinion of engineering fee would be approximately \$70,000.00. Please note that the electrical items (replacing conduits and removing and reinstalling fixtures if necessary) will only have a schematic design performed. It will be the contractor's responsibility to install per code and provide all necessary new connections and equipment. If more detailed specifications and drawings are requested, we can hire a sub-consultant as a reimbursable.

For periodic (intermittent) site visits during the construction, our opinion of engineering fee would be \$43,000.00 assuming the construction will take place during one construction season (spring, summer, and fall of 2010).

A formal proposal with updated fixed fees will be provided after the final report is reviewed by the Division of State Facilities, a project budget is set, and the scope of the project is finalized.

J. REMARKS

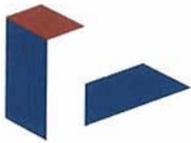
This report is a summary of the water infiltration and deteriorated masonry investigation of the exterior plazas and masonry barrier walls at the Milwaukee State Office Building located at 819 North 6th Street, Milwaukee, Wisconsin. Photographs and field notes will be retained in our files for future reference. If you have any questions regarding this report, please call our office.

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Sincerely,

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Dan Roehrdanz, P.E.
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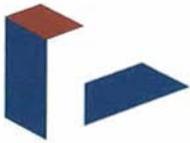
Milwaukee State Office Building
Milwaukee, Wisconsin

Plaza Waterproofing and Barrier Wall Modifications
Opinion of Construction Cost
November 2, 2009

DSF Project Number 08C1A
Developed by Inspec, Inc.

Northeast Plaza

Item	Quantity	Unit Price	Price
Scope of Repair - Key Note 1	1 LS	\$120,000.00 /LS	\$ 120,000
Scope of Repair - Key Note 2	1 LS	\$ 5,000.00 /LS	\$ 5,000
Scope of Repair - Key Note 3	1 LS	\$115,000.00 /LS	\$ 115,000
Scope of Repair - Key Note 4	1 LS	\$ 45,000.00 /LS	\$ 45,000
Scope of Repair - Key Note 5	1 LS	\$ 42,000.00 /LS	\$ 42,000
Scope of Repair - Key Note 6	1 LS	\$ 13,000.00 /LS	\$ 13,000
Scope of Repair - Key Note 7	1 LS	\$ 7,000.00 /LS	\$ 7,000
Scope of Repair - Key Note 8	1 LS	\$ 6,000.00 /LS	\$ 6,000
Scope of Repair - Key Note 9	1 LS	\$ 5,000.00 /LS	\$ 5,000
Scope of Repair - Key Note 10	1 LS	\$ 18,000.00 /LS	\$ 18,000
Scope of Repair - Key Note 11	1 LS	\$ 45,000.00 /LS	\$ 45,000
Scope of Repair - Key Note 12	1 LS	\$ 16,000.00 /LS	\$ 16,000
Scope of Repair - Key Note 13	1 LS	\$ 30,000.00 /LS	\$ 30,000
Scope of Repair - Key Note 14	1 LS	\$ 12,000.00 /LS	\$ 12,000
Interior structural repairs	1 LS	\$135,000.00 /LS	\$ 135,000
New topsoil and sod	1 LS	\$ 1,000.00 /LS	\$ 1,000
Erosion Control	1 LS	\$ 1,000.00 /LS	\$ 1,000
Construction fence	1 LS	\$ 1,000.00 /LS	\$ 1,000
Plants and mulch restoration in planters	1 LS	\$ 2,000.00 /LS	\$ 2,000
New electrical conduits and wires	1 LS	\$ 5,000.00 /LS	\$ 5,000
		Subtotal	\$ 624,000
		Total w/ 10% contingency	\$ 686,400



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Plaza Waterproofing and Barrier Wall Modifications
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Northwest Plaza

Item	Quantity	Unit Price	Price
Scope of Repair - Key Note 1	1 LS	\$ 30,000.00 /LS	\$ 30,000
Scope of Repair - Key Note 2	1 LS	\$ 16,000.00 /LS	\$ 16,000
Scope of Repair - Key Note 4	1 LS	\$ 87,000.00 /LS	\$ 87,000
Scope of Repair - Key Note 5	1 LS	\$ 55,000.00 /LS	\$ 55,000
Scope of Repair - Key Note 6	1 LS	\$ 22,000.00 /LS	\$ 22,000
Scope of Repair - Key Note 8	1 LS	\$ 6,000.00 /LS	\$ 6,000
Scope of Repair - Key Note 9	1 LS	\$ 10,000.00 /LS	\$ 10,000
Scope of Repair - Key Note 15	1 LS	\$ 17,000.00 /LS	\$ 17,000
Scope of Repair - Key Note 18	1 LS	\$ 2,000.00 /LS	\$ 2,000
Scope of Repair - Key Note 20	1 LS	\$ 36,000.00 /LS	\$ 36,000
Scope of Repair - Key Note 21	1 LS	\$ 1,000.00 /LS	\$ 1,000
Interior structural repairs	1 LS	\$ 70,000.00 /LS	\$ 70,000
New topsoil and sod	1 LS	\$ 1,000.00 /LS	\$ 1,000
Erosion Control	1 LS	\$ 1,000.00 /LS	\$ 1,000
Construction fence	1 LS	\$ 1,000.00 /LS	\$ 1,000
Plants and mulch restoration in planters	1 LS	\$ 2,000.00 /LS	\$ 2,000
New electrical conduits and wires	1 LS	\$ 4,000.00 /LS	\$ 4,000
Subtotal			\$ 361,000
Total w/ 10% contingency			\$ 397,100

East Barrier Wall Repair - Option A

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option A	1 LS	\$140,000.00 /LS	\$ 140,000
Subtotal			\$ 140,000
Total w/ 10% contingency			\$ 154,000



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Milwaukee, Wisconsin

Plaza Waterproofing and Barrier Wall Modifications
Opinion of Construction Cost
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Page Three

East Barrier Wall Repair - Option B

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option B	1 LS	\$185,000.00 /LS	\$ 185,000
Subtotal			\$ 185,000
Total w/ 10% contingency			\$ 203,500

East Barrier Wall Repair - Option C

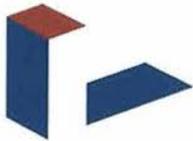
Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option C	1 LS	\$210,000.00 /LS	\$ 210,000
Subtotal			\$ 210,000
Total w/ 10% contingency			\$ 231,000

East Barrier Wall Repair - Option D

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option D	1 LS	\$190,000.00 /LS	\$ 190,000
Subtotal			\$ 190,000
Total w/ 10% contingency			\$ 209,000

West Barrier Wall Repair - Option A

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option A	1 LS	\$105,000.00 /LS	\$ 105,000
Subtotal			\$ 105,000
Total w/ 10% contingency			\$ 115,500



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Plaza Waterproofing and Barrier Wall Modifications
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Page Four

West Barrier Wall Repair - Option B

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option B	1 LS	\$135,000.00 /LS	\$ 135,000
Subtotal			\$ 135,000
Total w/ 10% contingency			\$ 148,500

West Barrier Wall Repair - Option C

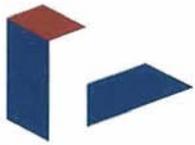
Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option C	1 LS	\$150,000.00 /LS	\$ 150,000
Subtotal			\$ 150,000
Total w/ 10% contingency			\$ 165,000

West Barrier Wall Repair - Option D

Item	Quantity	Unit Price	Price
Barrier Wall Repair - Option D	1 LS	\$140,000.00 /LS	\$ 140,000
Subtotal			\$ 140,000
Total w/ 10% contingency			\$ 154,000

Possible Deduct Alternates

Item	Quantity	Unit Price	Price
Reduce interior structural repairs NE plaza	1 LS	\$ (50,000.00)	\$ (50,000)
Reduce interior structural repairs NW plaza	1 LS	\$ (20,000.00)	\$ (20,000)
Less face brick replace. east barrier walls	1 LS	\$ (30,000.00)	\$ (30,000)
Less face brick replace. west barrier walls	1 LS	\$ (20,000.00)	\$ (20,000)
Painted guardrails for east wall opt. B & C	1 LS	\$ (30,000.00)	\$ (30,000)
Painted guardrails for east wall option D	1 LS	\$ (25,000.00)	\$ (25,000)
Painted guardrails for west wall opt. B & C	1 LS	\$ (20,000.00)	\$ (20,000)
Painted guardrails for west wall option D	1 LS	\$ (15,000.00)	\$ (15,000)



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Opinion of Construction Cost
November 2, 2009

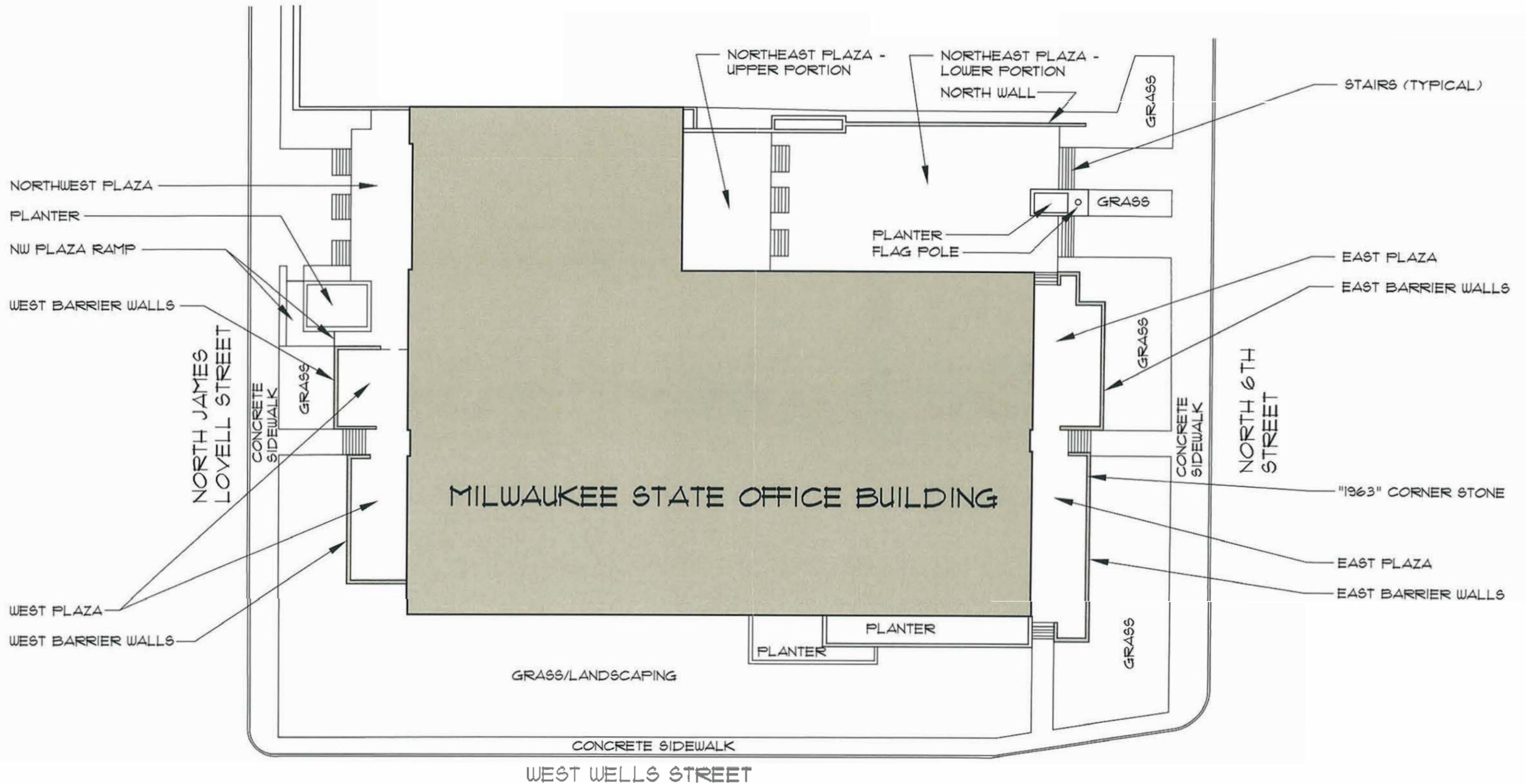
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Page Five

Emergency Repairs only for Northeast Plaza

Item	Quantity	Unit Price	Price
Scope of Repair - Key Note 1	1 LS	\$ 68,000.00 /LS	\$ 68,000
Scope of Repair - Key Note 2	1 LS	\$ 5,000.00 /LS	\$ 5,000
Scope of Repair - Key Note 4	1 LS	\$ 45,000.00 /LS	\$ 45,000
Scope of Repair - Key Note 5	1 LS	\$ 42,000.00 /LS	\$ 42,000
Scope of Repair - Key Note 6	1 LS	\$ 13,000.00 /LS	\$ 13,000
Scope of Repair - Key Note 7	1 LS	\$ 7,000.00 /LS	\$ 7,000
Scope of Repair - Key Note 8	1 LS	\$ 6,000.00 /LS	\$ 6,000
Scope of Repair - Key Note 12	1 LS	\$ 16,000.00 /LS	\$ 16,000
Scope of Repair - Key Note 13	1 LS	\$ 30,000.00 /LS	\$ 30,000
Scope of Repair - Key Note 14	1 LS	\$ 6,000.00 /LS	\$ 6,000
Interior structural repairs	1 LS	\$ 85,000.00 /LS	\$ 85,000
New topsoil and sod	1 LS	\$ 1,000.00 /LS	\$ 1,000
Erosion Control	1 LS	\$ 1,000.00 /LS	\$ 1,000
Construction fence	1 LS	\$ 1,000.00 /LS	\$ 1,000
Plants and mulch restoration in planters	1 LS	\$ 1,000.00 /LS	\$ 1,000
New electrical conduits and wires	1 LS	\$ 4,000.00 /LS	\$ 4,000
		Subtotal	\$ 331,000
		Total w/ 10% contingency	\$ 364,100

ASPHALT PARKING LOT

ASPHALT PARKING LOT



1 SITE PLAN SKETCH
1" = 30'-0" APPROXIMATE



2009 PLAZA CONDITION REPORT
MILWAUKEE STATE OFFICE BUILDING
819 NORTH 6TH STREET, MILWAUKEE, WISCONSIN

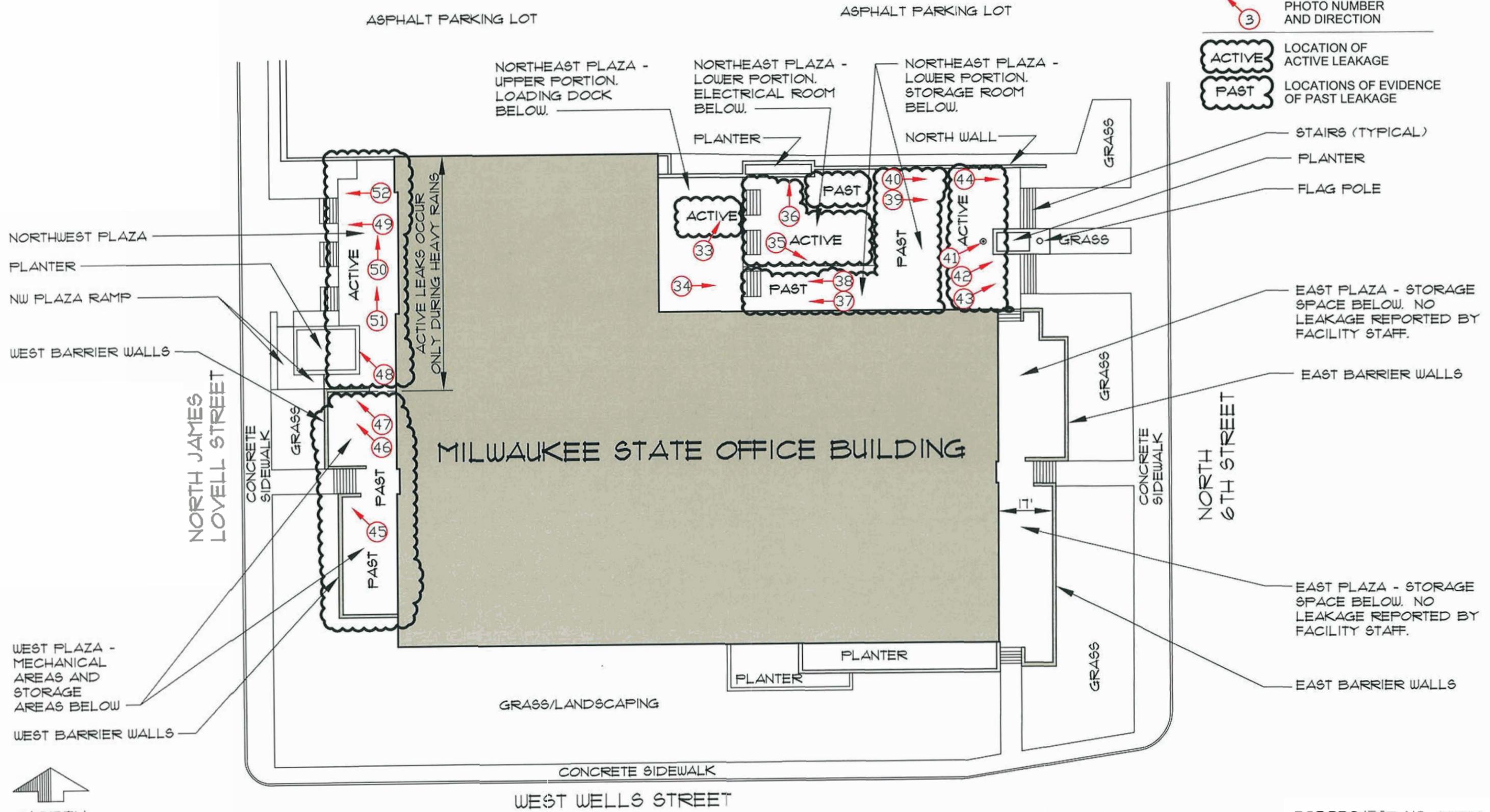
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SYMBOLS KEY

-  PHOTO NUMBER AND DIRECTION
-  ACTIVE LOCATION OF ACTIVE LEAKAGE
-  PAST LOCATIONS OF EVIDENCE OF PAST LEAKAGE



NORTH

2 LEAK LOCATION SKETCH
1" = 30'-0" APPROXIMATE



2009 PLAZA CONDITION REPORT
MILWAUKEE STATE OFFICE BUILDING
819 NORTH 6TH STREET, MILWAUKEE, WISCONSIN

DSF PROJECT NO.: 08C1A
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SCOPE OF RECOMMENDED REPAIR WORK - KEYED NOTES:

1. REMOVE EXISTING CONCRETE WEARING SLAB AND RUBBER WATERPROOFING MEMBRANE DOWN TO THE STRUCTURAL CONCRETE DECK. INSTALL NEW FLUID APPLIED, FULLY ADHERED, WATERPROOFING MEMBRANE, INSULATION, SUBSURFACE DRAINAGE PLANE, AND NEW CONCRETE WEARING SLAB (ASSUMED TO BE STANDARD CONCRETE WITH 'PICTURE FRAME' TYPE JOINTS CLOSELY SPACED IN EACH DIRECTION). PROPERLY DETAIL WATERPROOFING AT PERIMETER AND TRANSITIONS. PERFORM STRUCTURAL REPAIRS TO BOTTOM SIDE OF STRUCTURAL CONCRETE DECK TO REPAIR NUMEROUS AREAS OF SPALLED CONCRETE AND EXPOSED STEEL REINFORCING BARS.

2. INSTALL NEW BI-LEVEL PLAZA DRAIN TO ACCEPT SURFACE WATER AND SUBSURFACE WATER AT THE WATERPROOFING MEMBRANE LEVEL.

3. REMOVE CAP STONES AND SALVAGE FOR REUSE. REMOVE STAIRS, SUPPORTING CONCRETE, AND BRICK INFILL WALLS. CONSTRUCT NEW STAIRS APPROX. 5' EAST OF CURRENT LOCATION AND PROVIDE NEW 5' WIDE LANDING AT TOP OF STAIRS. INSTALL NEW BI-LEVEL PLAZA DRAIN. INSTALL NEW DRAIN LEADER PIPING VERTICALLY DOWN INTO THE HEATED STORAGE SPACE BELOW AND CONNECT TO EXISTING DRAINAGE PIPING. INSTALL NEW HANDRAILS. SEE DETAIL 5. REBUILD AND WATERPROOF MASONRY WALLS BETWEEN STAIRS. SEE DRAWING 6.

4. REMOVE EXISTING MASONRY DOWN TO CONCRETE BRICK LEDGE AND REBUILD WITH NEW MASONRY TO MATCH EXISTING WITH WATERPROOFING ON BACK-UP WALL. MODIFY DETAILS TO PROPERLY FLASH WATERPROOFING MEMBRANE. REMOVE CAP STONES AND REINSTALL OVER MORTAR WITH ROPE WICKS AND STAINLESS STEEL FLASHING. ON THE INSIDE OF THE PLANTER, REMOVE SOIL, INSTALL NEW WATERPROOFING MEMBRANE DOWN 6'-0" BELOW TOP OF PLAZA, AND MODIFY DETAILS TO PROPERLY FLASH WATERPROOFING MEMBRANE. INSTALL NEW BACKFILL, TOPSOIL, AND PLANTINGS.

5. REMOVE AND SALVAGE CAP STONES. REMOVE FACE BRICK INFILL WALLS, INSTALL NEW WATERPROOFING SYSTEM, INSTALL NEW MASONRY INFILL WALLS WITH THROUGHWALL FLASHING, AND REINSTALL CAP STONES. WATERPROOFING SYSTEM SHALL TURN DOWN THE FOUNDATION WALLS AND TERMINATE A MINIMUM OF 6'-0" BELOW PLAZA. ASSUME DRAINTILE AT BASE OF WALL IS STILL FUNCTIONING. INSTALL NEW STAINLESS STEEL HANDRAILS.

6. REMOVE AND SALVAGE CAP STONES. REMOVE MASONRY DOWN TO CONCRETE BRICK LEDGE. INSTALL WATERPROOFING MEMBRANE DOWN FOUNDATION WALL, OVER BRICK LEDGE, AND DOWN FOUNDATION WALL APPROXIMATELY 4'-0" BELOW BRICK LEDGE. INSTALL NEW THROUGHWALL FLASHING AT BRICK LEDGE, INSTALL NEW MASONRY TO MATCH EXISTING, AND REINSTALL EXISTING CAP STONES. INSTALL NEW STAINLESS STEEL GUARDRAIL.

7. REMOVE AND SALVAGE CAP STONES. INSTALL NEW WATERPROOFING SYSTEM AND REINSTALL CAP STONES. TIE NEW WATERPROOFING MEMBRANE INTO EXISTING RUBBER MEMBRANE AT TOP OF STAIRS. INSTALL NEW STAINLESS STEEL HANDRAILS.

8. REMOVE AND INSTALL NEW CONCRETE SIDEWALK.

9. REMOVE CAP STONES AND REINSTALL OVER NEW MORTAR WITH ROPE WICKS AND STAINLESS STEEL FLASHING.

10. CLEAN, PRIME, AND PAINT EXPOSED SURFACES OF SHELF ANGLE. REMOVE AND REINSTALL CAP STONES OVER NEW MORTAR WITH ROPE WICKS OVER STAINLESS STEEL FLASHING. INSTALL NEW STAINLESS STEEL GUARDRAIL.

11. REMOVE MASONRY AS NECESSARY TO INSTALL NEW STEEL SHELF ANGLE AT BOTTOM OF FACE BRICK. INSTALL NEW MASONRY TO MATCH EXISTING. REMOVE AND REINSTALL CAP STONES ON NEW MORTAR BED WITH ROPE WEEPS OVER NEW STAINLESS STEEL THROUGHWALL FLASHING. INSTALL NEW SEALANT AT PRECAST CONCRETE JOINTS. WATERPROOF INSIDE PLANTER, RETURN WATERPROOFING UNDER CAP STONES, AND INSTALL NEW DRAIN. INSTALL NEW BACKFILL, TOPSOIL, AND PLANTINGS.

12. SEAL JOINTS BETWEEN PRECAST CONCRETE PANELS. METAL FLASHING TO REMAIN.

13. REMOVE MASONRY DOWN TO CONCRETE BRICK LEDGE AND REMOVE METAL FLASHING. INSTALL NEW THROUGHWALL FLASHING AT BRICK LEDGE, INSTALL WATERPROOFING MEMBRANE ON CONCRETE BACK-UP WALL, INSTALL NEW MASONRY TO MATCH EXISTING, AND INSTALL NEW STAINLESS STEEL GUARDRAIL. REMOVE AND REINSTALL CAP STONES WHERE PRESENT. INSTALL NEW SEALANT AT PRECAST CONCRETE JOINTS.

14. REMOVE AND REPLACE ALL JOINT SEALANT UP TO BOTTOM OF WINDOWS. REMOVE AND INSTALL NEW STAINLESS STEEL FLASHING AT BOTTOM OF PRECAST CONCRETE WALL PANELS.

15. REMOVE CAP STONES. REMOVE MASONRY DOWN TO STRUCTURAL CONCRETE DECK. CONSTRUCT NEW WALL AND GUARDRAIL SIMILAR TO OPTION SELECTED FOR BARRIER WALL RECONSTRUCTION.

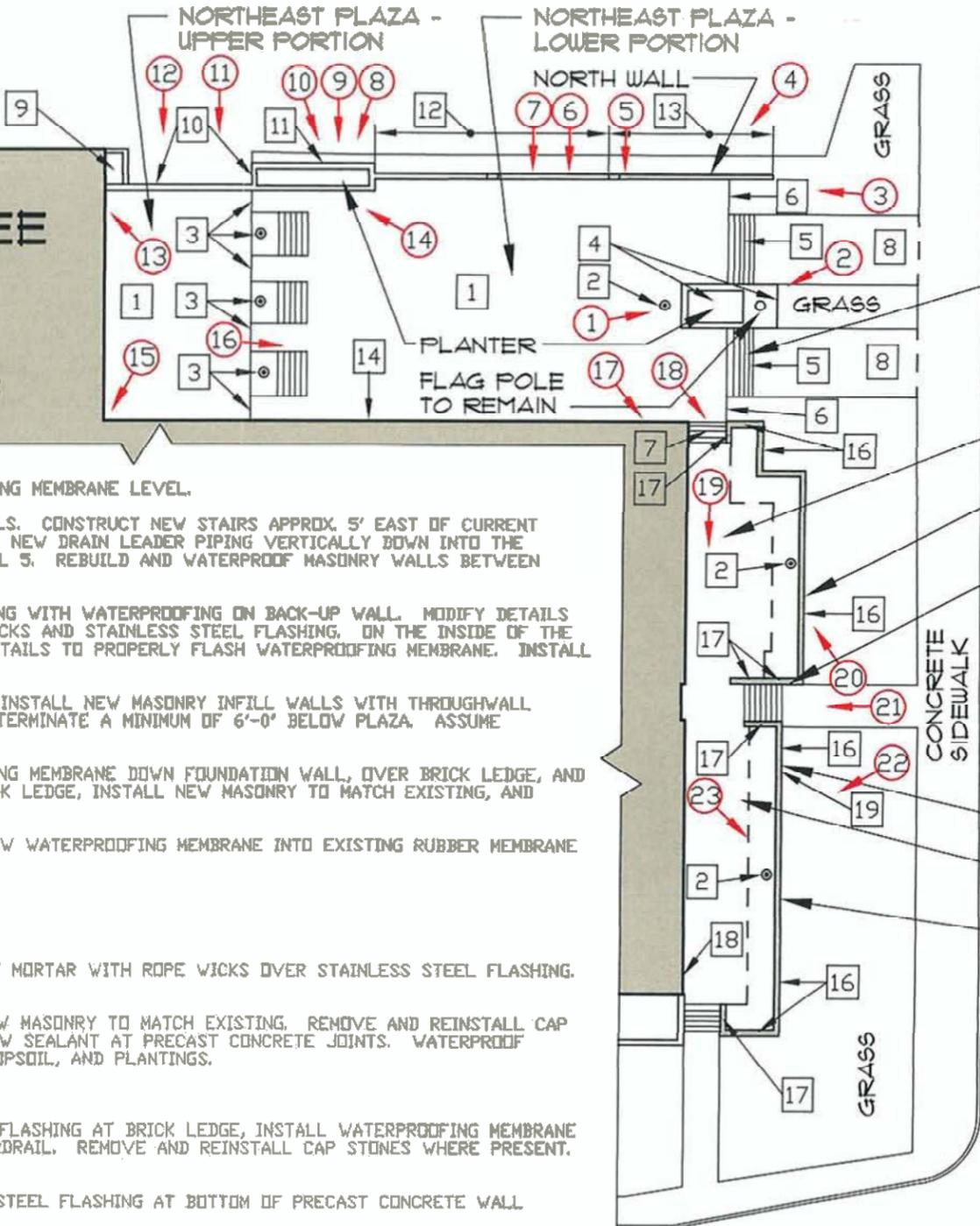
16. REMOVE CAP STONES. REPAIR OR REBUILD BARRIER WALL PER OPTION A, B, C, OR D (DRAWINGS #8 THROUGH #11). REINSTALL CAP STONES OVER NEW MORTAR WITH ROPE WEEPS OVER STAINLESS STEEL FLASHING. INSTALL NEW STAINLESS STEEL GUARDRAIL FOR OPTIONS B, C, AND D.

17. REMOVE AND REINSTALL CAP STONES ON NEW MORTAR BED WITH ROPE WEEPS OVER STAINLESS STEEL FLASHING. REPAIR INTERIOR BASE OF WALL PER DRAWING 8 (WALL WILL REMAIN FULL HEIGHT MASONRY).

18. REPAIR DAMAGED MASONRY TO MATCH EXISTING.

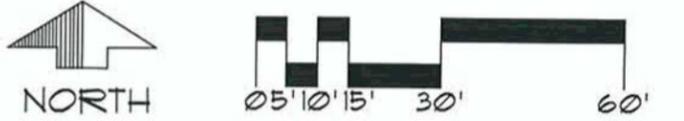
19. RELOCATE CORNER STONE. EXACT LOCATION TO BE DETERMINED BY OWNER.

MILWAUKEE STATE OFFICE BUILDING



SYMBOLS KEY

- 3 PHOTO NUMBER AND DIRECTION
- 18 RECOMMENDED REPAIR KEY NOTE NUMBER AND LOCATION



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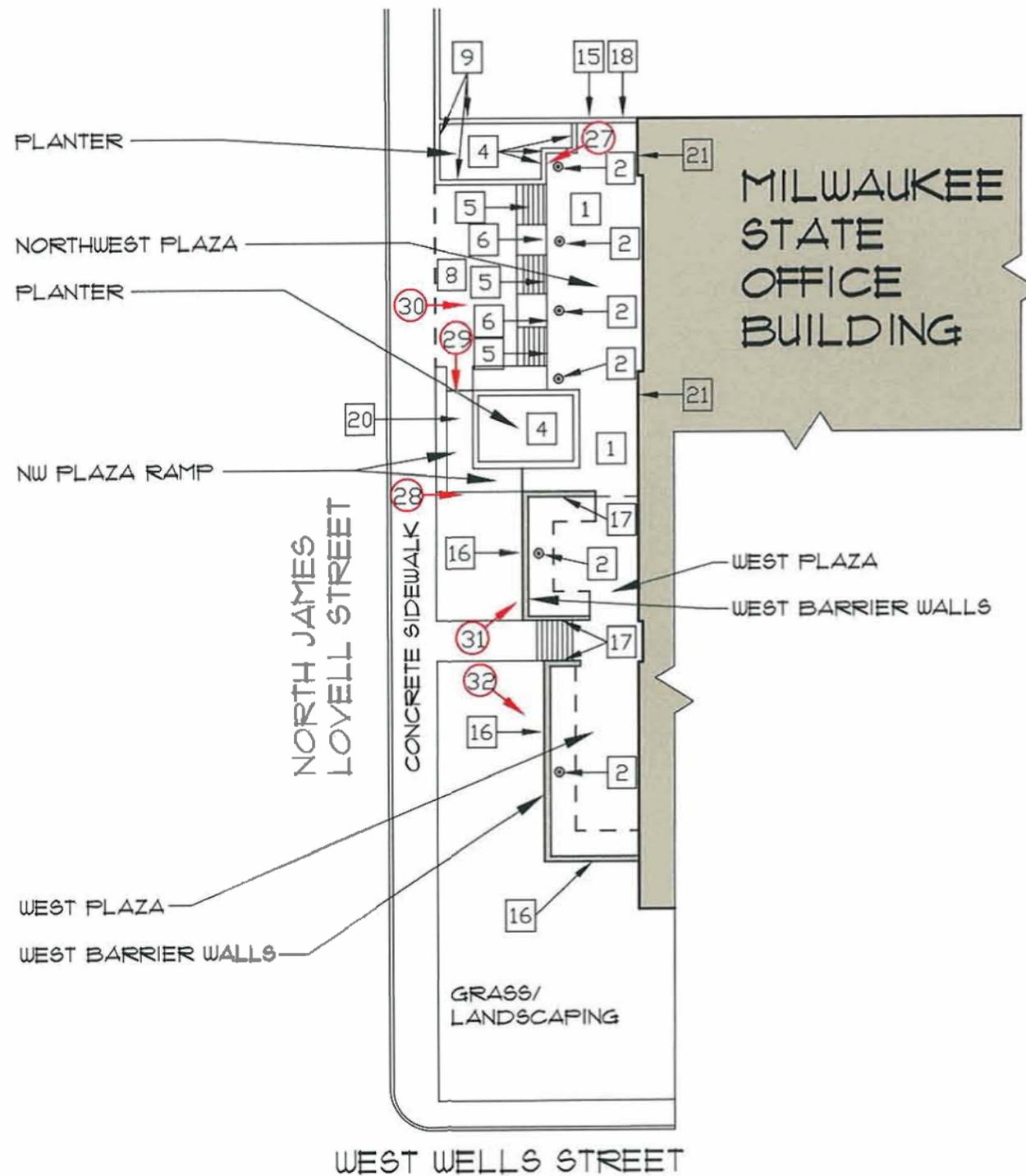
NORTHEAST PLAZA AND EAST PLAZA RECOMMENDED REPAIR WORK SKETCH

3 1" = 30'-0" APPROXIMATE

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819 NORTH 6TH STREET, MILWAUKEE, WI

126 North Jefferson St,
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Ph. 414-744-6962

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SYMBOLS KEY

- PHOTO NUMBER AND DIRECTION
- RECOMMENDED REPAIR KEY NOTE NUMBER AND LOCATION

SCOPE OF RECOMMENDED REPAIR WORK - KEYED NOTES:

1. REMOVE EXISTING CONCRETE WEARING SLAB AND RUBBER WATERPROOFING MEMBRANE DOWN TO THE STRUCTURAL CONCRETE DECK. INSTALL NEW FLUID APPLIED, FULLY ADHERED, WATERPROOFING MEMBRANE, INSULATION, SUBSURFACE DRAINAGE PLANE, AND NEW CONCRETE WEARING SLAB (ASSUMED TO BE STANDARD CONCRETE WITH 'PICTURE FRAME' TYPE JOINTS CLOSELY SPACED IN EACH DIRECTION). PROPERLY DETAIL WATERPROOFING AT PERIMETER AND TRANSITIONS. PERFORM STRUCTURAL REPAIRS TO BOTTOM SIDE OF STRUCTURAL CONCRETE DECK TO REPAIR NUMEROUS AREAS OF SPALLED CONCRETE AND EXPOSED STEEL REINFORCING BARS.
2. INSTALL NEW BI-LEVEL PLAZA DRAIN TO ACCEPT SURFACE WATER AND SUBSURFACE WATER AT THE WATERPROOFING MEMBRANE LEVEL.
3. REMOVE CAP STONES AND SALVAGE FOR REUSE. REMOVE STAIRS, SUPPORTING CONCRETE, AND BRICK INFILL WALLS. CONSTRUCT NEW STAIRS APPROX. 5' EAST OF CURRENT LOCATION AND PROVIDE NEW 5' WIDE LANDING AT TOP OF STAIRS. INSTALL NEW BI-LEVEL PLAZA DRAIN. INSTALL NEW DRAIN LEADER PIPING VERTICALLY DOWN INTO THE HEATED STORAGE SPACE BELOW AND CONNECT TO EXISTING DRAINAGE PIPING. INSTALL NEW HANDRAILS. SEE DETAIL 5. REBUILD AND WATERPROOF MASONRY WALLS BETWEEN STAIRS. SEE DRAWING 6.
4. REMOVE EXISTING MASONRY DOWN TO CONCRETE BRICK LEDGE AND REBUILD WITH NEW MASONRY TO MATCH EXISTING WITH WATERPROOFING ON BACK-UP WALL. MODIFY DETAILS TO PROPERLY FLASH WATERPROOFING MEMBRANE. REMOVE CAP STONES AND REINSTALL OVER MORTAR WITH ROPE WICKS AND STAINLESS STEEL FLASHING. ON THE INSIDE OF THE PLANTER, REMOVE SOIL, INSTALL NEW WATERPROOFING MEMBRANE DOWN 6'-0" BELOW TOP OF PLAZA, AND MODIFY DETAILS TO PROPERLY FLASH WATERPROOFING MEMBRANE. INSTALL NEW BACKFILL, TOPSOIL, AND PLANTINGS.
5. REMOVE AND SALVAGE CAP STONES. REMOVE FACE BRICK INFILL WALLS, INSTALL NEW WATERPROOFING SYSTEM, INSTALL NEW MASONRY INFILL WALLS WITH THROUGHWALL FLASHING, AND REINSTALL CAP STONES. WATERPROOFING SYSTEM SHALL TURN DOWN THE FOUNDATION WALLS AND TERMINATE A MINIMUM OF 6'-0" BELOW PLAZA. ASSUME DRAIN TILE AT BASE OF WALL IS STILL FUNCTIONING. INSTALL NEW STAINLESS STEEL HANDRAILS.
6. REMOVE AND SALVAGE CAP STONES. REMOVE MASONRY DOWN TO CONCRETE BRICK LEDGE. INSTALL WATERPROOFING MEMBRANE DOWN FOUNDATION WALL, OVER BRICK LEDGE, AND DOWN FOUNDATION WALL APPROXIMATELY 4'-0" BELOW BRICK LEDGE. INSTALL NEW THROUGHWALL FLASHING AT BRICK LEDGE, INSTALL NEW MASONRY TO MATCH EXISTING, AND REINSTALL EXISTING CAP STONES. INSTALL NEW STAINLESS STEEL GUARD RAIL.
7. REMOVE AND SALVAGE CAP STONES. INSTALL NEW WATERPROOFING SYSTEM AND REINSTALL CAP STONES. TIE NEW WATERPROOFING MEMBRANE INTO EXISTING RUBBER MEMBRANE AT TOP OF STAIRS. INSTALL NEW STAINLESS STEEL HANDRAILS.
8. REMOVE AND INSTALL NEW CONCRETE SIDEWALK.
9. REMOVE CAP STONES AND REINSTALL OVER NEW MORTAR WITH ROPE WICKS AND STAINLESS STEEL FLASHING.
10. CLEAN, PRIME, AND PAINT EXPOSED SURFACES OF SHELF ANGLE. REMOVE AND REINSTALL CAP STONES OVER NEW MORTAR WITH ROPE WICKS OVER STAINLESS STEEL FLASHING. INSTALL NEW STAINLESS STEEL GUARDRAIL.
11. REMOVE MASONRY AS NECESSARY TO INSTALL NEW STEEL SHELF ANGLE AT BOTTOM OF FACE BRICK. INSTALL NEW MASONRY TO MATCH EXISTING. REMOVE AND REINSTALL CAP STONES ON NEW MORTAR BED WITH ROPE WEEPS OVER NEW STAINLESS STEEL THROUGHWALL FLASHING. INSTALL NEW SEALANT AT PRECAST CONCRETE JOINTS. WATERPROOF INSIDE PLANTER, RETURN WATERPROOFING UNDER CAP STONES, AND INSTALL NEW DRAIN. INSTALL NEW BACKFILL, TOPSOIL, AND PLANTINGS.
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13. REMOVE MASONRY DOWN TO CONCRETE BRICK LEDGE AND REMOVE METAL FLASHING. INSTALL NEW THROUGHWALL FLASHING AT BRICK LEDGE, INSTALL WATERPROOFING MEMBRANE ON CONCRETE BACK-UP WALL, INSTALL NEW MASONRY TO MATCH EXISTING, AND INSTALL NEW STAINLESS STEEL GUARDRAIL. REMOVE AND REINSTALL CAP STONES WHERE PRESENT. INSTALL NEW SEALANT AT PRECAST CONCRETE JOINTS.
14. REMOVE AND REPLACE ALL JOINT SEALANT UP TO BOTTOM OF WINDOWS. REMOVE AND INSTALL NEW STAINLESS STEEL FLASHING AT BOTTOM OF PRECAST CONCRETE WALL PANELS.
15. REMOVE CAP STONES. REMOVE MASONRY DOWN TO STRUCTURAL CONCRETE DECK. CONSTRUCT NEW WALL AND GUARDRAIL SIMILAR TO OPTION SELECTED FOR BARRIER WALL RECONSTRUCTION.
16. REMOVE CAP STONES. REPAIR OR REBUILD BARRIER WALL PER OPTION A, B, C, OR D (DRAWINGS #8 THROUGH #11). REINSTALL CAP STONES OVER NEW MORTAR WITH ROPE WEEPS OVER STAINLESS STEEL FLASHING. INSTALL NEW STAINLESS STEEL GUARDRAIL FOR OPTIONS B, C, AND D.
17. REMOVE AND REINSTALL CAP STONES ON NEW MORTAR BED WITH ROPE WEEPS OVER STAINLESS STEEL FLASHING. REPAIR INTERIOR BASE OF WALL PER DRAWING 8 (WALL WILL REMAIN FULL HEIGHT MASONRY).
18. REPAIR DAMAGED MASONRY TO MATCH EXISTING.
19. RELOCATE CORNER STONE. EXACT LOCATION TO BE DETERMINED BY OWNER.
20. REMOVE, WATERPROOF FOUNDATION WALLS ADJACENT TO BELOW GRADE OCCUPIED SPACE, AND INSTALL NEW CONCRETE RAMP. INSTALL NEW HANDRAILS AND GUARDRAILS.
21. REMOVE AND INSTALL NEW JOINT SEALANT AT WALL PANEL JOINTS.

NORTHWEST PLAZA AND WEST PLAZA RECOMMENDED REPAIR WORK SKETCH

1" = 30'-0" APPROXIMATE

DSF PROJECT. NO.: 08C1A
11-02-2009

2009 PLAZA CONDITION REPORT
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REMOVE AND SALVAGE EXISTING CAP STONES AND STEPS

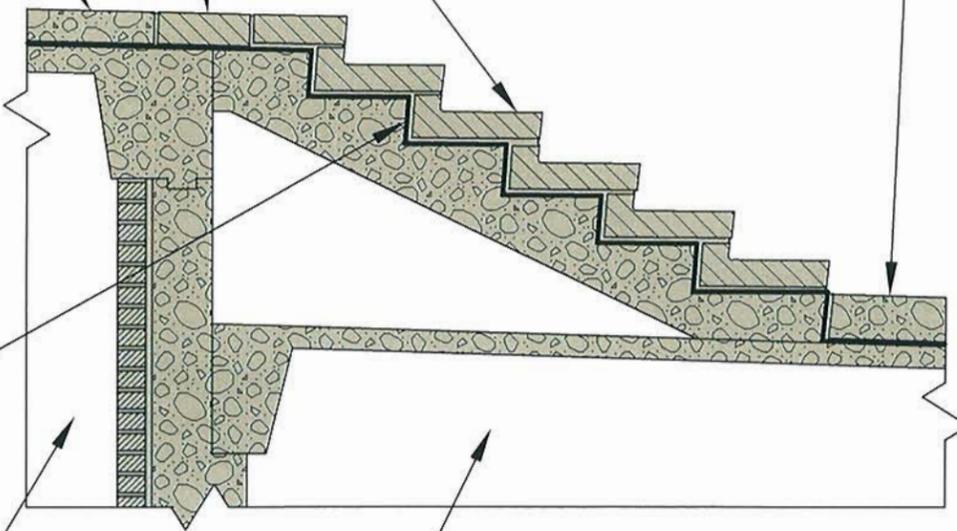
EXISTING PLAZA SYSTEM:
CONCRETE WEARING SLAB OVER RUBBER WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK

EXISTING WATERPROOFING MEMBRANE CHANNELS SUBSURFACE WATER UNDER STONE STEPS DOWN TO LOWER PLAZA

AREA UNDER STRUCTURAL DECK IS A LOADING DOCK WHICH IS UNHEATED AND OPEN TO THE OUTSIDE

AREA UNDER STRUCTURAL DECK IS HEATED OCCUPIED SPACE (ELECTRICAL VAULT AND STORAGE ROOM)

EXISTING PLAZA SYSTEM:
CONCRETE WEARING SLAB OVER RUBBER WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK

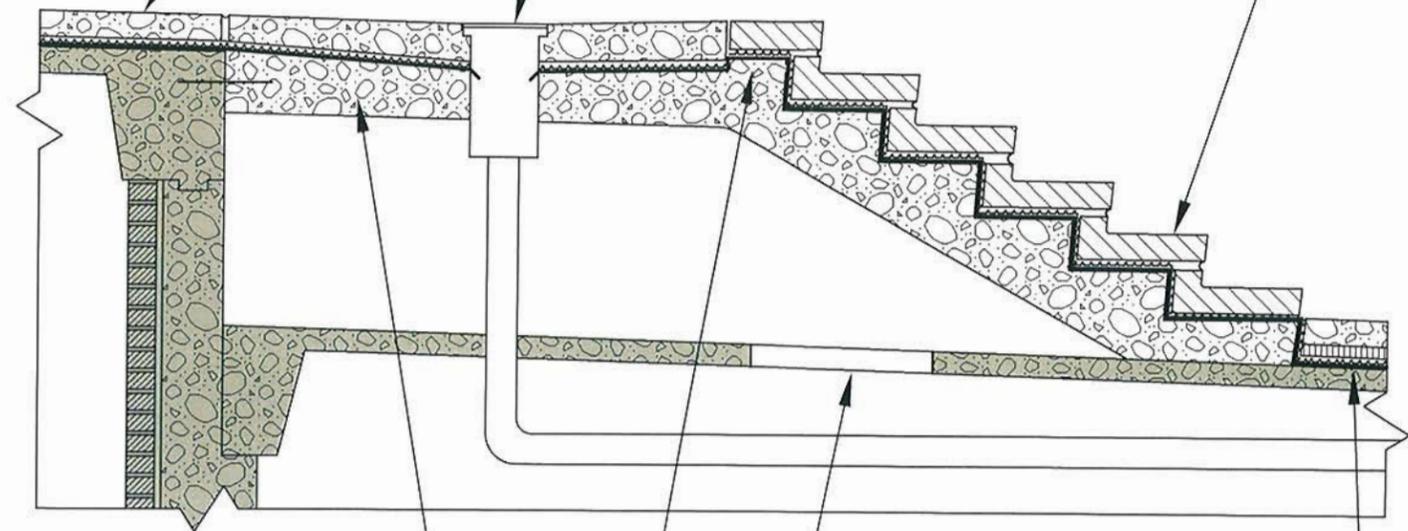


EXISTING DETAIL

NEW PLAZA SYSTEM:
CONCRETE WEARING SLAB OVER DRAINAGE SHEET OVER FULLY ADHERED FLUID APPLIED WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK.

REINSTALL EXISTING CAP STONES AND STAIRS OVER DRAINAGE SHEET OVER NEW WATERPROOFING MEMBRANE OVER NEW SUPPORTING CONCRETE. SEALANT JOINTS BETWEEN STONE STAIR TREADS WILL BE APPROX. 1" WIDE.

NEW BI-LEVEL PLAZA DRAIN IN CENTER OF NEW 5' WIDE LANDING AT TOP OF STAIRS. THIS WILL ALLOW DRAINAGE PIPING TO BE INSTALLED INTO HEATED OCCUPIED SPACE TO MINIMIZE THE POSSIBILITY OF THE DRAINAGE PIPES FREEZING. THE SAME NEW PLAZA SYSTEM WILL BE INSTALLED IN THE LANDING EXCEPT FOR THE CONCRETE WEARING SLAB CAN BE COLORED TO A SIMILAR COLOR AS THE CAP STONES.



NEW REINFORCED SUPPORTING CONCRETE DOWELED TO EXISTING STRUCTURE.

NEW CONCRETE CURB TO PREVENT SUBSURFACE WATER FROM DRAINING UNDER THE STONE STAIRS TO THE LOWER PLAZA

NEW OPENING CUT INTO EXISTING STRUCTURAL CONCRETE TO ALLOW WARM AIR TO ENTER THE AREA UNDER THE NEW LANDING AND TO ALLOW INSPECTIONS OF THIS AREA.

NEW PLAZA SYSTEM:
CONCRETE WEARING SLAB OVER INSULATION OVER DRAINAGE SHEET OVER FULLY ADHERED FLUID APPLIED WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK

PROPOSED DETAIL

5 SCHEMATIC DETAIL OF NORTHEAST PLAZA TRANSITION AT STAIRS

1/2" = 1'-0"

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11-02-2009

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REMOVE AND SALVAGE EXISTING CAP STONES

EXISTING PRECAST CONCRETE - PLAIN CONCRETE FACE

EXISTING PLAZA SYSTEM: CONCRETE WEARING SLAB OVER RUBBER WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK

EXISTING WATERPROOFING MEMBRANE CHANNELS SUBSURFACE WATER UNDER PRECAST CONCRETE AND DOWN BEHIND FACE BRICK

AREA UNDER STRUCTURAL DECK IS A LOADING DOCK WHICH IS UNHEATED AND OPEN TO THE OUTSIDE

AREA UNDER STRUCTURAL DECK IS HEATED OCCUPIED SPACE (ELECTRICAL VAULT AND STORAGE ROOM)

EXISTING PRECAST CONCRETE - EXPOSED AGGREGATE THIS FACE ONLY

EXISTING FACE BRICK SEVERLY DAMAGED DUE TO MOISTURE IN WALL SYSTEM. EMERGENCY REPAIRS HAVE RECENTLY BEEN PERFORMED TO REPLACE THE FACE BRICK

EXISTING PLAZA SYSTEM: CONCRETE WEARING SLAB OVER RUBBER WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK

REINSTALL EXISTING CAP STONES OVER NEW MORTAR WITH ROPE WEEPS OVER STAINLESS STEEL THROUGHWALL FLASHING

EXISTING PRECAST CONCRETE TO REMAIN. CUT NEW REGLET 4" ABOVE PLAZA SURFACE AND INSTALL NEW STAINLESS STEEL FLASHING.

NEW PLAZA SYSTEM: CONCRETE WEARING SLAB OVER DRAINAGE SHEET OVER FULLY ADHERED FLUID APPLIED WATERPROOFING MEMBRANE OVER CAST-IN-PLACE STRUCTURAL CONCRETE DECK. SUBSURFACE WATER WILL DRAIN LATERALLY ALONG PRECAST CONCRETE WALL TO NEW DRAINS AT STAIRS.

TERMINATE NEW WATERPROOFING MEMBRANE ON FACE OF PRECAST CONCRETE

FILL VOID UNDER PRECAST CONCRETE (BETWEEN SHIMS) WITH NON-SHRINKING GROUT

NEW WALL SYSTEM: NEW FACE BRICK TO MATCH EXISTING, 1" WIDE AIR SPACE, NEW WATERPROOFING MEMBRANE OVER STRUCTURAL CONCRETE.

NEW CONCRETE BRICK LEDGE WITH WATERPROOFING MEMBRANE AND STAINLESS STEEL THROUGHWALL FLASHING

NEW PLAZA SYSTEM: CONCRETE WEARING SLAB OVER INSULATION OVER DRAINAGE SHEET OVER FULLY ADHERED FLUID APPLIED WATERPROOFING MEMBRANE OVER CAST IN PLACE STRUCTURAL CONCRETE DECK.

EXISTING DETAIL

PROPOSED DETAIL

SCHEMATIC DETAIL OF NORTHEAST PLAZA TRANSITION DETAIL AT WALL

1/2" = 1'-0"

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EXISTING CAP STONES ARE IN GOOD CONDITION
EXISTING MORTAR JOINT IS IN POOR CONDITION,
WEEPS ARE NOT PRESENT. THROUGHWALL FLASHING
IS PRESENT. CONDITION OF FLASHING UNDER THE
MORTAR IS UNKNOWN.

EXISTING MASONRY APPEARS TO BE IN FAIR
TO GOOD CONDITION

EXISTING MASONRY
DETERIORATED AND WET

EXISTING CONCRETE WEARING
SLAB IS IN GOOD CONDITION

EXISTING RUBBER MEMBRANE IS
LOOSE LAID ON THE STRUCTURAL
DECK. LEAKAGE IS NOT
REPORTED IN PLAZA AREAS
BEHIND BARRIER WALLS.

EXISTING CAST-IN-PLACE
CONCRETE STRUCTURAL DECK

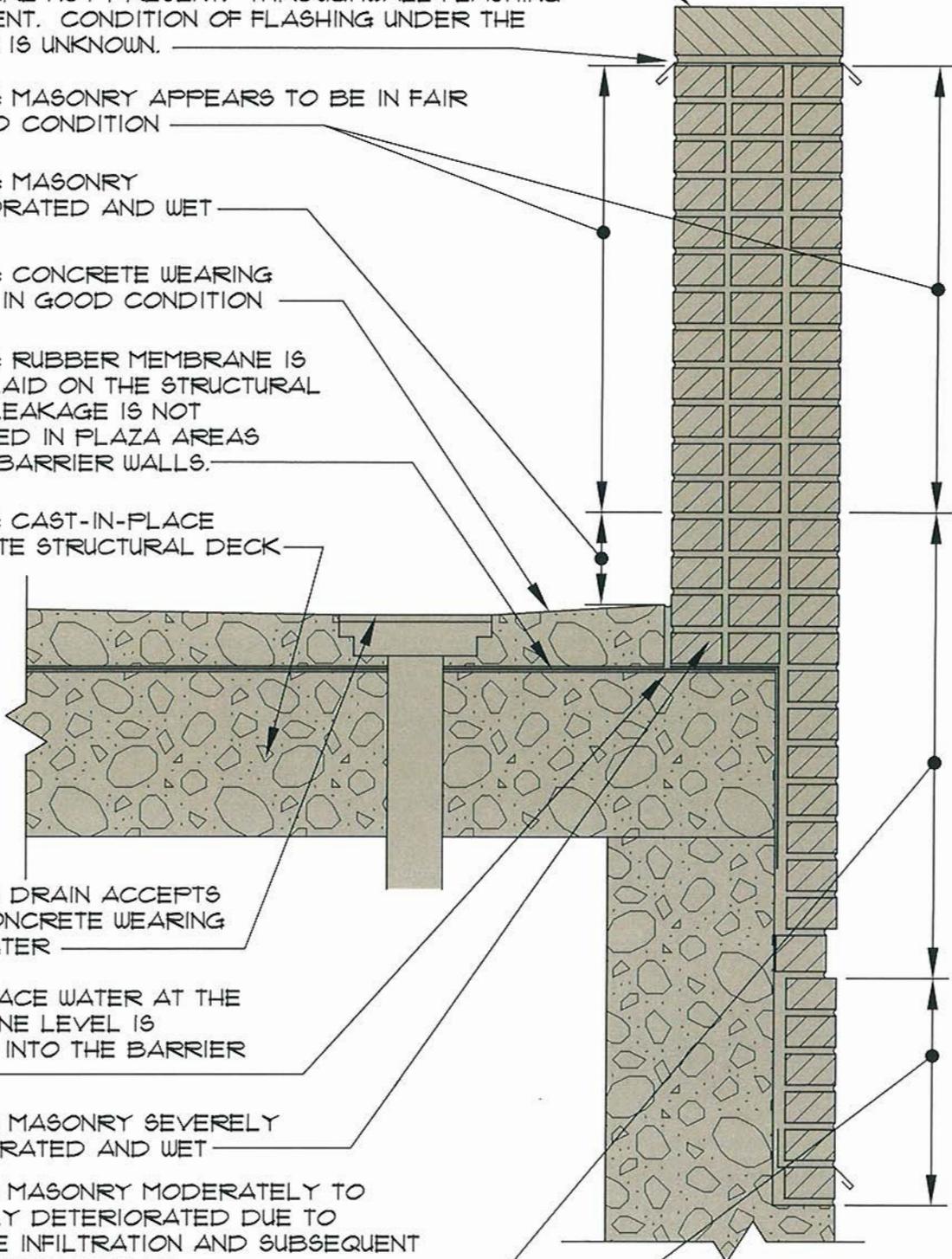
EXISTING DRAIN ACCEPTS
ONLY CONCRETE WEARING
SLAB WATER

SUBSURFACE WATER AT THE
MEMBRANE LEVEL IS
FORCED INTO THE BARRIER
WALL

EXISTING MASONRY SEVERELY
DETERIORATED AND WET

EXISTING MASONRY MODERATELY TO
SEVERELY DETERIORATED DUE TO
MOISTURE INFILTRATION AND SUBSEQUENT
FREEZE-THAW CYCLING

EXISTING MASONRY AND THROUGHWALL FLASHING
APPEARS TO BE IN FAIR CONDITION



SCHEMATIC DETAIL OF EXIST. BARRIER WALL

1" = 1'-0"

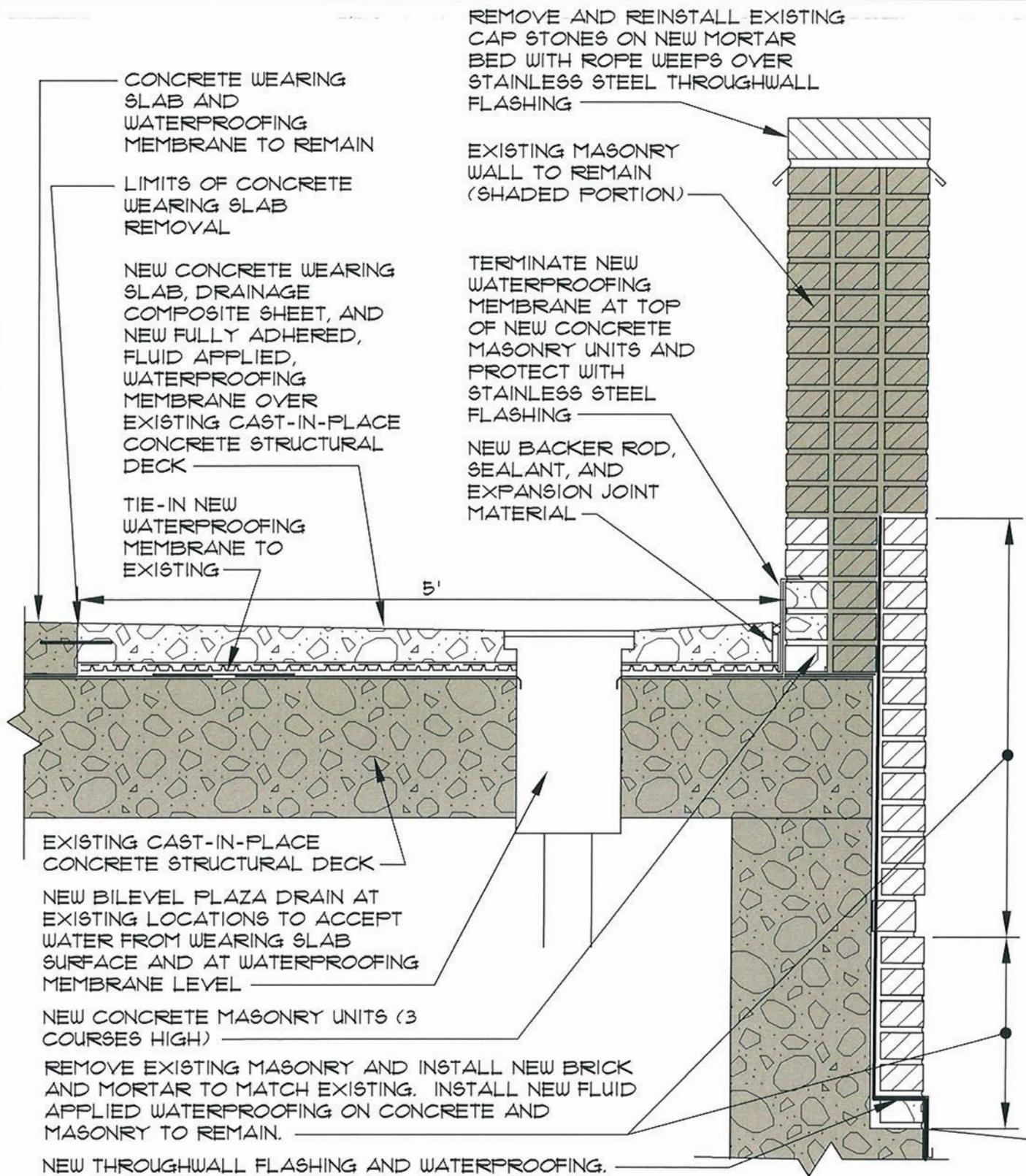
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8 SCHEMATIC DETAIL OF BARRIER WALL REPAIRS - OPTION A

1" = 1'-0"

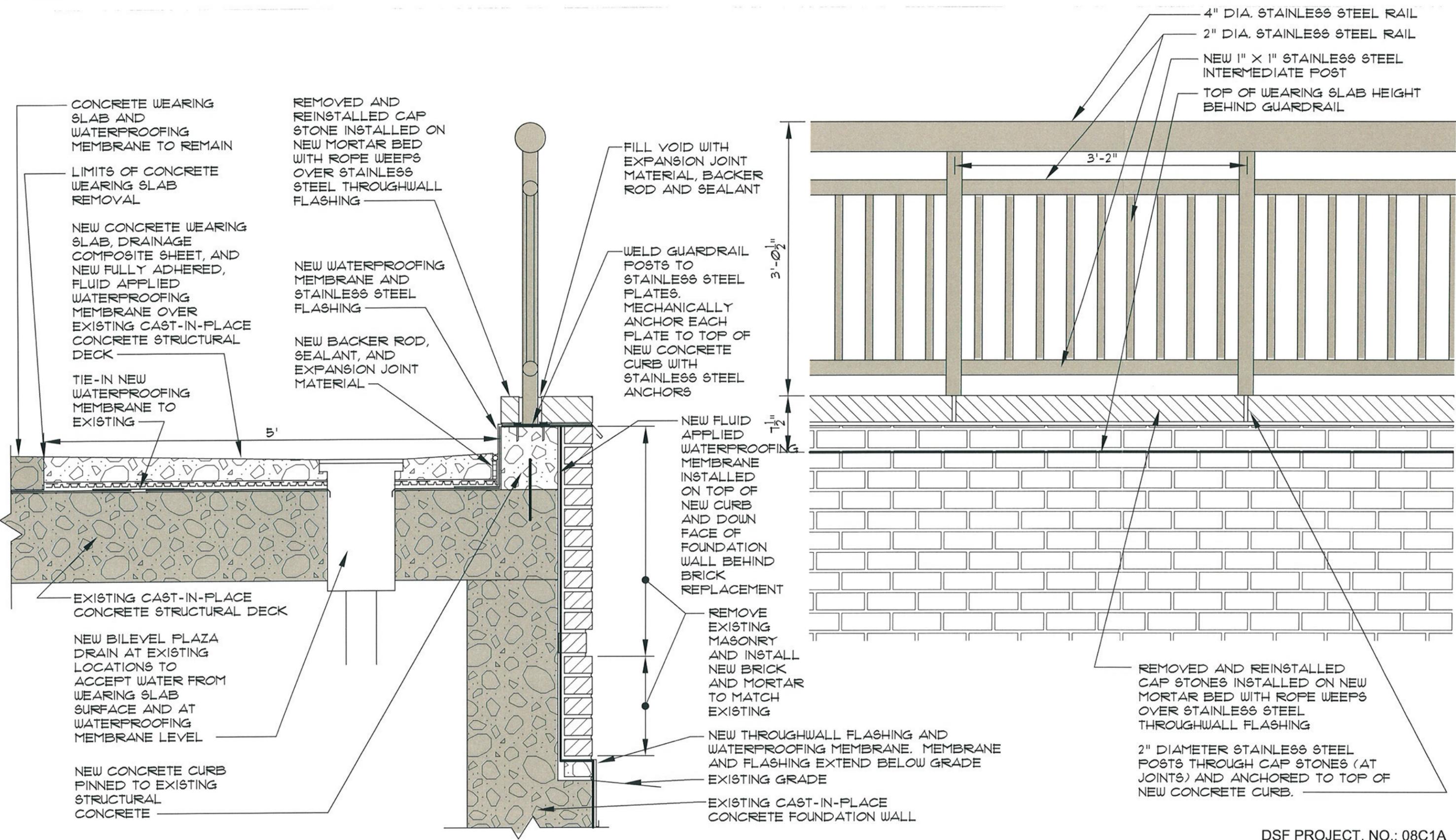
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SCHEMATIC DETAIL OF BARRIER WALL AND GUARDRAIL OPTION B

9
1" = 1'-0"

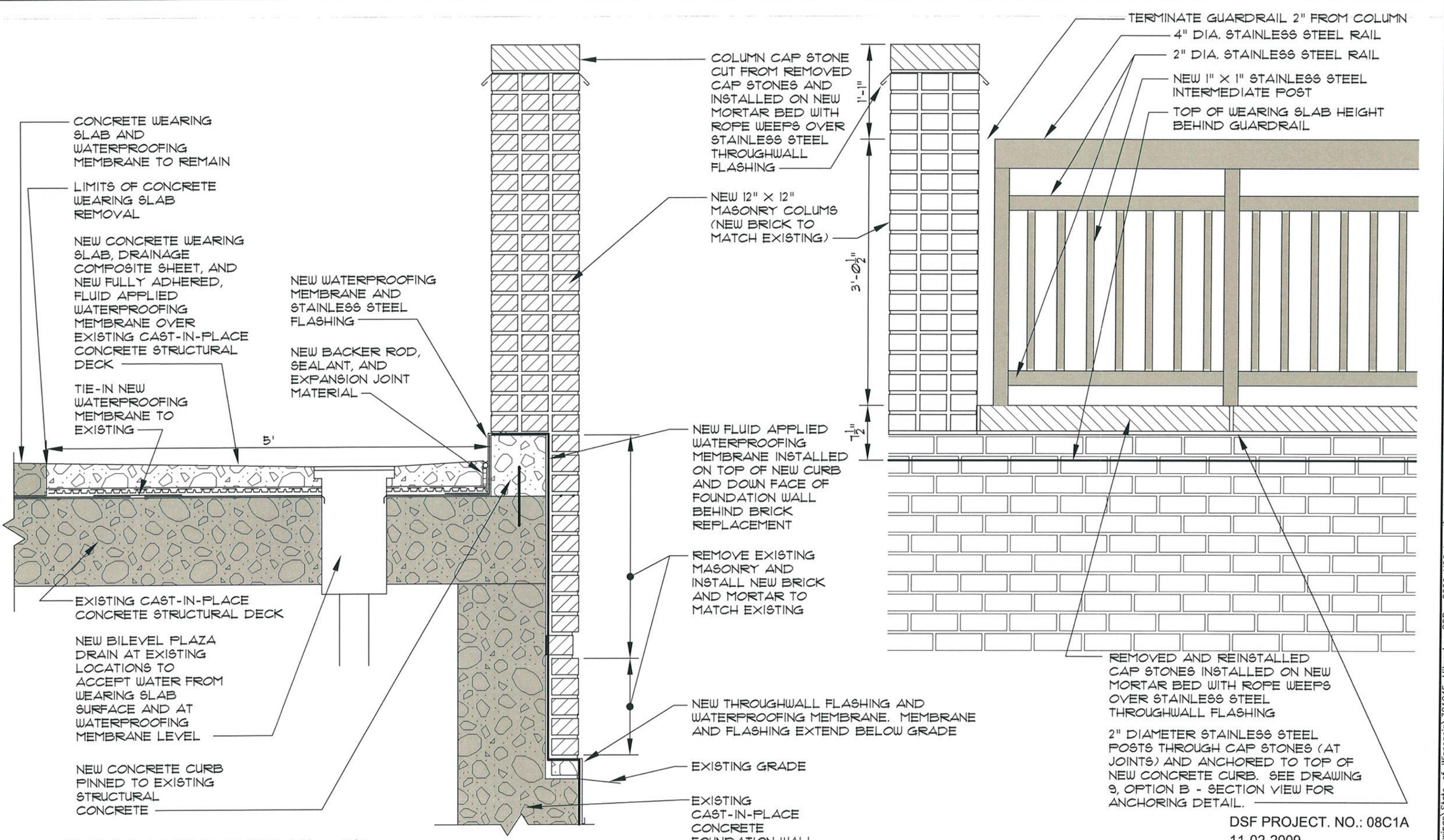
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CONCRETE WEARING SLAB AND WATERPROOFING MEMBRANE TO REMAIN

LIMITS OF CONCRETE WEARING SLAB REMOVAL

NEW CONCRETE WEARING SLAB, DRAINAGE COMPOSITE SHEET, AND NEW FULLY ADHERED, FLUID APPLIED WATERPROOFING MEMBRANE OVER EXISTING CAST-IN-PLACE CONCRETE STRUCTURAL DECK

TIE-IN NEW WATERPROOFING MEMBRANE TO EXISTING

5'

NEW WATERPROOFING MEMBRANE AND STAINLESS STEEL FLASHING

NEW BACKER ROD, SEALANT, AND EXPANSION JOINT MATERIAL

COLUMN CAP STONE CUT FROM REMOVED CAP STONES AND INSTALLED ON NEW MORTAR BED WITH ROPE WEEPS OVER STAINLESS STEEL THROUGHWALL FLASHING

NEW 12" X 12" MASONRY COLUMNS (NEW BRICK TO MATCH EXISTING)

NEW FLUID APPLIED WATERPROOFING MEMBRANE INSTALLED ON TOP OF NEW CURB AND DOWN FACE OF FOUNDATION WALL BEHIND BRICK REPLACEMENT

REMOVE EXISTING MASONRY AND INSTALL NEW BRICK AND MORTAR TO MATCH EXISTING

NEW THROUGHWALL FLASHING AND WATERPROOFING MEMBRANE. MEMBRANE AND FLASHING EXTEND BELOW GRADE

EXISTING GRADE

EXISTING CAST-IN-PLACE CONCRETE FOUNDATION WALL

TERMINATE GUARDRAIL 2" FROM COLUMN
 4" DIA. STAINLESS STEEL RAIL
 2" DIA. STAINLESS STEEL RAIL
 NEW 1" X 1" STAINLESS STEEL INTERMEDIATE POST
 TOP OF WEARING SLAB HEIGHT BEHIND GUARDRAIL

REMOVED AND REINSTALLED CAP STONES INSTALLED ON NEW MORTAR BED WITH ROPE WEEPS OVER STAINLESS STEEL THROUGHWALL FLASHING

2" DIAMETER STAINLESS STEEL POSTS THROUGH CAP STONES (AT JOINTS) AND ANCHORED TO TOP OF NEW CONCRETE CURB. SEE DRAWING 9, OPTION B - SECTION VIEW FOR ANCHORING DETAIL.

SCHEMATIC DETAIL OF BARRIER WALL AND GUARDRAIL OPTION C



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Photo #01



Photo #02



Photo #03



Photo #04

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Photo #05



Photo #06



Photo #07

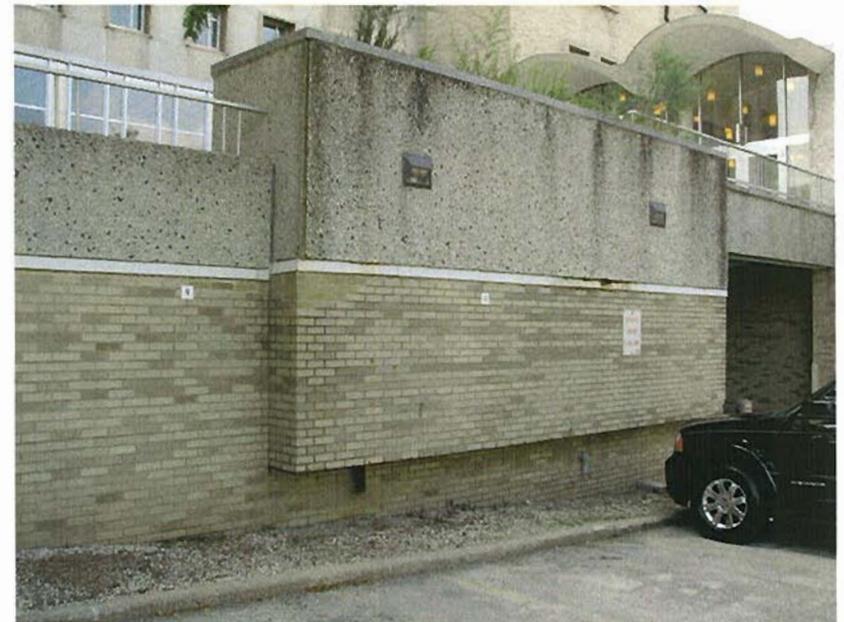


Photo #08

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Photo #09



Photo #10



Photo #11



Photo #12

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Photo #13



Photo #14



Photo #15



Photo #16

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Photo #17



Photo #18



Photo #19

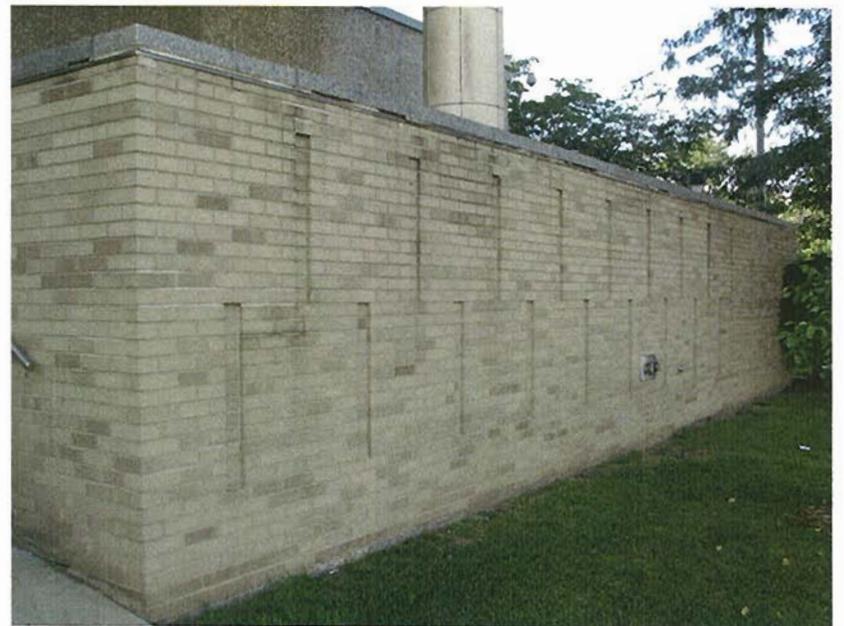


Photo #20

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Photo #21



Photo #22



Photo #23



Photo #24

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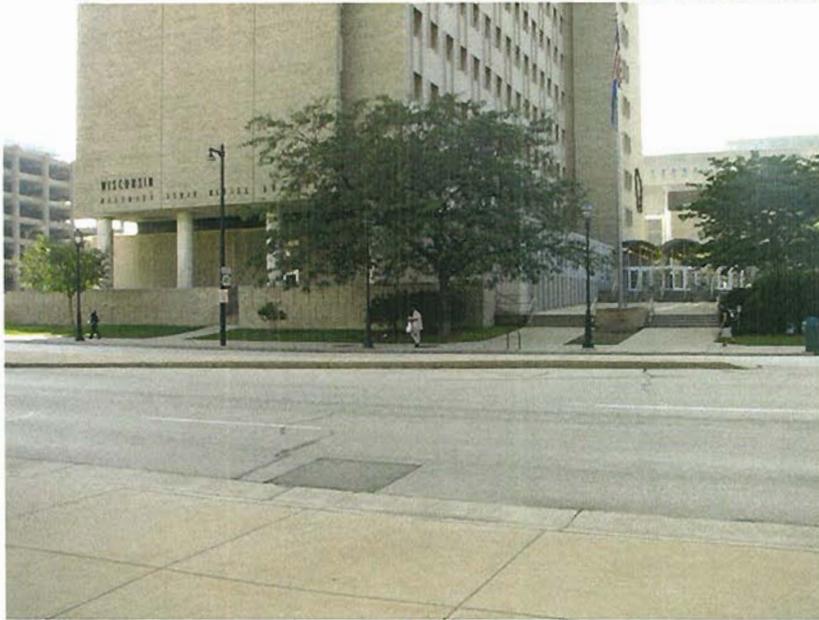


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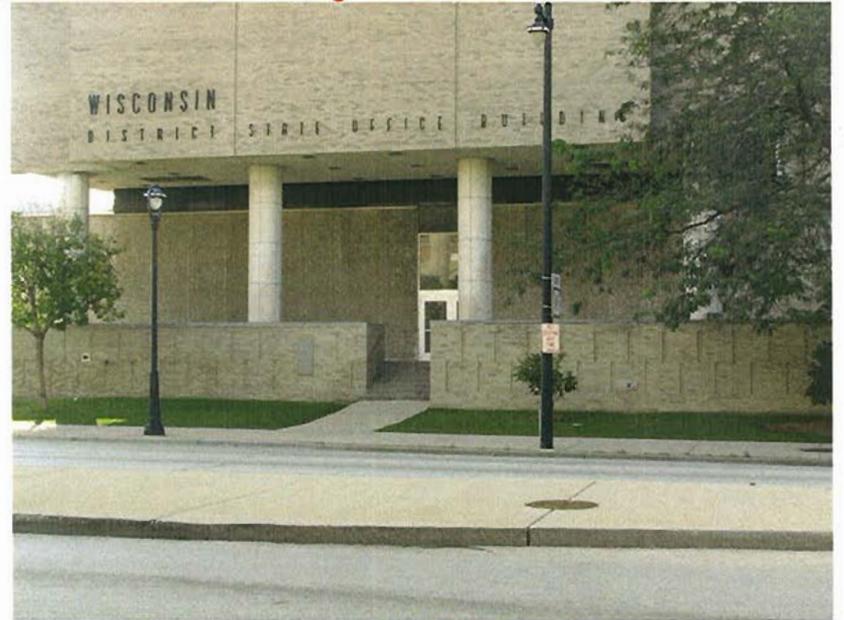


Photo #26



Photo #27



Photo #28

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Photo #29



Photo #30



Photo #31

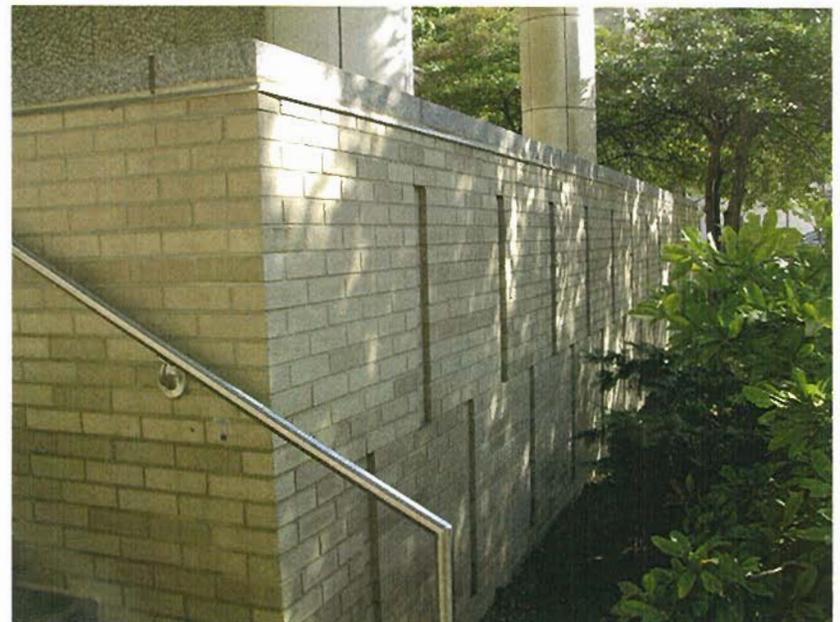


Photo #32

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Photo #33



Photo #34



Photo #35



Photo #36

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Photo #37



Photo #38



Photo #39



Photo #40

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Photo #41



Photo #42



Photo #43



Photo #44

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Photo #45



Photo #46



Photo #47

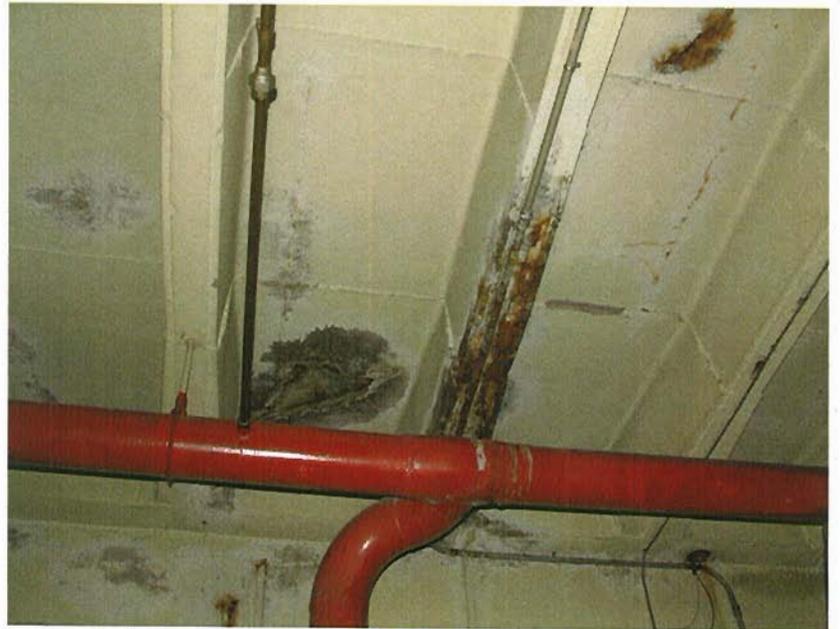


Photo #48

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Photo #49



Photo #50

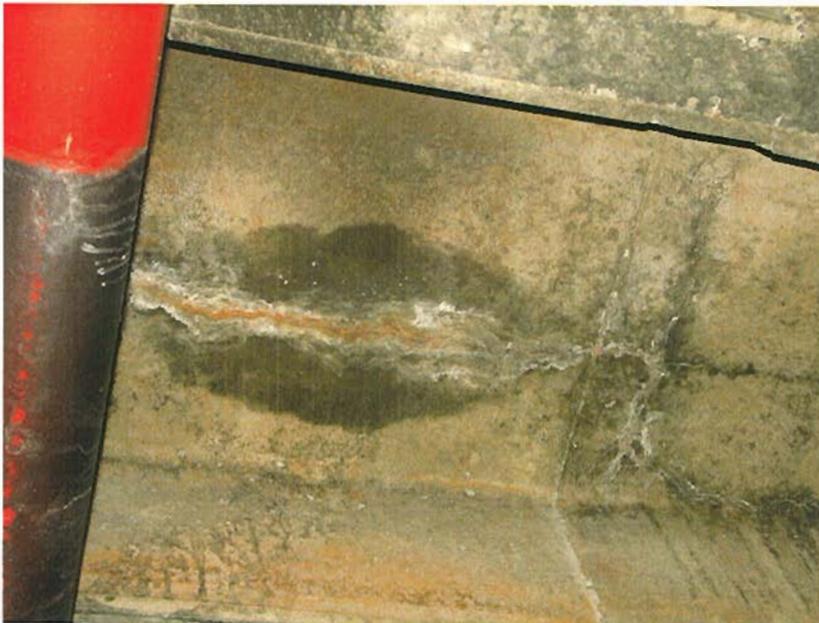


Photo #51



Photo #52