DOF DALTON OLMSTED FUGLEVAND

MEMORANDUM

TO: Steve Teel and Kaia Petersen, Washington State Department of Ecology

FROM: Tasya Gray, Patrick Hsieh, DOF

CC: William Beck, Keith Lund, Stericycle Environmental Solutions

DATE: June 10, 2016

SUBJECT: Tacoma Stericycle Facility, Lab Pack Building, Vapor Mitigation System Preliminary Design Overview

Dalton, Olmsted, and Fuglevand (DOF) has provided this memorandum in support of Stericycle's construction of the Lab Pack Building at the Tacoma facility. The Washington Department of Ecology (Ecology) provided comments on May 18, 2016 on the suggested soil vapor mitigation system outline provided in the Soil Vapor Sampling Report, Stericycle Tacoma Facility (dated May 13, 2016, Amec Foster Wheeler). The purpose of this memorandum is to provide early documentation to Ecology of the preliminary design of the Vapor Mitigation System for the Lab Pack Building.

Major design essentials are provided for comment below, in order to ensure that the design is in line with Ecology's expectations and to help speed finalization of the Mitigation Design and Installation Plan, requested in Ecology's comments. Design details will be provided to Ecology for comment in the Mitigation Design and Installation Plan.

VAPOR MITIGATION SYSTEM DESIGN

Per Ecology's May 18, 2016 comments, the vapor mitigation system will be installed per ASTM E2435-05. An active depressurization system will be installed including a liner, ventilation piping, blower, and controls.

The Lab Pack Building design includes six fully enclosed rooms and otherwise fully ventilated structures with open sidewalls and vented roofs, as noted on the attached drawing A1.0. Five fully enclosed rooms are material handling (room numbers 110 to 114) and the sixth (in the far southwest corner) is a mechanical room (number 115).

The vapor mitigation system will be installed under the six fully enclosed rooms. In order to ensure a continuous protective barrier, the liner will be installed under the trench drains and foundations shown on drawings S1.0 and S5.3. These subgrade structures extend approximately 4 to 5 feet below ground surface. Additional features will include:

- A 40 ml geomembrane liner designed specifically as a barrier against VOCs and methane placed below the enclosed room foundations, slab, and trench drains.

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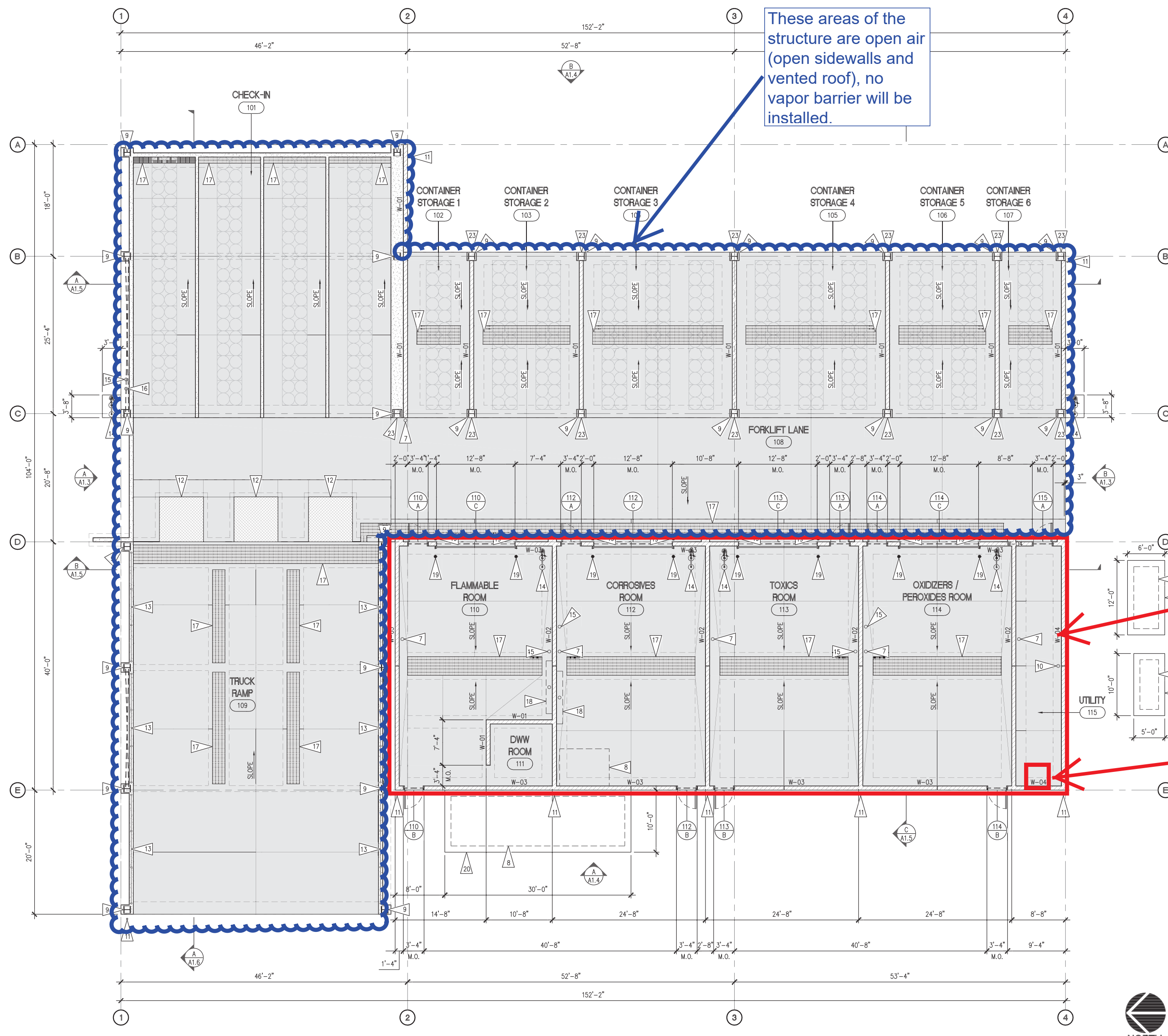
- Slotted PVC ventilation piping for the active depressurization system placed below the slab (but not below the foundation and trench drains) and bedded in appropriate material with minimal fines to promote air flow and minimize damage to the piping.
- Blower and controls placed in the mechanical room (number 115) as noted on drawing A1.0.

Attachments

Drawing A1.0 Markup – Lab Pack Building Floor Plan

Drawing S1.0 – Lab Pack Building Foundation Plan

Drawing S5.3 – Foundation Details



A LAB PACK BUILDING - FLOOR PLAN
SCALE: 1/8" = 1'-0"

FLOOR PLAN NOTES:

1. VERIFY ALL DIMENSIONS WITH OWNER. DO NOT USE "CONC. C.J." AS DIMENSION LINE OR TO LOCATE BUILDING ELEMENTS.
2. SCHEDULE MARK DESIGNATION ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
3. W-01, W-02, ETC AS SHOWN ON PLAN INDICATES WALL TYPE. SEE WALL TYPE SCHEDULE ON SHEET 01/A7.0 FOR ADDITIONAL INFORMATION.
4. (room tag) AS SHOWN ON PLAN INDICATES ROOM NUMBER. SEE FINISH SCHEDULE ON SHEET 03/A7.0 FOR ADDITIONAL INFORMATION.
5. (door tag) AS SHOWN ON PLAN INDICATES DOOR NUMBER. SEE DOOR SCHEDULE ON SHEET 04/A7.0 FOR ADDITIONAL INFORMATION.
6. VERIFY EXACT SIZE AND LOCATION OF OPENINGS IN WALL WITH ELEVATIONS AND SCHEDULES.
7. SURFACE MOUNTED FIRE EXTINGUISHER PER DETAIL 03/A5.0.
8. SCRUBBER EQUIPMENT BY OWNER (N.I.C.). SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION – PROVIDE MINIMUM ANCHORAGE PER DETAIL 04/S5.9
9. COLUMN PER STRUCTURAL DRAWINGS.
10. FIRE RISER.
11. 6" DIA. DOWNSPOUT CONNECT TO SITE STORM DRAM STUB OUT. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
12. DOCK LEVELER PER STRUCTURAL.
13. 3'-6" HIGH GUARDRAIL PER DETAIL 06/A6.0.
14. EYE WASH STATION PER MECHANICAL DRAWINGS.
15. COMPRESSED AIR CONNECTION PER MECHANICAL DRAWINGS.
16. HOSE BIB PER MECHANICAL DRAWINGS.
17. TRENCH DRAIN/SUMP PER STRUCTURAL DRAWINGS.
18. VENT HOODS PER MECHANICAL DRAWINGS.
19. STEEL BOLLARD PER DETAILS 07/A6.0 AND 08/A6.0.
20. CONCRETE EQUIPMENT PAD PER STRUCTURAL DRAWINGS – COORDINATE FINAL SIZE WITH OWNER.
21. PROVIDE TANK PER ELECTRICAL DRAWINGS AND SPECIFICATIONS – OFFSET A MINIMUM OF 10'-0" FROM THE FACE OF THE BUILDING. COORDINATE FINAL LOCATION WITH OWNER.
22. GENERATOR PER ELECTRICAL DRAWINGS.
23. CONCRETE BOLLARD AROUND COLUMN PER DETAIL 03/S5.6
24. ANCHOR EQUIPMENT PER MANUFACTURER'S REQUIREMENTS WITH MINIMUM ANCHORAGE REQUIREMENTS PER DETAIL 04/S5.9

REVISIONS

Rev.	Description	Date
F	PERMIT RESUBMITTAL	2016-04-01
E	PERMIT SUBMITTAL	2015-11-20
D	WDOE SUBMITTAL	2015-08-24
C	WDOE SUBMITTAL	2015-06-23
B	WDOE SUBMITTAL	2015-05-27

APPROVALS

DESIGNED	D.F.
DRAWN	K.L.K.
CHECKED	B.K.L.
DATE	05/27/15
SCALE	AS NOTED

SEAL: BRENT K. LESLIE, STATE OF WASHINGTON, PROFESSIONAL ENGINEER, 04/01/2016

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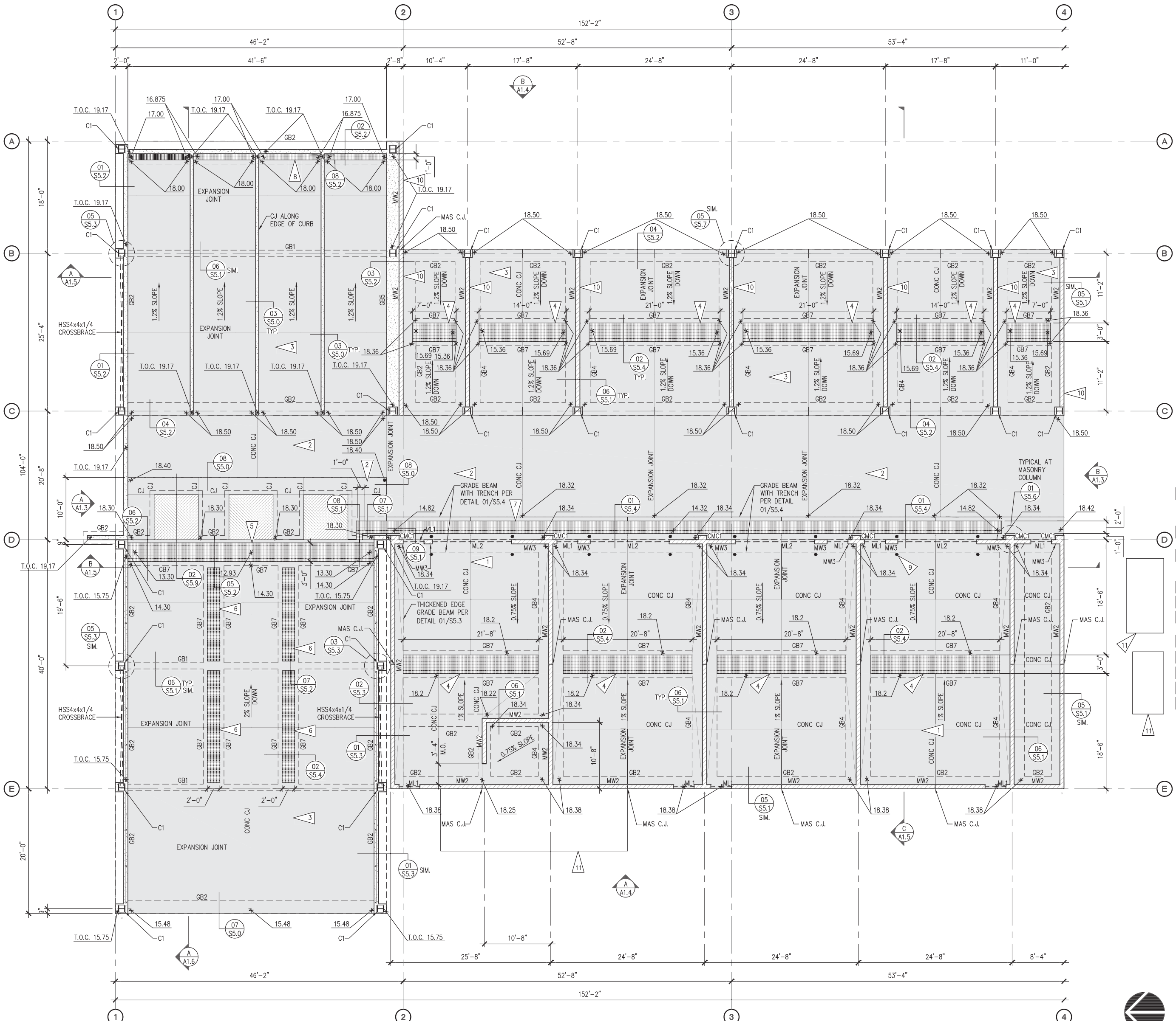
PROJECT
CONTAINER MANAGEMENT AREA IMPROVEMENTS
TACOMA, WA

SHEET TITLE
LAB PACK BUILDING FLOOR PLAN

SHEET NO.
A1.0

PROJECT NO.
16259



A LAB PACK BUILDING - FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

LEGEND:

1. MW1, MW2, ETC AS SHOWN ON PLAN INDICATES MASONRY WALL SCHEDULE. SEE MASONRY WALL REINFORCING SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
2. CMC1, CMC2, ETC. AS SHOWN ON PLAN INDICATES CMU COLUMN. SEE CMU COLUMN SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
3. GB1, GB2, ETC. AS SHOWN ON PLAN INDICATES CONCRETE GRADE BEAM. SEE CONCRETE GRADE BEAM SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
4. F1, F2, ETC. AS SHOWN ON PLAN INDICATES CONCRETE FOOTING. SEE CONCRETE FOOTING SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
5. C1, C2, ETC. AS SHOWN ON PLAN INDICATES STEEL COLUMN. SEE STEEL COLUMN SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
6. ML1, ML2, ETC., AS SHOWN ON PLAN INDICATES MASONRY LINTEL. SEE MASONRY LINTEL SCHEDULE ON SHEET S8.0 FOR ADDITIONAL INFORMATION.
7. AS SHOWN ON PLAN INDICATES DIRECTION OF SLOPE IN SLAB.
8. AS SHOWN ON PLAN INDICATES STEEL SUMP GRATING PER GSN.
9. AS SHOWN ON PLAN INDICATES DOCK LEVELER PER DETAIL 02/S5.9.
10. XX.XX AS SHOWN ON PLAN INDICATES TOP OF SLAB ELEVATION.

FOUNDATION PLAN NOTES:

1. VERIFY ALL DIMENSIONS WITH OWNER. DO NOT USE "CONC. C.J." AS DIMENSION LINE OR TO LOCATE BUILDING ELEMENTS.
2. SCHEDULE MARK DESIGNATION ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
3. SEE CIVIL DRAWINGS FOR FINISH GRADE AROUND CONCRETE
4. CONC. CJ AS SHOWN ON PLAN INDICATES CONCRETE CONTROL JOINT PER DETAIL 09/S0.3.
5. EXPANSION JOINT AS SHOWN ON PLAN INDICATES CONCRETE EXPANSION JOINT PER DETAILS 10/S0.3 AND 12/S0.3.
6. ALL MASONRY WALLS ARE ON TOP OF 8" WIDE CONCRETE STEM WALLS, TYPICAL U.N.O. SEE PLAN FOR TOP OF CONCRETE STEM WALL ELEVATIONS.
7. SUMP DIMENSIONS SHOWN ARE INSIDE OF WALL TO INSIDE OF WALL. GRATING EXTENDS PAST WALL FACE PER DETAILS.
8. FOR MISCELLANEOUS LINTELS NOT SHOWN, SEE G.S.N. MASONRY CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR EXACT SIZE AND LOCATION REQUIREMENTS.
9. MAS C.J. AS SHOWN ON PLAN INDICATES MASONRY CONTROL JOINT IN MASONRY WALL. SEE G.S.N. AND TYPICAL DETAIL. JOINTS MAY BE SHOWN, BUT NOT NOTED, ON THIS PLAN. SEE FOUNDATION PLAN AND ELEVATIONS FOR NOTED LOCATIONS.

CONSTRUCTION NOTES:

1. 10" MINIMUM THICKNESS CONCRETE MAT FOUNDATION WITH #5 AT 12" O.C. EACH WAY, TOP AND BOTTOM OF SLAB OVER 3" SAND LAYER OVER VAPOR BARRIER PER GAN OVER 2'-0" CRUSHED ROCK BEARING PAD COMPACTED TO 95 PERCENT PER ASTM D-1557. WHERE APPLICABLE, COMPACTED PRE-LOAD MAY BE USED AS BEARING PAD.
2. 8" THICK CONCRETE SLAB WITH #5 AT 9" O.C. EACH WAY CENTERED IN SLAB OVER 6" MINIMUM CRUSHED ROCK LEVELING COURSE OVER COMPACTED PRE-LOAD BEARING SURFACE.
3. 8" MINIMUM THICKNESS CONCRETE MAT FOUNDATION WITH #5 AT 9" O.C. EACH WAY CENTERED IN SLAB OVER 2'-0" MINIMUM CRUSHED ROCK BEARING PAD COMPACTED TO 95 PERCENT PER ASTM D-1557. WHERE APPLICABLE, COMPACTED PRE-LOAD MAY BE USED AS BEARING PAD.
4. 3'-0" WIDE x 3'-0" DEEP CONCRETE SUMP WITH 19-W-4 (3"x5/16) STEEL GRATING.
5. TRUCK DOCK TRENCH - 3'-0" WIDE WITH 19-W-4 (2 1/4"x3/8") STEEL GRATING PER GSN.
6. TRUCK DOCK TRENCHES - 2'-0" DEEP SLOPED TO MATCH DOCK WITH 19-W-4 (2 1/4"x3/8") STEEL GRATING PER GSN.
7. SLOPED TRENCH - 2'-0" WIDE WITH 19-W-4 (2 1/4"x3/8") STEEL GRATING PER GSN.
8. SLOPED TRENCH - 1'-0" WIDE WITH 19-W-4 (1 1/2"x1/4") STEEL GRATING PER GSN.
9. BOLLARDS PER ARCH DRAWINGS, TYPICAL WHERE SHOWN.
10. C12x30 ON TOP OF CMU WALL.
11. CONCRETE PAD PER DETAIL 03/S5.9 AND ARCHITECTURAL.

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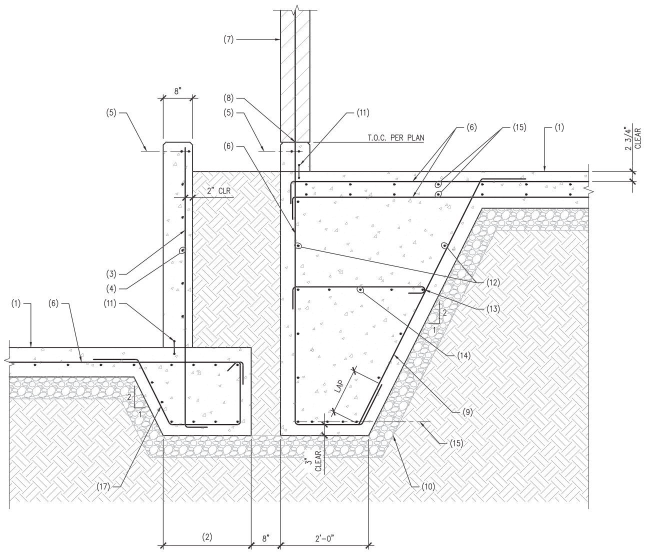
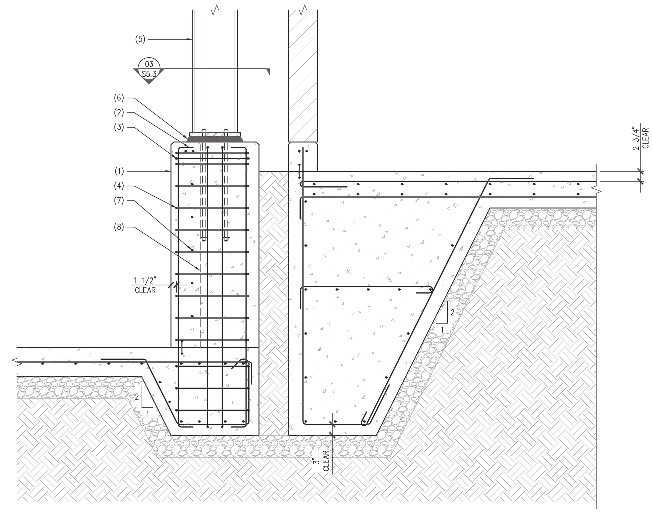


NOTES:
1. CONCRETE SLAB PER PLAN
2. CONCRETE GRADE BEAM PER PLAN
3. #5 DOWELS AT 9" O.C. – ALTERNATE BENDS
4. #4 BARS AT 9" O.C.
5. (2) #5 BARS AT TOP OF WALL
6. AT SLAB STEEL THAT TERMINATES INTO GRADE BEAM PROVIDE STANDARD 90° HOOK
7. MASONRY WALL PER PLAN
8. CONCRETE CURB PER PLAN
9. #5 DOWELS AT 9" O.C. – LAP WITH SLAB STEEL AND WALL DOWELS
10. PREPARE SOILS AS NOTED ON PLANS
11. CONTINUOUS WATERSTOP
12. #5 BARS AT 12" O.C.
13. #4 BARS AT 12" O.C. – PLACE 1'-9" BELOW TOP OF SLAB
14. (5) #5 BARS
15. PROVIDE (5) #5 BARS AT BOTTOM AND CONTINUE TYPICAL SLAB REINFORCING TO EDGE OF CONCRETE AT TOP
16. DOWELS TO MATCH AND LAP VERTICAL WALL STEEL – EXTEND DOWELS TO BOTTOM OF CONCRETE AND LAP ADJACENT DOWELS AS SHOWN
17. #5 DOWELS AT 9" O.C. – LAP WITH SLAB STEEL AT ONE END AND PROVIDE 135 DEGREE HOOK AT OPPOSITE END

NOTES:
A. LOADING DOCK ONLY AT SIM.

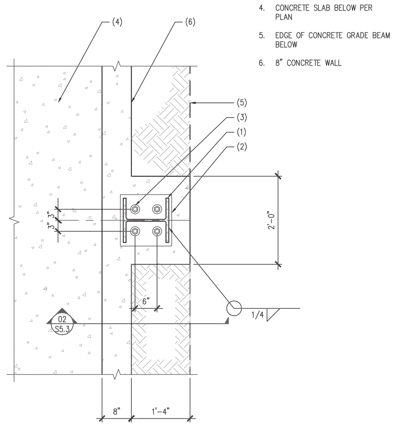
01 **FOUNDATION DETAIL**
SCALE: 3/4" = 1'-0"



NOTES:
1. CONCRETE PEDESTAL PER PLAN
2. (12) #5 DOWELS WITH 90-DEGREE HOOK EACH END AROUND PERIMETER OF PEDESTAL
3. (3) #3 TIES IN TOP 5"
4. #3 TIES AT 6" O.C.
5. STEEL COLUMN PER PLAN
6. 1 1/2" DRY PACK PER GSN
7. WALL REINFORCING TO RUN CONTINUOUS THROUGH PEDESTAL
8. WALL LINE BEYOND

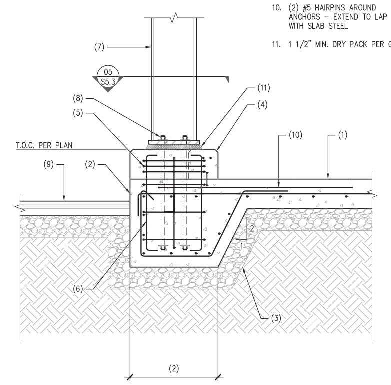
NOTES:
A. SEE DETAILS 01/S5.3 FOR CALLOUTS IN COMMON

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



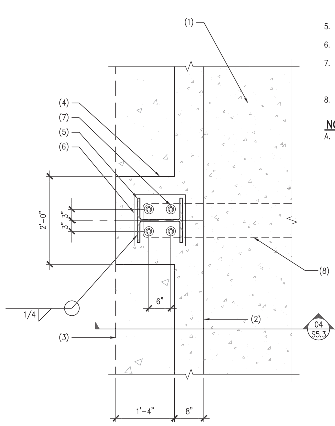
NOTES:
1. STEEL COLUMN PER PLAN
2. 1"x14"x14" STEEL BASEPLATE
3. (4) 1" DIA. ANCHORS – EMBED 2'-0" INTO PEDESTAL PER DETAIL 02/S5.3
4. CONCRETE SLAB BELOW PER PLAN
5. EDGE OF CONCRETE GRADE BEAM BELOW
6. 8" CONCRETE WALL

03 **FOUNDATION DETAIL**
SCALE: 3/4" = 1'-0"



NOTES:
1. CONCRETE SLAB PER PLAN
2. CONCRETE GRADE BEAM PER SCHEDULE AND PLAN
3. PREPARE SOILS AS NOTED ON PLANS
4. CONTINUOUS 8" CONCRETE WALL PER DETAIL 01/S5.2
5. (3) #3 TIES IN TOP 5" O.C. – PROVIDE TIES AT 6" O.C. MAX. BELOW INTO GRADE BEAM
6. (8) #5 DOWELS WITH 90-DEGREE HOOK EACH END AROUND PERIMETER OF PEDESTAL
7. STEEL COLUMN PER PLAN
8. (4) 1" DIA. ANCHORS – EMBED 1'-6" INTO CONCRETE GRADE BEAM
9. PAVING AS OCCURS PER CIVIL DRAWINGS
10. (2) #5 HAIRPINS AROUND ANCHORS – EXTEND TO LAP WITH SLAB STEEL
11. 1 1/2" MIN. DRY PACK PER GSN

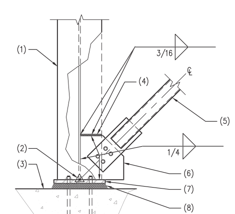
04 **FOUNDATION DETAIL**
SCALE: 3/4" = 1'-0"



NOTES:
1. CONCRETE SLAB PER PLAN
2. 8" CONTINUOUS CONCRETE WALL
3. CONCRETE GRADE BEAM BELOW
4. CONCRETE PEDESTAL – TOP OF PEDESTAL TO MATCH TOP OF WALL
5. STEEL COLUMN PER PLAN
6. 1"x14"x14" STEEL BASEPLATE
7. (4) 1" DIA. ANCHORS – EMBED 1'-6" INTO GRADE BEAM PER DETAIL 04/S5.3
8. (2) #5 HAIRPINS

NOTES:
A. AT CORNER COLUMNS PROVIDE (2) #5 HAIRPINS IN EACH DIRECTION

05 **FOUNDATION DETAIL**
SCALE: 3/4" = 1'-0"



NOTES:
1. STEEL COLUMN PER PLAN
2. WORK POINT
3. TOP OF CONCRETE PEDESTAL PER PLAN
4. 1/2" STIFFENER PLATE
5. STEEL BRACE PER PLAN
6. 1/2" GUSSET PLATE
7. BASE PLATE PER DETAIL 05/S5.3
8. 1 1/2" DRY PACK PER GSN

NOTES:
A. SEE DETAILS 02/S5.7 AND 03/S7.1 FOR ATTACHMENT OF BRACE TO GUSSET PLATE

06 **BRACED FRAME DETAIL**
SCALE: 3/4" = 1'-0"

REVISIONS

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