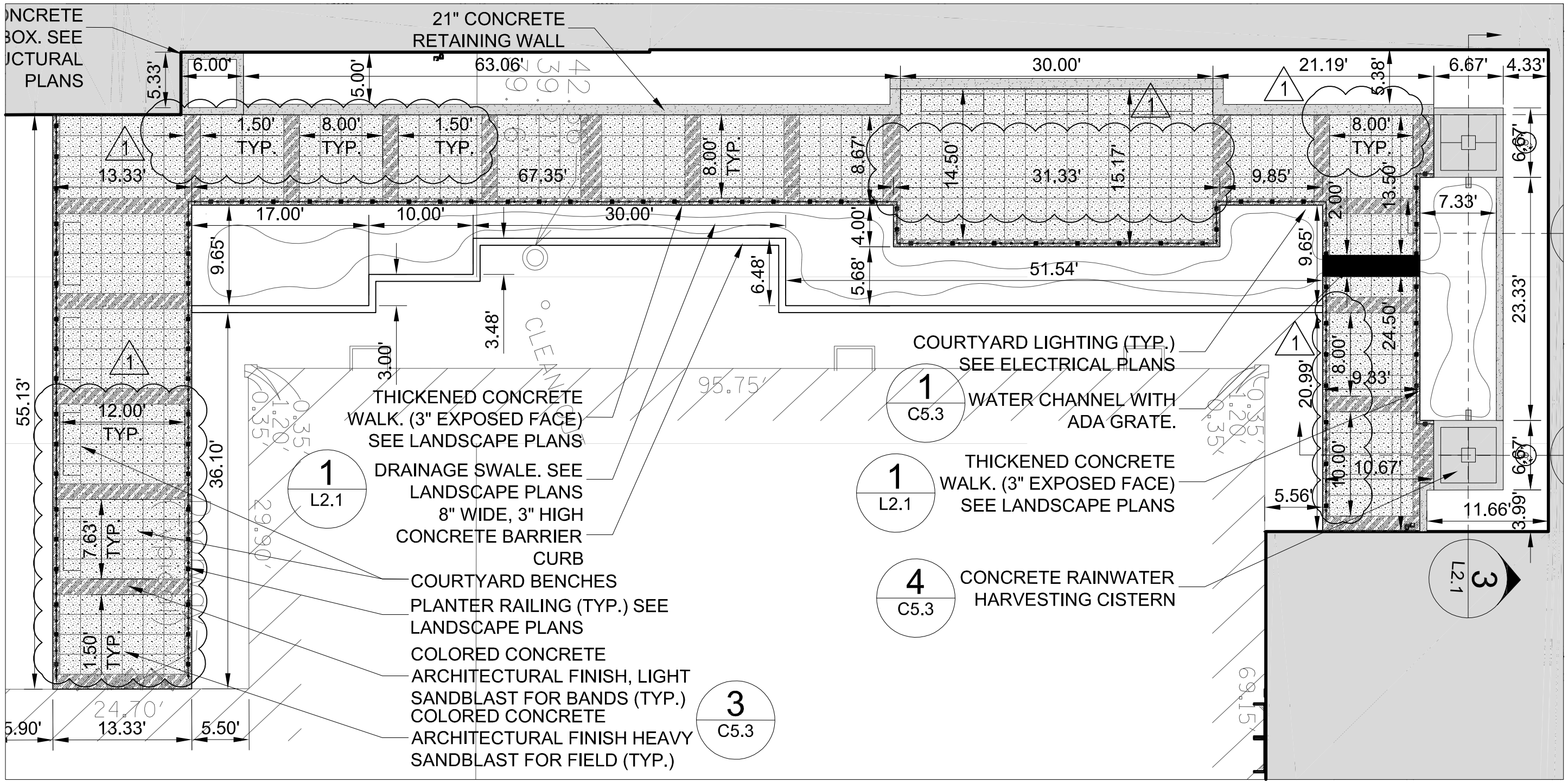

COURTYARD DETAILED DIMENSIONS

1 / C2.0

SCALE: 1" = 10'

ISSUE DATE: 01.06.12

CSK-01

PAGE 1 OF 3

PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: UPDATED COURTYARD PLAN
COMMENTS: REFERENCE DETAIL 1 OF C2.0

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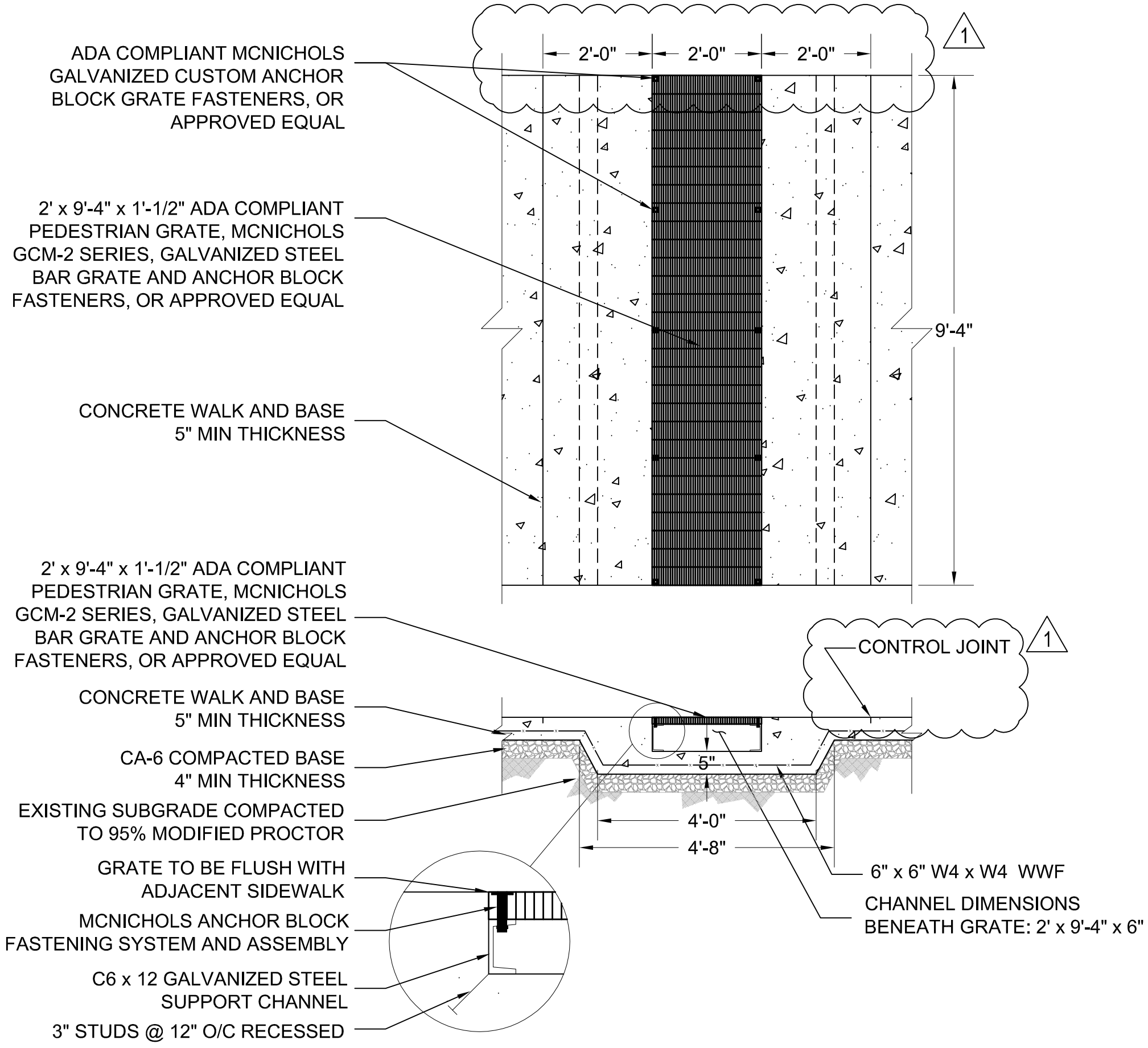

1 ADA GRATE IN COURTYARD
NTS

ISSUE DATE: 01.06.12

CSK-02

PAGE 2 OF 3

PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: UPDATED ADA GRATE IN COURTYARD
COMMENTS: REFERENCE DETAIL 1 OF C5.3

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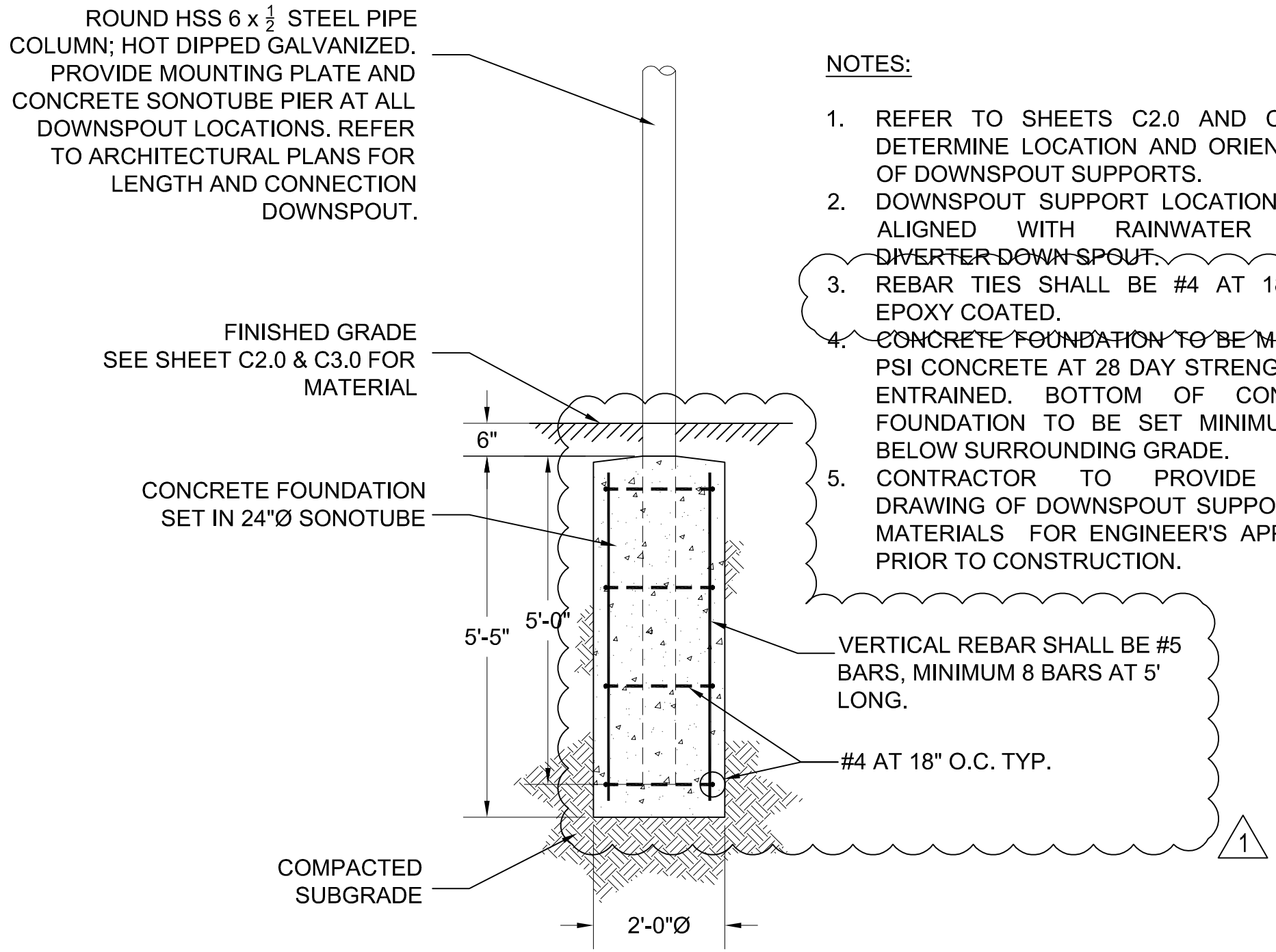

NOTES:

1. REFER TO SHEETS C2.0 AND C3.0 TO DETERMINE LOCATION AND ORIENTATION OF DOWNSPOUT SUPPORTS.
2. DOWNSPOUT SUPPORT LOCATION TO BE ALIGNED WITH RAINWATER PLATE DIVERTER DOWN SPOUT.
3. REBAR TIES SHALL BE #4 AT 18" O.C., EPOXY COATED.
4. CONCRETE FOUNDATION TO BE MIN 3,500 PSI CONCRETE AT 28 DAY STRENGTH, AIR ENTRAINED. BOTTOM OF CONCRETE FOUNDATION TO BE SET MINIMUM 6'-0" BELOW SURROUNDING GRADE.
5. CONTRACTOR TO PROVIDE SHOP DRAWING OF DOWNSPOUT SUPPORT AND MATERIALS FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

1

5 DOWNSPOUT SUPPORT FOUNDATION
NTS

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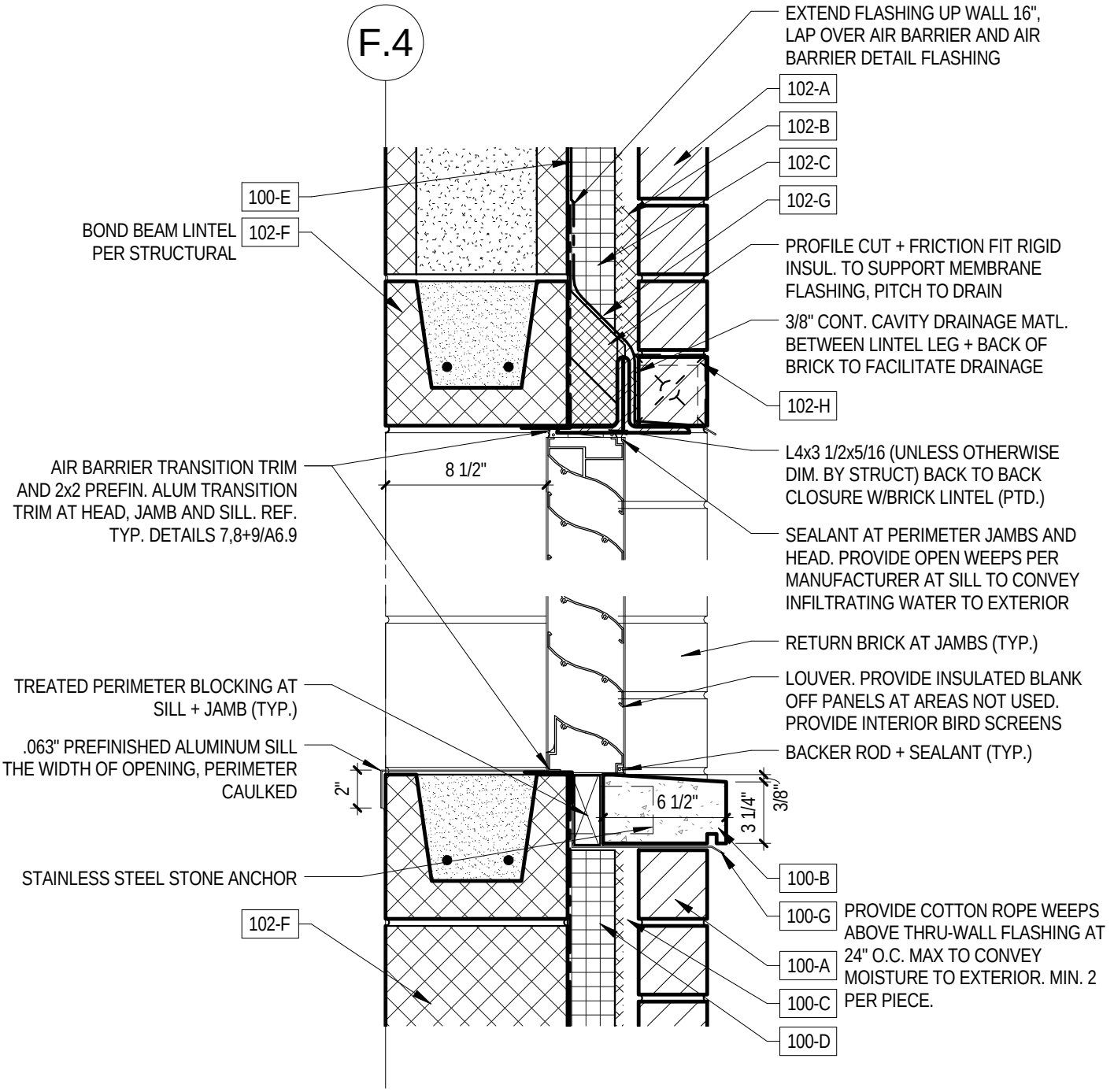
PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: UPDATED DOWNSPOUT SUPPORT FOUNDATION
COMMENTS: REFERENCE DETAIL 5 OF C5.3



TYPICAL SECTION THROUGH LOUVER AT CMU

1 / ASK-1

1 1/2" = 1'-0"

DRAWING 3/A6.11

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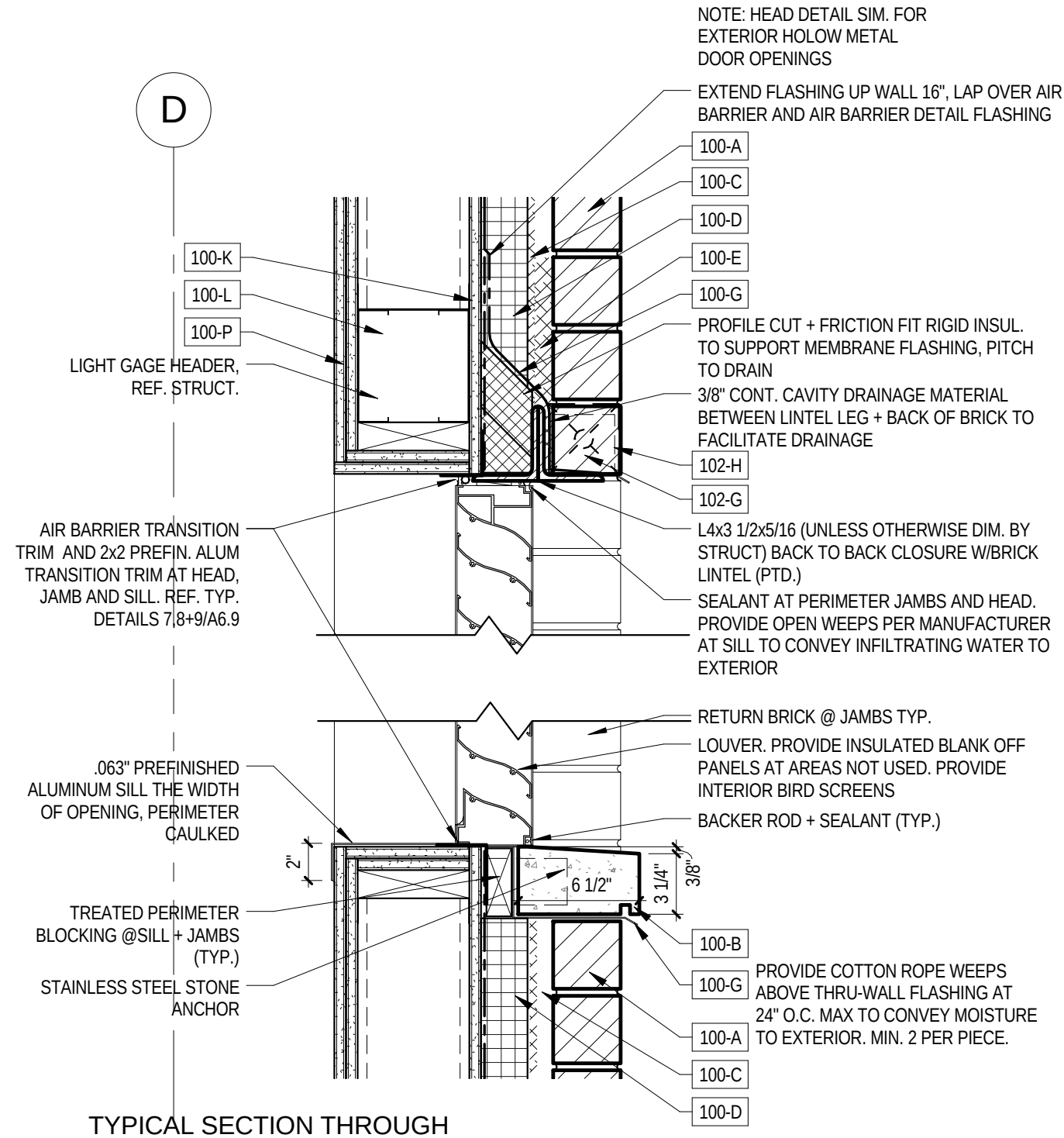
PROJECT:	DURKIN PARK ELEMENTARY SCHOOL ANNEX ADDITION
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	-
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	SECTION THROUGH LOUVER AT CMU
COMMENTS:	REFERENCE SHEET A6.1 FOR KEYNOTE LEGEND AND 3/A6.11

ISSUE DATE: 01.06.2012

ASK-1



TYPICAL SECTION THROUGH LOUVER AT LIGHT GAGE FRAMING

1 / ASK-2

1 1/2" = 1'-0"

DRAWING 4/A6.11

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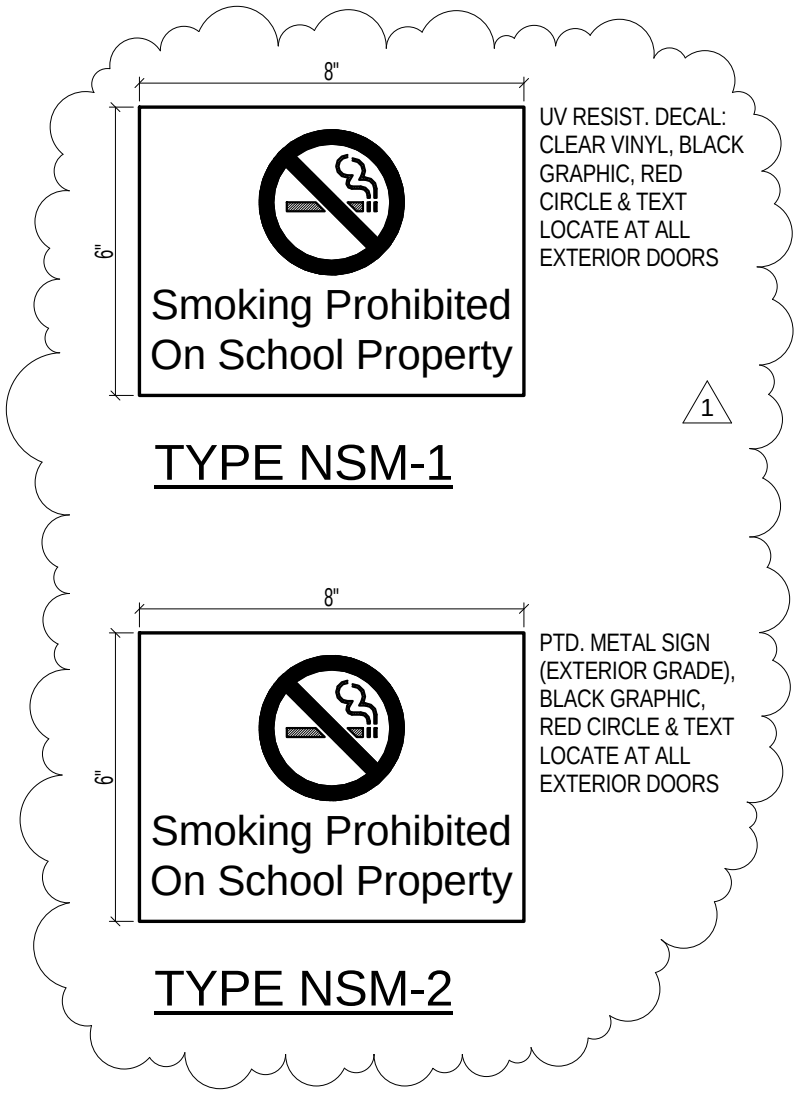
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	-
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	SECTION THROUGH LOUVER AT METAL STUD
COMMENTS:	REFERENCE SHEET A6.1 FOR KEYNOTE LEGEND AND 3/A6.11

ISSUE DATE: 01.06.2012

ASK-2

SHEET 1 OF 1



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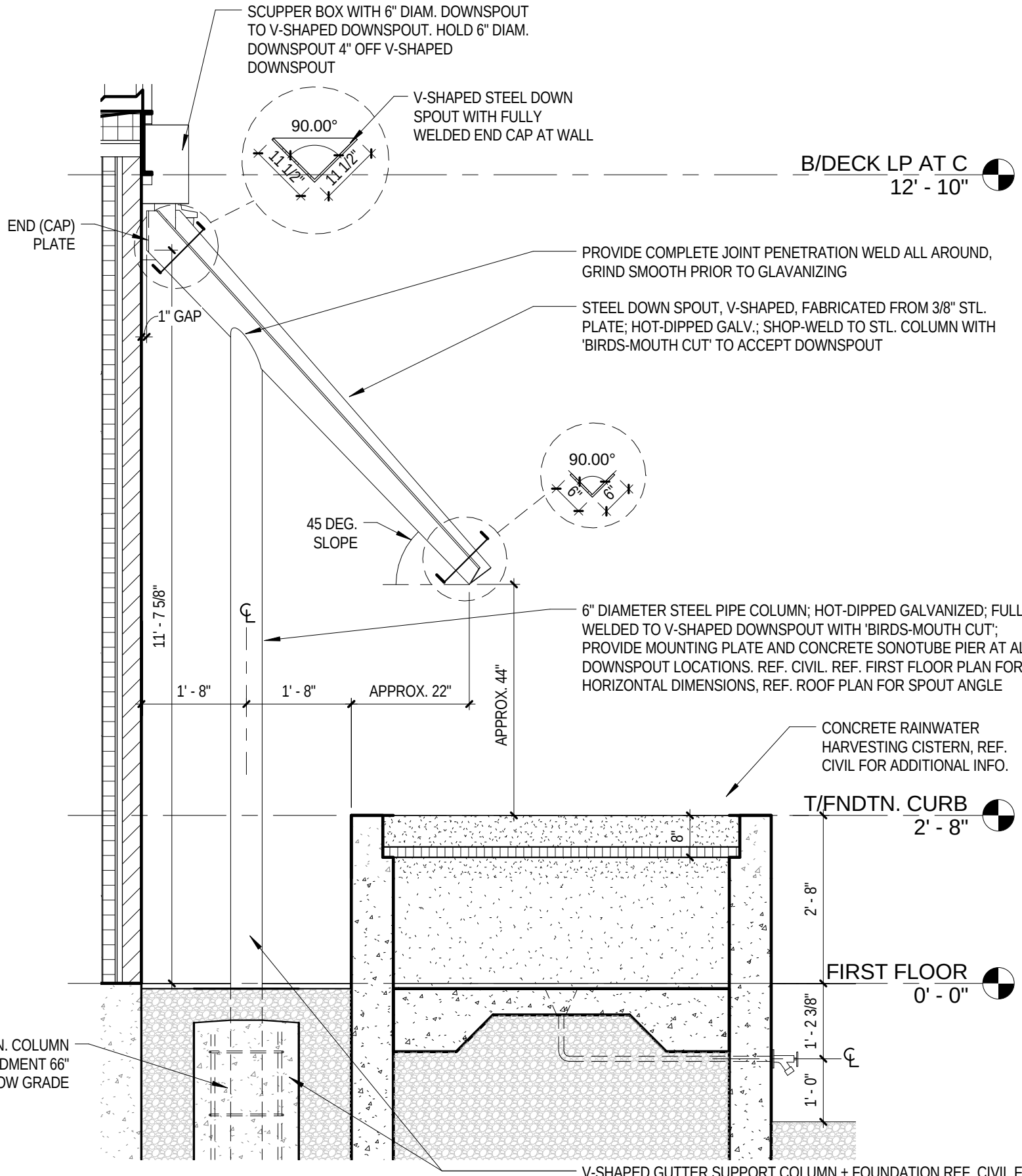
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	-
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	NO SMOKING SIGN
COMMENTS:	REFERENCE SHEET A14.0 FOR ADDITIONAL INFORMATION

ISSUE DATE: 01.06.2012

ASK-3



1 / ASK-4 SECTION AT NORTH SCUPPER
1/2" = 1'-0"

DRAWING 5/A5.4

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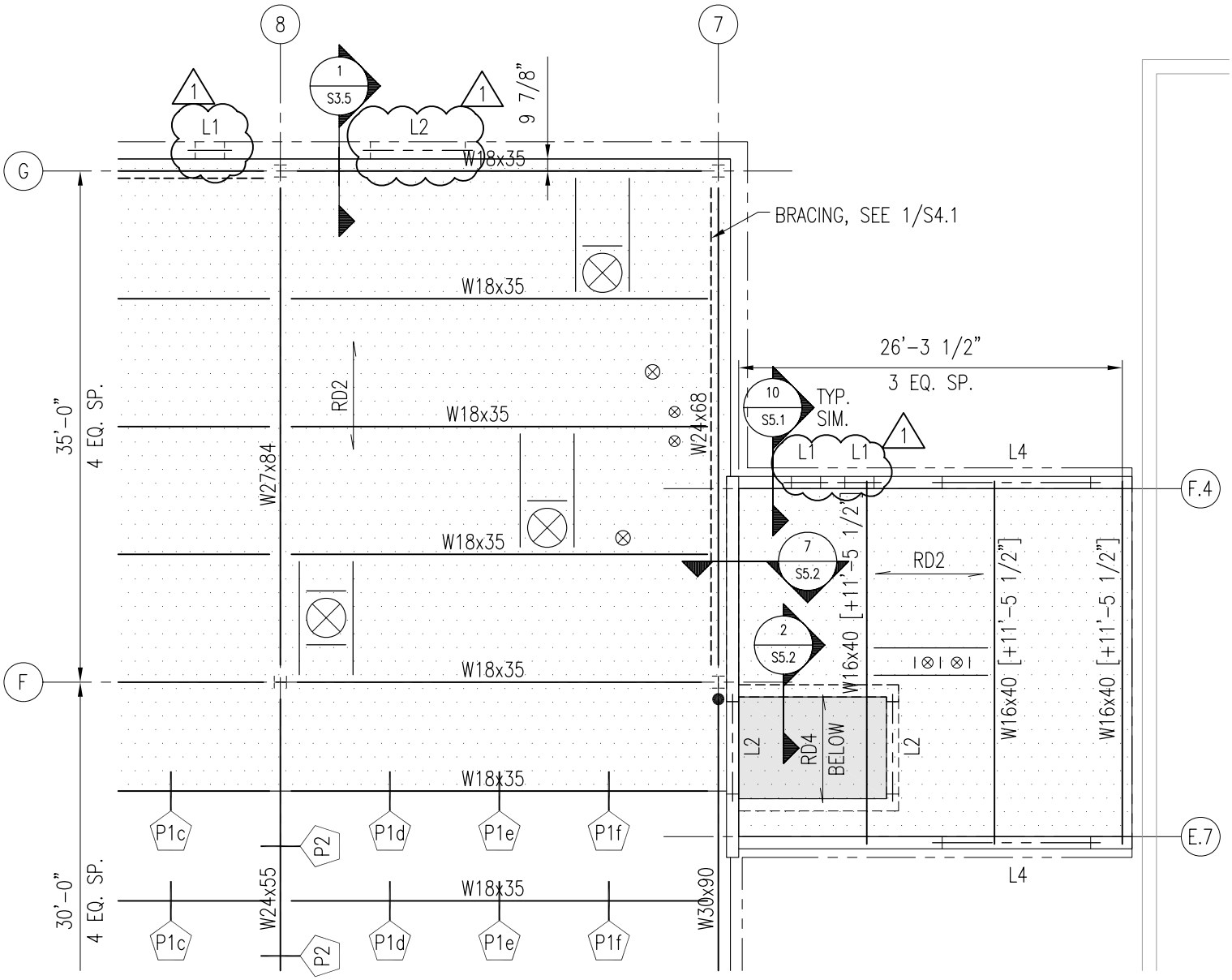
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	-
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	SECTION AT NORTH SCUPPER
COMMENTS:	REFERENCE SHEET A5.4

ISSUE DATE: 01.06.2012

ASK-4



PARTIAL ROOF FRAMING PLAN

1/8"=1'-0"

NOTES:

1. VERIFY ALL DIMENSIONS AND ELEVATIONS . . . .
2. . . .

9. SEE DETAILS 5/S3.2, 6/S3.2, 7/S3.2 AND 8/S3.2 FOR TYPICAL FRAMING AT OPENINGS. COORDINATE SIZE AND LOCATION OF ALL OPENINGS/PENETRATIONS WITH ARCHITECTURAL AND M.E.P. DRAWINGS.
10. "Lx" INDICATES STEEL LINTEL BELOW. SEE SCHEDULE ON SHEET S5.1, AND ELEVATIONS ON SHEET S6.1. (1)
11. (P1x) INDICATES 9"x18" MAX. WEB PENETRATION IN BEAM AT 1/4th POINTS OF BEAM SPAN. SEE DETAIL 8/S3.1 FOR MORE INFORMATION. COORDINATE WITH ARCH. AND MEP DWGS. REGARDING THE LOWER CASE "x" DESIGNATION.
12. (P2) INDICATES 9"x18" MAX. WEB PENETRATION IN GIRDER AT MID POINTS BETWEEN BEAMS. SEE DETAIL 8/S3.1 FOR MORE INFORMATION.

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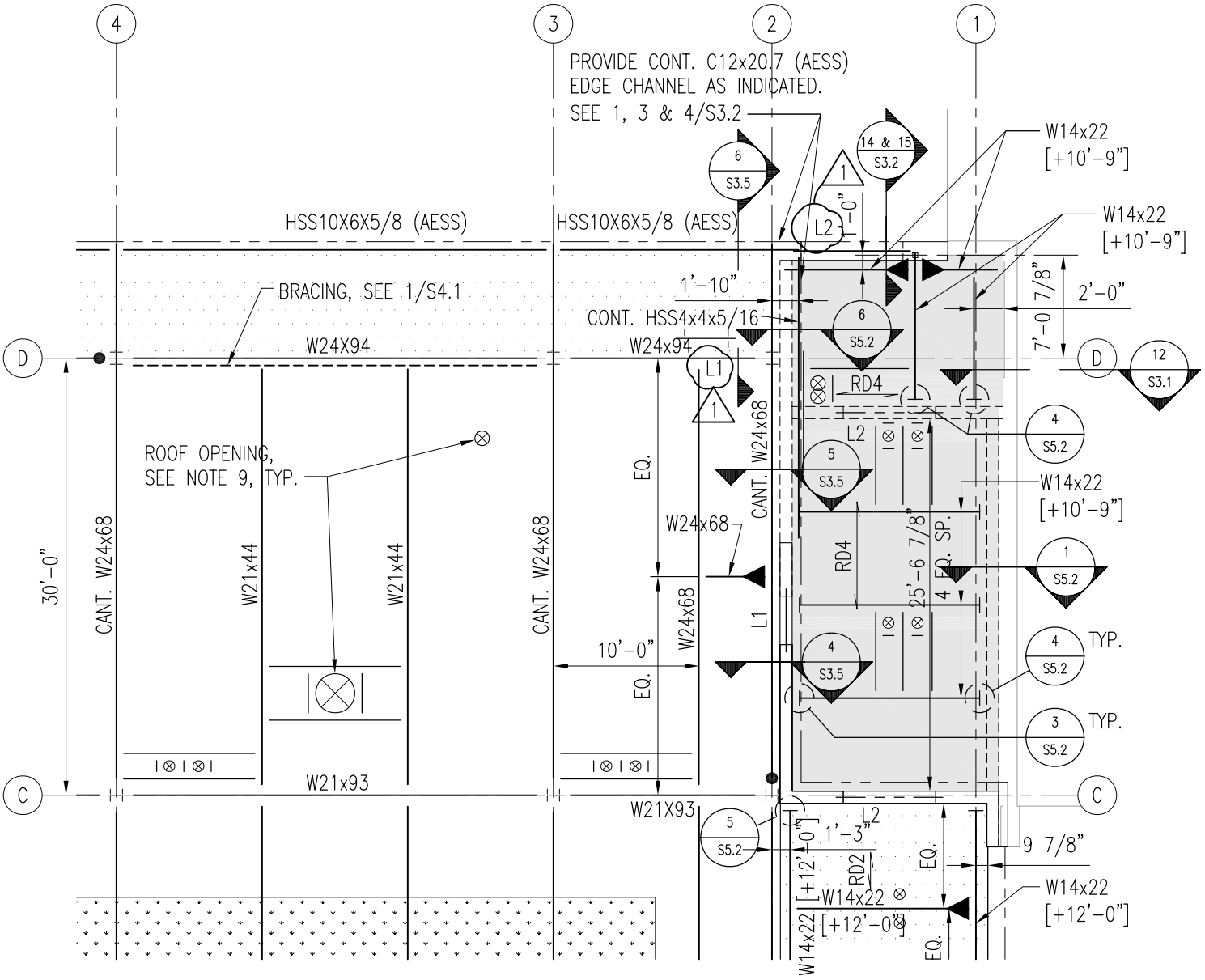
PROJECT:	DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	PARTIAL ROOF FRAMING PLAN
REFERENCE:	S1.2
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-01



PARTIAL ROOF FRAMING PLAN

1/8"=1'-0"

NOTES:

1. VERIFY ALL DIMENSIONS AND ELEVATIONS . . . .
2. . . .

9. SEE DETAILS 5/S3.2, 6/S3.2, 7/S3.2 AND 8/S3.2 FOR TYPICAL FRAMING AT OPENINGS. COORDINATE SIZE AND LOCATION OF ALL OPENINGS/PENETRATIONS WITH ARCHITECTURAL AND M.E.P. DRAWINGS.
10. "Lx" INDICATES STEEL LINTEL BELOW. SEE SCHEDULE ON SHEET S5.1, AND ELEVATIONS ON SHEET S6.1.
11. P1x INDICATES 9"x18" MAX. WEB PENETRATION IN BEAM AT 1/4th POINTS OF BEAM SPAN. SEE DETAIL 8/S3.1 FOR MORE INFORMATION. COORDINATE WITH ARCH. AND MEP DWGS. REGARDING THE LOWER CASE "x" DESIGNATION.
12. P2 INDICATES 9"x18" MAX. WEB PENETRATION IN GIRDER AT MID POINTS BETWEEN BEAMS. SEE DETAIL 8/S3.1 FOR MORE INFORMATION.

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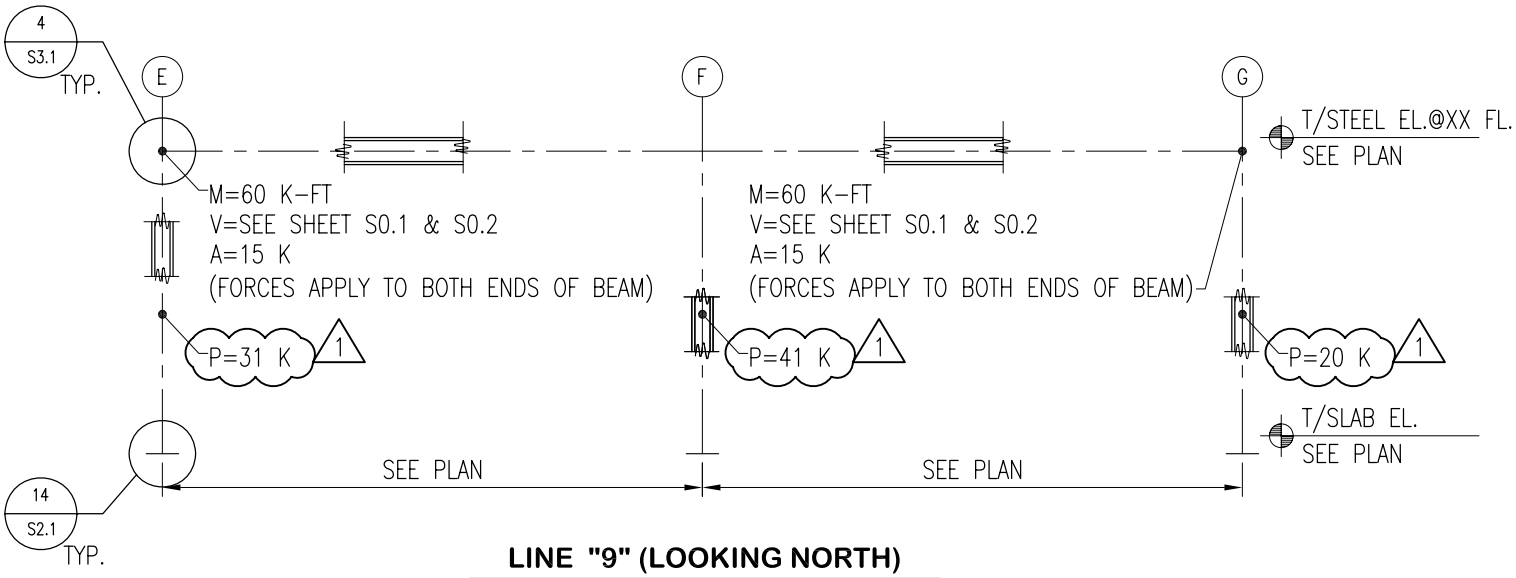
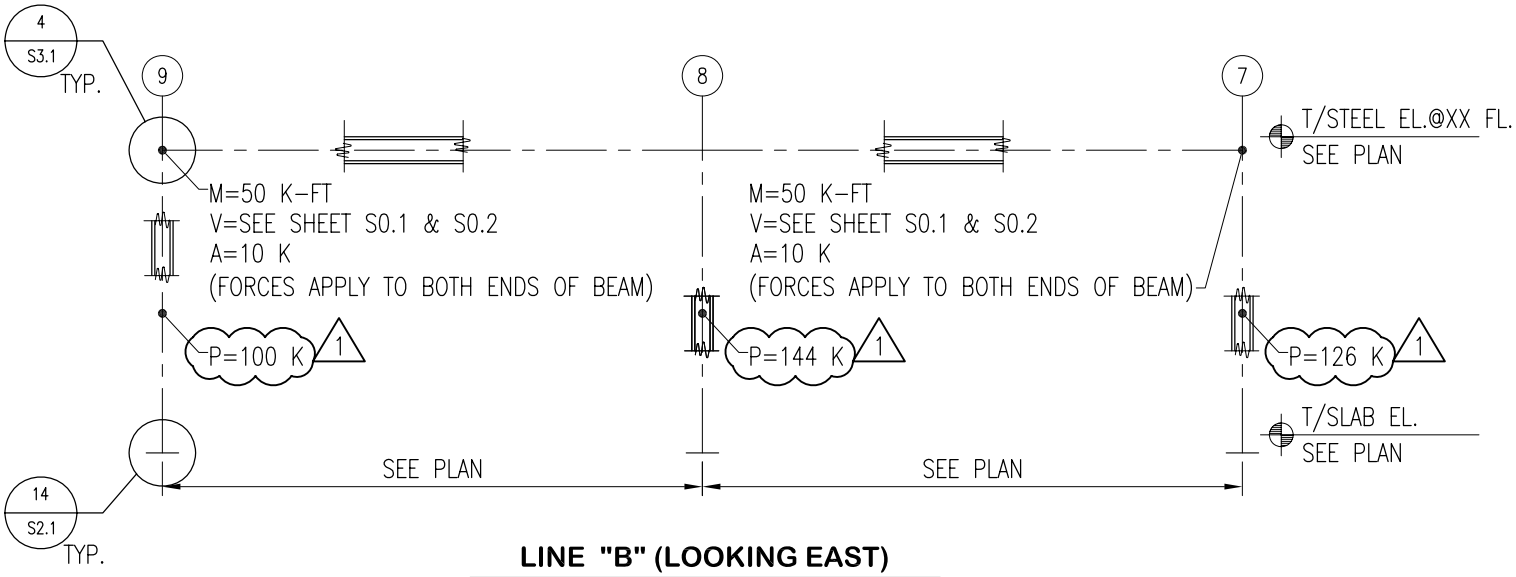
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	PARTIAL ROOF FRAMING PLAN
REFERENCE:	S1.2
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-02



LINE "9" (LOOKING NORTH)



LINE "B" (LOOKING EAST)

2 / S4.1 MOMENT FRAME ELEVATIONS

SCHEMATIC

NOTES:

1. SEE PLAN FOR BEAM/COLUMN SIZES AND ALL ELEVATIONS AND DIMENSIONS.
2. ALL INDICATED LOADS ARE UNFACTORED.
3. M = MOMENT, V = SHEAR & A = AXIAL (APPLIES TO BOTH ENDS OF BEAMS)
4. P = AXIAL LOAD IN COLUMN ONLY FOR THE DESIGN OF MOMENT FRAME DOUBLER PLATES. 1

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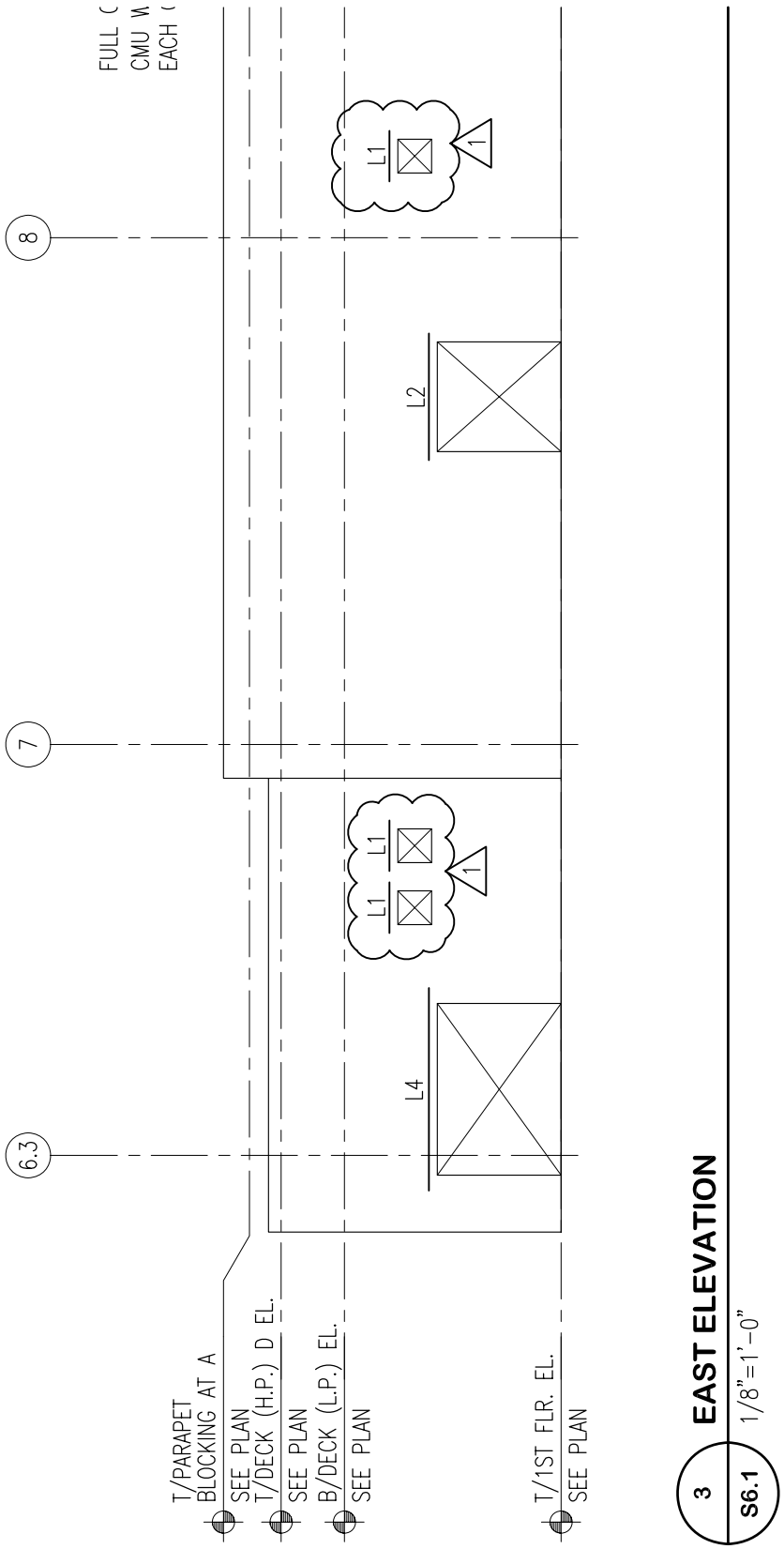
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	MOMENT FRAME ELEVATIONS
REFERENCE:	S4.1
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-03



3 EAST ELEVATION S6.1 1/8"=1'-0"

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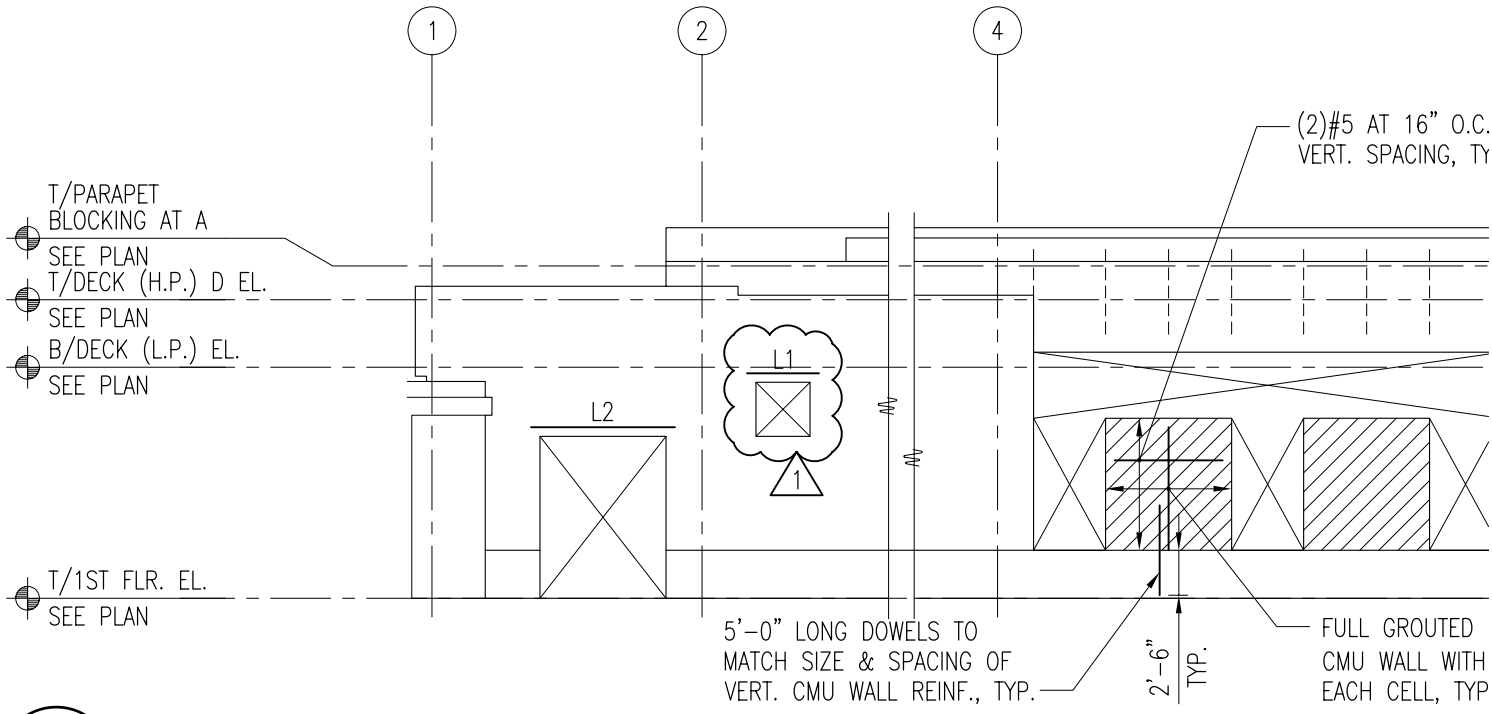
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	EAST ELEVATION
REFERENCE:	S6.1
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-04



5 / S6.1 **COURTYARD WEST ELEVATION**

1/8"=1'-0"

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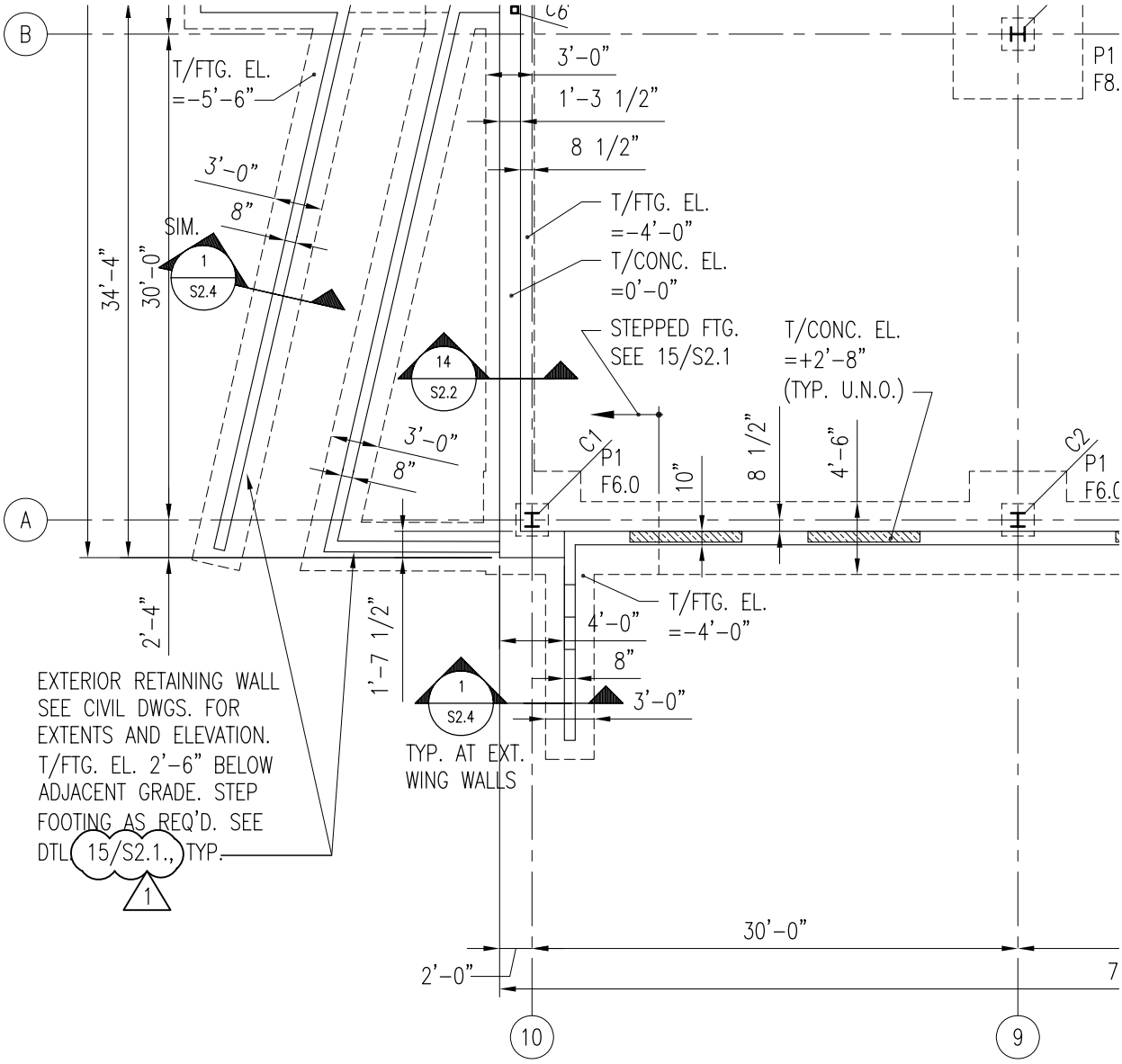
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	COURTYARD WEST ELEVATION
REFERENCE:	S6.1
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-05



PARTIAL FOUNDATION/FIRST FLOOR PLAN

1/8"=1'-0"

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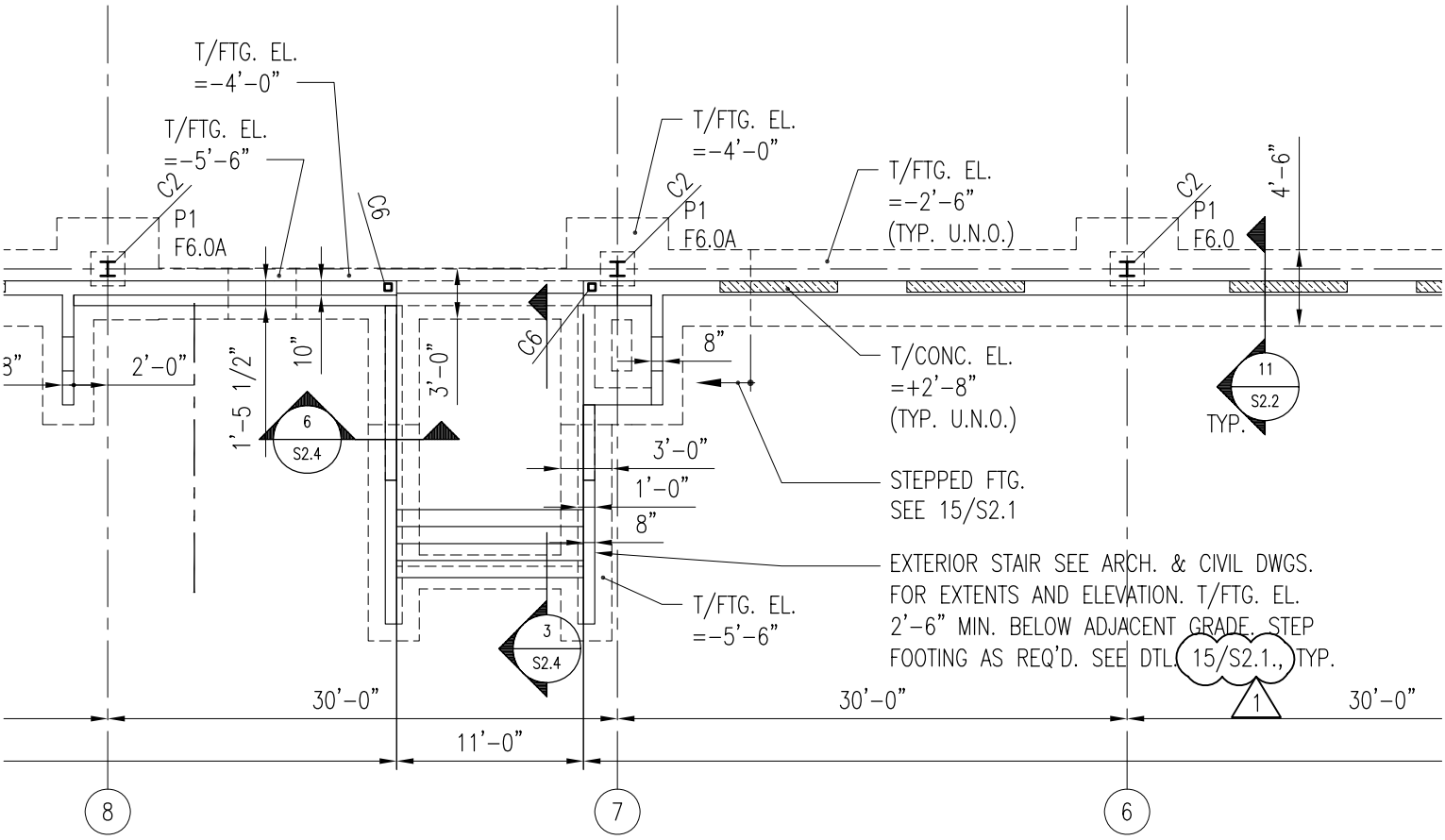
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	PARTIAL FOUNDATION/FIRST FLOOR PLAN
REFERENCE:	S1.1
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-06



PARTIAL FOUNDATION/FIRST FLOOR PLAN

1/8"=1'-0"

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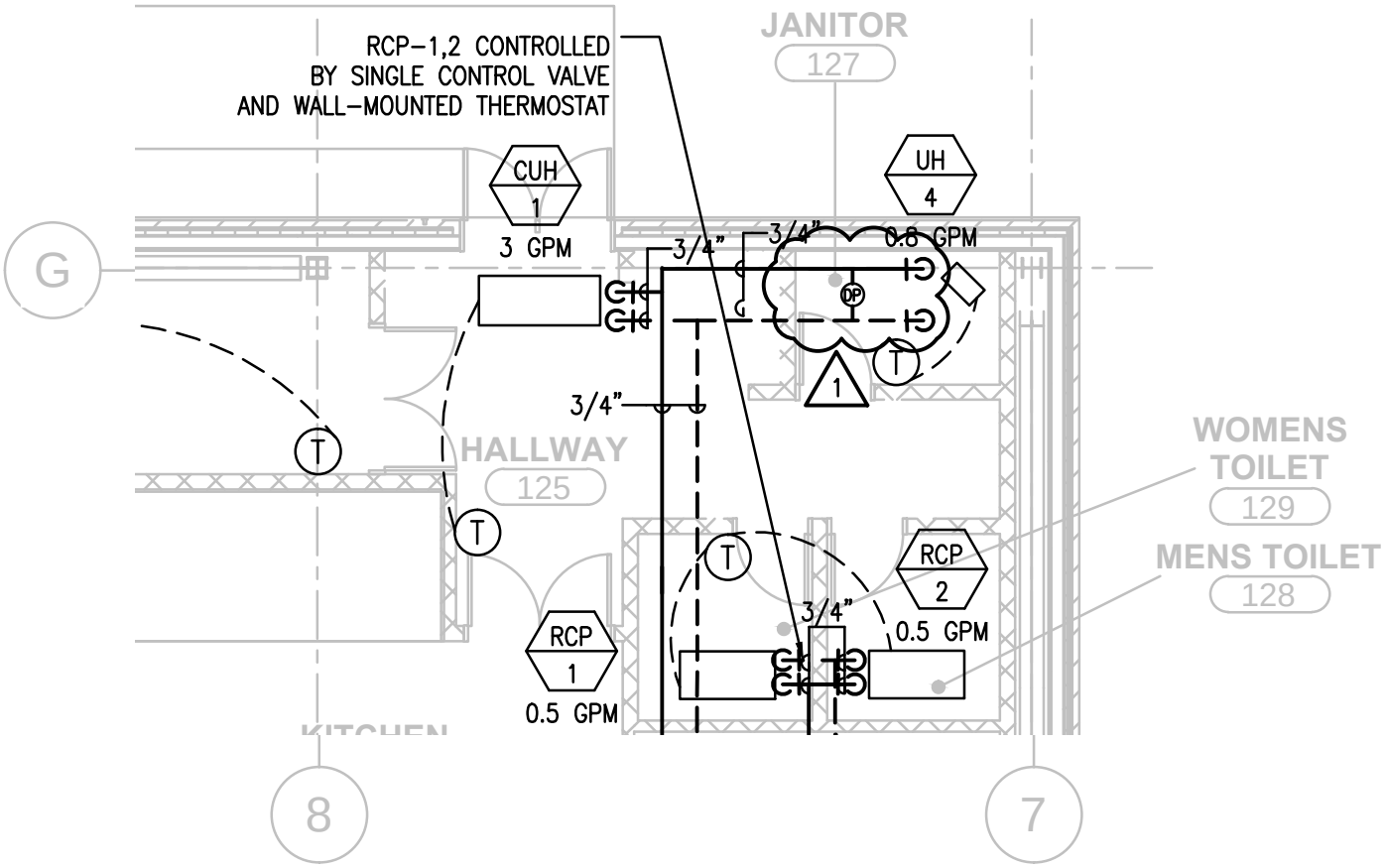
SMNG-A NO.:	1110 MEC# 11021
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	PARTIAL FOUNDATION/FIRST FLOOR PLAN
REFERENCE:	S1.1
COMMENTS:	N.T.S.

ISSUE DATE: 01.06.12

SSK-07



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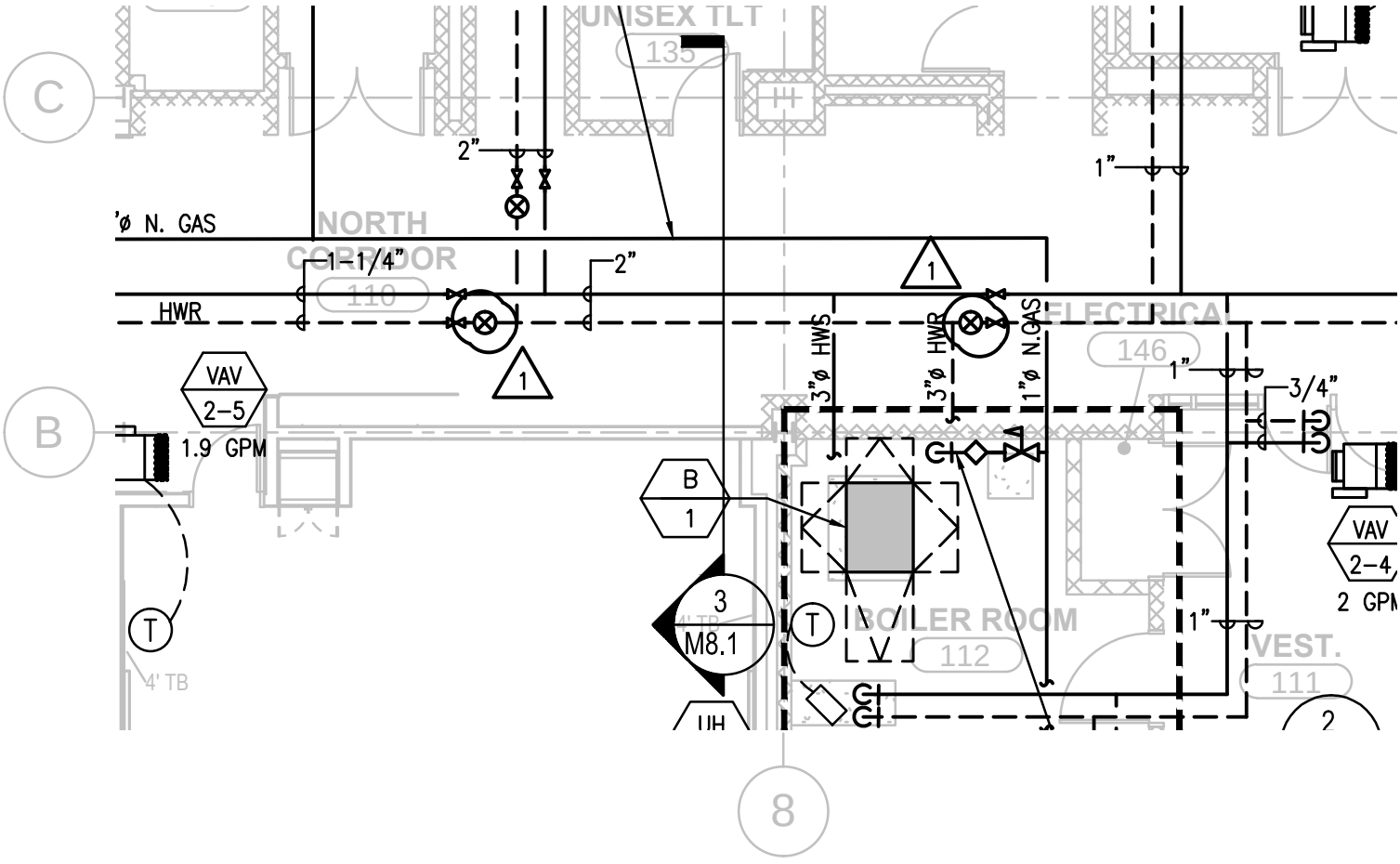
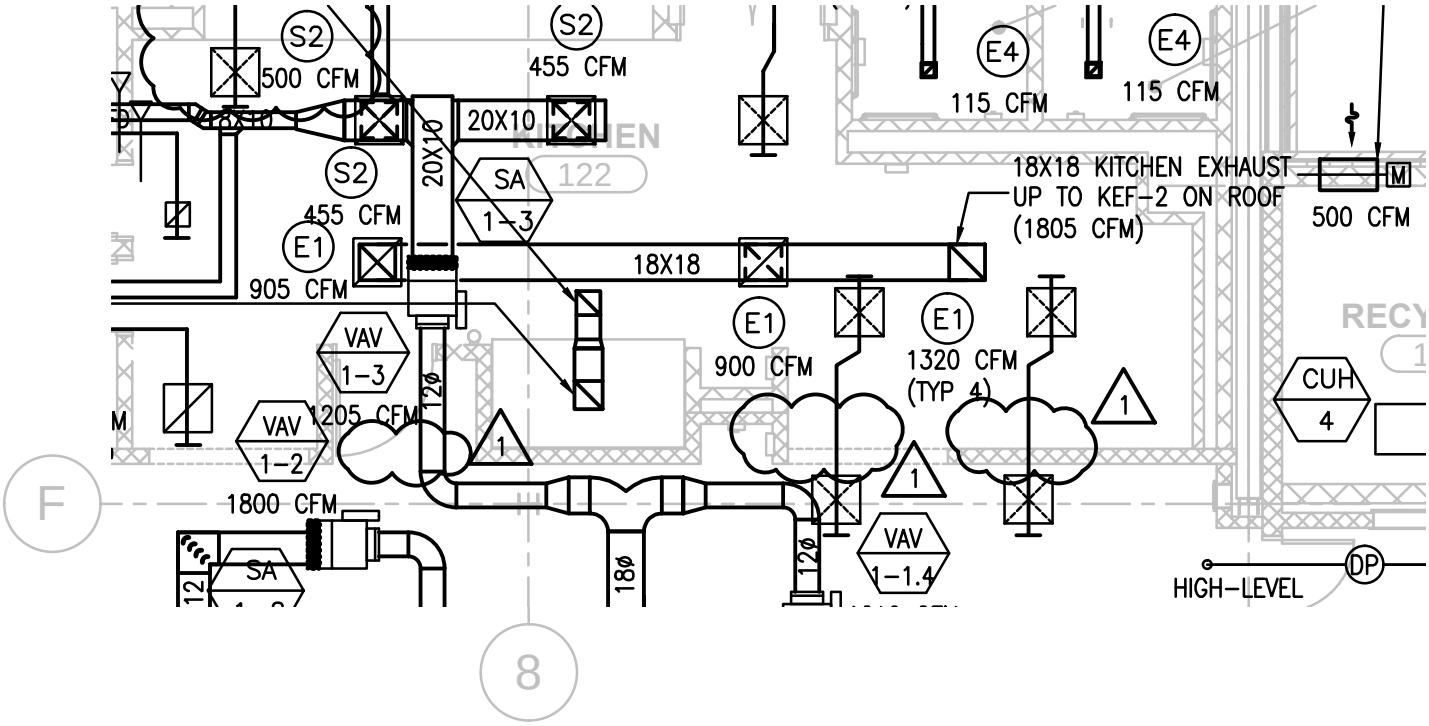
PROJECT:	DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	MECHANICAL PIPING FIRST FLOOR PLAN ANNEX (REFER TO M1.1A)
COMMENTS:	SCALE - 1/8" = 1'-0"

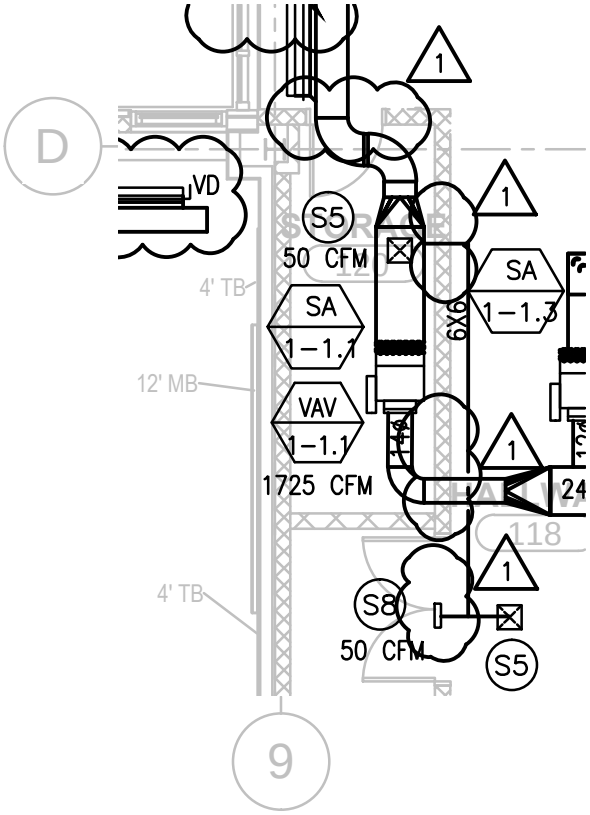
ISSUE DATE: 01.06.12

MSK-1



SMNG-A Architects, Ltd. Schroeder Murchie Niemiec Gazda-Auskalnis Architecture Planning Interior Architecture 936 West Huron Street Chicago, Illinois 60642 312.829.3355 voice 312.829.8187 fax	PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX SMNG-A NO.: 1110 PBC NO.: 05540 CONTRACT NO.: ISSUE: ISSUE FOR ADDENDUM NO. 1 TITLE: MECHANICAL PIPING FIRST FLOOR PLAN ANNEX (REFER TO M1.1A) COMMENTS: SCALE - 1/8" = 1'-0"	ISSUE DATE: 01.06.12 **MSK-2** PAGE 1 OF 1





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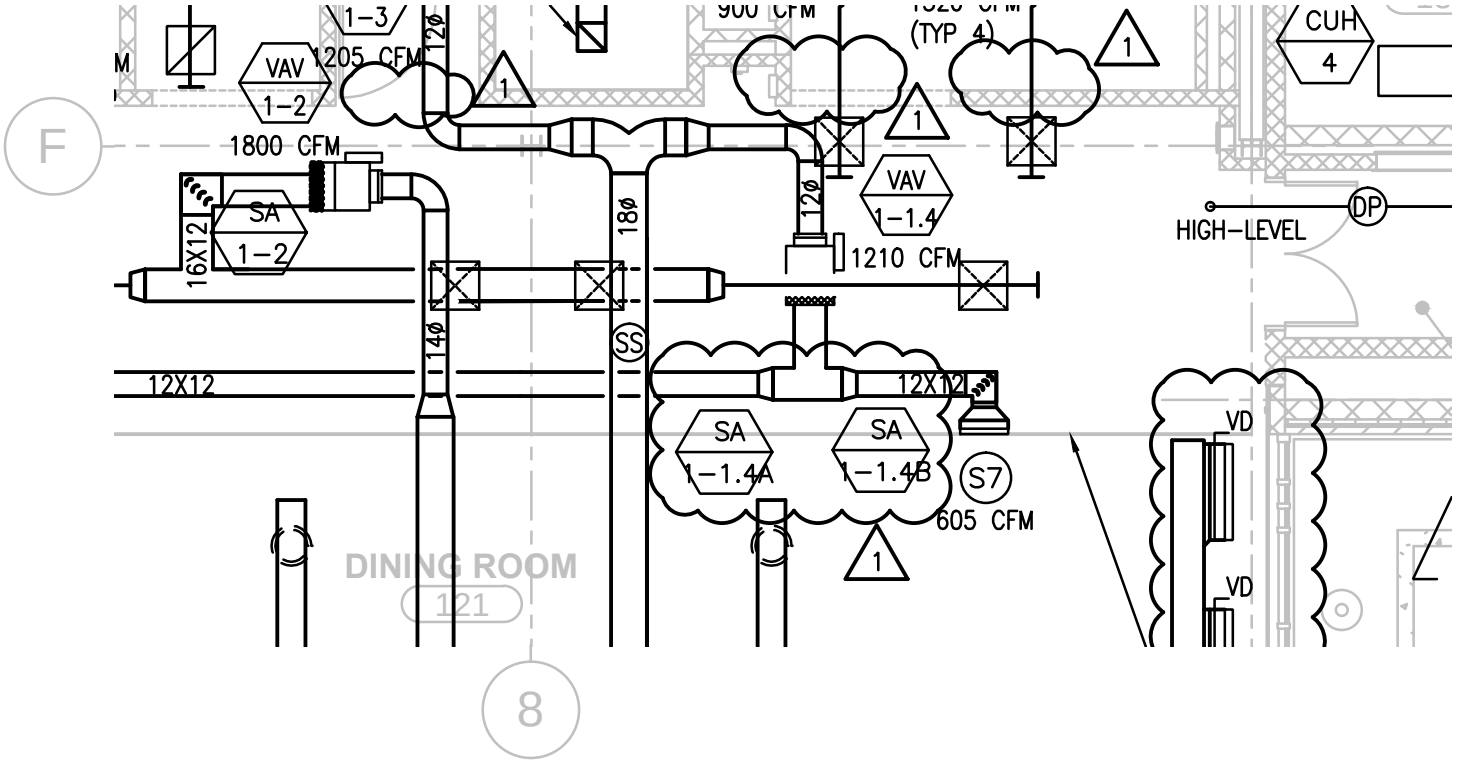

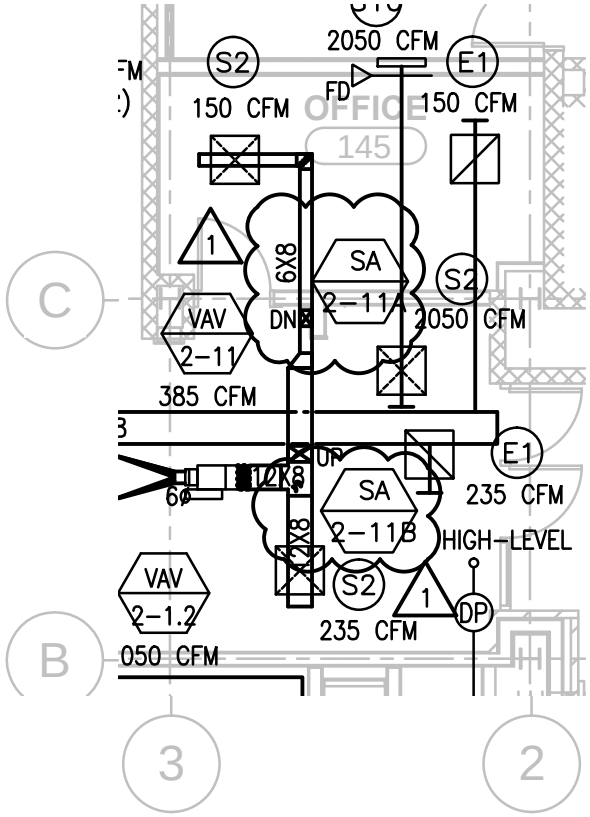

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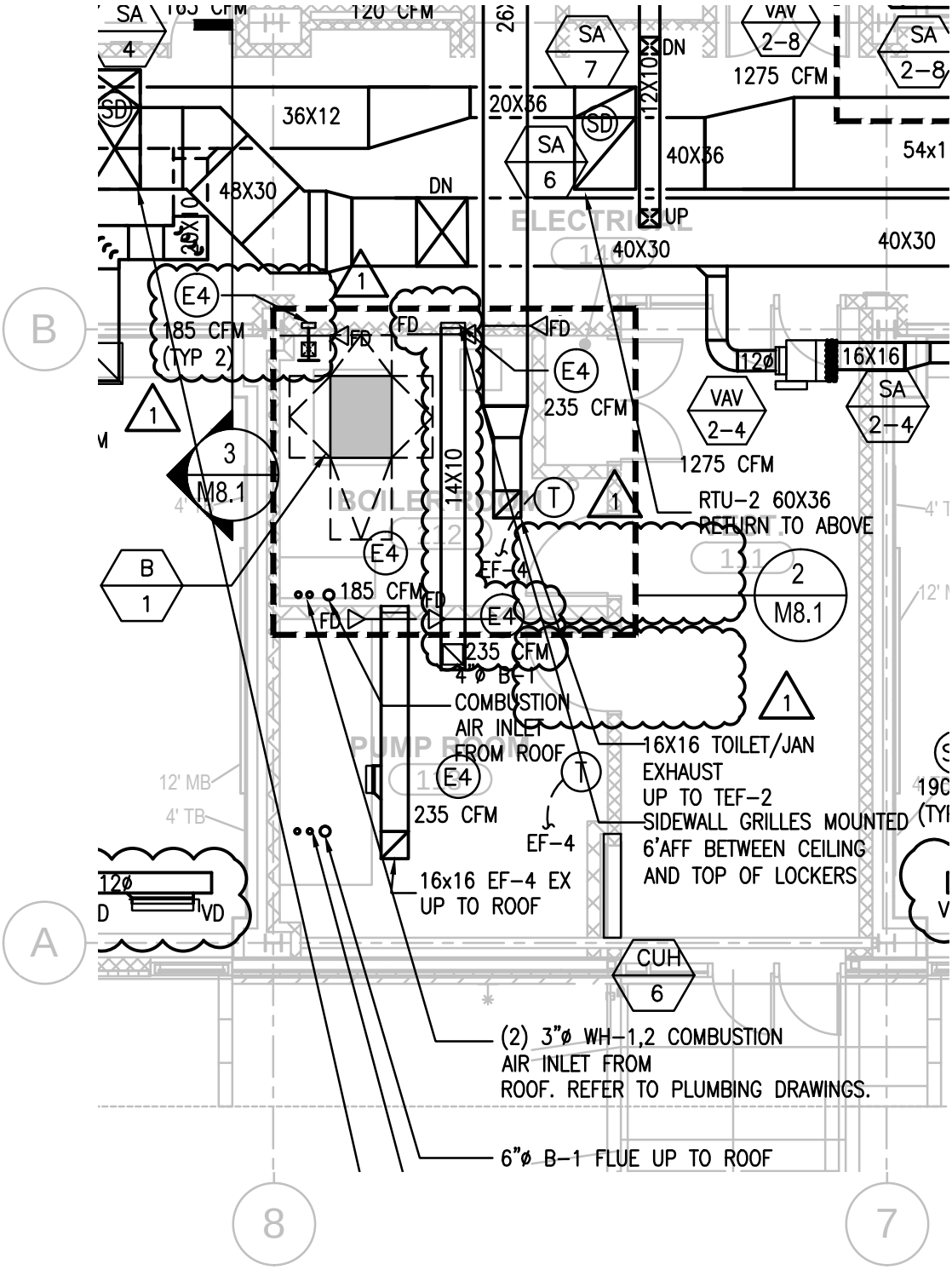

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PROJECT:	DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	MECHANICAL HVAC FIRST FLOOR PLAN ANNEX (REFER TO M2.1A)
COMMENTS:	SCALE - 1/8" = 1'-0"

ISSUE DATE: 01.06.12

MSK-5

1

DUCT SILENCER SCHEDULE

TAG	FAN SYSTEM	TYPE	W x H (INCHES)	L (FT)	CFM	MAX. S.P. (IN. W.C.)	MIN. DYNAMIC INSERTION LOSS (FREQUENCY, HZ)								BASED ON	REMARKS
							63	125	250	500	1000	2000	4000	8000		
SA-1	RTU-1 SUPPLY	ELBOW	46X18	7	5,890	0.25	6	17	20	26	27	24	22	24	Price ERMT	1,2
SA-2	RTU-1 SUPPLY	ELBOW	24X18	7	3,165	0.25	6	13	21	25	28	27	24	27	Price ERMT	1,2
SA-3	RTU-1 RETURN	ELBOW	60X24	7	9,055	0.25	10	27	27	32	30	24	19	19	Price ERMT	1,2
SA-4	RTU-2 SUPPLY	ELBOW	22X30	7	3,810	0.25	6	13	21	25	28	27	24	27	Price ERMT	1,2
SA-5	RTU-2 SUPPLY	ELBOW	48X30	9	10,135	0.25	6	20	27	32	31	27	25	28	Price ERMT	1,2
SA-6	RTU-2 RETURN	ELBOW	40X36	9	10,135	0.25	7	33	35	38	34	27	22	21	Price ERMT	1,2
SA-7	RTU-2 RETURN	ELBOW	20X36	9	3,810	0.25	13	23	27	31	31	27	23	22	Price ERMT	1,2
SA-1-1.1	VAV 1.1	STRAIGHT	20x18	3	1,725	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-1-1.2	VAV 1.2	STRAIGHT	20x18	3	1,675	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-1-1.3	VAV 1.3	ELBOW	16x16	3	1,440	0.25	5	5	12	14	18	17	15	16	Price ERMT	1,2
SA-1-1.4A	VAV 1.4	STRAIGHT	12x12	3	605	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-1-1.4B	VAV 1.4	STRAIGHT	12x12	3	605	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-1-2	VAV 1-2	STRAIGHT	20x18	3	1,800	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-1-3	VAV 1-3	STRAIGHT	16x16	3	1,205	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-1.1	VAV 2-1.1	ELBOW	24X10	3	1,050	0.25	5	5	12	14	18	17	15	16	Price ERMT	1,2
SA-2-1.2	VAV 2-1.2	ELBOW	24X10	3	1,050	0.25	5	5	12	14	18	17	15	16	Price ERMT	1,2
SA-2-2	VAV 2-2	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-3	VAV 2-3	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-4	VAV 2-4	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-5	VAV 2-5	STRAIGHT	16x16	3	1,350	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-6	VAV 2-6	STRAIGHT	24x10	3	1,235	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-7	VAV 2-7	ELBOW	24x10	3	1,225	0.25	5	5	12	14	18	17	15	16	Price ERMT	1,2
SA-2-8	VAV 2-8	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-9	VAV 2-9	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-10	VAV 2-10	STRAIGHT	16x16	3	1,275	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-11A	VAV 2-11	STRAIGHT	12x8	3	150	0.25	4	11	13	16	13	9	7	8	Price RLT	2
SA-2-11B	VAV 2-11	STRAIGHT	12x8	3	235	0.25	4	11	13	16	13	9	7	8	Price RLT	2

NOTES:
1. RECTANGULAR 90 DEGREE ELBOW SILENCER.
2. AFTERMARKET VAV SILENCERS REQUIRED. INTEGRAL SILENCERS NOT ACCEPTABLE. INSTALL SILENCERS AT LEAST THREE DUCT DIAMETERS DOWNSTREAM OF VAV's.

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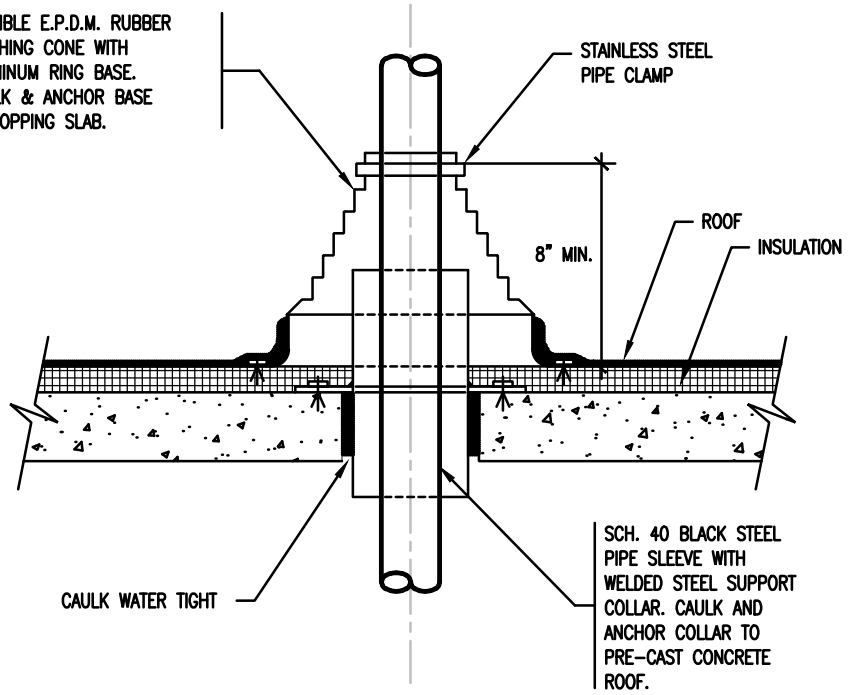
PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: MECHANICAL SCHEDULES (REFER TO M5.1)
COMMENTS: SCALE - NTS

ISSUE DATE: 01.06.12

MSK-6

1



6 / M6.5 SINGLE PIPE ROOF PENETRATION DETAIL

NO SCALE

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SMNG-A NO.: 1110
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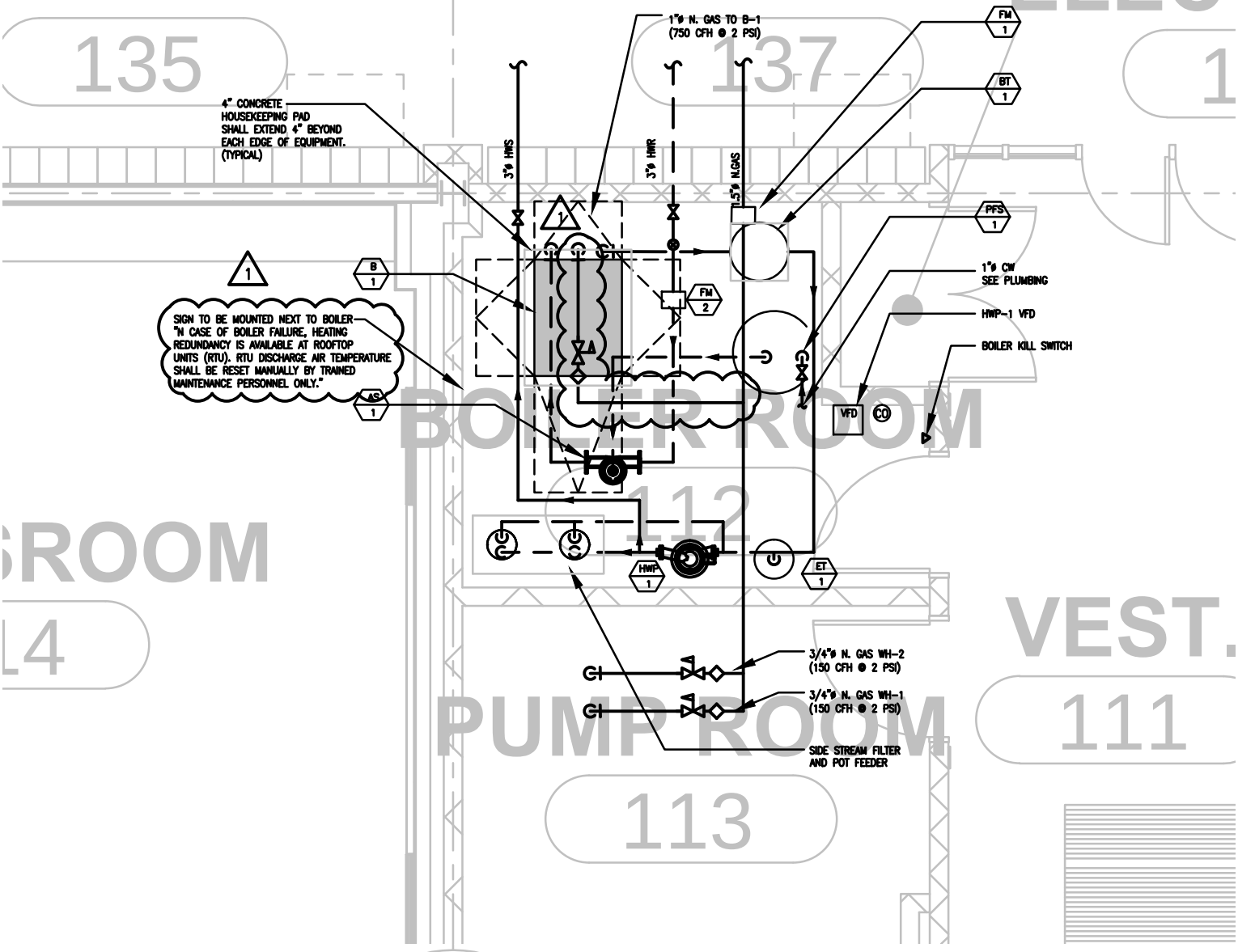
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: MECHANICAL DETAILS (REFER TO M6.5)
COMMENTS: SCALE - NTS

ISSUE DATE: 01.06.12

MSK-7



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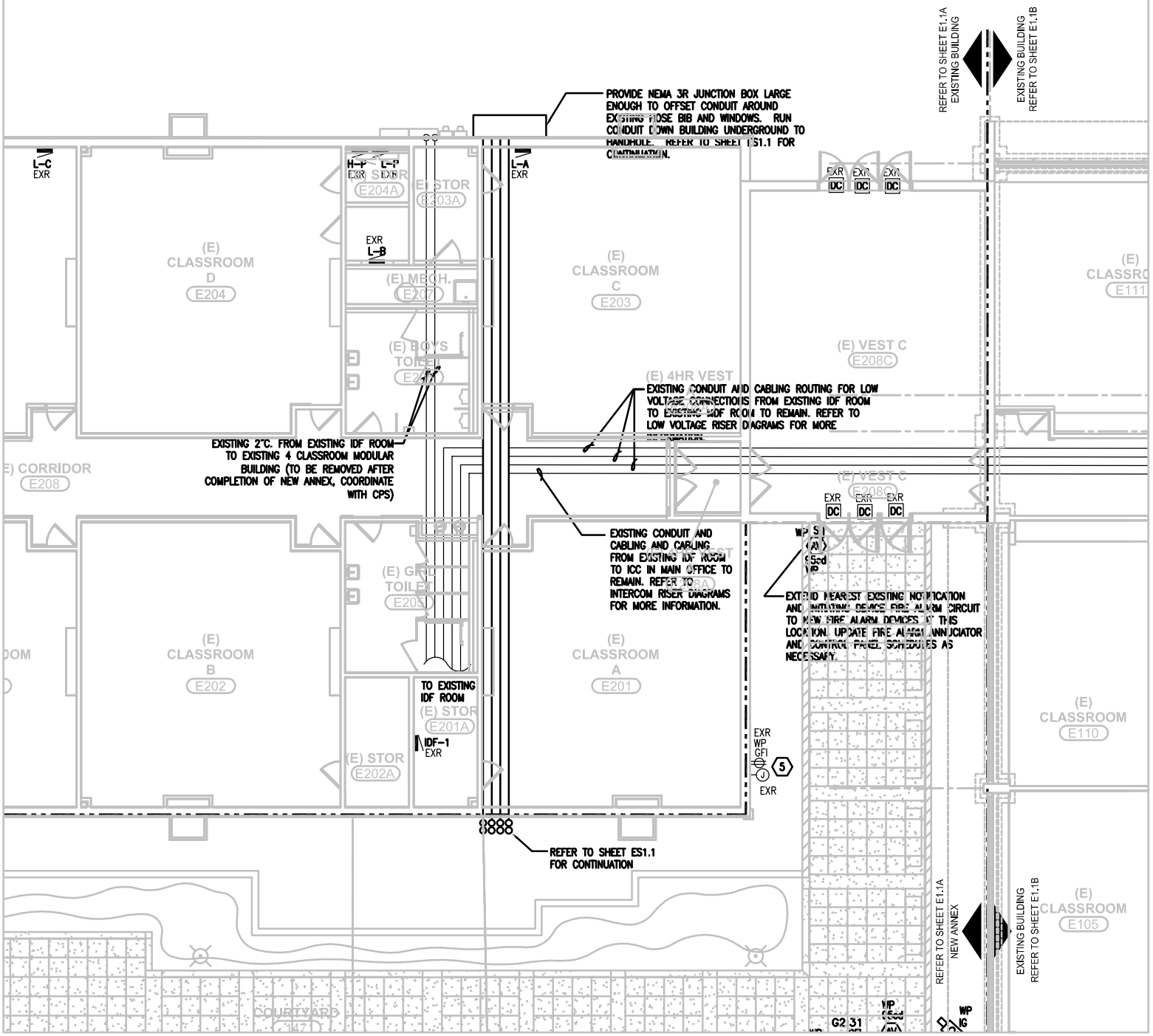
PROJECT:	DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.:	1110
PBC NO.:	05540
CONTRACT NO.:	
ISSUE:	ISSUE FOR ADDENDUM NO. 1
TITLE:	ENLARGED MECHANICAL PLANS (REFER TO M8.1)
COMMENTS:	SCALE - 3/16" = 1'-0"

ISSUE DATE: 01.06.12

MSK-8



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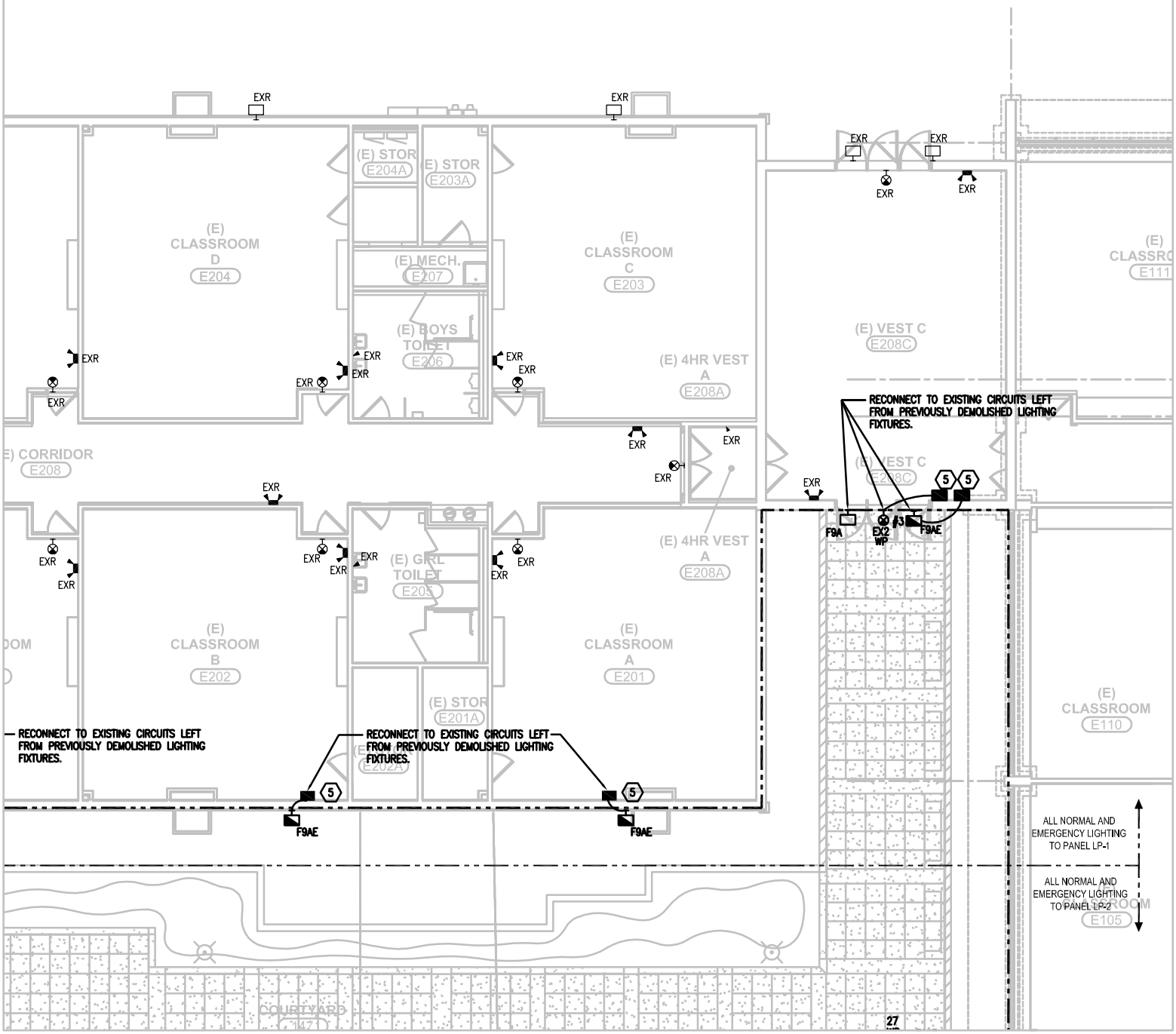
PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX

SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: ELECTRICAL POWER FIRST FLOOR PLAN ANNEX
COMMENTS: E1.1A

ISSUE DATE: 01.06.12

ESK-1



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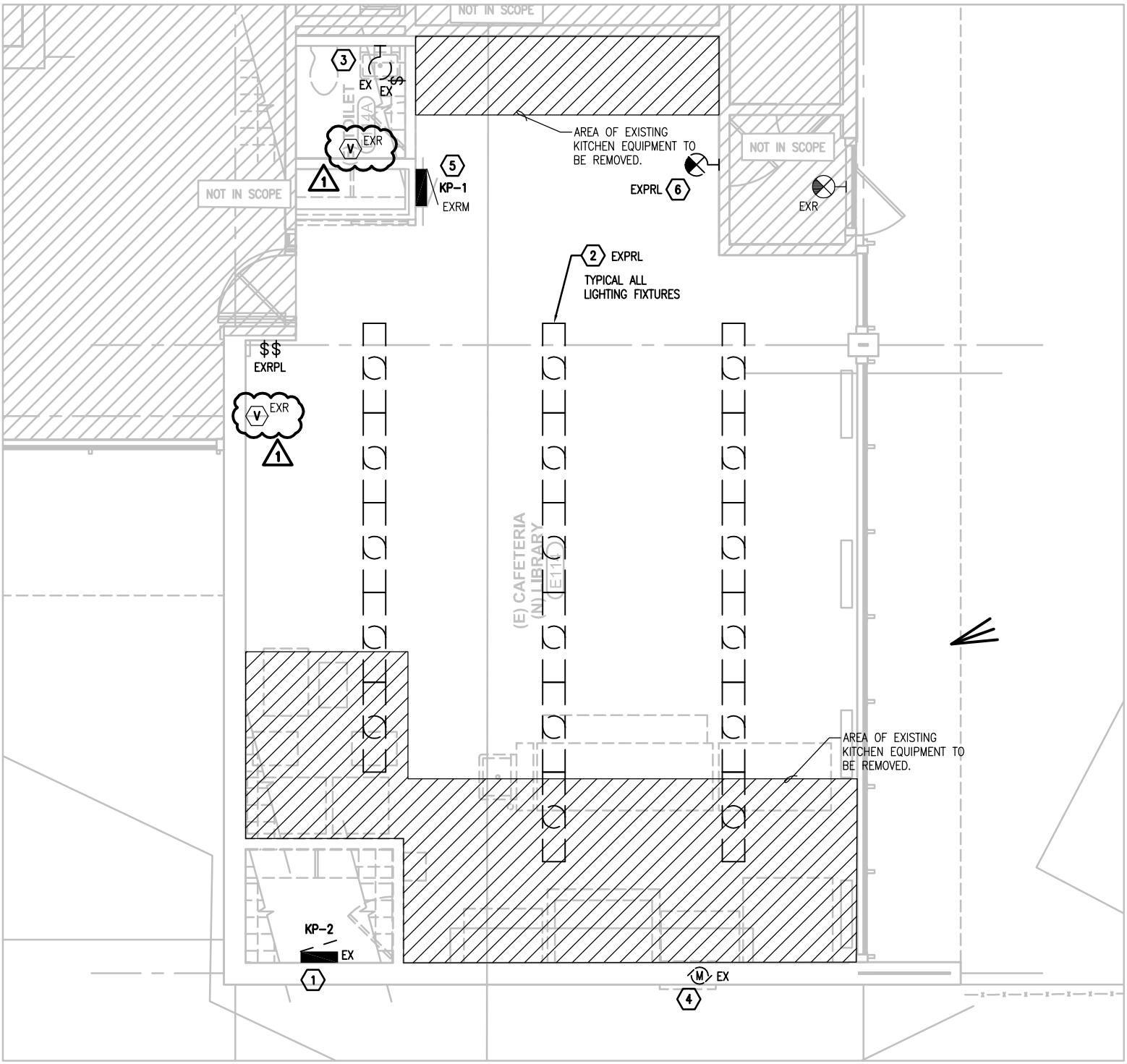
PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX
SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: ELECTRICAL LIGHTING FIRST FLOOR PLAN ANNEX
COMMENTS: E2.1A

ISSUE DATE: 01.06.12

ESK-2



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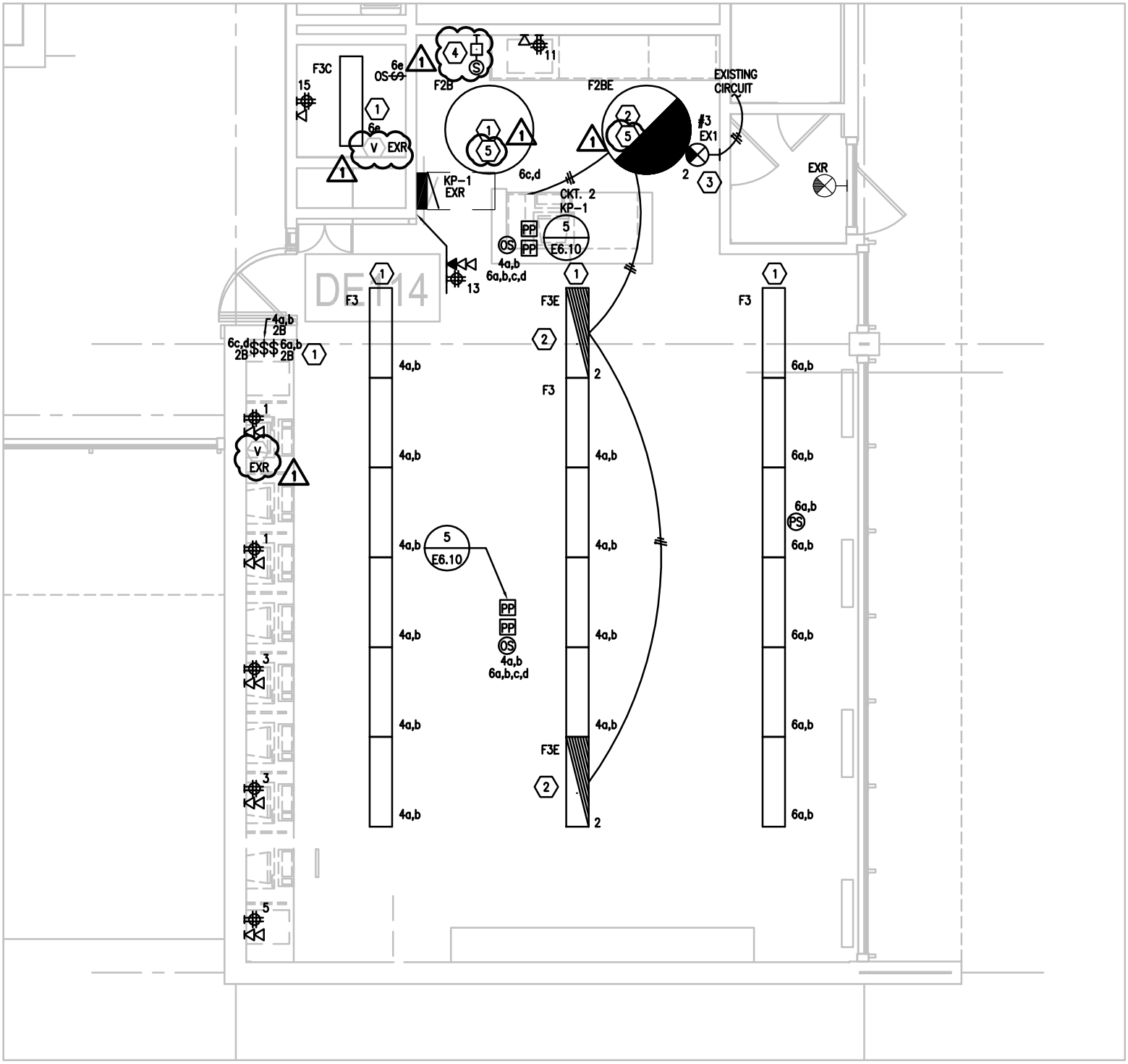
PROJECT: DURKIN PARK ELEMENTARY SCHOOL ANNEX

SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: ELECTRICAL ENLARGED PLANS
COMMENTS: E7.1 - DETAIL 3

ISSUE DATE: 01.06.12

ESK-3



3 RECONNECT NEW EXIT SIGN LEFT FROM PREVIOUSLY DEMOLISHED EXIT SIGN AT SAME LOCATION.

1

4 PROVIDE NEW CONCEALED CONDUIT WHERE POSSIBLE AND SURFACE MOUNTED RACEWAY WHERE CONCEALED CONDUIT IS NOT POSSIBLE BACK TO ICC IN EXISTING OFFICE.

5 PROVIDE SURFACE MOUNTED VERSION OF FIXTURE SHOWN AND ALL ASSOCIATED MOUNTING PIECES REQUIRED FOR A PROPER SURFACE MOUNTED INSTALLATION.

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SMNG-A NO.: 1110
PBC NO.: 05540
CONTRACT NO.:
ISSUE: ISSUE FOR ADDENDUM NO. 1
TITLE: ELECTRICAL ENLARGED PLANS
COMMENTS: E7.1 - DETAIL 4

ISSUE DATE: 01.06.12

ESK-4

SECTION 16781
CCTV SYSTEM AND COMPONENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Refer to Spec section 16782 CCTV and/or DVS system requirements.

SECTION 16782A

DIGITAL VIDEO SURVEILLANCE INFRASTRUCTURE AND BACKBONE SYSTEM

PART 1 - GENERAL

1.1 TERMINOLOGY

A. CCTV and Digital Video Surveillance are one in the same and are used interchangeably throughout the drawings and specifications.

1.2 SUMMARY

A. This Section includes the materials and components for infrastructure and backbone for Digital Video Surveillance (DVS) System.

1. Cabling including fiber-optic cabling.
2. DVS concentrator remote enclosures.
3. Equipment mounts and racks.
4. Un-interruptible power supply (UPS).
5. Final adjustments and system cable continuity check out.
6. Wall mounted plywood panels.
7. All connections and terminations.

B. Work by others under Section 16782B Owner provided components include the following:

1. Interconnections to LAN and WAN networks.
2. Final adjustments and system check out.
3. Training of Owner's personnel.
4. Dell Server hardware equipment, including directory server, storage arrays, and archive server.
5. Cisco PoE Switches (CPS).
6. Dell Viewing stations (CPS).
7. Dell Server hardware equipment (CPS).
8. DVS Cameras and Housings and Hardware (PBC).
9. Patch cables.

1.3 SYSTEM REQUIREMENTS

A. Surge Protection: Provide surge protection for external wiring of each conductor's entry connection to components, CRE and MDF rooms.

1. Minimum Protection for Power Connections 120 V and More: Auxiliary panel suppressors complying with requirements in Division 16 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits and/or Surge Protection Devices."
2. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Connections: Comply with requirements in Division 16 Section "Transient-Voltage

Suppression for Low-Voltage Electrical Power Circuits and/or Surge Protection Devices," as recommended by manufacturer for type of line being protected.

3. Surge devices shall be fully accessible for maintenance purposes.

B. Tamper Protection: Provide tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components. Tamper switches shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station, control-unit alarm display shall identify tamper alarms and indicate locations.

C. Installation – Existing Facilities:

1. For existing schools, review existing conditions within the building(s) and proposed or anticipated methods for the installation of conduit, raceway, pullboxes, and other components and devices included as part of the system design.
2. Roughing-in of DVS system shall be completed prior to start of finish work, including painting.

D. Provide and install IP-based video surveillance system backbone and infrastructure as shown on contract documents.

1. Utilize telecommunication structured cabling system as provided under Division 17 Section, 17250 "Communications Horizontal Cabling," Division 17 Section, "Optical Fiber Backbone Cabling," Fiber Optic Connector Intermateability Standards (FOCIS) specifications TIA/EIA-604-2, TIA/EIA-604-3-A, TIA/EIA-604-12, AND COMPLY WITH TIA/EIA-568B-3.

1.4 DEFINITIONS

A. DVS: Digital Video Surveillance.

B. CRE: Concentrator Remote Enclosure.

C. MDF: Main Distribution Facility.

D. ITS: CPS Information Technology Services at 125 S. Clark.

E. OEMC: Office of Emergency Management and Communication.

F. OSSS: CPS Office of School Safety and Security at 125 S. Clark.

G. SSC: CPS Student Security Center at 125 S. Clark.

H. Commission: The Public Building Commission of Chicago, a municipal corporation organized under the Public Building Commission Act of the State of Illinois, as amended, or its duly authorized officers or employees.

I. Commission Representative (CR): means the person assigned, in writing, by the Executive Director to be the Commission's Representative for the project.

J. Contractor: The partnership, firm, corporation, joint venture, or entity entering into the contract with the Commission to perform to perform the Work required by the Contract Documents. This includes any sub-contractors (or sub-contractors to sub-contractors) working under the Prime Contract.

K. CPS means The City of Chicago Board of Education: Chicago Public Schools, 125 South Clark St, Chicago, Illinois 60603.

L. Architect (AOR): "Architect" or "Architect/Engineer" means any person or firm employed by the Commission for the purpose of designing the project.

1.5 SUBMITTALS

A. Concurrent Submittals: Submittals shall be simultaneously (concurrently) submitted by the contractor to the Architect/Engineer and CPS OSSS. Responses to Contractor submittals may include, in addition to the AOR comments, comments from OSSS. OSSS comments shall be responded to by the Contractor in the same manner as AOR comments. Work related to the DVS system shall not proceed prior to receipt of final review comments from CPS OSSS through the AOR. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.

B. Product Data: For each type of product specified. For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets. Shop Drawings: For video surveillance system, include plans, elevations, sections, details and attachment to other work.

1. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
2. Floor plans, prepared at 1/8 inch scale, indicating the following:
    a. Location of all DVS outlets with identification numbers.
    b. System layout, including, but not limited to, routing of conduit and raceways, locations of concentrator boxes, both existing and new, and other components required as part of the complete system.
    c. Riser and Connection diagrams.
    d. Location of DVS remote enclosures (CRE), termination racks and backboards.
    e. Point-to-point raceway routing, identifying number and type of cables in each raceway. Include pullbox locations and sizes.
    f. Conduit fill calculations, indicating cross-section area percent fill for each raceway.
    g. Detailed layout drawings of each DVS Remote Enclosure (CRE), MDF racks, including identifying all components, cabling connections, and cable identification numbers.
    h. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.

C. Coordination Drawings: Routing plans for conduit and raceway (if any), drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved.

1. Structural members in the paths of conduit groups with common supports.
2. HVAC, plumbing, fire protection, and fire alarm items and architectural features in the paths of conduit groups with common supports.

3. Floor plans, prepared at 1/8 inch scale, indicating the following:
   a. Location of all DVS outlets with identification numbers.
   b. System layout, including.
   c. Riser and Connection diagrams.
   d. Location of DVS remote enclosures (CRE), termination racks and backboards.
   e. Point-to-point raceway routing, identifying number and type of cables in each raceway. Include pullbox locations and sizes.
   f. Detailed layout drawings of each DVS Remote Enclosure (CRE), MDF racks, including front-view details identifying all components, cabling connections, and cable identification numbers.

4. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.

D. Schedule: Contractor will provide a schedule indicating target completion dates that fit within the overall project schedule's substantial completion date and at minimum include the dates for the starting and completion of the various stages or phases of the Work, submittal and approval timeline of all required Submittals, the placing of material orders, delivery of materials and equipment, and interface activities performed by others upon which the Contractor's schedule depends.

E. Installer qualifications.

F. Test Reports:

1. Final test reports for field tests specified in Division 17 Sections, "Communications Horizontal Cabling" and "Optical Fiber Backbone Cabling."
2. Final test reports for continuity in accordance with Division 16 "Testing"

G. Warranty: as specified in this section.

H. As-Builts: as specified in this section.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Engage firms experienced in manufacturing systems and equipment similar to those indicated for this Project and that have a record of successful in-service performance.

B. Pre-Installation Conference: Not less than 14 days prior to starting the DVS system work, conduct a pre-installation conference at the Project site to comply with requirements in Division 01 Section, "Project Management and Coordination." Attendees shall include representatives from OSSS, ITS, AOR, CR and Contractor. Review methods and procedures related to the DVS system installation including, but not limited to, the following:

1. Review construction schedule and verify availability of materials, equipment, installer personnel, and facilities needed to make progress and avoid delays.
2. Review preparatory work and procedures, including roughing-in of electrical and data wiring

3. Review and confirm locations for cameras, both interior and exterior, and all other devices that are part of the system.

4. Review requirements for MDF and/or IDF room(s), CRE's, and equipment installation.
   a. In existing buildings, review the MDF/IDF room(s), CRE's and confirm any alterations, including installation of wall-mounted plywood panels, required for installation of system equipment and devices.

5. Review routing of conduit and locations of CRE.
6. Review required testing, inspections, and certifying procedures and anticipated dates.
7. Review training procedures for Owner's personnel and coordinate dates/times for training sessions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as required by the City of Chicago Electrical Code.

D. Pre-Installation Walk-Through: This Contractor shall schedule, coordinate, attend and participate in a pre-installation walk-through with the AOR, PBC, CPS, and the PBC's equipment Contractor. The purpose of this walk through is to identify any deficiencies regarding conduit and raceways, location of outlets, terminal racks, backboards, pull box locations, point to point raceway routing, CRE, MDF, IDF and cable test result documents for final camera work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver product to the project properly identified with names, model numbers, types grades, compliance labels, and other information needed for identification.

B. Store materials inside, protected from weather, in a secure location, in accordance with manufacturer's written instructions. Protect materials from construction activity and other potential sources of damage.

1.8 AS-BUILTS

A. At substantial completion, the Contractor shall provide as-built drawings showing system layout including conduit and raceways diagram, location of all outlets, terminal racks, backboards, pull box locations, point to point raceway routing, CRE, MDF, IDF and riser diagram.

B. At substantial completion, the Contractor shall provide separate bound copy of Cable Schedule listing incoming and outgoing cables and their designations, origins, and destinations.

C. Provide As-Builts plans and cable schedule in electronic format. Provide (1) electronic copy in both .DWG Auto CADD and .PDF to Owners web based storage (CW).

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form, executed by the manufacturer and installer, in which the manufacturer agrees to repair or replace components of the digital video surveillance system that develop defects in materials or workmanship within the specified warranty period. Warranty period shall begin on date of substantial completion of the project.

1. Warranty Period for System Cabling/Wiring: 25 years from date of substantial completion.

PART 2 - PRODUCTS

2.1 POWER AND GROUNDING REQUIREMENTS

A. Provide power supply if the camera and/or heater/cooler are not completely powered over PoE, or HighPoE. Provide the necessary gauge wire (per wiring and manufacturers specifications) for low-voltage power if the camera and/or heater/cooler are not completely powered over PoE, or HighPoE.

1. Provide 120V, single phase power within 75 feet of all PTZ. Where outdoor cameras are to be mounted in close proximity, a combined local power supply for up to four outdoor cameras may be provided. Mount power supply indoors, wall mounted, above ceiling.

B. Un-interruptible Power Supply:

1. Provide un-interruptible power supply(s) with sufficient capacity to power all DVS system head-end components including camera power supplies located in MDF Room for a minimum of 15 minutes.
2. Submit test report stating UPS at time of project completion complies with 15 minutes of backup.
3. Contractor to confirm the final Backup Power requirements and shall be based on the number of PoE cameras and equipment installed within the CRE and MDF Security System Rack. UPS shall be supplied for DVS equipment in CRE and MDF head end location.
   a. UPS for CRE shall be APC Rack mount UPS with Surge Protector depending on the power requirements.
      1) Provide APC Smart UPS SC 1000VA – 2U rack mount unit to support up to 10 PoE cameras and switch.

   b. UPS for MDF Server Rack shall be rack mounted APC Smart UPS 5000VA 208V or 120V.

C. Surge Protection Devices – Outdoor Cameras:

1. Provide surge protection devices at all outdoor cameras.
2. The method of attachment shall employ a RJ45 jack format for both input and output for video/data, two pairs of 24V power protection and an external grounding screw.
3. Power protection shall be clamped at a maximum of 47 volts AC.
4. Reaction time of the surge protection device shall be in pico seconds.
5. The protective devices shall be placed at all outdoor camera locations.
6. The protective device shall be placed in the camera housing, or in a separate weatherproof enclosure.
7. Manufacturer: Ditek DTK-PVPIP, DTK-MRJPOE or integral built in surge protector.

D. Grounding:

1. Provide Telecommunication Rack Grounding Kit.
2. Provide No. 6 AWG copper bonding conductor.
3. Provide one hole compression lugs for bonding conductor terminations.
4. Provide ground from DVS equipment rack to MDF Main Grounding Bussbar.
5. Provide ground from MDF ladder tray to MDF Main Grounding Bussbar.
6. Comply with Division 17 Section, "Cabinets, Racks and Enclosures," for grounding requirements.

2.2 ENCLOSURES AND RACKS

A. DVS Concentrator Remote Enclosure (CRE):

1. General: The wall-mounted metal enclosures shall be used to house, secure and protect remotely located DVS equipment from environment, vandalism, etc., in various rooms of the Chicago Public Schools. This enclosure shall also serve as a zone limiting the cabling distance of any DVS camera to 295 feet throughout the school. The unit shall consist of basic enclosures plus accessories required for fully functional system.
2. Concentrator enclosures shall serve as the CRE for the DVS system. Subject to compliance with requirements in Division 17 Section, "Cabinets, Racks and Enclosures."
   a. Enclosure shall have thirteen (13) rack-mount spaces minimum. Vertical rails shall provide front-to-back adjustment of one-inch (1") minimum or extension brackets for vertical hub enclosures. Enclosure shall be gasketed to provide environmental protection.
   b. Enclosure body and door shall be provided with welded grounding studs on both sides so that the enclosure and the door can both be grounded using flexible copper braids, with the door hinge installed on either side.
3. Provide Fan and Fan Filter Kit accessory for CRE.
4. Power shall be an isolated ground quadruplex receptacle, connected to a 20amp, single pole breaker.
5. Provide master key for lockable cabinet.
6. The CREs shall be primarily located in Storage or Office Rooms. Classroom locations are to be avoided.
7. In existing schools, provide the CRE adjacent to the existing concentrator enclosure with working space of 4-inches to 6-inches between enclosures. The two enclosures will be connected by a 2-inch conduit. Service to the new CRE will be provided by a fiber patch cord from the 3rd/4th fiber on the existing fiber backbone from the originating concentrator enclosure.
8. In existing schools where new camera distances exceed 295 feet from the closest concentrator enclosure, a new CRE will be provided per specifications.

B. Equipment Rack:

1. Subject to compliance with requirements in Division 17 Section, "Cabinets, Racks and Enclosures," for communications floor-mounted rack and wire management panels.
2. Provide with double-side vertical wire management on each side.
3. Provide dedicated power, twelve (12) isolated ground duplex receptacles and one isolated ground simplex receptacle connected to five 20-amp circuits, single pole breaker and dedicated power connection to support the equipment rack UPS from the MDF panelboard to MDF Security Systems Rack. (See MDF Rack Detail)

2.3 SIGNAL TRANSMISSION COMPONENTS

A. DVS-UTP Cable:

1. A Category 6 solution is provided subject to compliance with all requirements as described in Division 17 Section, "Communications Horizontal Cabling."
2. All DVS-UTP cables shall meet or exceed the following UL listing:
   a. UL 1690, Data-Processing Cable defining DP-3 or DP-3P listings.
   b. UL 444, Communications Cable.

3. Jacket Color: Purple

B. DVS Power Cable:

1. For outdoor camera installations only: in addition to the DVS-UTP cable, a power cable shall be a minimum No. 16 AWG 2-conductor, stranded copper conductor construction. Size of cable is based on voltage drop and camera requirements. This cable is used to feed 24 VAC from a local power supply and shall be provided for each outdoor camera.

C. DVS Backbone Cable (up to 150 meters): Subject to compliance with requirements in Division 17 Section, "Optical Fiber Backbone Cabling." Provide Indoor 10G/150M Multimode Fiber-Optic Cable: 50/125-micrometer, laser-optimized multimode optical fiber, capable of 10-Gigabit Ethernet transmission up to 492 feet (150 meters), for use in indoor-applications only.

1. Strand Count: 6 (MDF to enclosures);
2. Minimum OFL Bandwidth: 700 MHz-km at 850 nm; 500 MHz-km at 1300 nm, as characterized by OFL (overfill launch) measurement per EIA/TIA-455-204.
3. Cable shall meet or exceed the OM3 standard.
4. Sheathing Color: Aqua

D. DVS Backbone Cable (up to 300 meters): Subject to compliance with requirements in Division 17 Section, "Optical Fiber Backbone Cabling." Provide Indoor 10G/300M Multimode Fiber-Optic Cable: 50/125-micrometer, laser-optimized multimode optical fiber, optimized for VCSEL-based transmission of 10-Gigabit Ethernet up to 984 feet (300 meters), for use in indoor-applications only.

1. Strand Count: 6 (MDF to enclosures);
2. Minimum Effective Modal Bandwidth: 2000 MHz-km at 850 nm; 500 MHz-km at 1300 nm, as characterized by DMD measurement per EIA/TIA-455-220.
3. Cable shall meet or exceed the OM3 standard.
4. Sheathing Color: Aqua

E. DVS UTP Connecting Hardware:

1. DVS Jacks Category 6:
   a. Subject to compliance with requirements in Division 17 Section, "Communications Horizontal Cabling."
   b. DVS jacks shall be modular and not a permanent element associated to a faceplate.
   c. DVS Jack Color: Purple

2. DVS Patch Panels Category 6:
   a. Subject to compliance with Category 6 requirements. Subject to compliance with requirements in Division 17 Section, "Communications Horizontal Cabling."
   b. DVS patch panels in 16, 24, and 32-port configurations shall have 110 IDC conductor terminations and shall be capable of terminating 22 - 24 AWG solid copper conductors without damaging jack.
   c. Patch cable length determined by rack layout.
   d. Provide one patch cord for each information outlet.
   e. Color requirements:
      1) DVS Jacks for insertion into DVS patch panels shall be purple color.
      2) Color: Black mounting plate with purple RJ45 jacks.

2.4 PATHWAYS

A. General Requirements: Comply with TIA/EIA-569-A.

B. Ladder Rack Runway: Comply with requirements in Division 17 Section, "Cabinets, Racks and Enclosures."

1. Used for routing of communications cabling within MDF and IDF rooms.

C. Conduit and Boxes: Comply with requirements in Division 16 Section, "Raceway and Boxes." Flexible metal conduit shall not be used.

1. Outlet boxes shall be no smaller than 4 inch square by 2-1/2 inches deep, fitted with single- or double-gang trim plates to accommodate single- or double-gang communications faceplates as coordinated with Contract Drawings and outlet configuration.

PART 3 - EXECUTION

3.1 WIRING METHODS AND INSTALLATION OF PATHWAYS

A. Wiring Method: Install cables in dedicated, concealed raceways for DVS System cabling.

1. Comply with requirements for raceways and boxes and their installation specified in Division 16 Section "Raceways and Boxes."
2. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
3. Utilize wide sweeping radius bends and elbows.
4. DVS system shall have dedicated conduit raceway system. No other system wiring shall be allowed in the DVS raceway.

B. Wiring within Enclosures: Bundle, lace, and train cables to terminal points without exceeding manufacturer's limitations on bending radii. Provide Velcro straps- cable ties are not allowed. Provide service loop per requirements of this Section. Provide and use lacing bars and distribution spools.

C. Wiring within MDF and IDF: Bundle, lace, and train cables to terminal points without exceeding manufacturer's limitations on bending radii. Provide Velcro straps – cable ties are not allowed. Provide service loop per requirements of this Section. Utilize overhead ladder rack runway for cable routing within room(s).

1. Coordinate with contractor on installation of dedicated floor-mounted rack for DVS system equipment. Coordinate location adjacent to structured cabling floor-mounted racks.

D. Comply with requirements for ladder rack runway, cabinets, and racks specified in Division 17 Section, "Cabinets, Racks and Enclosures." Drawings indicate general arrangement of pathways and fittings.

E. Additions to Existing Schools: Raceways and conduit shall be fully concealed, except where concealment cannot be achieved due to existing, unforeseen conditions. Exposed wiremold raceways are not acceptable.

1. Where raceways or conduit are proposed to be exposed, those installations shall be reviewed, and approved in writing, by CPS Office of Safety and Security prior to the start of the Work.

F. Existing Schools: For existing school with a CCTV system to be removed and new DVS system to be installed:

1. Contractor shall remove all RG59 coax abandoned by the removal of the CCTV system.
2. All raceways and conduit shall be fully concealed within existing construction, except where concealment cannot be achieved due to existing, unforeseen conditions. Exposed wiremold raceways are not acceptable.
   a. Where raceways or conduit are proposed to be exposed, those locations and installations shall be reviewed, and approved in writing, by CPS Office of Safety and Security prior to the start of the Work.

3. Contractor shall utilize conduit raceway in hidden areas only.

3.2 GENERAL INSTALLATION

A. Install all equipment and components in accordance with manufacturer’s written instructions, in compliance with CEC, and with recognized industry practices, to ensure that all items comply with specifications and service intended purposes.

B. Record serial numbers of all items furnished that are serialized. Serial numbers to be included in warranty manual.

C. Pulling Cable: Do not exceed manufacturer's recommended pulling tensions. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between indicated termination, tap, or junction points. Remove and discard cable where damaged during installation and replace it with new cable.

D. Terminations: Terminate UTP cables in CRE and MDF room on patch panels. Terminate DVS cables at outlets. Leave 12 inches of slack DVS cable at each outlet box and label cable and outlet box cover plate.

E. Labeling:

1. Identify system components, wiring, cabling, and terminals. Subject to compliance with requirements in Division 17 Section, "Identification for Communications Systems," and Division 16 Section, "Electrical Identification."
2. Power supply and equipment used, must be labeled “Class 2”.
3. Outlets: Label cables within outlet boxes.
4. Distribution Racks and Frames: Label each unit and field within that unit.
5. Within Connectors Fields, in MDF Room and CRE: Label each connector and each discrete unit of cable-terminating and connecting hardware.
6. Cables, Generally: Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
7. Head End Equipment: Provide labels on the front of the equipment to identify port number, IP address, subnet mask, and gateway and using a professional labeler
8. Provide labeling for all cameras.
9. Utilize label equipment that is professional grade.

F. Cable Schedule: Post at a prominent location in each CRE and the MDF room. List incoming and outgoing cables and their designations, origins, and destinations. Provide a diskette copy of final comprehensive schedules for the project in the software and format selected by the Board.

3.3 FIELD QUALITY CONTROL

A. Inspection: Inspect for physical damage and test cable for continuity and shorts. Test cable segments for faulty connectors, splices, terminations, and the integrity of the cable and its component parts. Test and submit reports in accordance with Division 16 Testing.

B. Subject to compliance with requirements in Division 17 Section, "Commissioning of Communications," DVS-UTP Cable Testing Procedures:

3.4 COMMISSIONING

A. Comply with requirements in Division 17 Section “Commissioning of Communications” for performance tests, inspections, correction of deficiencies, and preparation of test and inspection reports (excluding commissioning of DVS System and Components specified in Section 16782B).

3.5 DEMONSTRATION/TRAINING

A. Provide eight hours for a pre-installation walk-through with PBC’s Equipment and Programming contractor. Schedule and conduct meeting.

B. Provide an additional four hours of technical review with PBC’s Equipment and Programming contractor.

3.6 CLEANING

A. On completion of installation inspect exposed finishes. Remove burrs, dirt, paint spots, and construction debris. Repair damaged finish(es), including chips, scratches, and abrasions.

B. All finishes shall be cleaned prior to final acceptance. Unless otherwise indicated, clean shall mean free of dust, dirt, mud, debris, oil, grease, residues, and contamination.

C. Protect and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion. Protect conduit and wireway openings against the entrance of foreign matter by means of plugs or caps. Cover fixtures, materials, equipment and devices furnished or installed under this section or otherwise protect against damage, both before and after installation.

END OF SECTION

SECTION 16782B

DIGITAL VIDEO SURVEILLANCE SYSTEM COMPONENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the materials and components, including programming for a complete Digital Video Surveillance (DVS) System.

1. Interconnections to LAN and WAN networks.
2. Final adjustments and system check out.
3. Training of Owner's personnel.
4. Dell Server hardware equipment, including directory server, storage arrays, and archive server.
5. Cisco PoE Switches.
6. Dell Viewing stations.
7. Server hardware equipment.
8. DVS Cameras, Housings and Hardware.
9. Patch cords.

B. To provide and install IP-based video surveillance system, cameras and supporting equipment through-out the facility as shown on contract documents:

1. CPS to provide software and programming on installed network electronic (PoE) switches.
2. CPS to provide Software and programming for Installed Work Stations and Servers.
3. Provide software Licenses quantity as indicated in contract documents.
4. Provide IP-cameras aiming, programming and interconnection to the CPS OSSS and the OEMC surveillance systems. The remote access feature shall be included in the installation. All communications between the Contractor and CPS OSSS and OEMC shall be through the Commission Representative.

C. Work by others under Section 16782A to be verified and accepted by the Contractor:

1. Cabling including fiber-optic cabling.
2. DVS concentrator remote enclosures (CRE).
3. Equipment mounts and racks.
4. Un-interruptible power supply (UPS).
5. Wall mounted plywood panels.
6. Conduit, backboxes, electrical service.
7. Certification of installed cable.
8. All connections and terminations.

1.2 SYSTEM REQUIREMENTS

A. General:

1. The installation of the DVS system shall be done under the direct supervision of an experienced technician, licensed by the Authorities Having Jurisdiction, who is trained and approved by the manufacturer to install an IP-based video surveillance system, cameras, and supporting equipment, utilizing structured telecommunications cabling infrastructure.
    a. The DVS system shall record and store images so to ensure they are admissible as evidence in a Court of Law.

B. Programming:

1. Camera default viewpoints shall be determined and reviewed by CPS OSSS. Adjustments shall be made in the field as required by CPS OSSS. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.
    a. If a camera's viewpoint is altered remotely, the camera shall return to its default viewpoint when control is electronically relinquished, or after a predetermined period of inactivity.
2. Coordinate and program IP cameras to be interconnected with surveillance system software graphical user interface headend located per CPS via the Campus Local Area Network.
3. Camera Control – Hierarchy: Control of cameras shall be provided to the groups/agencies, in the order of priority, indicated below. If a camera has been accessed by one of the groups/agencies indicated, those lower in the priority list shall not be allowed access until control is relinquished; those higher in the priority list shall be able to override control/access by those lower in the list.
    a. Chicago Police Department (CPD).
    b. Chicago Public Schools Office of Emergency Management and Control (OEMC).
    c. Chicago Public Schools Office of School Safety and Security.
    d. The school (Principal's office, security office, etc.)
    e. Other entities, as directed by CPS Office of School Safety and Security.
    f. The Public Building Commission (PBC).

C. Surge Protection: Verify surge protection infrastructure and devices installed by others are in place and functional for equipment provided by this section. Make connections and terminations as required to components, CRE and MDF room equipment provided by this section.

D. Installation – Existing Facilities:

1. For existing schools, review existing conditions within the building(s) and proposed or anticipated methods for the installation of conduit, raceway, pullboxes, and other components and devices included as part of the system design.
2. Final installation of cameras, housings, and other exposed devices shall be performed after finish work, including painting, has been completed.
3. Existing cameras that are removed shall be delivered to the CPS Office of School Safety and Security.

4. Where existing cameras, boxes, conduit, and related services are removed, as indicated on the Drawings, the existing wall and ceiling surfaces shall be patched in a workmanlike manner so to eliminate all visual evidence of patching and refinishing.
    a. Finish restoration and repair shall be extended into adjoining construction as required to eliminate all visual evidence of patching and refinishing, with the finished surface uniform in finish, color, texture, and appearance.
    b. Patching of surfaces on the building exterior shall be performed in a manner that restores the building enclosure to a weathertight condition.
    c. Patching of surfaces that are exposed on the building exterior, or in occupied spaces, shall NOT be performed in a manner that would, in either the Architect's or Owner's opinion, reduce the building's aesthetic qualities.
        1) Work that has been performed in a visually unsatisfactory manner, in either the Architect's or Owner's opinion, shall be removed and replaced at no additional cost to the Owner.

1.3 DEFINITIONS

A. DVS: Digital Video Surveillance.

B. CRE: Concentrator Remote Enclosure.

C. MDF: Main Distribution Facility.

D. ITS: CPS Information Technology Services at 125 S Clark.

E. OEMC: Office of Emergency Management and Communication 1411 W Madison.

F. OSSS: CPS Office of School Safety and Security at 125 S Clark.

G. SSC: CPS Student Security Center at 125 S Clark.

H. Commission: The Public Building Commission of Chicago, a municipal corporation organized under the Public Building Commission Act of the State of Illinois, as amended, or its duly authorized officers or employees.

I. Commission Representative (CR): means the person assigned, in writing, by the Executive Director to be the Commission’s Representative for the project.

J. Contractor or Installer: means DVS System Integration Contractor as the entity entering into the Contract with the Commission to perform the Work required by the Contract Documents.

K. CPS means The City of Chicago Board of Education: Chicago Public Schools, 125 South Clark St, Chicago, Illinois 60603

L. Architect: “Architect” or “Architect/Engineer” means any person or firm employed by the Commission for the purpose of designing the project.

1.4 SUBMITTALS

A. Concurrent Submittals: Submittals, including programming submittals, shall be simultaneously (concurrently) submitted by the Contractor to the Architect/Engineer and CPS OSSS. Responses to Contractor submittals may include, in addition to the AOR comments, comments from OSSS. OSSS comments shall be responded to by the Contractor in the same manner as AOR comments. Work related to the DVS system shall not proceed prior to receipt of final review comments from CPS OSSS. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.

B. Product Data: For each type of product specified. Including detailed manufacturer's specifications, data on features, ratings, dimensions, electrical characteristics, performance and finishes.

C. Schedule: Within ten (10) days following the pre-installation walk through, Contractor will provide a schedule indicating target completion dates that fit within the overall project schedule's substantial completion date and at minimum include the dates for the starting and completion of the various stages or phases of the Work, submittal and approval timeline of all required Submittals, the placing of material orders, delivery of materials and equipment, and interface activities performed by others upon which the Contractor's schedule depends.

1. The PBC shall provide the Contractor with a copy of the overall project schedule for reference.
2. The Contractor shall be required to complete their work within the timeframe established in the overall project schedule.
3. The Contractor may be required to install certain components concurrent as the infrastructure and backbone contractor is installing the cabling.

D. Shop Drawings: For video surveillance system, include plans, elevations, sections, details and attachment to other work.

1. Detail installed features and devices.
2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
3. Programming documentation using manufacturer's programming form and system layout work sheets. Procure CPS OSSS general programming requirements through the AOR.
    a. Responses to Contractor submittals may include, in addition to the AOR comments, comments from OSSS. OSSS comments shall be responded to by the Contractor in the same manner as AOR comments through the AOR. Programming submittals must be reviewed and approved by CPS Office of School Safety and Security prior to starting any work. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.
    b. Programming documentation shall include the following:
        1) Configure Cameras using IP Scheme.
        2) Configure Network Switch.
        3) Load Software.
        4) Install and configure servers and storage.

E. Coordination Drawings: drawn to scale, items are shown and coordinated with each other.

F. Equipment List: Include every piece of equipment by model number, manufacturer, serial number, location, and date of original installation.

G. Operation and Maintenance Data: For surveillance system components and equipment, to include in emergency, operation, and maintenance manuals. Include the following:

1. Programming instructions.
2. Programming disk.
3. Contact information for programming assistance.
4. Lists of spare parts and replacement components recommended to be stored at the site for ready access.

H. Installer qualifications.

I. Test Reports:

1. Final reports for startup testing and procedures identified in Article 3.8, "Contractor Startup and Reporting."

J. Warranty: as specified in this section.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Engage firms experienced in manufacturing systems and equipment similar to those indicated for this Project and that have a record of successful in-service performance.

B. Installer Qualifications: Award the digital video surveillance system work to a single firm that is specialized in the installation of digital video surveillance systems, who has successfully completed system installations in not less than three (3) projects of similar size and complexity, to the satisfaction of the Architect and PBC, in the last two (2) years, and whose work has resulted in a record of successful in-service performance. Provide a project listing of major projects, similar in scale and scope to the Project, completed in the last three (3) years. Include the project addresses and phone numbers of the Facility Director and Architect, if any, responsible for the project

C. The installer shall be factory trained (OMNICAST Certified level 2); authorized by the manufacturer(s) to install the products and components required for a complete system; employ technicians trained and familiar with Microsoft Networks and Cisco Systems network hardware and software, and capable of performing diagnostic testing and servicing of the system components; be licensed by the State of Illinois as a Private Alarm Contractor, licensed by the City of Chicago, and maintain a current P.E.R.C. (Blue) Card through the Illinois Department of Professional Regulation.

1. The installer shall provide telephone response within one hour and onsite service response within eight (8) hours of the initial call, with the system restored within twenty-four (24) hours of the initial call ninety percent (90%) of the time.
2. The installer shall maintain and provide a 24-hour help desk telephone number.

D. Pre-Installation Walk-Through: This Contractor shall attend and participate in a pre-installation walk-through with the AOR, PBC, CPS, and the backbone and infrastructure installing Contractor. The purpose of this walk through is to identify any deficiencies regarding conduit and raceways, location of outlets, terminal racks, backboards, pull box locations, point to point raceway routing, CRE, MDF, IDF and cable test result documents. Upon inspecting and reviewing the supplied data, Contractor is to certify in writing to the Owner that substrate conditions are in compliance with the requirements for final camera work.

1. The PBC shall provide the Contractor with a copy of the test reports for cable.

E. Pre-Installation Conference: Not less than 14 days prior to starting the DVS system work, conduct a pre-installation conference at the Project site to comply with requirements in Division 01 Section, “Project Management and Coordination." Attendees shall include representatives from OSSS, ITS, AOR, CR and Contractor. Review methods and procedures related to the DVS system installation including, but not limited to, the following:

1. Review construction schedule and verify availability of materials, equipment, installer personnel, and facilities needed to make progress and avoid delays.
2. Review preparatory work and procedures, including roughing-in of electrical and data wiring.
3. Review and confirm locations for cameras, both interior and exterior, and all other devices that are part of the system.
   a. In existing buildings, review removal, relocation, and/or removal of existing cameras.

4. Review requirements for MDF and/or IDF room(s), CRE’s and equipment installation.
   a. In existing buildings, review the MDF/IDF room(s), CRE’s and confirm any alterations, including installation of wall-mounted plywood panels, required for installation of system equipment and devices.

5. Review routing of conduit and locations of CRE.
6. Review required testing, inspections, and certifying procedures and anticipated dates.
7. Review training procedures for Owner's personnel and coordinate dates/times for training sessions.

F. Electrical Components, Devices, and Accessories: Listed and labeled as required by the City of Chicago Electrical Code.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not install electronic components until major construction work in the area is complete. Do not install in areas where dust or moisture can contaminate the working parts or where finish can be marred by construction work.

B. Deliver product to the project properly identified with names, model numbers, types grades, compliance labels, and other information needed for identification.

C. Store materials inside, protected from weather, in a secure location, in accordance with manufacturer's written instructions. Protect materials from construction activity and other potential sources of damage.

1.7 FIELD CONDITIONS

A. Do not deliver or store materials until building is enclosed and mechanical systems are operational and maintaining interior environment in accordance with manufacturer's requirements.

B. Do not install DVS system components exposed to view until after finish work, including painting, is complete.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form, executed by the manufacturer and installer, in which the manufacturer agrees to repair or replace components of the digital video surveillance system that develop defects in materials or workmanship within the specified warranty period. Warranty period shall begin on date of substantial completion.

1. Warranty Period for DVS System Components (except cabling/wiring): 3 years from date of acceptance by CPS Office of School Safety and Security and the Architect.

1.9 EXTRA MATERIALS

A. Deliver extra of the components indicated below, packaged with protective covering and identification labels, to the CPS Office of School Safety and Security. Provide a quantity equal to three percent (3%) of the quantity installed, but not less than two, of each item. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.

1. Fixed cameras.
2. PTZ cameras – Coordinate this requirement with CPS prior to bid.

1.10 MAINTENANCE SERVICE PROPOSAL

A. Continuing Maintenance Proposal: Provide a continuing maintenance proposal from the Installer for service and maintenance for the DVS system, starting on the date of substantial completion for a two year period. Include the following:

1. The continuing maintenance proposal shall be in the form of a standard one-year maintenance agreement. The agreement shall clearly outline services, obligations, conditions, and terms for agreement period and future renewal; include all necessary parts, labor and service equipment; and include the following basic services:
   a. Repair or replacement of any CCTV equipment item that fails to perform as initially installed, as specified, or as determined per the manufacturer’s performance criteria.
   b. Semi-annual preventive maintenance on the security equipment. This preventive maintenance shall include, but is not limited to, cleaning, realignment, inspection, and testing of security devices. The Owner shall receive a written report of these inspections that identifies each security device’s status and, if required, a list of all necessary repairs or replacements.
   c. Software maintenance on the security system. Installer shall install and configure, at no cost, any software updates that the manufacturer provides. Any additional

software features, upgrades, or enhancements purchased by the Owner shall be installed. The cost of Owner requested software upgrades shall be outside of this service contract.

d. Provide flash, EEPROM or other firmware upgrades as required.

2. The Contractor shall be compensated for any repairs or maintenance provided as a result of Owner abuse, misuse, intentional damage, accidental damage, or power fluctuations exceeding specified equipment tolerances.

3. System defects or failures shall be corrected within four (4) hours on the same business day if the Owner makes a service request before 11:00 a.m., or before 12:00 noon the next business day if the Owner makes the request after 11:00 a.m. If requested by the Owner, the Contractor shall respond or remain at the site after normal business hours, and the Owner shall reimburse the Contractor for the incremental cost difference between premium labor rates and standard labor rates. This reimbursement applies to premium labor rates that do not exceed time-and-one-half rates after normal business hours, and double-time rates for Sundays and holidays. The Contractor's services shall be performed in a professional manner and remain free from defects for a period of one (1) year.

B. Provide complete terms and conditions of warranty and services.

C. The Owner will enter into a contract directly with the Vendor. This specification is not a contract between the Owner and the Vendor to perform these services.

PART 2 - PRODUCTS

2.1 CAMERAS POWER SUPPLY

A. Typical Indoor IP Fixed Camera and Housing:

1. Fixed Vandal-Resistant MegaPixel Dome Camera. Subject to compliance with the requirements of this section, one of the following:
   a. Axis P3304-V
   b. Sony SNC-DH120T

2. Fixed cameras shall include the following features for optimal performance within a school environment:
   a. Power-over-Ethernet (PoE) IP Camera: Providing power and data transmission via a single Category 6 cable (up to 295 feet)
   b. Vandal-Resistant Dome: IP66 weatherproof hardened enclosure with security screws.
   c. Integrated Sensor: One-half inch (1/2") sensor for low light capabilities and sharper imagery.
   d. Resolution: Up to 3 MegaPixels of resolution for facial identification at 30 feet.
   e. Streaming: Multiple streaming (up to eight) at variable resolutions and frame rates.
   f. Compression: H.264 compression.

3. Mounting: Cameras shall be wall-mounted.

a. Ceiling-mounted cameras are allowed only upon prior review and approval, in writing, by CPS Office of School Safety and Security.

4. All cameras shall be capable of electronic light control for low light (day /night) conditions. Camera shall provide color images when sufficient light is present and automatically provide black and white images during low light and night conditions. Camera shall have the ability to autoback focus.
5. All cameras shall have automatic iris control with manual override.
6. Cameras shall be housed in vandal resistant, low profile, smoke mini-dome enclosures.
7. Camera shall have intelligent video motion detection feature.

B. Typical Exterior IP Fixed Camera and Housing:

1. Fixed Vandal-Resistant MegaPixel Dome Camera. Subject to compliance with requirements one of the following:
   a. Axis P3346-VE
   b. Sony SNC-DH260

2. All exterior dome cameras shall be mounted utilizing vandal proof outdoor wall mounted mounting brackets.
3. Provide smoke domes.
4. Provide 10 Watt heaters.

C. Specialty Fixed Camera:

1. Table 1: Sensor Size and Normal Field of View

Sensor Size	Normal Lens
1”	25mm
2/3”	16mm
1/2”	12mm
1/3”	8mm
1/4”	6mm

D. Typical Exterior IP PTZ (Pan-Tilt-Zoom) Cameras:

1. HD PTZ dome cameras. Subject to compliance with requirements, one of the following:
   a. Axis P5534-E
   b. Sony SNC-RH164

2. Outdoor IP DVS Camera and Housing:
   a. Provide IP PTZ Camera with minimal 18X zoom capabilities.
   b. All cameras shall be capable of electronic light control for low light (day /night) conditions. Camera shall provide color images when sufficient light is present and automatically provide black and white images during low light and night conditions.
   c. All cameras shall have automatic iris control with manual override.

d. All lenses shall be selected based on the application and view angle for maximum coverage as placed in drawings.
e. The integrated DVS camera enclosure shall be provided with a manufacturer's warranty covering repair or replacement of defective parts for period of two years from the date of shipment.
f. Cameras shall be vandal resistant, low profile, mini-dome enclosure.
g. Outdoor enclosures shall have a heater element and sun shields.
h. PTZ cameras shall be corner mounted for a 270 degree field of view with gooseneck mounts, whenever applicable.
i. Provide Power-over-Ethernet (or High Power-over-Ethernet) with significant voltage to power the internal heater and cooling function.

E. Typical Indoor IP PTZ (Pan-Tilt-Zoom) Cameras:

1. HD PTZ dome cameras. Subject to compliance with requirements, one of the following:
   a. Axis P5534
   b. Sony SNC-RH124

2. Indoor IP DVS Camera and Housing:
   a. Provide IP PTZ Camera with minimal 18X zoom capabilities.
   b. All cameras shall be capable of electronic light control for low light (day /night) conditions. Camera shall provide color images when sufficient light is present and automatically provide black and white images during low light and night conditions.
   c. All cameras shall have automatic iris control with manual override.
   d. All lenses shall be selected based on the application and view angle for maximum coverage as placed in drawings.
   e. The integrated DVS camera enclosure shall be provided with a manufacturer's warranty covering repair or replacement of defective parts for period of two years from the date of shipment.
   f. Cameras shall be vandal resistant, low profile, mini-dome enclosure

2.2 POWER AND GROUNDING REQUIREMENTS

A. Power Supplies:

1. All power supplies shall be Altronix or Pelco, UL listed power supplies with appropriate number of camera inputs. Provide rack mount power supplies in CRE/MDF rack locations. Provide wall mount power supplies within 75 feet of exterior cameras if exterior cameras power requirements exceed PoE or high PoE standards.

2.3 HARDWARE AND SOFTWARE

A. Viewing Workstations: Hardware provided and installed by CPS. Video Management Software furnished, installed and programmed by Contractor.

1. Genetec Omnicast Client Station Requirements:
   a. Dell Work Station
   b. Intell ® Core ® 2 Quad Processor Q9400 (2.66Ghz, 1333MHz FSB)
   c. 4GB DDR2 Non-ECC SDRAM
   d. 2 x 250 GB Hard Drive.

e. 256MB ATI Radeon HD3450 Dual Monitor Video Card.
f. 1600 x 1200 or higher screen resolution.
g. 10/100/1000 Ethernet network Interface Card, wireless card.
h. 16x DVD +/- RW Drive.
i. AX510 Sound Card.
j. 17" UltraSharp 1708FP flat panel monitor, integrated Gigabit.
k. Win XP Pro, Office 2003, CPS Image, Keyboard, Optical Mouse.

2. Provide three (3) viewing workstations. The following locations shall be provided with viewing workstations:
   a. Grade Schools:
      1) Principal's Office.
      2) Secretary/Engineer's Office.
      3) Security Station/Desk.

3. View stations shall be connected to local data outlet routed from local concentrator or MDF Room.

B. Switches: Hardware and Software furnished, installed and programmed by CPS.

1. For CRE: Provide 24 Port Gigabit Fiber/POE/Ethernet Switch.
2. For MDF Security System Rack Fiber Backbone from CRE: Provide 12 Port Gigabit Fiber/POE/Ethernet Switch
3. For MDF Security System Rack: Provide 24 Port Gigabit Fiber/POE/Ethernet Switch

C. Software and Servers

1. The Genetec Omnicast Enterprise 4.6 (or higher) is the Video Management System software to manage all the cameras, and connections. The base license includes four (4) client/user connections and the quantity of device licenses is determined by the number of camera connections.
2. Archiving requires a physically separate server, as all archiving should be done on completely separate machines so not to slow down the directory and gateway functions. There is a maximum of 75 cameras per 25TB Archive machine.
3. Additional Federation Server Licenses are a requirement to link each additional school implementation to the CPS (SSC) Student Security Center and the Office of Emergency Management and Communication (OEMC).
4. The software shall be based on a true open architecture that shall not limit the storage capacity and shall allow for gradual upgrades of recording capacity.
5. Required Licenses Include:
   a. Genetec Omnicast Enterprise 4.6 (or higher) base license includes:
      1) One 75 camera/25TB Archiver (on directory machine, camera licenses not included)
      2) Gateway - 8 camera connections – 4 client/user connections
      3) Maps/Procedures – Camera Sequences - Audio Support – Webpack
      4) Virtual Matrix
      5) Macros
      6) Keyboard connection
      7) Alarm Management Module
      8) Local Archiving

9) Offline archiving
10) Time Zone Support

b. Genetec Additional Camera Licenses based upon the number of camera connections.

6. Provide latest version of Genetec software to date of Bid Project.
7. Omnicast Software requirements:
   a. Operating System: (CPS Preferred Server OS)
      1) Microsoft ® Windows Server ® 2008 Standard Edition SP2 32-bit/64-bit.
      2) Microsoft ® Windows Server ® 2008 Enterprise Edition SP2 32-bit/64-bit.
      3) Microsoft ® Windows Server ® 2008 Standard/Enterprise Edition R2 64-bit.

   b. Databases: (CPS Preferred SQL Version)
      1) SQL Server 2008 Express/Standard/Enterprise.

   c. Browsers: (CPS Preferred Browser)
      1) Internet Explorer 7(for Web Clients).

D. Server (Gateway Directory and Archive Server (s) Hardware Environment Hardware provided and installed by CPS. Software furnished, installed and programmed by contractor.

1. Network device rack with adequate space for required equipment within an environmentally controlled environment or enclosure. If using a two post rack, center-mount rails must be purchased to properly mount servers and storage arrays.
2. Provide the server hardware environment to support the DVS/Genetec Software Solution.
3. The Storage capacity and configuration shall be scalable based on specific application needs without modification to the base video management software package.
4. All hardware platforms will be capable of mounting in a standard nineteen inch (19") equipment rack and accepting power, network and other standard IT wiring connections.
5. The video management software manufacturer and camera manufacturer shall provide storage per camera required based tool to calculate hardware requirements for the specific recording configuration to be managed by the video management software server. In order to determine the hardware storage requirements that are best suited for the actual application coordinate with the video management software manufacturer.
6. For Storage Hardware Calculations: Provide storage capacity use 3MP (2048 x 1536) resolution with 30% compression, 12 FPS 7am to 6pm and 6 FPS 6PM to 7am, and 30 days retention.
7. Server Hardware shall be packaged from DELL.
8. Recommended Server Specifications:
   a. Dell PowerEdge R710 with Chassis for Up to 6, 3.5-Inch Hard Drives and Intel 56XX Processors
   b. 48GB Memory (12x4GB), 1333MHz Dual Ranked RDIMMs for 2 Processors
   c. 2 X Intel Xeon X5677, 3.46Ghz, 12M Cache,Turbo, HT, 1333MHz Max Mem
   d. 6 X 1TB 7.2K RPM Near-Line SAS 6Gbps 3.5in Hotplug Hard Drive
   e. PERC H700 Integrated RAID Controller, 512MB Cache, x6
   f. High Output Power Supply Redundant, 870W
   g. iDRAC6 Enterprise

h. At least one additional storage controller may be needed for each additional storage array that must be added.
i. Dell PowerVault MD1200 Direct Attach Storage Array with 12x2Tb 7200K SAS hard drives.
j. Mission Critical Package: 4-Hour 7x24 On-Site Service with Emergency Dispatch for three (3) years for both server and storage array.
k. Rack mount 17" Keyboard/Monitor combo.
l. 8-Port KVM Switch to control Gateway and Archive servers
m. Rack mount PDU for servers (APC or compatible)

9. At a minimum one Genetec Gateway Directory Server and one Genetec Archive Server will be required. Additional Archive servers may be required to meet the needs of the installation. The number of servers required will depend on the total number of cameras as well as the camera used. Another determining factor will be the amount of motion. The greater the motion, the greater the use of storage. Below is an example of an Arecont 80 camera implementation, using 3MP (2048 x 1536) resolution, 30% compression, 12 FPS 7am to 6pm and 6 FPS 6PM to 7am, and 30 days retention. Max throughput of about 308 Mbps or 3.86 Mbps per camera.
   a. Storage:
      1) 26.5 TB for 13 hours overnight.
      2) 44 TB for 11 hours daytime.
      3) 70 TB total Storage required.

2.4 SIGNAL TRANSMISSION COMPONENTS

A. DVS UTP Connecting Hardware:

1. DVS Jacks Category 6:
   a. Subject to compliance with requirements in Division 17 Section, "Communications Horizontal Cabling."
   b. DVS jacks shall be modular and not a permanent element associated to a faceplate.
   c. DVS Jack Color: Purple

2. DVS Patch Panels Category 6:
   a. Subject to compliance with Category 6 requirements. Subject to compliance with requirements in Division 17 Section, "Communications Horizontal Cabling."
   b. DVS patch panels in 16, 24, and 32-port configurations shall have 110 IDC conductor terminations and shall be capable of terminating 22 - 24 AWG solid copper conductors without damaging jack.
   c. Patch cable length determined by rack layout.
   d. Provide one patch cord for each information outlet.
   e. Color requirements:
      1) DVS Jacks for insertion into DVS patch panels shall be purple color.
      2) Color: Black mounting plate with purple RJ45 jacks.

3. DVS Work area Patch Cords Category 6:
   a. Subject to compliance with Category 6 requirements. Subject to compliance with requirement in Division 17 Section, "Communications Horizontal Cabling."
   b. Patch cords shall be in the configuration of a four (4) pair, unshielded twisted pair design, stranded copper conductor construction.

1) The patch cord insulation shall be PVC and shall be UL rated as CM or CMR.
2) All patch cables shall be component compliant to TIA/EIA Category 6 requirements.
3) All patch cords shall meet or exceed the TIA/EIA-568-B.2.1 worst-case electrical characteristics.
4) Patch Cord Color: Purple

c. Provide 6 foot work area patch cable length.
d. Provide one patch cord for each information outlet.
e. Provide one patch cord for each port.

B. DVS Backbone Connecting Hardware, Patch Cords and Optical Cable Connectors:

1. Comply with Fiber Optic Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-B.3.
2. Fiber Optic Termination Housing: Rack-mount, with multi-numbered, duplex connector insert adapter panels holding fiber optic strand connectors.
   a. Optical Fiber Connecting Hardware subject to compliance with requirements in Division 17 Section, "Optical Fiber Backbone Cabling."
   b. Size – Concentrator Enclosures: (1) rack unit height; sized to accommodate a total of two (2) adapter panels.
   c. Size – MDF/IDF: (3) rack units height, sized to accommodate at least six (6) adapter panels.

3. Patch Cords:
   a. Optical Patch Cords subject to compliance with requirements in Division 17 Section, "Optical Fiber Backbone Cabling."
   b. Patch cords shall be of same manufacturer and consistent with components and performance level of cross-listed solutions indicated in this Section.
   c. Specification of fiber optic patch cord to match fiber optical backbone served by cord.
   d. Patch cable length determined by rack layout.

4. Optical Cable Connectors:
   a. Optical Fiber Connecting Hardware subject to compliance with requirements in Division 17 Section, "Optical Fiber Backbone Cabling."

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Install all equipment and components in accordance with manufacturer's written instructions, in compliance with Chicago Electrical Code (CEC), and with recognized industry practices, to ensure that all items comply with specifications and service intended purposes.

B. Record serial numbers of all items furnished that are serialized. Serial numbers to be included in warranty manual.

C. Terminations: Terminate UTP cables in CRE and MDF room on patch panels. Terminate DVS cables at outlets. Leave 12 inches of slack DVS cable at each outlet box and label cable and outlet box cover plate.

D. Labeling:

1. Identify system components, wiring, cabling, and terminals. Subject to compliance with requirements in Division 17 Section, "Identification for Communications Systems," and Division 16 Section, "Electrical Identification."
2. Power supply and equipment used, must be labeled “Class 2”.
3. Outlets: Label cables within outlet boxes.
4. Distribution Racks and Frames: Label each unit and field within that unit.
5. Within Connectors Fields, in MDF Room and CRE: Label each connector and each discrete unit of cable-terminating and connecting hardware.
6. Cables, Generally: Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
7. Head End Equipment: Provide labels on the front of the equipment to identify port number, IP address, subnet mask, and gateway and using a professional labeler
8. Provide labeling for all cameras.
9. Utilize label equipment that is professional grade.

E. Programming/Configuring Coordinate with CPS OSSS for general programming requirements. Use manufacturers programming form and system layout work sheets provided by CPS. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.

1. Configure Cameras using IP Scheme.
2. Configure Network Switch.
3. Load Software.
4. Install and configure Video Management Software on servers and storage.
5. All cameras to be recorded in MDF on Storage Array Servers. All PTZ cameras to be programmed to tour outside areas per CPS Office of School Safety and Security designee. Tour of duty shall be interrupted by any computer loaded with software and shall resume after two minute idle time delay.
6. DVS System shall be connected to CPS’s LAN and WAN network through static IP addressing via the administration network side. Contractor shall obtain from the CPS-ITS group and program IP addresses into DVS Software Solution. Contractor shall provide the CPS Office of School Safety and Security emergency control center with new IP addresses.
7. The Contractor shall be responsible for installing the CPS approved settings for configuration of cameras, servers, storage, testing, training, and connectivity verified to CPS security and OEMC.

F. Mounting:

1. Camera locations and mountings shall be determined by CPS Office of School Safety and Security.
2. Exterior cameras (both fixed and PTZ) shall be mounted at a second floor level where possible, minimum of at least 15 feet above finished grade.
3. Interior cameras shall be wall-mounted, 10-inches below finish ceiling.

3.2 ADJUSTING:

A. Make adjustments or corrections for operation of the system. Obtain final approval from CPS Office of School Safety and Security Equipment Technician.

B. Follow the manufacturer's instructions to program the system and provide a copy of programming on CD-ROM disk in format required for downloading.

C. Adjust or replace system devices until all cameras are aimed and focused as directed by CPS Office of School Safety and Security. Installer's technicians shall be available for adjustments for a period of 30 consecutive days.

3.3 FIELD QUALITY CONTROL

A. Inspection: Inspect for physical damage and test cable for continuity and shorts. Test cable segments for faulty connectors, splices, terminations, and the integrity of the cable and its component parts.

B. Subject to compliance with requirements in Division 17 Section, "Commissioning of Communications," DVS-UTP Cable Testing Procedures:

3.4 COMMISSIONING

A. Comply with requirements in Division 17 Section “Commissioning of Communications” for performance tests, inspections, correction of deficiencies, and preparation of test and inspection reports.

3.5 DEMONSTRATION/TRAINING

A. Provide a minimum of (2) four hours of Technical training sessions for designated CPS Office of School Safety and Security representatives. Training shall include system programming, operation and maintenance procedures, and delivery of manuals required under Part 1.

B. Provide a four hour training seminar to be prescheduled with principal and selected staff on proper methods of live view, retrieval, setting PTZ tour patterns, printing photos, and saving crucial video shall be included from awarded vendor.

C. Provide a minimum of (2) two hours of refresher Technical training sessions for designated CPS Office of School Safety and Security representatives 30 days after the initial training session. Training shall include system programming, operation and maintenance procedures.

D. Provide a minimum of (2) two hours of Operator/User training sessions for designated CPS Office of School Safety and Security representatives. Training shall include system operation.

E. Provide a minimum of two hours of Operator/User training sessions for designated CPS Office of School Safety and Security representatives 30 days after the initial training session. Training shall include system operation.

3.6 CLEANING

A. On completion of installation inspect exposed finishes. Remove burrs, dirt, paint spots, and construction debris. Repair damaged finish(es), including chips, scratches, and abrasions.

B. All equipment, hardware and finishes shall be cleaned prior to final acceptance. Unless otherwise indicated, clean shall mean free of dust, dirt, mud, debris, oil, grease, residues, and contamination.

C. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion. Protect conduit and wireway openings against the entrance of foreign matter by means of plugs or caps. Cover fixtures, materials, equipment and devices furnished or installed under this section or otherwise protect against damage, both before and after installation. Hardware, materials, equipment, or devices damaged prior to final acceptance of the work shall be restored to their original condition or replaced.

3.7 CONTRACTOR STARTUP AND REPORTING

A. Vendor to set outdoor PTZ cameras for tours of duty (medium speed, medium distances). Tours shall have the ability to be set and interrupted by any computer loaded with Genetec software (per Principal's direction) and resume tours after two minute idle time.

B. Installer shall obtain and program IP addresses as well as all camera alpha descriptors into Genetec and verify connectivity to CPS Emergency Control Center at (773) 553-3335 and (773) 553-3001, Office of Emergency Management and Communication (OEMC), as well as connectivity on school computers. Identify port number, IP address, subnet mask, and gateway and using a professional labeler, label MDF headend equipment with this information. All communications between the Contractor and CPS OSSS and OEMC shall be through the Commission Representative.

C. Installer shall load up to four (4) administrative school computers (the designated viewing workstations) with latest version of Genetec software (per Principal's direction) and leave copy of Genetec software with school Principal. All communications between the Contractor and CPS OSSS shall be through the Commission Representative.

END OF SECTION