

SHEET 2 OF 6
KEY PLAN FOR FENCES LOCATED WITHIN THE BRL
AND PS

NOTE:
 SEE L400-440 FOR PLANTED
 AREAS



R. McGREE & ASSOCIATES
 2011 FLORIDA AVE., 9TH FLOOR, WASHINGTON, DC 20001
 T: 202 426 2000

ASSOCIATE ARCHITECT:
herd coplan macht
 2000 OLIVE ST., 1120 ALEXANDRIA, VA 22304
 T: 703 382 7761
 F: 410 837 6232

Structural SK&A:
 1155 COMMERCE AVE. NW, STE. 100 WASHINGTON, DC 20038
 T: 202 659 2520

M.E.P. SETHY & ASSOCIATES:
 5185 MACHARTR BLVD NW, STE. 229 WASHINGTON, DC 20018
 T: 703 691 2115

Civil CDDI:
 4000 POWERS MILL RD, STE. 200 BELTSVILLE, MD 20705
 T: 301 937 3501

Technology Educational Systems Planning:
 49 Old Solomon's Island Rd, STE. 201 ANNEAPOLIS, MD 21401
 T: 410 573 0148

Acoustics Acoustical Design Collaborative LTD:
 7509 L HIRONSIDE CLUB RD FLUXUS, MD 21204
 T: 410 821 5930

Landscape Architect:
 Jordan Honeyman 711 Florida Ave NW WASHINGTON, DC 20001
 T: 202 986 0711

Kilchen Nyikos Associates:
 11211-A Flower Hill Way GAITHERSBURG, MD 20878
 T: 240 683 9530

MURCH ELEMENTARY SCHOOL
 4810 36TH ST., NW
 WASHINGTON DC, 20008

Project Number: 2015-4810

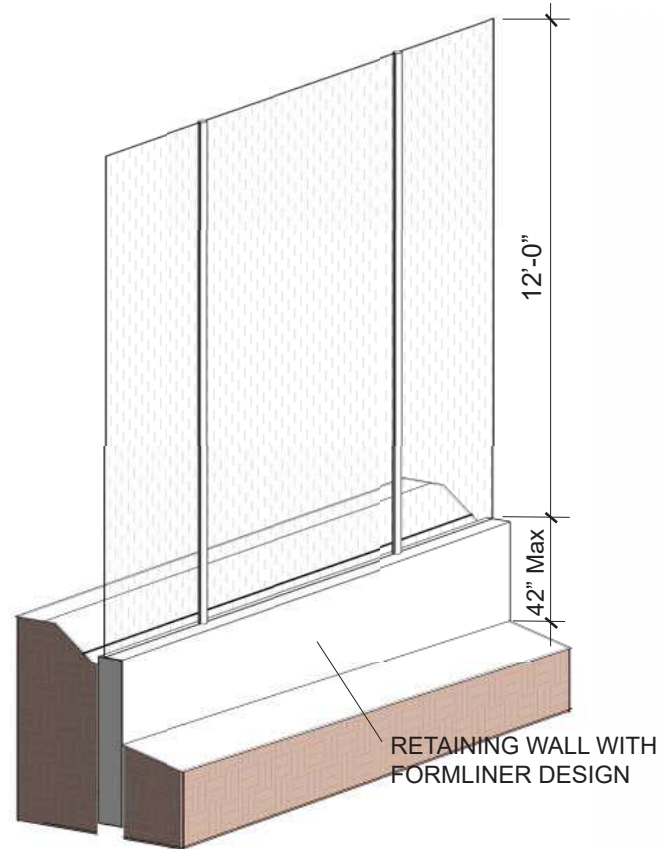
Revision Number	Revision Date	Revision Description
1	12.21.16	IFC

Issue Date: 12.21.2016

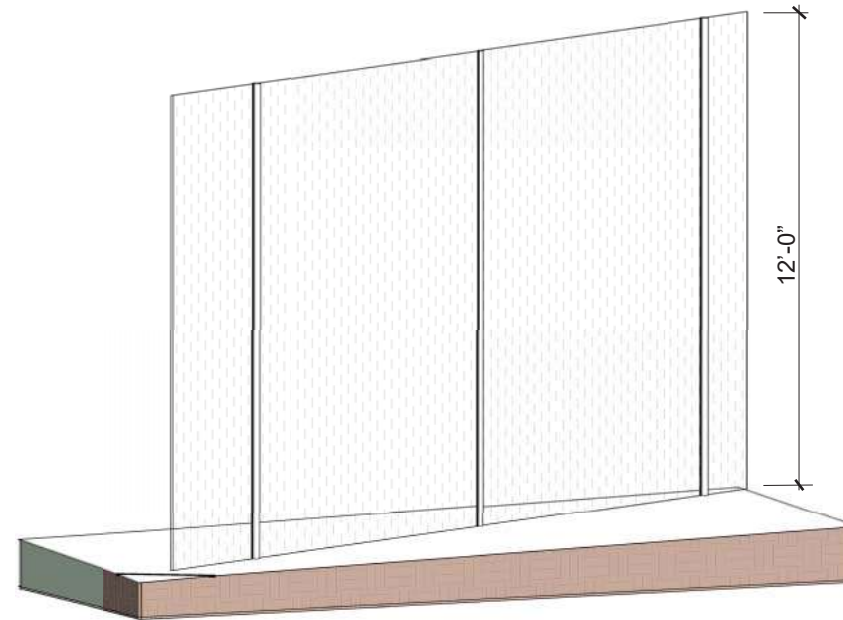
Sheet Title: SITE/LANDSCAPE PUBLIC SPACE PLAN

Sheet Number: 1200A

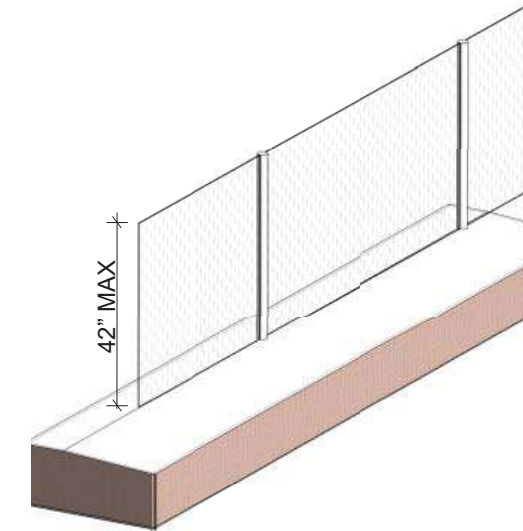
FENCING



1) FENCE ABOVE RETAINING WALL AT SOCCER FIELD



2) 12' FENCE ON GRADE AT SOCCER FIELD



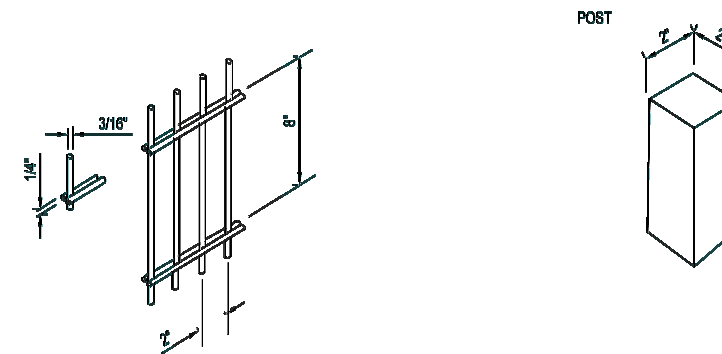
3) 42" FENCE ON GRADE



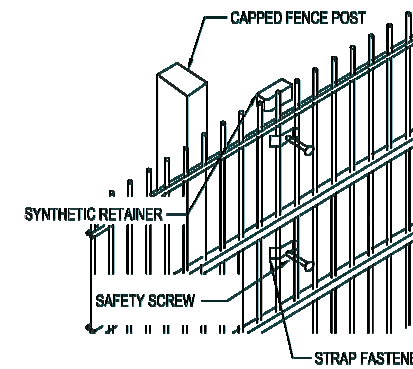
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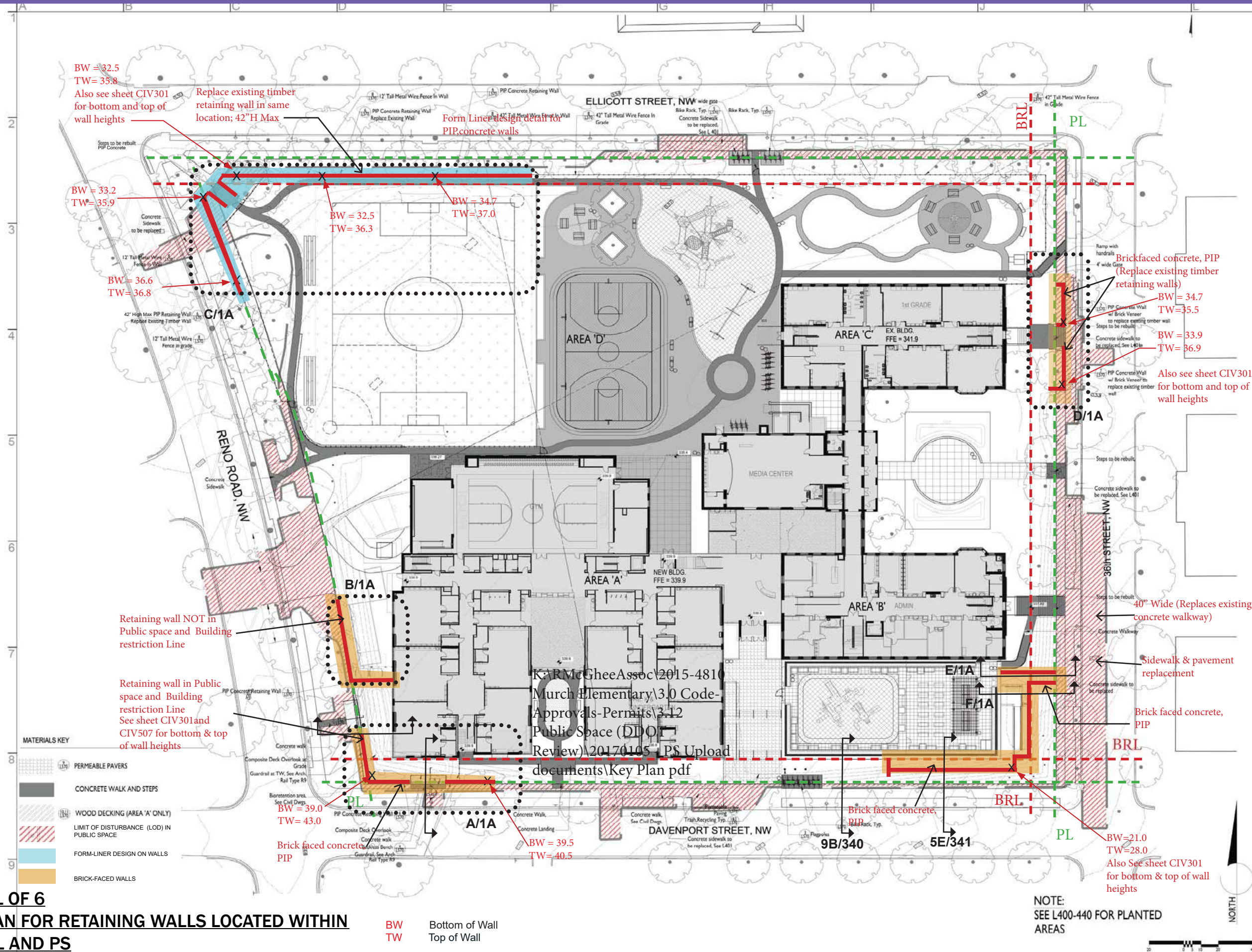
**RECKLI
2/209 NEWA**

The indented leaf texture of this abstract pattern takes its inspiration from nature has a fading effect.



- NOTES:
1. FENCE HEIGHT: 12' COMPRISED OF (2) 6' PANELS AT SOCCER FIELD AND 42" AT OUTDOOR LEARNING AREA AND PLAYGROUND
 2. COLOR : TBD
 3. 2" SQUARE HORIZONTAL TUBE REQUIRED AT JUNCTURE OF 6' PANELS ON 12' HIGH FENCE
 4. 2" SQUARE HORIZONTAL TOP RAIL REQUIRED AT 42" HIGH FENCE





SHEET 1 OF 6
KEY PLAN FOR RETAINING WALLS LOCATED WITHIN
THE BRL AND PS

BW Bottom of Wall
TW Top of Wall

NOTE:
 SEE L400-440 FOR PLANTED AREAS



ASSOCIATE ARCHITECT:
herd coplan macht

3000 DRAKE ST., #120
 ALEXANDRIA, VA 22314
 T: 703-288-7763
 F: 703-288-6530

Structural: SKAA
 1155 Connecticut Ave NW, STE 800
 Washington, DC 20036
 T: 202-658-2520

MEL: Saffy & Associates
 5185 MacArthur Blvd NW, STE 220
 Washington, DC 20015
 T: 703-691-2145

Civil: CODI
 4800 Powder Mill Rd, STE 200
 Beltsville, MD 20705
 T: 301-937-3501

Technology: Educational Systems
 Planning
 49 Old Solomons Island Rd, STE 301
 Annapolis, MD 21401
 T: 410-573-9148

Acoustics: Acoustical Design
 Collaborative LTD
 7500 L'Enferme Club Rd
 Fluxus, MD 21204
 T: 410-621-5930

Landscape Architect:
 Jordan Hoenesman
 711 Florida Ave NW
 Washington, DC 20001
 T: 202-686-0711

Kitchen: Nykos Associates
 18719-A Flower Hill Way
 Gaithersburg, MD 20878
 T: 240-683-6530

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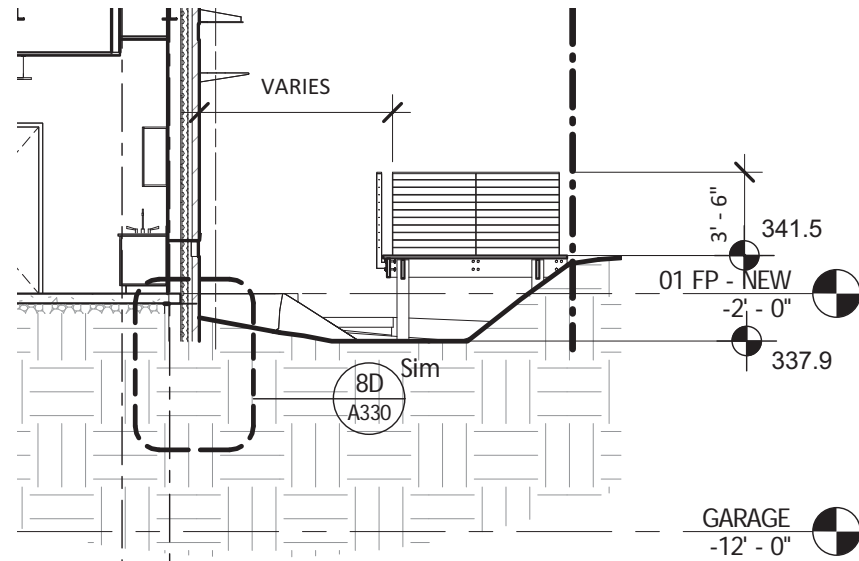
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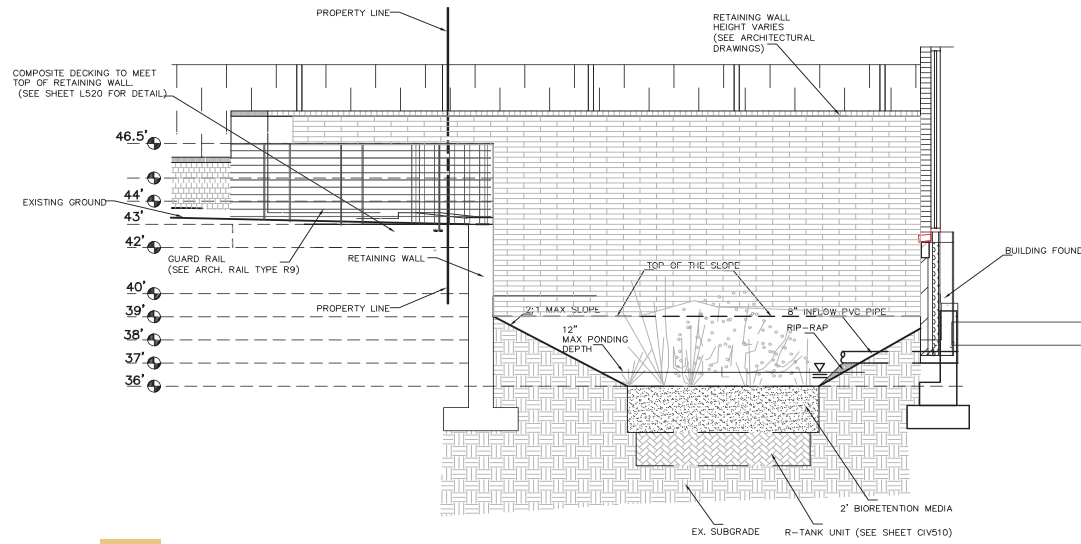
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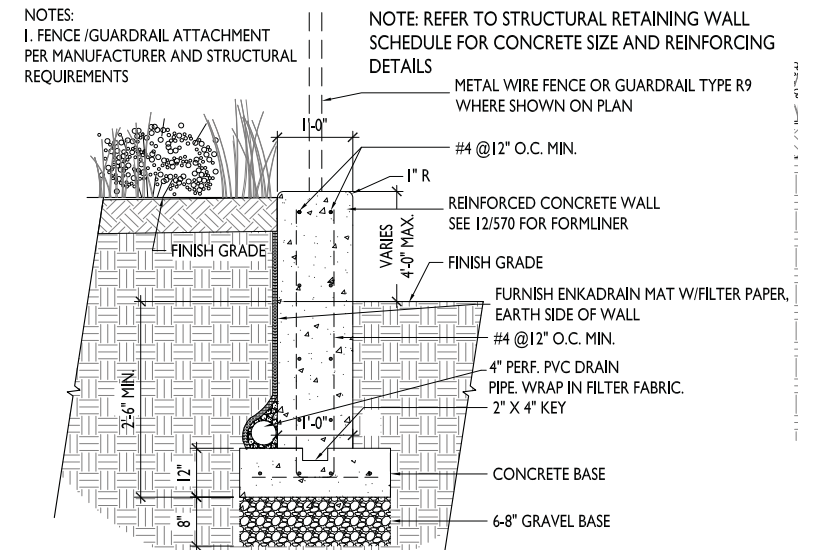
RETAINING WALLS



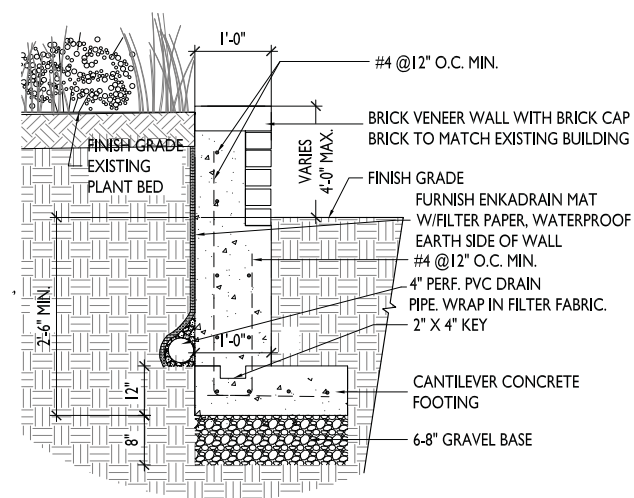
A



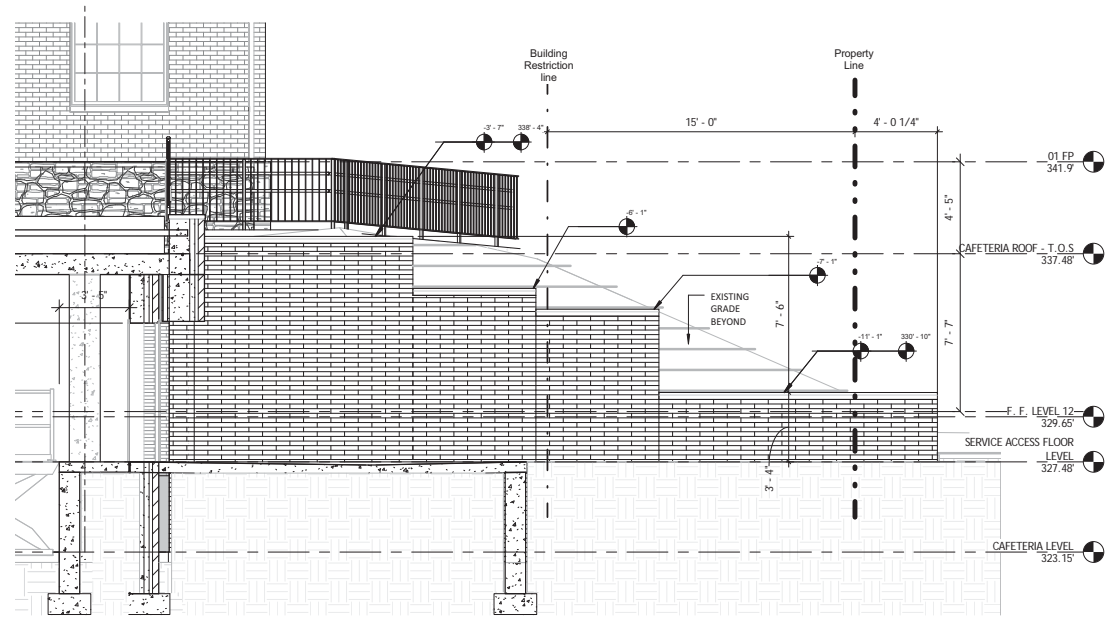
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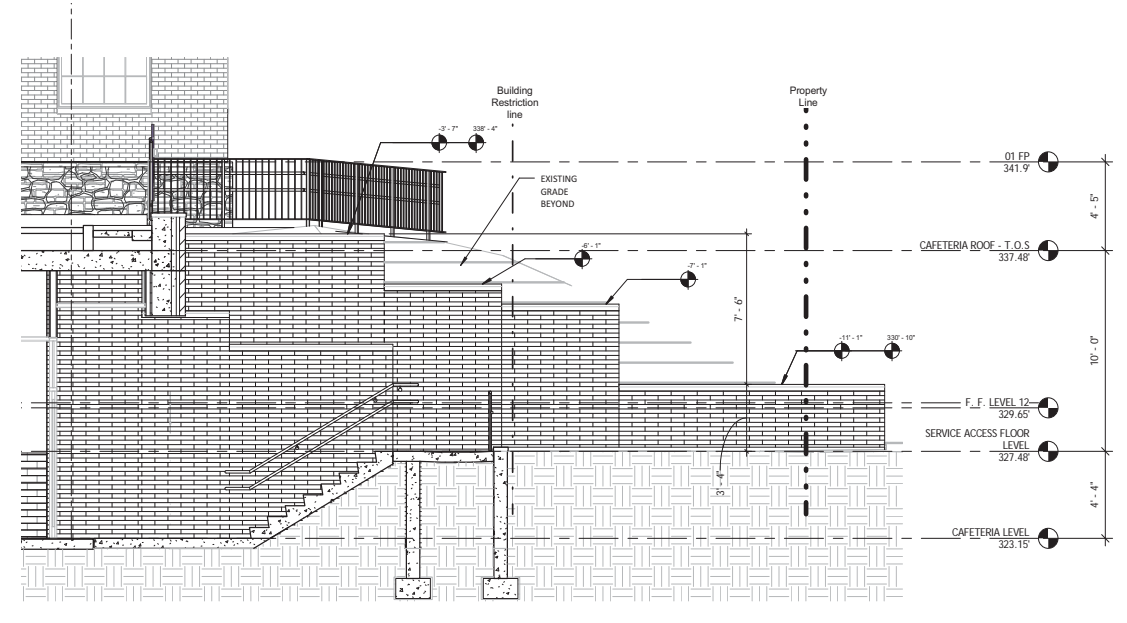
C



D





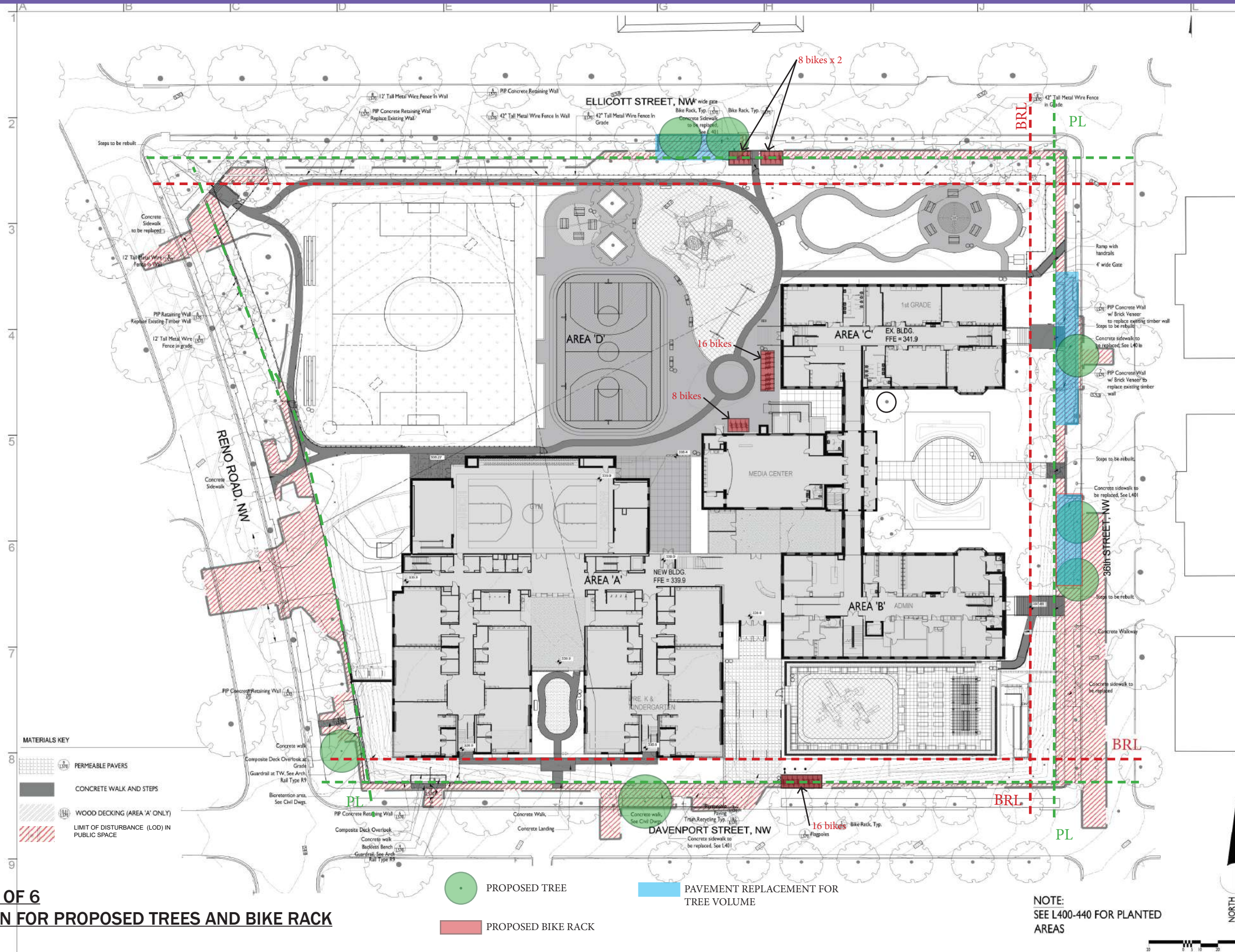
E



F

SHEET 1A OF 6
RETAINING WALLS LOCATED WITHIN THE BRL AND PS

 FORM-LINER DESIGN ON WALLS
 BRICK-FACED WALLS



SHEET 6 OF 6
KEY PLAN FOR PROPOSED TREES AND BIKE RACK

- MATERIALS KEY**
- PERMEABLE PAVERS
 - CONCRETE WALK AND STEPS
 - WOOD DECKING (AREA 'A' ONLY)
 - LIMIT OF DISTURBANCE (LOD) IN PUBLIC SPACE

- PROPOSED TREE
- PROPOSED BIKE RACK

PAVEMENT REPLACEMENT FOR TREE VOLUME

NOTE:
 SEE L400-440 FOR PLANTED AREAS

R
MC
ASSOCIATES

R. MCGHEE & ASSOCIATES
 2031 FLORIDA AVE, NW, 3RD FLOOR, WASHINGTON, DC 20004
 T: 202-426-0600

ASSOCIATE ARCHITECT:
herd coplan macht

2000 DUNE ST, #120
 ALEXANDRIA, VA 22304
 T: 571-388-7761
 F: 410-837-6539

Structural: SK&A
 1155 Connecticut Ave, NW, STE 800
 Washington, DC 20036
 T: 202-659-2520

MEP: Sarty & Associates
 5185 MacArthur Blvd NW, STE 220
 Washington, DC 20016
 T: 703-691-2115

Civil: CDDI
 4400 Powder Mill Rd, STE 200
 Beltsville, MD 20705
 T: 301-937-3501

Technology: Educational Systems Planning
 48 Old Solomon's Island Rd, STE 301
 Annapolis, MD 21401
 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD
 7509 L'Hondelle Club Rd
 Fluxus, MD 21204
 T: 410-621-6930

Landscape Architect: Jordan Honeyman
 711 Florida Ave NW
 Washington, DC 20001
 T: 202-986-0711

Kitchen: Nyikos Associates
 18219-A Flower Hill Way
 Gaithersburg, MD 20879
 T: 240-683-9530

MURCH ELEMENTARY SCHOOL
 4810 36TH ST. NW
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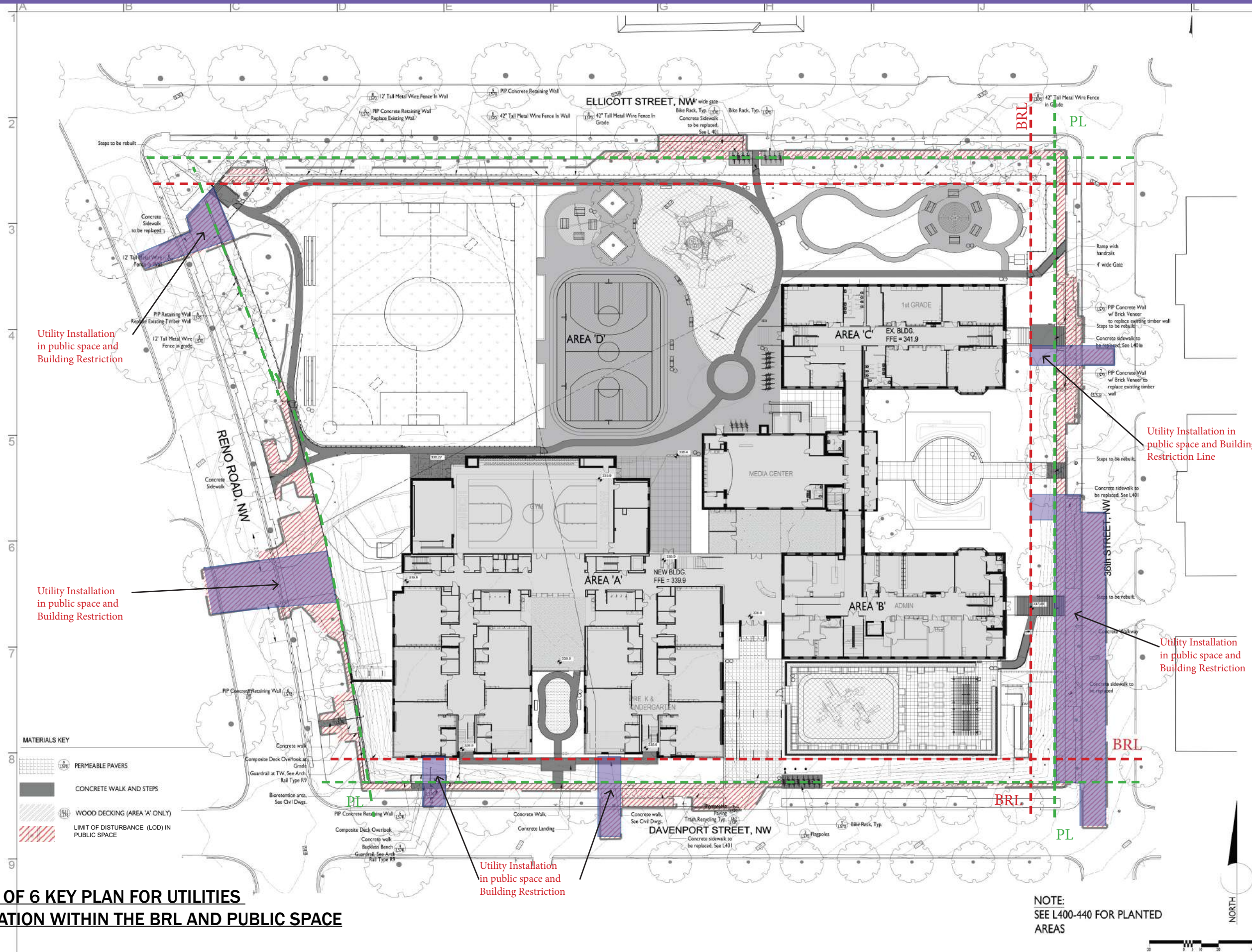
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Sheet Title: SITE/LANDSCAPE PUBLIC SPACE PLAN

Sheet Number: 1200A





Utility Installation in public space and Building Restriction

Utility Installation in public space and Building Restriction

Utility Installation in public space and Building Restriction Line

Utility Installation in public space and Building Restriction

Utility Installation in public space and Building Restriction

**SHEET 5 OF 6 KEY PLAN FOR UTILITIES
INSTALLATION WITHIN THE BRL AND PUBLIC SPACE**

NOTE:
SEE L400-440 FOR PLANTED AREAS

R
MC
AS

R. MCGHEE & ASSOCIATES
2031 FLORIDA AVE. NW, 180 FLOOR, WASHINGTON, DC 20009
T: 202-426-0609

ASSOCIATE ARCHITECT:
herd coplan macht
2000 DUNE ST., #120
ALEXANDRIA, VA 22304
T: 571-388-7761
F: 410-837-6539

Structural: SK&A
1155 Connecticut Ave. NW, STE. 800
Washington, DC 20036
T: 202-659-2520

MEP: Sarty & Associates
5185 MacArthur Blvd NW, STE. 220
Washington, DC 20016
T: 703-691-2115

Civil: CDDI
4400 Powder Mill Rd., STE. 200
Beltsville, MD 20705
T: 301-937-3501

Technology: Educational Systems Planning
48 Old Solomon's Island Rd., STE. 301
Annapolis, MD 21401
T: 410-573-9148

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7509 L'Hirondelle Club Rd
Fluxus, MD 21204
T: 410-621-5930

Landscape Architect:
Jordan Honeyman
711 Florida Ave NW
Washington, DC 20001
T: 202-986-0711

Kitchen: Nyikos Associates
18219-A Flower Hill Way
Gaithersburg, MD 20879
T: 240-683-9530

MURCH ELEMENTARY SCHOOL
4810 36TH ST. NW
WASHINGTON DC, 20008

Project Number: 2015-4810

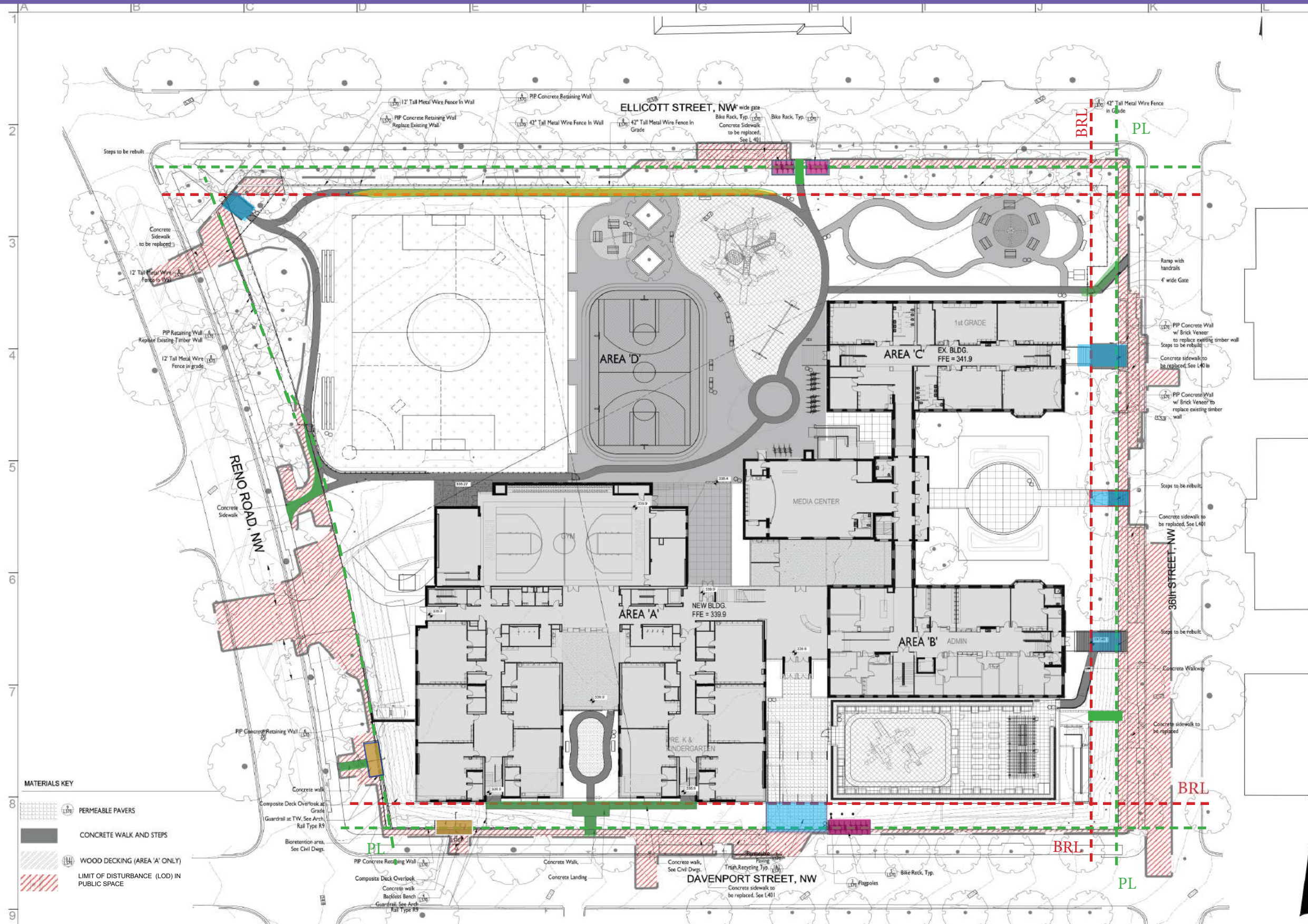
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SHEET 4 OF 6
KEY PLAN FOR WOOD DECKS, PIP CONCRETE BIKE RACK PADS, STAIR REPLACEMENTS AND PED/BIKE PATHS LOCATED WITHIN THE BRL

- PIP CONCRETE FOR BIKE RACKS
- STAIR REPLACEMENT AND PAVING WITHIN BRL
- BIKE / PEDESTRIAN PATH IN WITHIN BRL
- WOOD OBSERVATION DECKS WITHIN BRL

NOTE:
SEE L400-440 FOR PLANTED AREAS

R. MCGHEE & ASSOCIATES
 2031 FLORIDA AVE. NW, 180 FLOOR, WASHINGTON, DC 20009
 T: 202 426 0600

ASSOCIATE ARCHITECT:
herd coplan macht
 2000 DUNE ST., #120 ALEXANDRIA, VA 22304
 T: 571 388 7761 F: 410 837 6539

Structural SK&A
 1155 Connecticut Ave. NW, STE 800 Washington, DC 20036
 T: 202 659 2520

MEP Sletty & Associates
 5185 MacArthur Blvd NW, STE 220 Washington, DC 20016
 T: 703 691 2115

Civil CODI
 4400 Powder Mill Rd, STE 200 Beltsville, MD 20705
 T: 301 937 3501

Technology Educational Systems Planning
 48 Old Solomon's Island Rd, STE 301 Annapolis, MD 21401
 T: 410 573 9148

Acoustics Acoustical Design Collaborative LTD
 7509 L'Hirondelle Club Rd Fluxus, MD 21204
 T: 410 621 5930

Landscape Architect:
 Jordan Honeyman
 711 Florida Ave NW Washington, DC 20001
 T: 202 986 0711

Kitchen: Nyikos Associates
 18215-A Flower Hill Way Gaithersburg, MD 20879
 T: 240 683 9530

MURCH ELEMENTARY SCHOOL
 4810 36TH ST. NW
 WASHINGTON DC, 20008

Project Number: 2015-4810

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Sheet Number: 1200A



PROJECT NARRATIVE:

THE MODERNIZATION OF MURCH ELEMENTARY SCHOOL INCLUDES THE RENOVATION OF THE EXISTING SCHOOL BUILDINGS PLUS A NEW ADDITION.

THIS PROJECT IS LOCATED AT 4810 36TH STREET N.W., D.C. THE PROPERTY IS APPROXIMATELY 3.936 ACRES WHICH IS SURROUNDED BY ELLICOTT STREET TO THE NORTH, DAVENPORT STREET TO THE SOUTH, RENO ROAD TO THE WEST AND 36TH STREET TO THE EAST.

THERE ARE THREE EXISTING BUILDINGS AND A PAVED PARKING LOT ON SITE. THE THREE EXISTING BUILDINGS WILL REMAIN AND THE PARKING LOT WILL BE REMOVED.

THE DEVELOPMENT OF THE SITE INCLUDES: A NEW BUILDING ADDITION, THE RENOVATION OF THE THREE EXISTING BUILDINGS, A NEW PLAY GROUND AND VARIOUS COURTS WILL BE CONSTRUCTED ON THIS PROPERTY. THE NEW BUILDING ADDITION WILL INCLUDE: CAFETERIA, GYM, AND MEDIA SPACE TO SUPPORT THE CURRENT ACADEMIC PROGRAMS.

- THE SITE IMPROVEMENTS INCLUDE:
- CONSTRUCTION OF STORMWATER MANAGEMENT FACILITIES AND STORM DRAIN SYSTEM
 - CONSTRUCTION OF NEW BUILDING ADDITION
 - WATER AND SANITARY SEWER CONNECTIONS TO THE EXISTING AND PROPOSED BUILDING
 - NEW CURB, GUTTER AND SIDEWALK WITHIN PUBLIC AREA
 - RELOCATION OF AN EXISTING LIGHT POLE
 - ON-SITE PARKING GARAGE
 - TREE PLANTING
 - MILL AND OVERLAY ALONG PUBLIC STREET

SITE NOTES:

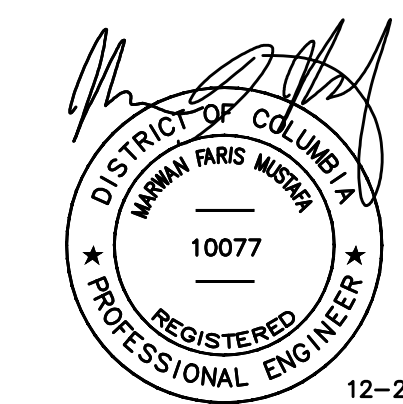
1. TOTAL AREA OF PROPERTY (LOTS 814, 815, AND 815 SQUARE 1980): 171,456 Sq. Ft. or 3.936 ACRES
2. ZONE: R-1-B
3. PROPERTY ADDRESS: LOTS 814, 815, 816, SQUARE 1980- 4810 36TH STREET, N.W. D.C. WASHINGTON, DC
4. CURRENT OWNER: DISTRICT OF COLUMBIA 1350 PENNSYLVANIA AVE, NW- SUITE 307 WASHINGTON, DC 20004
5. CONTOUR INTERVAL: 1'
6. TOPOGRAPHICAL INFORMATION FROM: AMT,LLC
7. BOUNDARY INFORMATION FROM: RECORDED PLAT SQUARE 1980 LOTS 814-816

DEVELOPMENT NOTES:

1. PROPERTY ZONED: R-1-B
2. PROPOSED USE OF PROPERTY: ELEMENTARY SCHOOL
3. R-1-B REGULATIONS: PUBLIC SCHOOL USES BUILDING RESTRICTION LINES:
FRONT: 15'
SIDE: 15'
ALONG RENO ROAD: 0'
MINIMUM LOT WIDTH: 120'- PUBLIC SCHOOLS
MINIMUM LOT AREA: 15,000 PUBLIC SCHOOLS
MAXIMUM BUILDING HEIGHT: 60 FT
MAXIMUM FAR PERMITTED: 0.9
4. BUILDING FOOT PRINT ARE SUBJECT TO CHANGE.

INDEX OF CIVIL DRAWINGS	
DWG. #	TITLE
CIV001	COVER SHEET
CIV101	EXISTING CONDITIONS
CIV201	SITE DEMOLITION LAYOUT PLAN
CIV301	SITE GRADING PLAN
CIV501	STORM DRAIN AND STORM WATER MANAGEMENT PLAN
CIV502	STORM DRAIN PROFILES
CIV503	STORM DRAIN PROFILES
CIV504	STORM DRAIN PROFILES
CIV505	STORM DRAIN PROFILES
CIV506	STORM DRAIN PROFILES
CIV507	STORM DRAIN DETAILS AND NOTES
CIV508	STORM DRAIN DETAILS AND NOTES
CIV509	STORM DRAIN DETAILS AND NOTES
CIV510	STORM DRAIN DETAILS AND NOTES
CIV511	STORM DRAIN DETAILS AND NOTES
CIV512	STORM DRAIN DETAILS AND NOTES
CIV513	STORM DRAIN DETAILS AND NOTES
CIV514	DRAINAGE AREA PLAN
CIV601	WATER AND SEWER PLAN
CIV602	WATER AND SEWER PROFILES
CIV603	WATER AND SEWER NOTES AND DETAILS
CIV604	WATER AND SEWER NOTES AND DETAILS
CIV701	EROSION AND SEDIMENT CONTROL (INITIAL)
CIV702	EROSION AND SEDIMENT CONTROL (FINAL)
CIV703	EROSION AND SEDIMENT CONTROL DETAILS-1
CIV704	EROSION AND SEDIMENT CONTROL DETAILS-2
CIV705	EROSION AND SEDIMENT CONTROL DETAILS-3
CIV706	EROSION AND SEDIMENT CONTROL DETAILS-4
CIV801	SOIL BORING LOCATION PLAN
CIV901	UTILITY PLAN

COVER SHEET



ASSOCIATE ARCHITECT:
herd | coplan | macht
2000 DUKE ST. #120
ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155
Connecticut Ave,NW,
Suite 800 Washington, DC 20036
T: 202.659.2520

MEP: Setty & Associates - 5185
MacArthur Blvd NW, Suite 220
Washington, DC 20016 T:
703.691.2115

Civil: CDDI - 701 12th St NW #2
Washington, DC 20018 T:
301.937.3501

Technology: Educational Systems
Planning
48 Old Solomon's Island Rd, Suite
301
Annapolis, MD 21401 T:
410-573-9148

Acoustics: Acoustical Design
Collaborative LTD
7509 L'Hirondelle Club Rd Ruxton,
MD 21204
T: 410-821-5930

Landscape Architect: Jordan
Honeyman - 711 Florida Ave NW
Washington, DC 20001 T:
202-986-0711

Kitchen: Nyikos Associates -
18219-A Flower Hill Way
Gaithersburg, MD 20879 T:
240-683-9530

**MURCH ELEMENTARY SCHOOL
ADDITION & MODERNIZATION**

4810 36TH ST. NW
WASHINGTON DC, 20008

Project Number: 2015-4810

Revisions		
Revision Number	Revision Date	Revision Description
1	12/21/2016	ISSUE FOR CONSTRUCTION

Issue Date: 12/21/2016
Sheet Title: COVER SHEET
Sheet Number:

CIV001

ELICOTT STREET, NW

GENERAL SURVEY NOTES

- HORIZONTAL DATUM: DISTRICT OF COLUMBIA SURVEYOR'S OFFICE MERIDIAN
- VERTICAL DATUM: DISTRICT OF COLUMBIA DEPARTMENT OF PUBLIC WORKS
- PROPERTY IS ZONED: LOT 816 R-1-B
- BOUNDARY INFORMATION SHOWN HEREON WAS OBTAINED FROM RECORDS AND VERIFIED IN THE FIELD INsofar AS POSSIBLE. PROPERTY LINE DIMENSIONS FROM OFFICIAL CITY RECORDS MAY NOT NECESSARILY AGREE WITH ACTUAL MEASURED DIMENSIONS. ALL PROPERTY LINES IN THE DISTRICT OF COLUMBIA ARE SUBJECT TO CHANGE BY THE OFFICE OF THE SURVEYOR, D.C.
- THE UNDERGROUND UTILITIES INDICATED HEREON ARE DERIVED FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES. THE LOCATION OF THESE UTILITIES SHOULD BE CONSIDERED APPROXIMATE AND OTHER UTILITIES MAY EXIST WHICH HAVE NO RECORD DATA OR ARE UNDETECTABLE WITH CONVENTIONAL METHODS. NO GUARANTEE OR WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF UTILITY INFORMATION PROVIDED HEREON. UTILITIES LABELED (DATR) ARE SHOWN BASED UPON "DATA ACCORDING TO RECORDS".
- CONTOUR INTERVAL IS ONE (1) FEET.
- PER TRANSFER OF JURISDICTION U.S. RESERVATION 515. THE FOLLOWING NOTES APPLY: SHALL BE RESERVED FOR RECREATIONAL PURPOSES AND OPEN SPACE FOR THE NATION'S CAPITAL. NO BUILDINGS OF ANY KIND OR PARKING ARE PERMITTED WITHIN THE LIMITS OF THIS AREA. TO BE USED FOR SCHOOL PURPOSES. THE EXISTING TEMPORARY ADDITION CONSTRUCTED WITHIN AREA IN 1989 MAY NOT BE REPLACED WHEN ITS USEFUL LIFE ENDS, AND NO OTHER STRUCTURE MAY BE BUILT WITHIN THE LIMITS.



R. McGHEE & ASSOCIATES
 2031 FLORIDA AVE., NW, 3RD FLOOR, WASHINGTON, DC 20009
 T: 202.626.0690
 F: 410.837.6530

ASSOCIATE ARCHITECT:
herd coplan macth
 2000 DUKE ST., #120
 ALEXANDRIA, VA 22314
 T: 571.388.7761
 F: 410.837.6530

Structural: SK&A - 1155
 Connecticut Ave., NW,
 Suite 800 Washington, DC 20036
 T: 202.659.2520

MEP: Setty & Associates - 5185
 MacArthur Blvd NW, Suite 220
 Washington, DC 20016 T:
 703.691.2115

Civil: CDDI - 1701 12th St NW #2
 Washington, DC 20018 T:
 301.937.3501

Technology: Educational Systems
 Planning
 48 Old Solomon's Island Rd, Suite
 301
 Annapolis, MD 21401 T:
 410-573-9148

Acoustics: Acoustical Design
 Collaborative LTD
 7509 L'Hirondelle Club Rd Ruxton,
 MD 21204
 T: 410-821-5930

Landscape Architect: Jordan
 Honeyman - 711 Florida Ave NW
 Washington, DC 20001 T:
 202-986-0711

Kitchen: Nyikos Associates -
 18219-A Flower Hill Way
 Gaithersburg, MD 20879 T:
 240-683-9530

Landscape Architect: Jordan
 Honeyman - 711 Florida Ave NW
 Washington, DC 20001 T:
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 Honeyman - 711 Florida Ave NW
 Washington, DC 20001 T:
 202-986-0711

Landscape Architect: Jordan
 Honeyman - 711 Florida Ave NW
 Washington, DC 20001 T:
 202-986-0711

NOTES ON UTILITIES

- THIS TOPOGRAPHIC INFORMATION IS PROVIDED BY AMT, LLC. FIELD VERIFICATION MUST BE CONDUCTED PRIOR TO ANY EXCAVATION OR CONSTRUCTION.
- THE UTILITY INFORMATION SHOWN IS NOT NECESSARILY COMPLETE AND THE GENERAL LOCATIONS SHOWN ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES WELL IN ADVANCE OF CONDUCTING ANY OPERATIONS WHICH COULD DAMAGE OR INTERRUPT THESE FACILITIES IN AREAS WHERE THE PROPOSED CONSTRUCTION MAY CONFLICT WITH THE EXISTING UTILITIES.
- THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING UTILITIES. IF AN UNDERGROUND UTILITY IS DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S CONSTRUCTION MANAGER. ANY DAMAGE SUSTAINED TO UTILITIES ABOVE AND BELOW GROUND SHALL BE REPAIRED BY CONTRACTOR AT HIS OWN EXPENSE TO THE SATISFACTION OF THE OWNER'S CONSTRUCTION MANAGER.
- IT SHALL BE THE DUTY OF THE CONTRACTOR TO VERIFY ALL DIMENSIONS AND CONDITIONS GIVEN ON THE DRAWINGS AND REPORT TO THE OWNER'S CONSTRUCTION MANAGER ANY ERROR OR INCONSISTENCY WITH THE ACTUAL CIRCUMSTANCES IN THE FIELD PRIOR TO COMMENCING WORKS.

STORM SEWER DATA:

- MANHOLE
 TOP=330.45
 INV IN(A)=325.41
 INV IN(B)=325.20
 INV IN(C)=325.95
 INV IN(D)=324.86
 INV IN(E)=322.16
 INV IN(F)=325.60
 INV OUT=316.81
- DROP INLET
 TOP=329.81
 INV=FULL OF DEBRIS
- DROP INLET
 TOP=330.67
 NV IN=327.87
 INV=FULL OF DEBRIS
- DROP INLET
 TOP=331.80
 INV=FULL OF DEBRIS
- DROP INLET
 TOP=331.64
 INV=FULL OF DEBRIS
- MANHOLE
 TOP=339.75
 INV IN=334.82
 INV OUT=331.23
- DROP INLET
 TOP=340.69
 INV=FULL OF DEBRIS
- MANHOLE
 TOP=344.16
 INV=UNABLE TO OPEN (SEALED)
- DROP INLET
 TOP=345.38
 INV=FULL OF DEBRIS
- DROP INLET
 TOP=345.32
 INV=FULL OF DEBRIS
- MANHOLE
 TOP=341.72
 INV IN=334.71
- MANHOLE
 TOP=325.44
 INV IN(A)=321.29
 INV IN(B)=320.73
 INV OUT=317.25
- DROP INLET
 TOP=325.42
 INV=FULL OF DEBRIS
- MANHOLE
 TOP=324.39
 INV IN(A)=316.31
 INV IN(B)=319.44
 INV OUT=316.00
- DROP INLET
 TOP=325.38
 INV=FULL OF DEBRIS
- MANHOLE
 TOP=315.18
 INV IN=307.13

DAVENPORT STREET, NW

GENERAL SURVEY NOTES

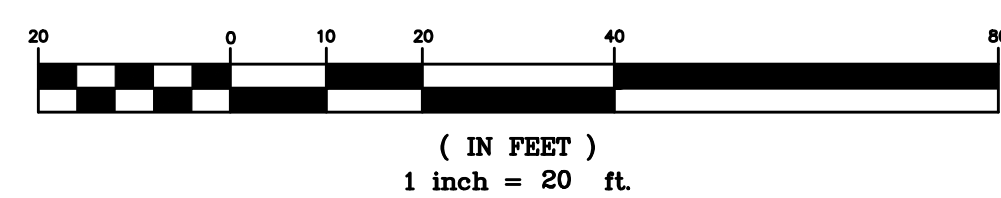
NO	ELEV	DESCRIPTION
500	345.49	SQUARE CUT ON TOP OF TRAFFIC SIGNAL POLE
501	332.99	TOP OF BOLT AT THE FIRE HYDRANT
502	339.68	SQUARE CUT ON TOP OF TRAFFIC SIGNAL POLE
503	328.80	TOP OF BOLT AT THE FIRE HYDRANT

SANITARY SEWER DATA:

A	MANHOLE TOP=333.35 INV OUT=322.51	D	MANHOLE TOP=335.37 INV OUT=324.14
B	MANHOLE TOP=330.23 INV IN(A)=319.58 INV IN(B)=319.14 INV OUT=319.09	E	MANHOLE TOP=344.32 INV IN(A)=333.74 INV IN(B)=334.30 INV OUT=333.67
C	MANHOLE TOP=324.84 INV OUT=UNABLE TO OPEN (SEALED)	F	MANHOLE TOP=336.76 INV OUT=326.51

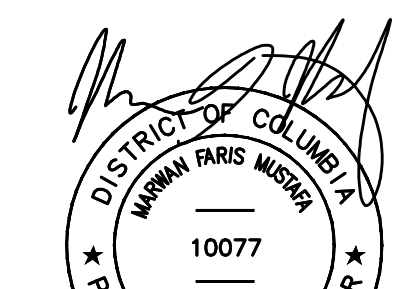
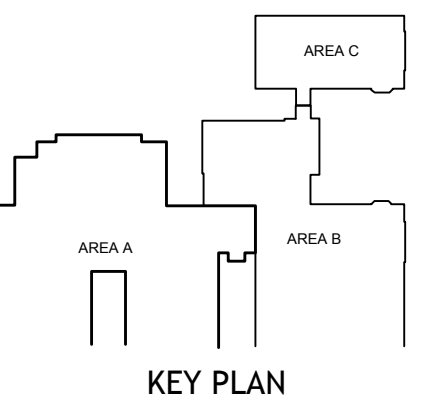
EXISTING CONDITION PLAN

GRAPHIC SCALE



EXISTING LEGEND & ABBREVIATIONS

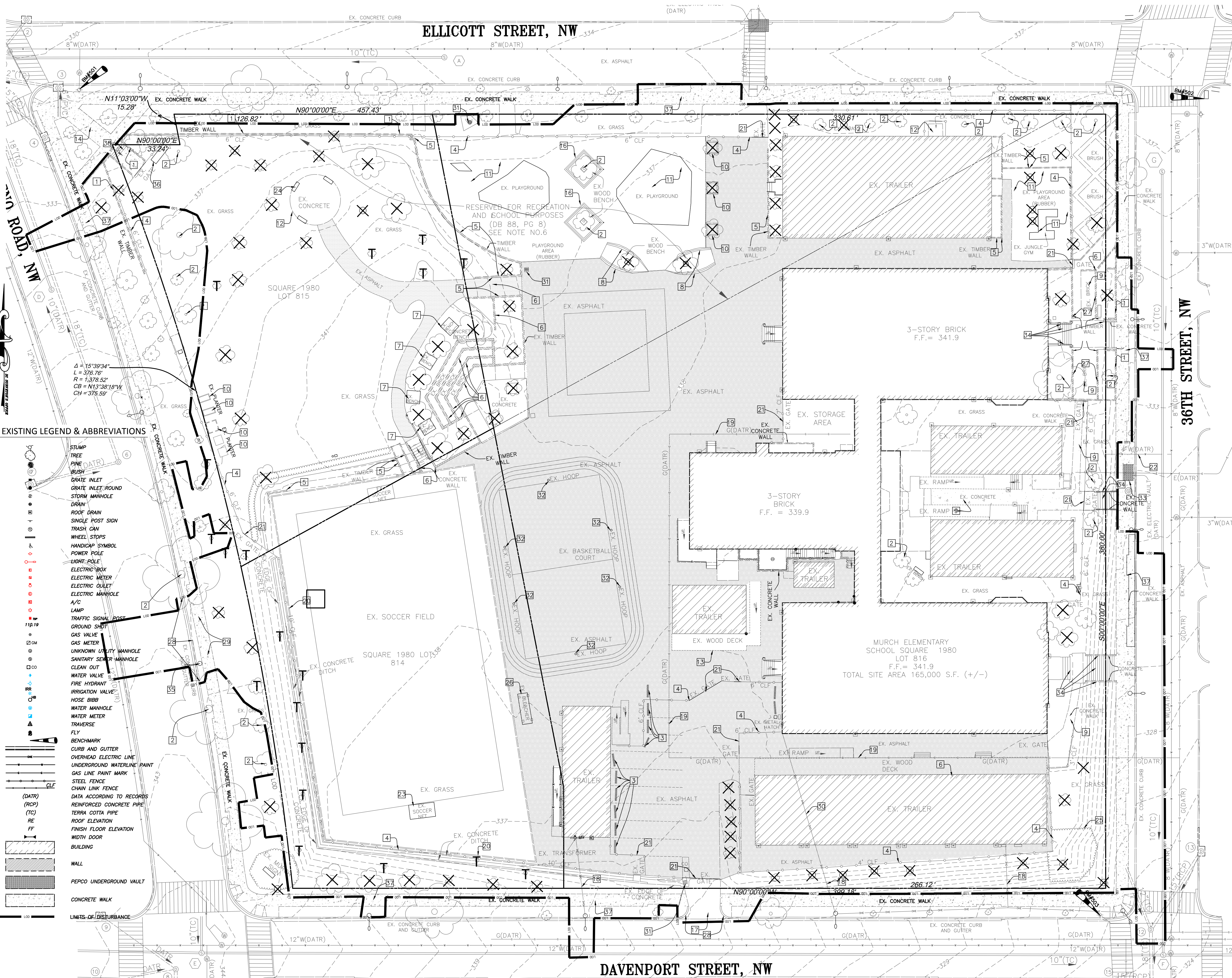
- STUMP
- TREE
- PINE
- BUSH
- GRATE INLET (DATR)
- GRATE INLET ROUND
- STORM MANHOLE
- DRAIN
- ROOF DRAIN
- SINGLE POST SIGN
- TRASH CAN
- WHEEL STOPS
- HANDICAP SYMBOL
- POWER POLE
- LIGHT POLE
- ELECTRIC BOX
- ELECTRIC METER
- ELECTRIC COUPLER
- ELECTRIC MANHOLE
- A/C
- LAMP
- TRAFFIC SIGNAL POST
- GROUND SHOT
- GAS VALVE
- GAS METER
- UNKNOWN UTILITY MANHOLE
- SEWAGE MANHOLE
- CLEAN OUT
- WATER VALVE
- FIRE HYDRANT
- IRRIGATION VALVE
- HOSE BIBB
- WATER MANHOLE
- TRANSVERSE
- FLY
- BENCHMARK
- CURB AND GUTTER
- OVERHEAD ELECTRIC LINE
- UNDERGROUND WATERLINE PAINT
- GAS LINE PAINT MARK
- STEEL FENCE
- CHAIN LINK FENCE
- DATA ACCORDING TO RECORDS
- REINFORCED CONCRETE PIPE
- TERRA COTTA PIPE
- ROOF ELEVATION
- FINISH FLOOR ELEVATION
- WIDTH DOOR
- BUILDING
- WALL
- PEPCO UNDERGROUND VAULT
- CONCRETE WALK
- RESERVATION AREA



12-21-2016

MISS UTILITY
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 48 HOURS IN ADVANCE OF ANY WORK IN THE VICINITY

CIV101

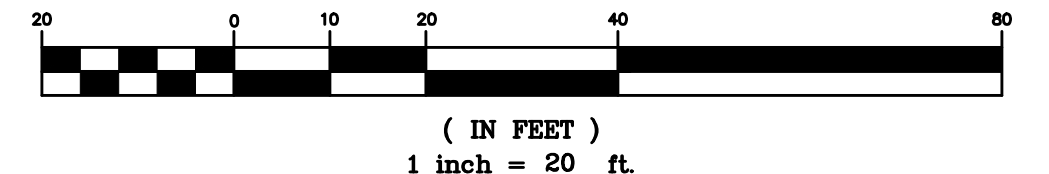


EXISTING LEGEND & ABBREVIATIONS

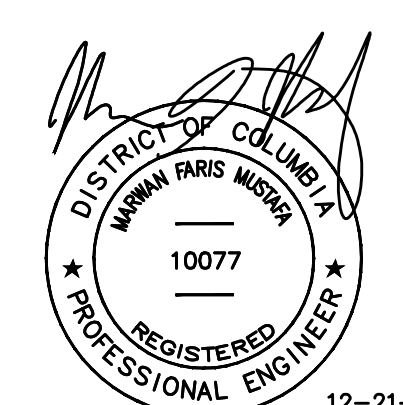
- STAMP
- TREE
- BLUSH
- GRATE INLET, ROUND
- GRATE INLET, SQUARE
- STORM MANHOLE
- DRAIN
- ROOF DRAIN
- SINGLE POST SIGN
- TRASH CAN
- WHEEL STOPS
- HANDICAP SYMBOL
- POWER POLE
- LIGHT POLE
- ELECTRIC BOX
- ELECTRIC WATER
- ELECTRIC OULET
- ELECTRIC MANHOLE
- A/C
- LAMP
- TRAFFIC SIGNAL POST
- GROUND SHOT
- GAS VALVE
- GAS METER
- UNKNOWN UTILITY MANHOLE
- SEWERY MANHOLE
- CLEAN OUT
- WATER VALVE
- FIRE HYDRANT
- IRRIGATION VALVE
- HOSE BIBB
- WATER MANHOLE
- WATER METER
- TRAVELER
- FLY
- BENCHMARK
- CURB AND GUTTER
- OVERHEAD ELECTRIC LINE
- UNDERGROUND WATERLINE
- GAS LINE PAINT MARK
- STEEL FENCE
- CHAIN LINK FENCE
- DATA ACCORDING TO RECORDS
- REINFORCED CONCRETE PIPE
- TERRA COTTA PIPE
- ROOF ELEVATION
- FINISH FLOOR ELEVATION
- WIDTH DOOR
- BUILDING
- WALL
- PEPCO UNDERGROUND VAULT
- CONCRETE WALK
- LIMITS OF DISTURBANCE

SITE DEMOLITION LAYOUT PLAN

GRAPHIC SCALE



MISS UTILITY
FOR LOCATION OF UTILITIES CALL 1-800-257-7777
48 HOURS IN ADVANCE OF ANY WORK IN THE VICINITY



12-21-2016

DEMOLITION GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES FOR SHUTOFF, CAPPING AND CONTINUATION OF UTILITY SERVICES AS REQUIRED.
2. CONTRACTOR SHALL REMOVE AND TRANSPORT ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM ALL DEMOLITION OPERATIONS TO A LEGAL DISPOSAL OFF SITE.
3. REMOVAL OF ASPHALT AND CONCRETE PAVEMENT SHALL INCLUDE THE REMOVAL OF ALL SURFACE, BASE AND SUBBASE MATERIALS.
4. EXISTING CONDITIONS SHOWN HEREON WERE TAKEN FROM A SURVEY PREPARED BY AMT, LLC DATED SEPTEMBER, 2014 AND FROM AVAILABLE UTILITY COMPANY RECORDS.
5. ALL UNDERGROUND UTILITY LOCATIONS, INCLUDING WATER, STORM DRAINAGE, SANITARY SEWER, ELECTRICAL, TELEPHONE AND GAS WERE TAKEN FROM AVAILABLE RECORDS AND FIELD VERIFIED WHERE POSSIBLE. THE LOCATION OF ALL UTILITIES SHOWN ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND DETERMINE THE EXACT LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO COMMENCING WORK IN EXCAVATION. THIS SITE, THE ENGINEER MARKING LOCATIONS OF EXISTING UTILITIES, CONTACT MISS UTILITY AT 1-800-257-7777, 48-HOURS PRIOR TO ANY EXCAVATION.
6. THE CONTRACTOR MUST HAND-DIG TEST PITS AT ALL UTILITY CROSSINGS TO DETERMINE THE EXACT LOCATION AND DEPTH OF ALL UTILITIES AS WELL IN DEMOLITION WORK AND PRIOR TO ORDERING PIPE MATERIALS AND STRUCTURE. UTILITIES FOUND DURING DEMOLITION OR CONSTRUCTION ACTIVITIES SHALL BE THE RESPONSIBILITY OF ANY CONTRACTOR ENGAGED IN EXCAVATION. THIS SITE, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY UTILITY FINDINGS WHICH DEVIATE FROM THE CONDITIONS SHOWN. DIG AND RELOCATE TREE TO BE TRANSLANTED AREA FOR REMOVAL TO DETERMINE AREA FOR HEELING IN AND CARING FOR TREES TO BE TRANSLANTED BEFORE DEMOLITION BEGINS. COORDINATE WITH LANDSCAPE ARCHITECT AND LANDSCAPE CONTRACTOR.
7. ALL SEDIMENT AND EROSION CONTROL METHODS SHALL BE INSTALLED BEFORE THE START OF ANY EXCAVATION AND/OR DEMOLITION AS PER DISTRICT OF COLUMBIA EROSION AND CONTROL HANDBOOK. IF ANY ONSITE INSPECTION REVEALS FURTHER EROSION CONTROL MEASURES ARE NECESSARY, CONTRACTOR SHALL BE PROVIDED REFER TO SHEETS CIV703 THROUGH CIV706 SEDIMENTATION AND EROSION CONTROL PLANS AND DETAILS.
8. SEE SEDIMENTATION AND EROSION CONTROL PLAN FOR ALL EXISTING TREES TO REMAIN AND BE PROTECTED.
9. NOTE PROTECTION OF ADJACENT STRUCTURES AND UTILITY LINES AND MAINTAIN CONTINUED SERVICE DURING CONSTRUCTION. COORDINATE WITH RESPECTIVE UTILITY COMPANIES AND ENGINEER SHOULD RELOCATION OF SERVICE BE REQUIRED.
10. EXISTING UTILITIES (STRUCTURES AND LINES) NOT REQUIRED FOR FUTURE SERVICE TO BE REMOVED TO FACILITATE CONSTRUCTION. UTILITIES TO BE CAPPED AS PER UTILITY SURVEYOR'S STANDARDS AND SPECIFICATIONS. COORDINATE REQUIREMENTS WITH UTILITY SURVEYORS.
11. REMOVAL OF ALL WALLS/ RETAINING WALLS AND FENCES SHALL INCLUDE THE REMOVAL OF THEIR FOUNDATION UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.
12. ALL EXISTING DC STREET LIGHT FIXTURES THAT ARE BEING PERMANENTLY REMOVED MUST BE RETURNED IN GOOD CONDITION TO THE DISTRICT OF COLUMBIA WAREHOUSE AT 1735 15TH STREET NE OFF WEST VIRGINIA AVENUE CONTACT NUMBER 202-576-5258.
13. EXISTING WATER AND SEWER SERVICES NOT REQUIRED FOR FUTURE USE TO BE REMOVED TO THE EXTENT NECESSARY TO FACILITATE NEW CONSTRUCTION. REMAINDER OF SERVICE TO BE CAPPED AT MAIN AND EXISTING VALVES AND TEES TO BE REMOVED PER DC/WATER STANDARDS SPECIFICATIONS. COORDINATE REQUIREMENTS WITH DC/WATER UTILITY INSPECTOR AT 202-787-4299. PAVEMENT TO BE REMOVED PER DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.
14. CONTRACTOR TO BE RESPONSIBLE FOR LAYOUT, EXTENT AND DESIGN OF SHEETING, SHORING AND SUPPORT OF EXISTING UTILITIES AND ADJACENT STRUCTURES, SHORING, BRACING AND UNDERPINNING SHALL BE DESIGNED BY A STRUCTURAL ENGINEER, LICENSED IN THE DISTRICT OF COLUMBIA, HIRED BY THE CONTRACTOR AS NECESSARY TO ENSURE SUPPORT OF SURROUNDING STRUCTURES AND UTILITIES.
15. CONTRACTOR TO RELOCATE PARKING METERS IF REQUIRED AND AS DIRECTED BY D.C. BUREAU OF PARKING. COORDINATE REQUIREMENT WITH LARRY BROWN OF PARKING SERVICES AT 202-671-2291.
16. NOTIFY UTILITY INSPECTOR (202) 787-4299 OF DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY 48 HOURS PRIOR TO START OF CONSTRUCTION.
17. UNLESS OTHERWISE SHOWN ON THESE DRAWINGS, EXISTING PAVEMENT ON 36TH STREET, RENO ROAD, ELLICOTT STREET AND DAVENPORT STREET, NW TO REMAIN. PROVIDE PRE-CONSTRUCTION VIDEO OF EXISTING PAVEMENT DISTURBED OR DAMAGED DURING CONSTRUCTION, SHALL BE REPLACED PER DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AT NO ADDITIONAL COST.
18. PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES VERIFY INVERT ELEVATION OF EXISTING UTILITIES. NOTIFY ENGINEER OF ANY DISCREPANCIES WITH INFORMATION SHOWN PRIOR TO ORDERING ANY STRUCTURES.
19. CONTACT MISS UTILITY AT 1-800-257-7777 48-HOURS PRIOR TO CONSTRUCTION.
20. CONTACT DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATIONS - PUBLIC SPACE MAINTENANCE ADMINISTRATION 48-HOURS PRIOR TO START OF CONSTRUCTION AT (202) 645-6030 OR (202)645-6031.
21. ALL PROPOSED UTILITY WORK TO BE PERFORMED UNDER THE INSPECTION OF THE DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY.
22. USE MANHOLE ENTRY SEALS WHERE REQUIRED.
23. CONTRACTOR TO PROVIDE A PRE AND POST TV VIDEO SEWER ON EXISTING SEWER AROUND THE SITE PER DC/WATER STANDARDS AND SPECIFICATIONS.
24. TREES TO BE REMOVED AND TRANSLANTED ARE TO BE IDENTIFIED IN THE FIELD BY LA BEFORE DEMOLITION. PERFORMA PRE-COSNTRUCTION ASSESSMENT TO IDENTIFY ANY PRUNING THAT MAY REQUIRED CLEARANCE FOR CONSTRUCTION VEHICLES. OAK TREES TO BE PRUNED MUST BE MONITORED FOR 5 YEARS. OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR REMOVAL IF REQUIRED AND REPLANT NEW TREES AS PER DDOT STANDARDS. CONTACT INFORMATION FOR WARD 3 ARBORIST: MICHAEL CHUKO WARD 3 ARBORIST, URBAN FORESTRY ADMINISTRATION, E-MAIL: michael.chuko@dc.gov PHONE: 202-671-5133.
25. ARBORIST TO MINIMIZE TREE ROOT IMPACT. TUNNELING (PNEUMATIC EXCAVATION TOOLS OR HYDROEXCAVATION) SHALL BE USED IN LIEU OF TRENCHING AND ROOT PRUNING FOR UTILITY WORK WITH IN THE ROOT ZONE OF A STREET TREE. THE ROOT ZONE IS MEASURED FROM THE NEAR SIDE OF THE TRUNK TO THE DISTANCE THAT EQUALS THE TREE'S DIAMETER (MEASURING NEAR SIDE OF THE TREE TRUNK TO THE EDGE OF EXCAVATION) OR COMPLETED BY TUNNELING PLEASE CONTACT: MICHAEL CHUKO WARD 3 ARBORIST, URBAN FORESTRY ADMINISTRATION, E-MAIL: michael.chuko@dc.gov PHONE: 202-671-5133. IF A STREET TREE REQUIRES REMOVAL, APPLICANT MUST APPLY FOR A CONSTRUCTION/EXCAVATION PERMIT FOR ITS REMOVAL AND COMPENSATE BASED ON ITS HEALTH AND SIZE (DBH).
26. ALL FREE STANDING BENCHES, WOOD SHED, AND SUNDIAL ARE TO BE PRESERVED.

DEMOLITION KEYNOTES:

- 1 EXISTING TIMBER/CONCRETE WALL TO BE REPLACED
- 2 EXISTING TREE TO REMAIN
- 3 EXISTING WHEEL STOP TO BE REMOVED
- 4 EXISTING CHAIN LINK FENCE TO BE REMOVED
- 5 EXISTING TIMBER WALL TO BE REMOVED
- 6 EXISTING CONCRETE/BRICK WALL TO BE REMOVED
- 7 EXISTING CONCRETE BENCH TO BE REMOVED
- 8 EXISTING WOOD BENCH TO BE REMOVED
- 9 EXISTING CONCRETE/BRICK WALK TO BE REMOVED
- 10 EXISTING PLANTER BOX TO BE REMOVED
- 11 EXISTING PLAY GROUND TO BE REMOVED
- 12 EXISTING CONCRETE PAD TO BE REMOVED
- 13 EXISTING WOOD DECK TO BE REMOVED
- 14 EXISTING CONCRETE WALK TO REMAIN
- 15 EXISTING TIMBER WALL TO BE REMOVED
- 16 EXISTING WOOD BENCH TO REMAIN
- 17 EXISTING ENTRANCE TO BE REMOVED DURING FINAL STAGE OF CONSTRUCTION
- 18 EXISTING OVERHEAD ELECTRIC LINES TO BE REMOVED
- 19 EXISTING 46" GAS PIPE TO BE REMOVED OR ADJUSTED ONCE NEW GAS LINE IS INSTALLED TO SERVED THE EXISTING BUILDING
- 20 EXISTING STREET ELECTRIC POLE TO BE REMOVED
- 21 EXISTING GATE TO BE REMOVED
- 22 EXISTING WATER HOUSE CONNECTION TO BE ABANDONED.
- 23 EXISTING SOCCER NET TO BE REMOVED
- 24 EXISTING BENCHES AND SUNDIAL TO BE REMOVED AND STORED
- 25 EXISTING SHRUB MASS TO BE REMOVED
- 26 EXISTING BLEACHER TO REMOVED AND STORED

R
MC
R. McGHEE & ASSOCIATES
2031 FLORIDA AVE, NW, 3RD FLOOR, WASHINGTON, DC 20009
T: 202-626-0690

ASSOCIATE ARCHITECT:
herd coplan macth
2000 DUKE ST, #120
ALEXANDRIA, VA 22314
T: 571-388-7761
F: 438-837-6530

Structural: SK&A - 1155 Connecticut Ave, NW, Suite 800 Washington, DC 20036 T: 202-659-2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016 T: 703-691-2115

Civil: CDDI - 1701 12th St NW #2 Washington, DC 20018 T: 301-937-3501

Technology: Educational Systems Planning
48 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD
7509 L'Hirondelle Club Rd Ruxton, MD 21204 T: 410-821-5930

Landscape Architect: Jordan Honeyman - 711 Florida Ave NW Washington, DC 20001 T: 202-986-0711

Kitchen: Nyikos Associates - 18219-A Flower Hill Way Gaithersburg, MD 20879 T: 240-683-9530

MURCH ELEMENTARY SCHOOL ADDITION & MODERNIZATION
4810 36TH ST. NW WASHINGTON DC, 20008

Project Number: 2015-4810

Revisions		
Revision Number	Revision Date	Revision Description
1	12/21/2016	ISSUE FOR CONSTRUCTION

Issue Date: 12/21/2016

Sheet Title: SITE DEMOLITION LAYOUT PLAN

Sheet Number: CIV201

ELLCOTT STREET, NW

R
MC
R. MCGHEE & ASSOCIATES
2031 FLORIDA AVE. NW, 3RD FLOOR, WASHINGTON, DC 20036
T: 202.626.0690

ASSOCIATE ARCHITECT:
herd coplan macth
2000 DUKE ST. #120 ALEXANDRIA, VA 22314
T: 571.388.7761 F: 410.837.6530

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**MURCH ELEMENTARY SCHOOL
ADDITION & MODERNIZATION**
4810 36TH ST. NW
WASHINGTON DC, 20008

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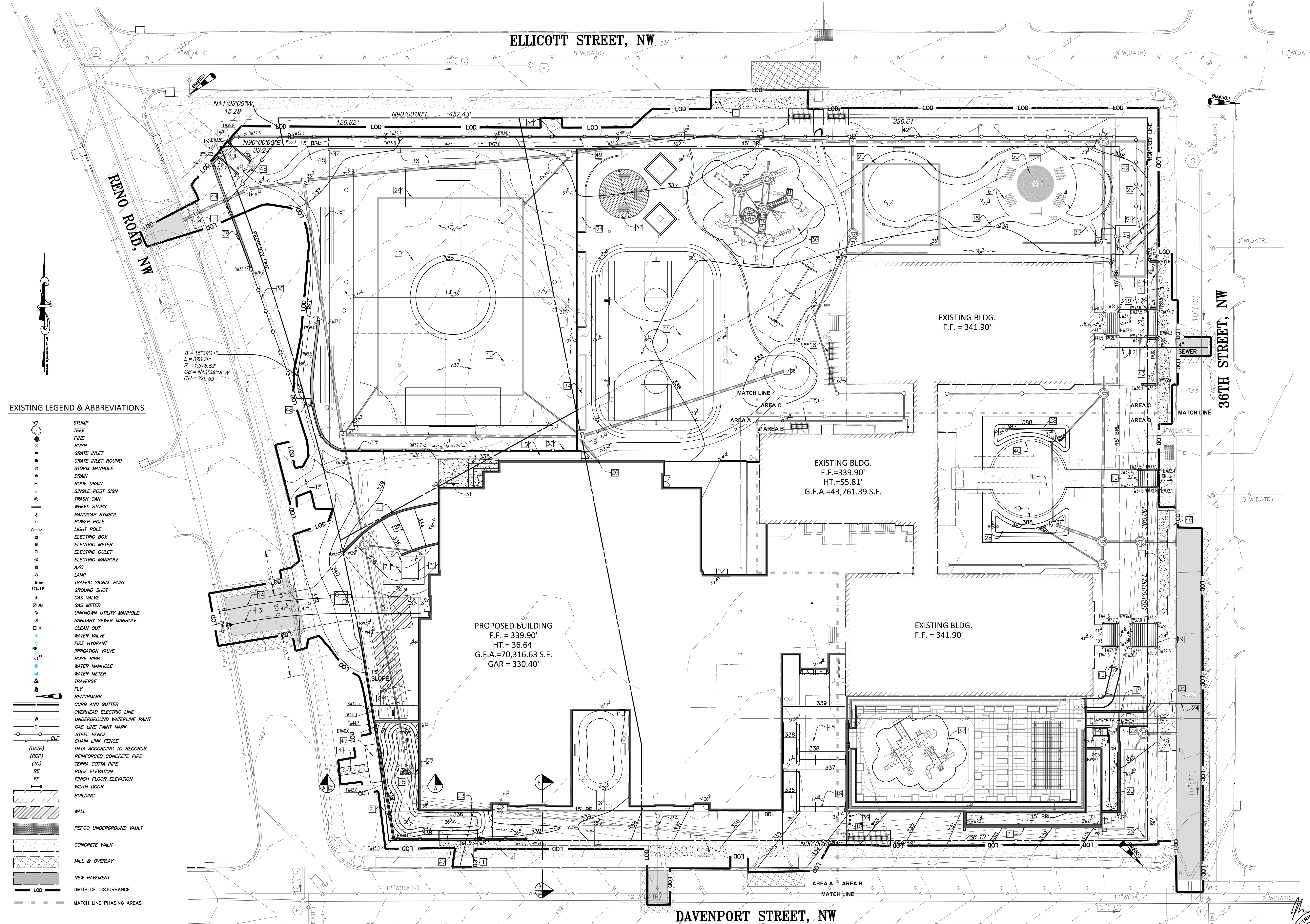
Sheet Title: SITE GRADING PLAN

Sheet Number:

12-21-2016

10077 REGISTERED PROFESSIONAL ENGINEER

CIV301

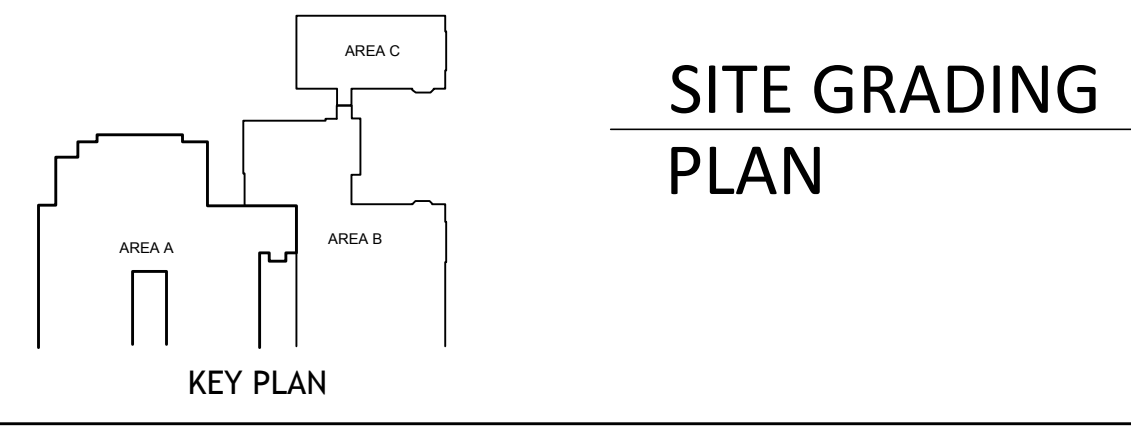


EXISTING LEGEND & ABBREVIATIONS

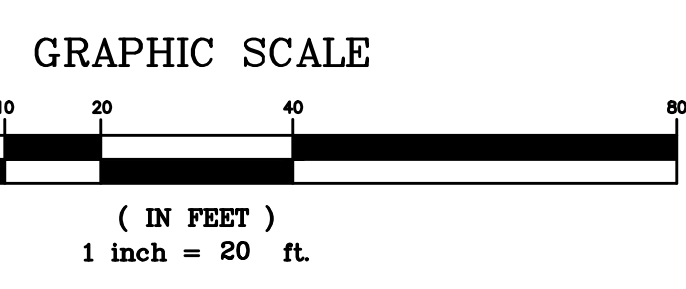
- STUMP
- TREE
- PINE
- BUSH
- GRATE INLET
- GRATE INLET ROUND
- STORM MANHOLE
- DRAIN
- ROOF DRAIN
- SINGLE POST SIGN
- TRASH CAN
- WHEEL STOPS
- HANDICAP SYMBOL
- POWER POLE
- LIGHT POLE
- ELECTRIC BOX
- ELECTRIC METER
- ELECTRIC OULET
- ELECTRIC MANHOLE
- A/C
- LAMP
- TRAFFIC SIGNAL POST
- GROUND SHOT
- GAS VALVE
- GAS METER
- UNKNOWN UTILITY MANHOLE
- SANITARY SEWER MANHOLE
- CLEAN OUT
- WATER VALVE
- FIRE HYDRANT
- IRRIGATION VALVE
- HOSE BIBB
- WATER MANHOLE
- WATER METER
- TRAVELER
- FLY
- BENCHMARK
- CURB AND GUTTER
- OVERHEAD ELECTRIC LINE
- UNDERGROUND WATERLINE PAINT
- GAS LINE PAINT MARK
- STEEL FENCE
- CHAIN LINK FENCE
- DATA ACCORDING TO RECORDS
- (RCP)
- (TC)
- RE
- FF
- WIDTH DOOR
- BUILDING
- WALL
- PEPCD UNDERGROUND VAULT
- CONCRETE WALK
- MILL & OVERLAY
- NEW PAVEMENT
- LIMITS OF DISTURBANCE
- MATCH LINE PHASING AREAS

SITE IMPROVEMENT CODED NOTES:

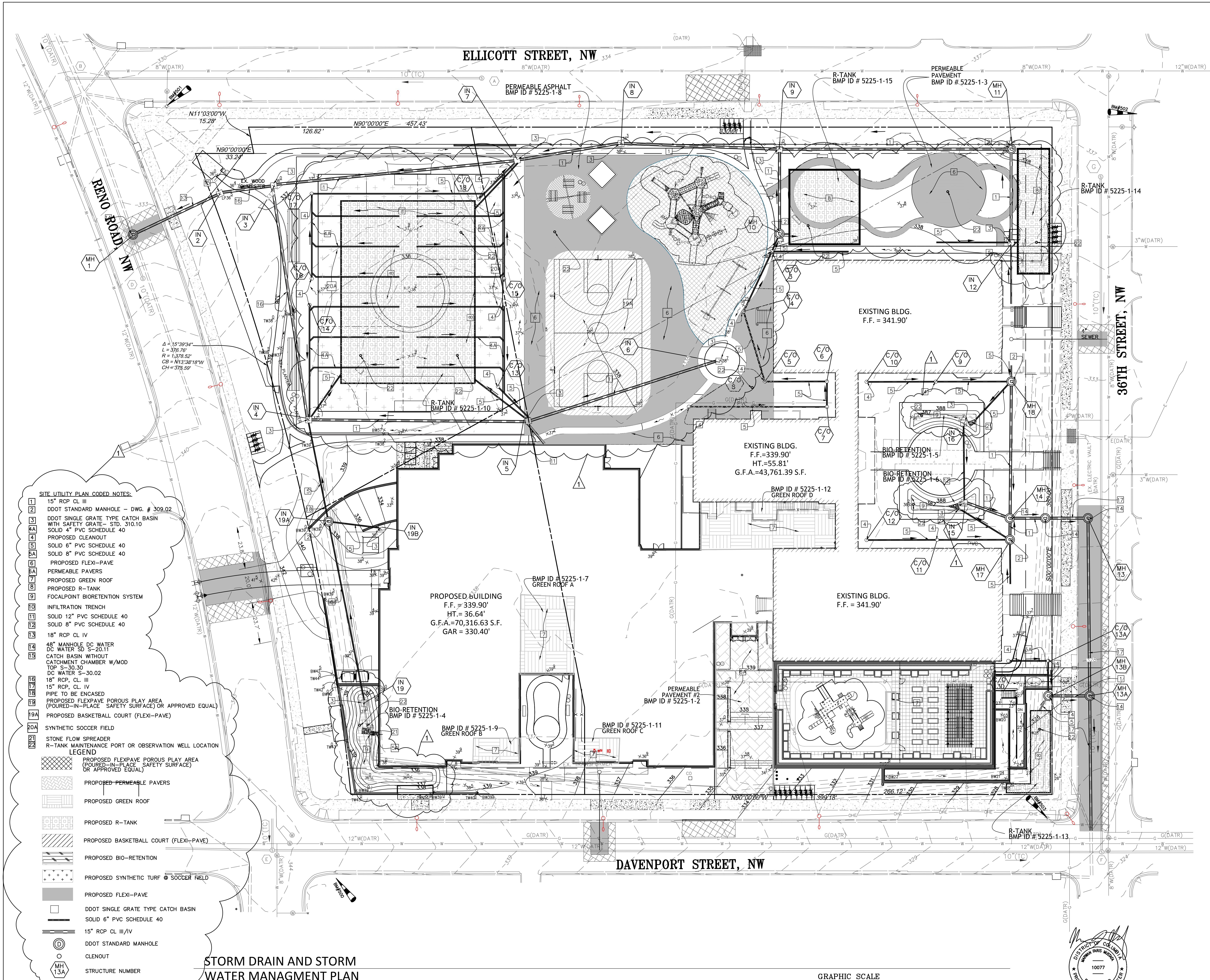
- 1 PROPOSED CONCRETE SIDEWALK
- 2 PROPOSED PIP CONCRETE RETAINING WALL WITH GUARDRAIL ON TOP (SEE L530)
- 3 PROPOSED 20' WIDE COMMERCIAL ENTRANCE (DETAIL No. 504.01)
- 4 PROPOSED CONCRETE WALKWAY (4' WIDE)
- 5 PROPOSED LOADING SPACE
- 6 PROPOSED PICNIC TABLE (SEE L540)
- 7 PROPOSED ELECTRIC TRANSFORMER
- 8 PROPOSED DUMPSTER WITH ENCLOSURE
- 9 PROPOSED BLEACHERS
- 10 PROPOSED PLAY FIELD (SYNTHETIC TURF)
- 11 PROPOSED BASKETBALL COURT (COLORED COLOR ASPHALT)
- 12 PROPOSED 4" SEWER
- 13 PROPOSED 6" FIRE
- 14 PROPOSED 4" WATER
- 15 PROPOSED CONCRETE WALKWAY
- 16 PROPOSED STEEL BOLLARD
- 17 PROPOSED CONC. RETAINING WALL (SEE L530)
- 18 PROPOSED BIKE RACK (** 16 BIKES, * 8 BIKES)
- 19 PROPOSED CONCRETE STEPS (SEE SHEET CIV510)
- 20 PROPOSED HANDICAPPED RAMP
- 21 PROPOSED TRANSFORMER PAD
- 22 PROPOSED GREASE INTERCEPTOR
- 23 PROPOSED 4" TELECOM CONDUITS
- 24 PROPOSED 6" SEWER
- 25 PROPOSED SWM BIORETENTION
- 26 PROPOSED 12" RCP
- 27 PROPOSED 8" PIPE
- 28 PROPOSED BIORETENTION OVER R-TANK
- 29 PROPOSED SWM TANK
- 30 PROPOSED SIDEWALK RAMP-SEE DDOT DETAIL 609.07
- 31 PROPOSED BIKE LOCKERS
- 32 PROPOSED COVERED PAVILION
- 33 PROPOSED STORAGE SHED (SEE L530)
- 34 PROPOSED PLANTING BED
- 35 PROPOSED 12' FENCE
- 36 PLAY AREA (POURED-IN-PLACE SAFETY SURFACE)
- 37 PLAY AREA (SEE ARCHITECTURAL DRAWINGS)
- 38 PROPOSED 12' FENCE INSTALLED IN TOP OF WALL
- 39 PROPOSED FLAG POLES
- 40 PROPOSED CONCRETE SEAT WALL
- 41 CONCRETE PAVERS ON FLEXIBLE BASE
- 42 PROPOSED 42" HIGH FENCE
- 43 CONCRETE WALL WITH BRICK VENEER (SEE ARCH. DWGS.)
- 44 PIP PROPOSED CONCRETE RETAINING WALL
- 45 MAIN ENTRANCE (PERMEABLE PAVERS)
- 46 PROPOSED NEW TREE STRIP
- 47 PROPOSED COMPOSITE DECK OVERLOOK
- 48 PROPOSED 4" WIDE GATE
- 49 PROPOSED 42" HIGH FENCE IN TOP OF WALL
- 50 PROPOSED LABYRINTH STENCIL (SEE L550)
- 51 PROPOSED A.D.A. RAMP WITH HAND RAILS



SITE GRADING PLAN



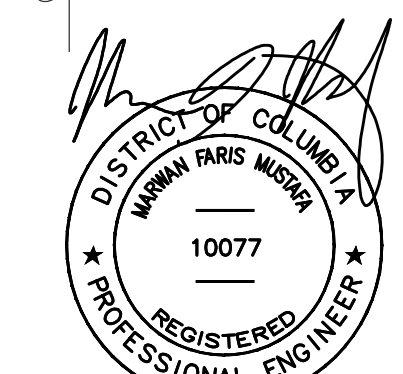
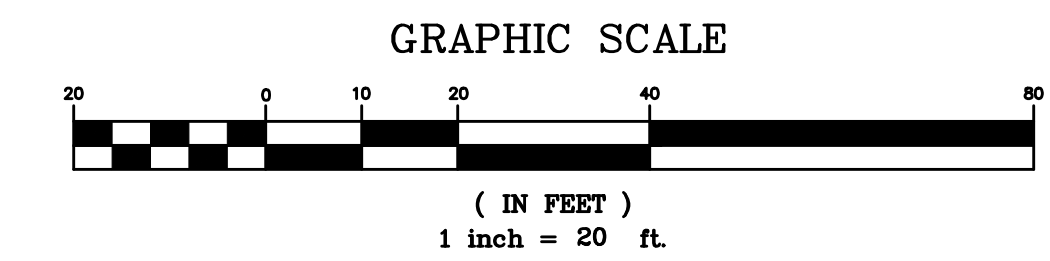
MISS UTILITY
FOR LOCATION OF UTILITIES CALL 1-800-257-7777
48 HOURS IN ADVANCE OF ANY WORK IN THE VICINITY



- SITE UTILITY PLAN CODED NOTES:**
- 1 15" RCP CL III
 - 2 DDOT STANDARD MANHOLE - DWG. # 309.02
 - 3 DDOT SINGLE GRATE TYPE CATCH BASIN WITH SAFETY GRATE - STD. 310.10
 - 4A SOLID 4" PVC SCHEDULE 40
 - 4 PROPOSED CLEANOUT
 - 5 SOLID 6" PVC SCHEDULE 40
 - 5A SOLID 8" PVC SCHEDULE 40
 - 6 PROPOSED FLEXI-PAVE
 - 6A PERMEABLE PAVERS
 - 7 PROPOSED GREEN ROOF
 - 8 PROPOSED R-TANK
 - 9 FOCALPOINT BIORETENTION SYSTEM
 - 10 INFILTRATION TRENCH
 - 11 SOLID 12" PVC SCHEDULE 40
 - 12 SOLID 8" PVC SCHEDULE 40
 - 13 18" RCP CL IV
 - 14 48" MANHOLE DC WATER
 - 15 DC WATER SD S-20.11
 - 16 CATCH BASIN WITHOUT CATCHMENT CHAMBER W/MOD TOP S-30.30
 - 17 DC WATER S-30.02
 - 18 18" RCP, CL III
 - 19 15" RCP, CL IV
 - 20 PIPE TO BE ENCASED
 - 21 PROPOSED FLEXPAVE POROUS PLAY AREA (POURED-IN-PLACE SAFETY SURFACE) OR APPROVED EQUAL
 - 22 PROPOSED BASKETBALL COURT (FLEXI-PAVE)
 - 20A SYNTHETIC SOCCER FIELD
 - 21 STONE FLOW SPREADER
 - 22 R-TANK MAINTENANCE PORT OR OBSERVATION WELL LOCATION

- LEGEND**
- PROPOSED FLEXPAVE POROUS PLAY AREA (POURED-IN-PLACE SAFETY SURFACE) OR APPROVED EQUAL
 - PROPOSED PERMEABLE PAVERS
 - PROPOSED GREEN ROOF
 - PROPOSED R-TANK
 - PROPOSED BASKETBALL COURT (FLEXI-PAVE)
 - PROPOSED BIO-RETENTION
 - PROPOSED SYNTHETIC TURF SOCCER FIELD
 - PROPOSED FLEXI-PAVE
 - DDOT SINGLE GRATE TYPE CATCH BASIN
 - SOLID 6" PVC SCHEDULE 40
 - 15" RCP CL III/IV
 - DDOT STANDARD MANHOLE
 - CLENOT
 - MH 13A STRUCTURE NUMBER

STORM DRAIN AND STORM WATER MANAGEMENT PLAN



R. McGHEE & ASSOCIATES
 2031 FLORIDA AVE., NW, 3RD FLOOR, WASHINGTON, DC 20009
 T: 202.626.0690

ASSOCIATE ARCHITECT:
herd coplan macth
 2000 DUKE ST., #130 ALEXANDRIA, VA 22314
 T: 571.388.7761 F: 410.837.6530

Structural: SK&A - 1155 Connecticut Ave., NW, Suite 800 Washington, DC 20036 T: 202.659.2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016 T: 703.691.2115

Civil: CDDI - 101 12th St NW #2 Washington, DC 20018 T: 301.937.3501

Technology: Educational Systems Planning
 48 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD
 7509 L'Hirondelle Club Rd Ruxton, MD 21204 T: 410-821-5930

Landscape Architect: Jordan Honeyman - 711 Florida Ave NW Washington, DC 20001 T: 202-986-0711

Kitchen: Nyikos Associates - 18219-A Flower Hill Way Gaithersburg, MD 20879 T: 240-683-9530

MURCH ELEMENTARY SCHOOL ADDITION & MODERNIZATION
 4810 36TH ST., NW
 WASHINGTON DC, 20008

Project Number: 2015-4810

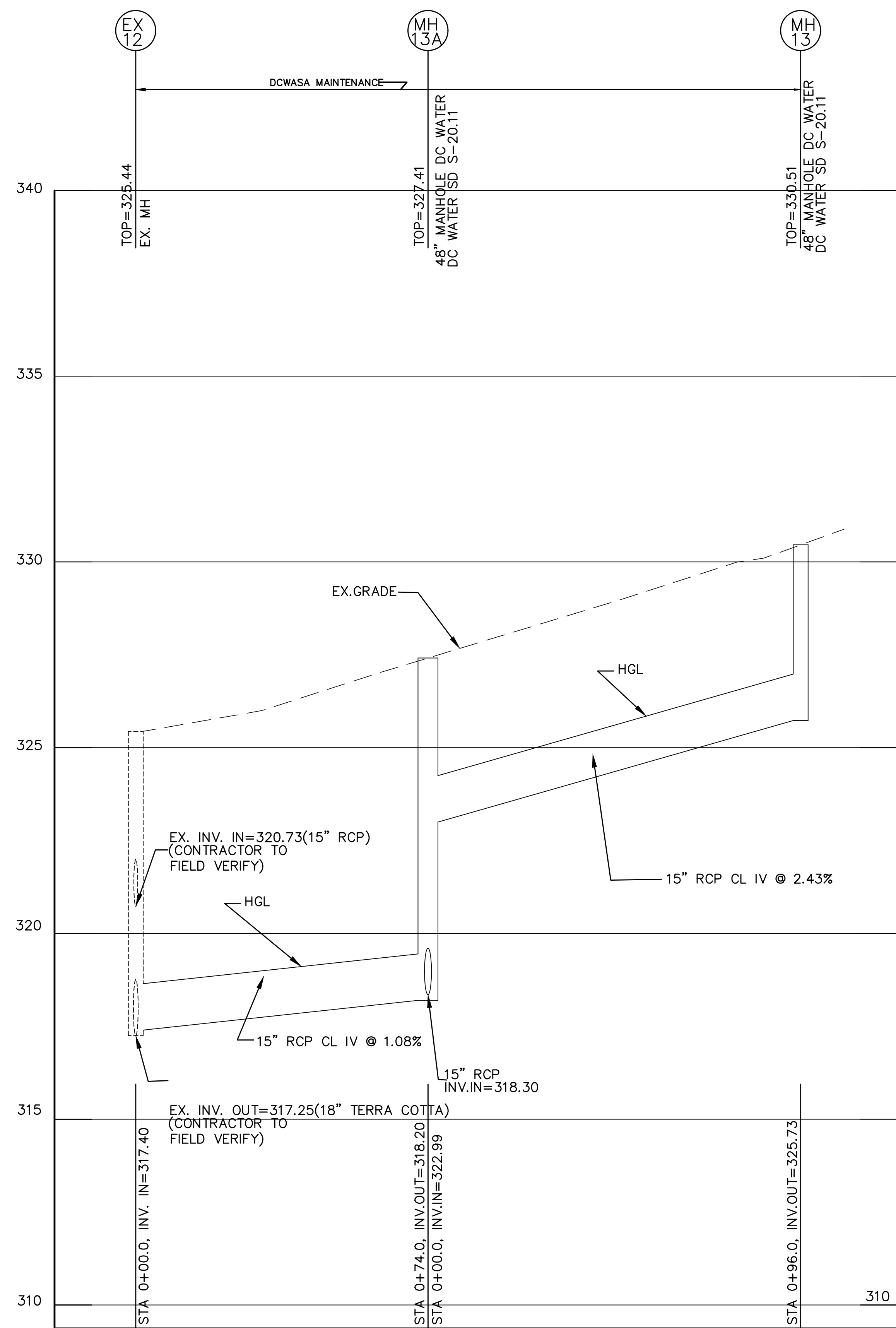
Revisions		
Revision Number	Revision Date	Revision Description
1	12/21/2016	ISSUE FOR CONSTRUCTION

Issue Date: 12/21/2016

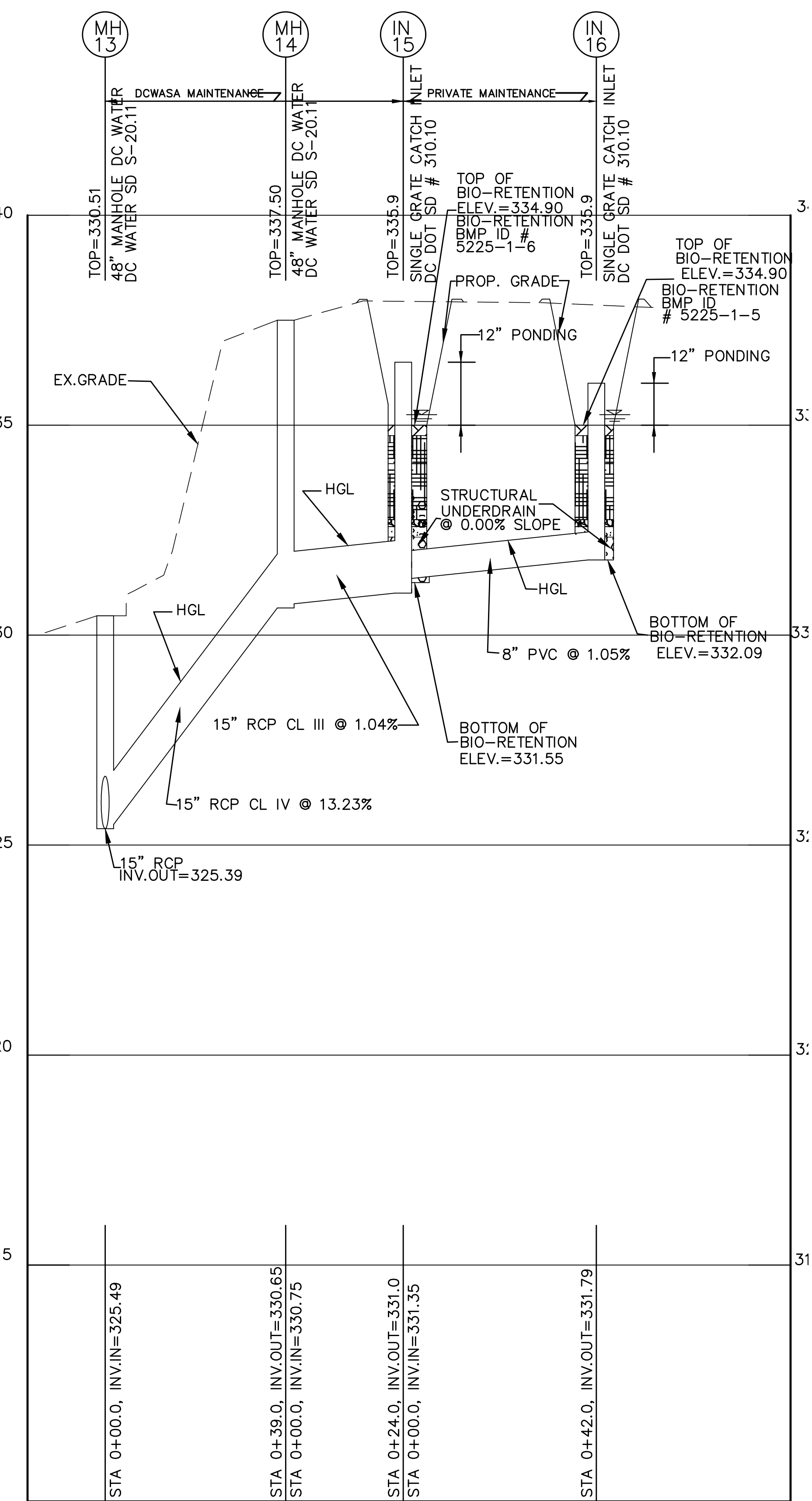
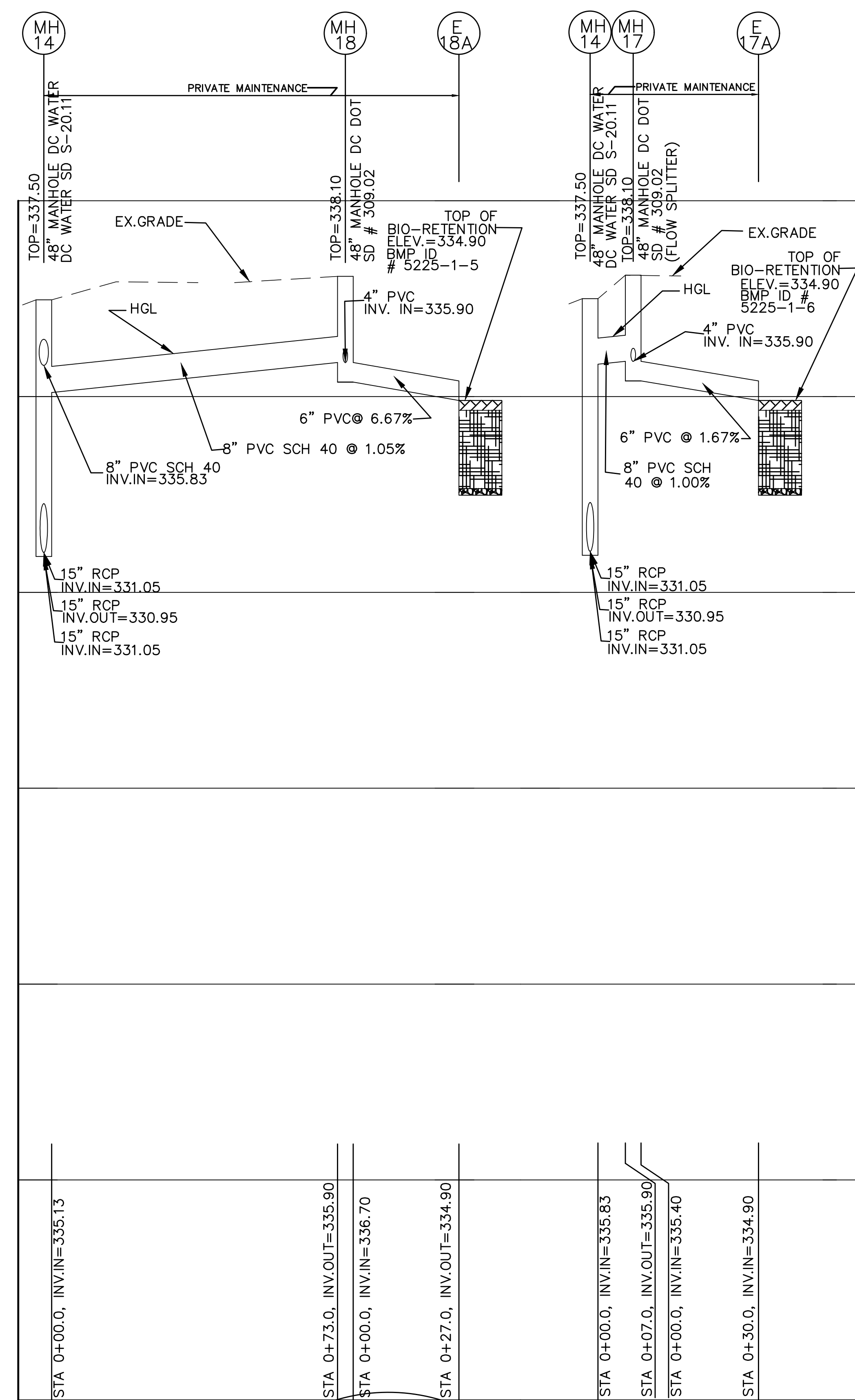
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Sheet Number:

CIV501



STORM DRAIN PROFILE
SCALE: 1" = 20' (H)
1" = 2' (V)



STORM DRAIN PROFILE
SCALE: 1" = 20' (H)
1" = 2' (V)

STRUCTURE SCHEDULE						
BONDED & INSPECTED BY	STR. No	Structure Type	WIDTH	INV. ELEV.	TOP ELEV.	Standard Detail
DC WATER	MH 1	MH	48" DIA.	328.80	334.00	DC WATER SD S-20.11
DC WATER	IN 2	CATCH BASIN		329.32	336.60	DC WATER SD S-30.02 W/MOD TOP S-30.30
PRIVATE	MH 3	MH	48" DIA.	329.71	337.40	DC DOT SD 309.02
PRIVATE	IN 4	CATCH BASIN		331.29	337.80	DC DOT SD 310.10
PRIVATE	IN 7	CATCH BASIN		331.43	336.80	DC DOT SD 310.10
PRIVATE	IN 8	CATCH BASIN		332.31	335.30	DC DOT SD 310.10
PRIVATE	IN 9	CATCH BASIN	48" DIA.	333.32	337.00	DC DOT SD 310.10
PRIVATE	MH 10	MH	48" DIA.	333.45	337.90	DC DOT SD 309.02
PRIVATE	MH 11	MH	48" DIA.	334.75	337.80	DC DOT SD 309.02
PRIVATE	IN 12	CATCH BASIN		334.95	337.70	DC DOT SD 310.10
DC WATER	EX MH 12					DC WATER SD S-20.11
DC WATER	MH 13	MH	48" DIA.	326.73	330.51	DC WATER SD S-20.11
DC WATER	MH 13A	MH	48" DIA.	318.20	327.41	DC WATER SD S-20.11
DC WATER	MH 13B	MH	48" DIA.	322.69	328.20	DC WATER SD S-20.11
DC WATER	MH 14	MH	48" DIA.	330.95	337.50	DC WATER SD S-20.11
PRIVATE	IN 15	CATCH BASIN		332.09	336.20	DC DOT SD 310.10
PRIVATE	IN 16	CATCH BASIN		331.30	336.20	DC DOT SD 310.10
PRIVATE	MH 17	MH	48" DIA.	335.90	338.10	DC DOT SD 309.02
PRIVATE	IN 19	CATCH BASIN		333.20	337.50	DC DOT SD 310.10
PRIVATE	MH 19A	MH	48" DIA.	332.09	337.80	DC DOT SD 309.02
PRIVATE	IN 19B	CATCH BASIN		332.45	336.60	DC DOT SD 310.10

PIPE SCHEDULE					
BONDED & INSPECTED BY	FROM	TO	SIZE	TYPE	LENGTH (ft)
DC WATER	MH 1	IN 2	18"	RCP, CL IV	50.0
PRIVATE	IN 2	MH3	18"	RCP, CL III	28.0
PRIVATE	MH3	IN 4	15"	RCP, CL III	131.0
PRIVATE	IN 4	IN 5	15"	RCP, CL III	120.0
PRIVATE	IN 4	IN 19A	6"	PVC	55.0
PRIVATE	IN 4	R-TANK #1	6"	PVC	30.0
PRIVATE	IN 19A	IN 19	6"	PVC	101.0
PRIVATE	IN 19B	IN 19A	6"	PVC	26.0
PRIVATE	IN 5	IN 6	15"	RCP, CL III	112.0
PRIVATE	IN 5	R-TANK #4	6"	PVC	44.0
PRIVATE	MH3	IN 7	15"	RCP, CL III	144.0
PRIVATE	IN 7	IN 8	15"	RCP, CL III	49.0
PRIVATE	IN 7	R-TANK #7	6"	PVC	41.0
PRIVATE	IN 8	IN 9	15"	RCP, CL III	87.0
PRIVATE	IN 9	MH 11	15"	RCP, CL III	127.0
PRIVATE	MH 11	IN 12	15"	RCP, CL III	49.0
PRIVATE	MH 10	MH 9	15"	RCP, CL III	44.0
PRIVATE	MH 10	R-TANK #3	6"	PVC	3.0
DC WATER	EX 12	MH 13A	15"	RCP, CL IV	74.0
PRIVATE	IN 12	R-TANK #2	6"	PVC	2.0
DC WATER	13B	13A	15"	RCP, CL IV	18.0
PRIVATE	13B	R-TANK #1	4"	PVC	7.0
DC WATER	13A	MH 13A	15"	RCP, CL IV	96.0
PRIVATE	MH 14	MH 18	8"	PVC	73.0
PRIVATE	MH 14	MH 17	8"	PVC	7.0
DC WATER	MH 13	MH 14	15"	RCP, CL IV	39.0
DC WATER	MH 14	MH 15	15"	RCP, CL III	24.0
PRIVATE	MH 15	MH 16	8"	PVC	42.0
TOTAL					1623.0

SIZE	TYPE	LENGTH (ft)	BY	LENGTH (ft)
4"	PVC	7.0	PRIVATE	7.0
6"	PVC	302.0	PRIVATE	302.0
8"	PVC	122.0	PRIVATE	122.0
15"	RCP CL IV	227.0	DC WATER	227.0
18"	RCP, CL IV	50.0	DC WATER	50.0
18"	RCP, CL III	28.0	PRIVATE	28.0
15"	RCP, CL III	887.0	PRIVATE	887.0
TOTAL =		1623.0		1623.0

STORM DRAIN PROFILES



ASSOCIATE ARCHITECT:
herd | coplan | macht
2000 DUKE ST., #120
ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155 Connecticut Ave, NW, Suite 800 Washington, DC 20036 T: 202.659.2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016 T: 703.691.2115

Civil: CDDI - 701 12th St NW #2 Washington, DC 20018 T: 301.937.3501

Technology: Educational Systems Planning
49 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD
7509 L'Hirondelle Club Rd Ruxton, MD 21204 T: 410-821-9930

Landscape Architect: Jordan Honeyman - 711 Florida Ave NW Washington, DC 20001 T: 202-986-0711

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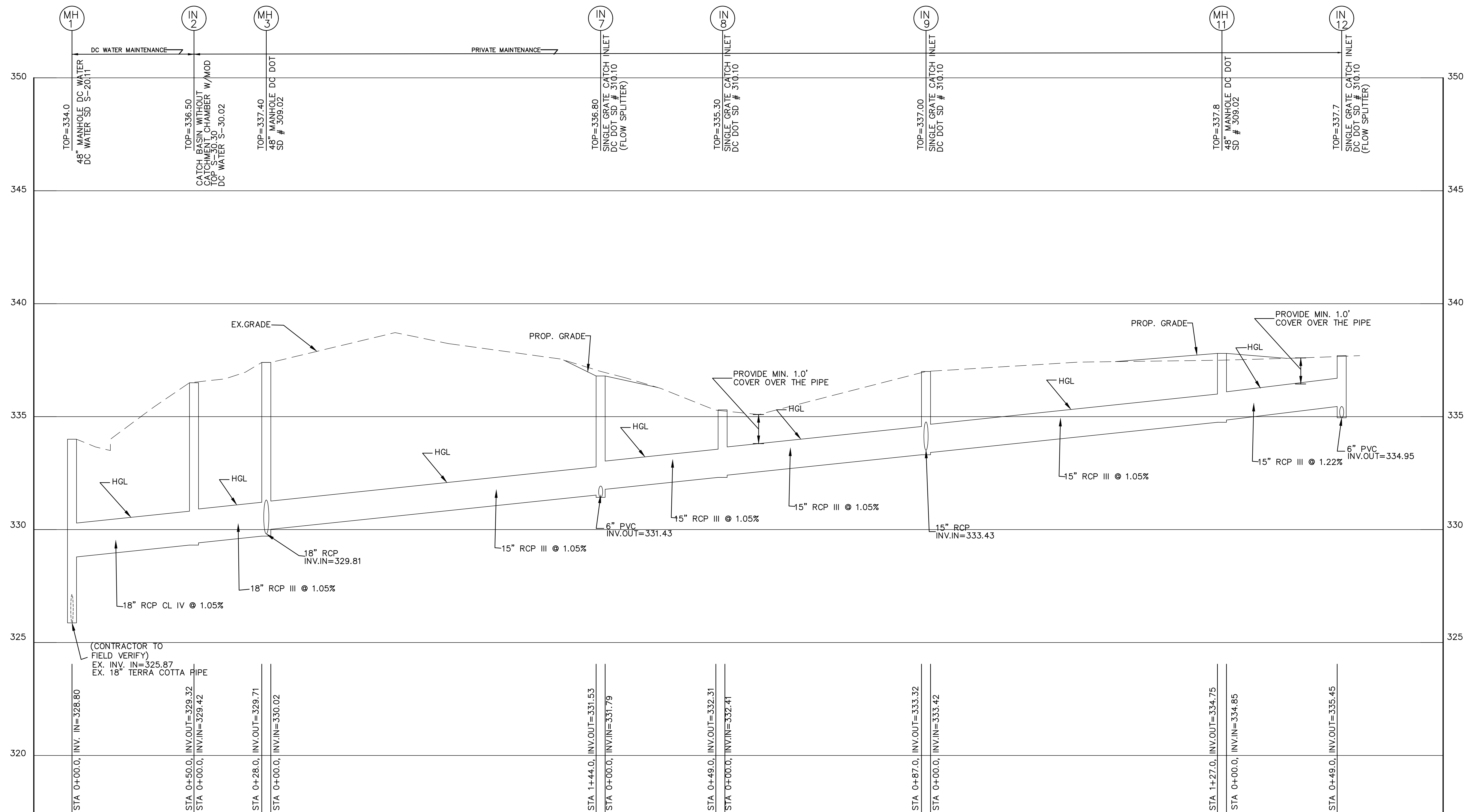
**MURCH ELEMENTARY SCHOOL
ADDITION & MODERNIZATION**
4810 36TH ST. NW
WASHINGTON DC, 20008

Project Number: 2015-4810

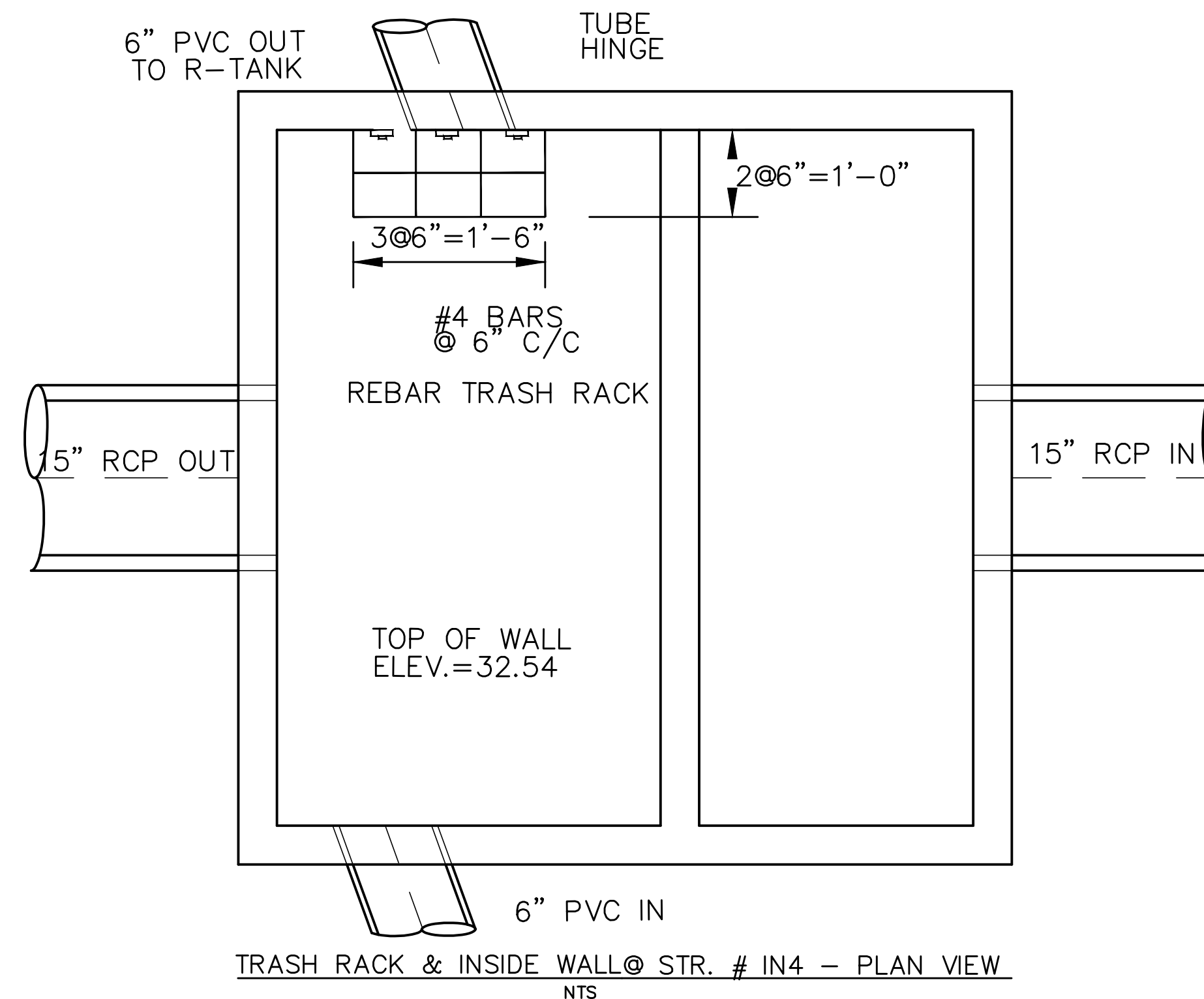
Revisions		
Revision Number	Revision Date	Revision Description
1	12/21/2016	ISSUE FOR CONSTRUCTION

Issue Date: 12/21/2016
Sheet Title: STORM DRAIN PROFILES
Sheet Number:

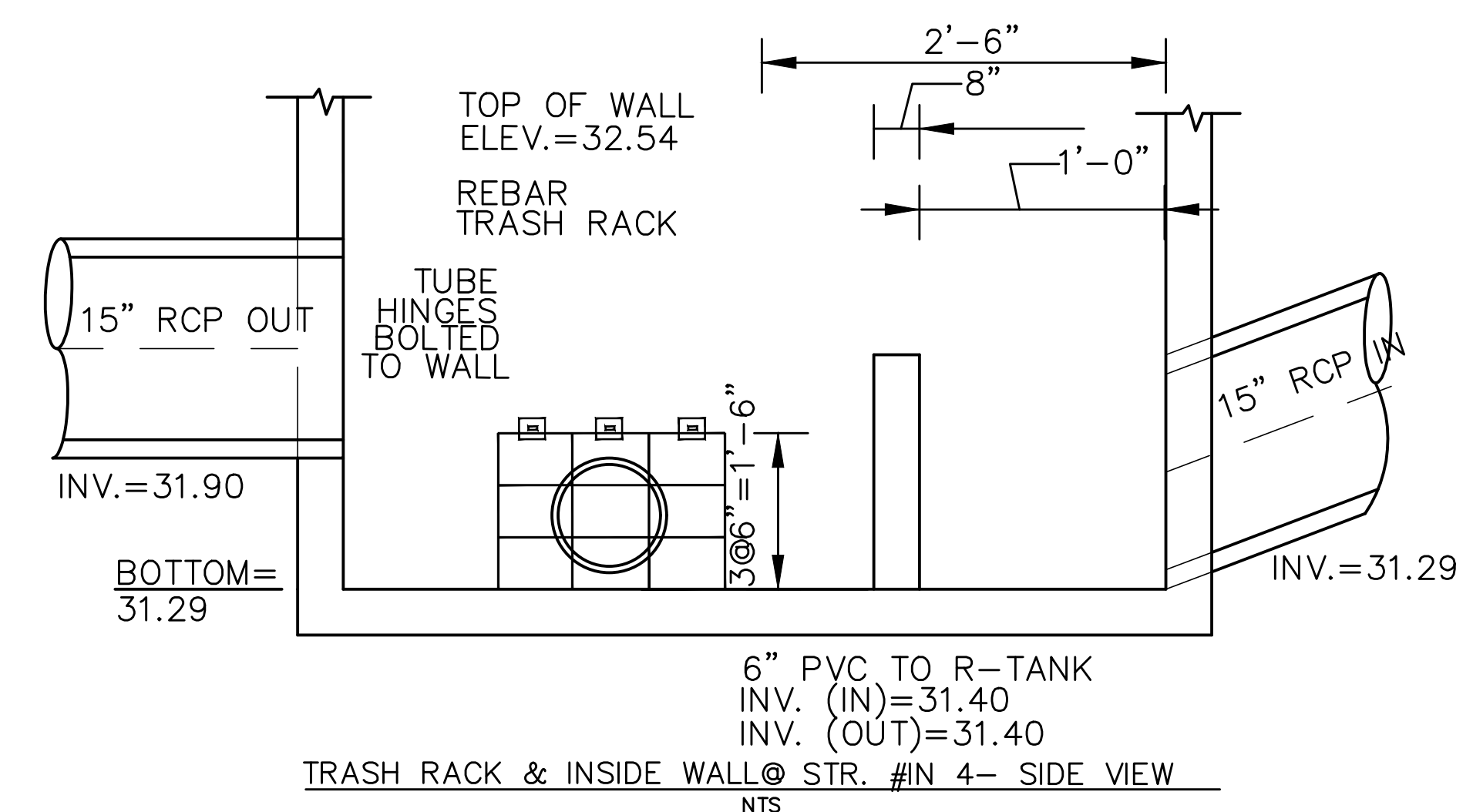
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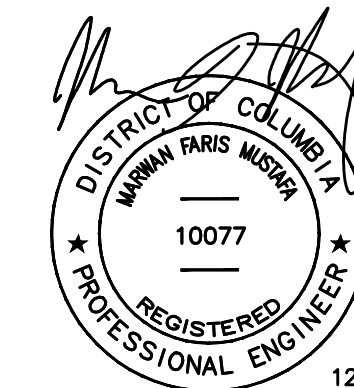
STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)



TRASH RACK & INSIDE WALL @ STR. # IN4 - PLAN VIEW
NTS



TRASH RACK & INSIDE WALL @ STR. # IN4 - SIDE VIEW
NTS



STORM DRAIN PROFILES



ASSOCIATE ARCHITECT:
herd coplan macht
2000 DUKE ST. #120
ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155
Connecticut Ave, NW,
Suite 800 Washington, DC 20036
T: 202.659.2520

MEP: Setty & Associates - 5185
MacArthur Blvd NW, Suite 220
Washington, DC 20016 T:
703.691.2115

Civil: CDDI - 701 12th St NW #2
Washington, DC 20018 T:
301.937.3501

Technology: Educational Systems
Planning
49 Old Solomon's Island Rd, Suite
301
Annapolis, MD 21401 T:
410-573-9148

Acoustics: Acoustical Design
Collaborative LTD
7509 L'Hirondelle Club Rd Ruxton,
MD 21204
T: 410-821-5930

Landscape Architect: Jordan
Honeyman - 711 Florida Ave NW
Washington, DC 20001 T:
202-986-0711

Kitchen: Nyikos Associates -
18219-A Flower Hill Way
Gaithersburg, MD 20879 T:
240-683-9530

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WASHINGTON DC, 20008**

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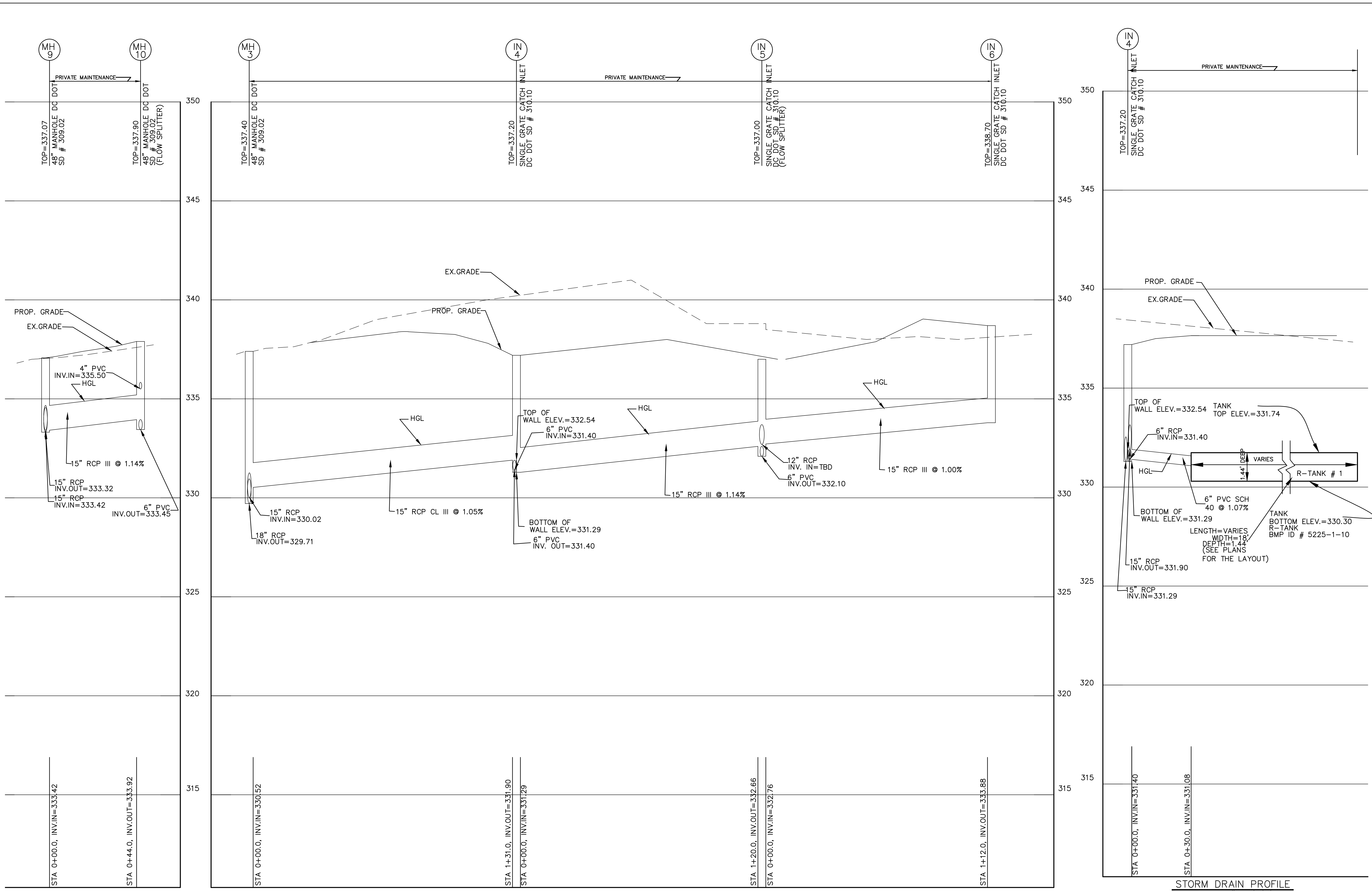
Revisions		
Revision Number	Revision Date	Revision Description

Issue Date: 12/21/2016

Sheet Title:
STORM DRAIN PROFILES

Sheet Number:

CIV503



STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)

STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)

STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)

STORM DRAIN PROFILES



R. McGHEE & ASSOCIATES
2031 FLORIDA AVE, NW, 3RD FLOOR, WASHINGTON, DC 20009
T: 202.626.0690

ASSOCIATE ARCHITECT:
herd | coplan | macht

2000 DUKE ST., #120 ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155 Connecticut Ave, NW, Suite 800 Washington, DC 20036
T: 202.659.2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016T: 703.691.2115

Civil: CDDI - 701 12th St NW #2 Washington, DC 20018 T: 301.937.3501

Technology: Educational Systems Planning
49 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD
7509 L'Hirondelle Club Rd Ruxton, MD 21204 T: 410-821-6930

Landscape Architect: Jordan Honeyman - 711 Florida Ave NW Washington, DC 20001 T: 202-986-0711

Kitchen: Nyikos Associates - 18219-A Flower Hill Way Gaithersburg, MD 20879 T: 240-683-9530

**MURCH ELEMENTARY SCHOOL
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4810 36TH ST. NW
WASHINGTON DC, 20008

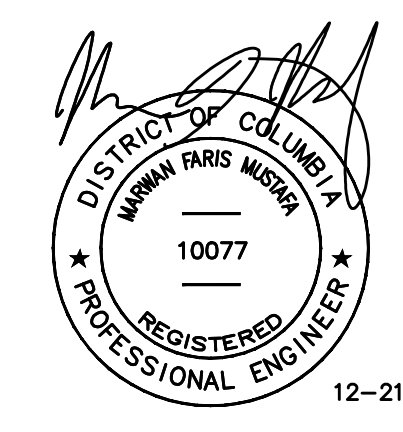
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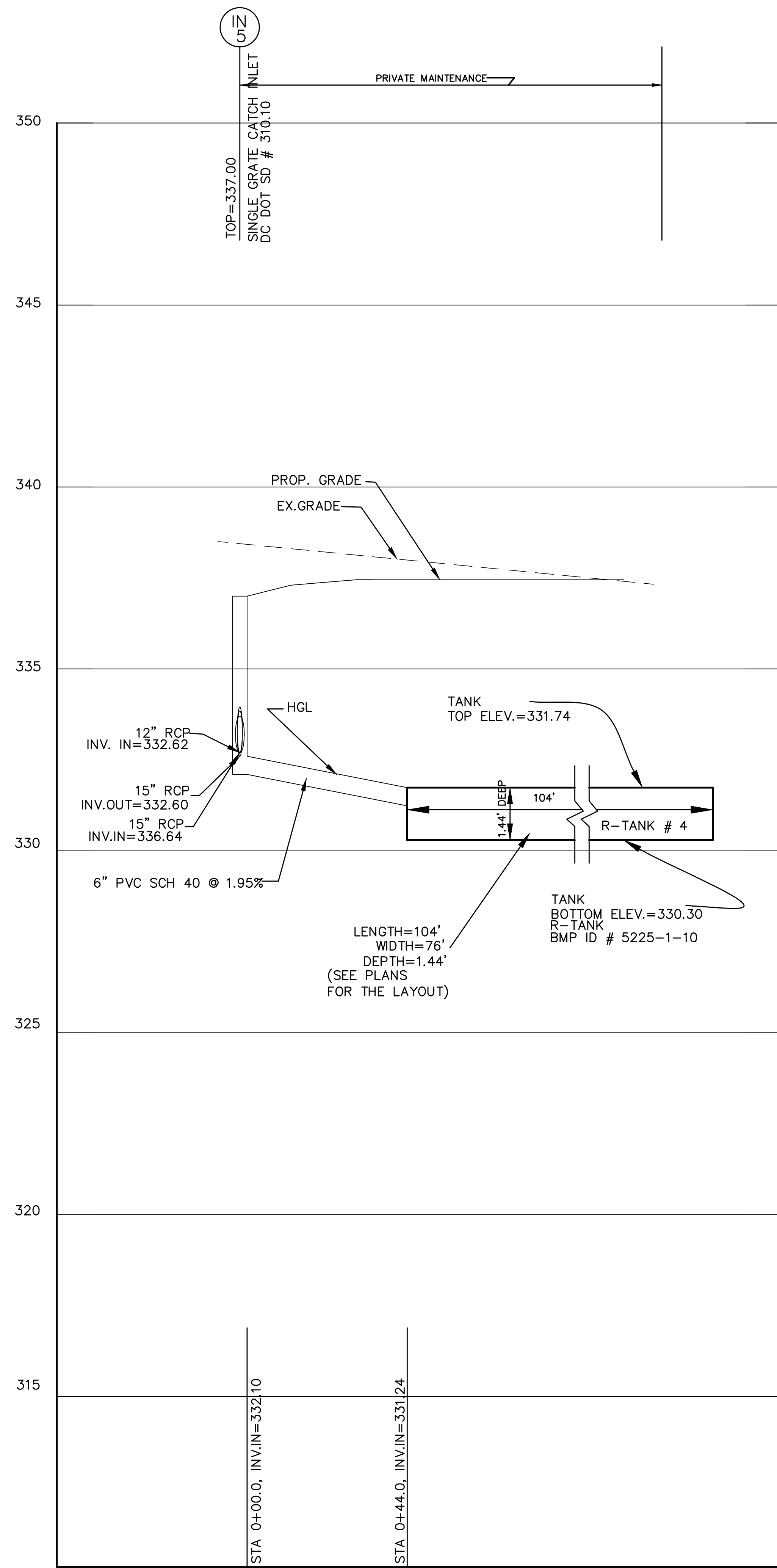
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Sheet Title:
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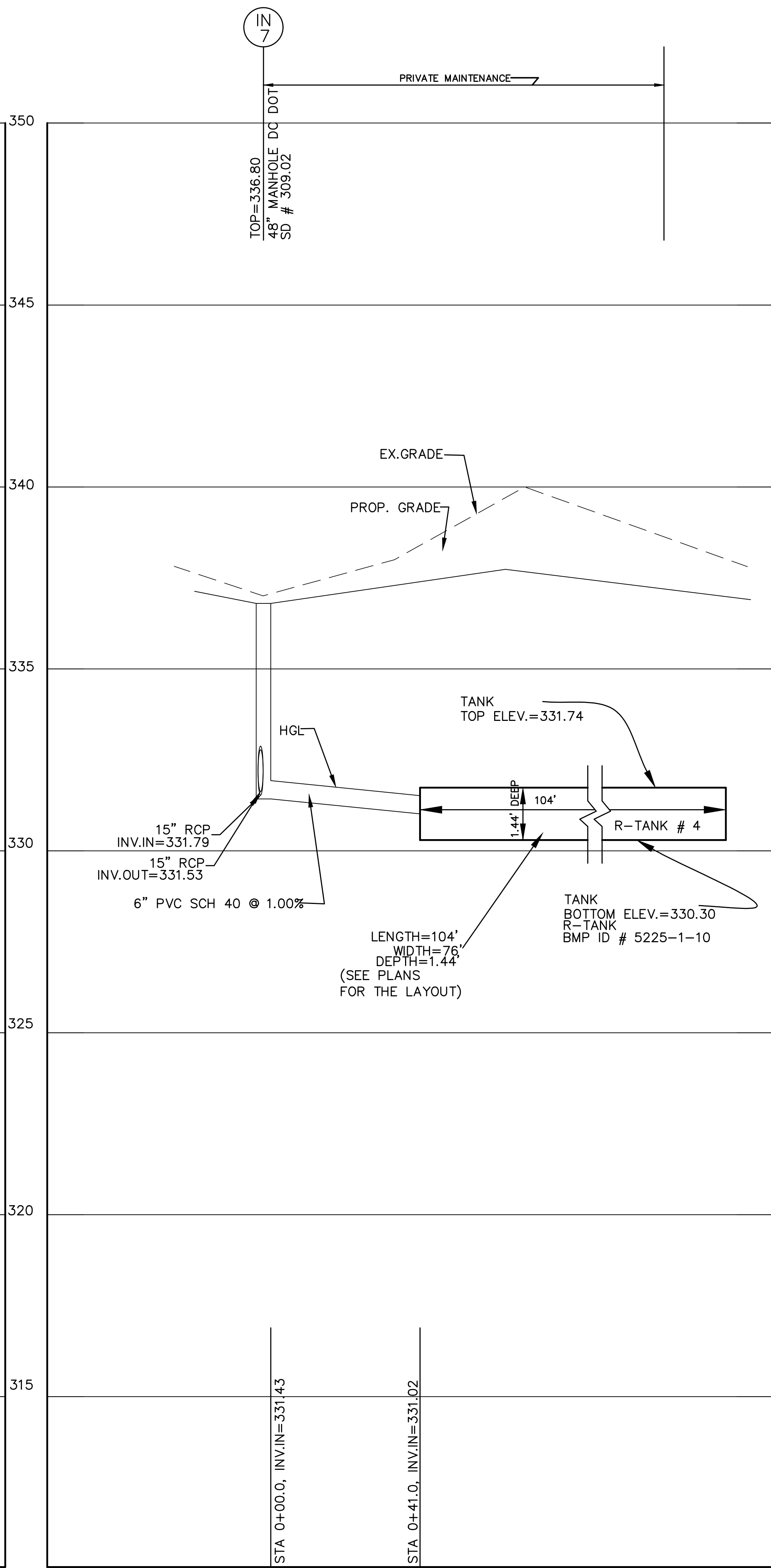
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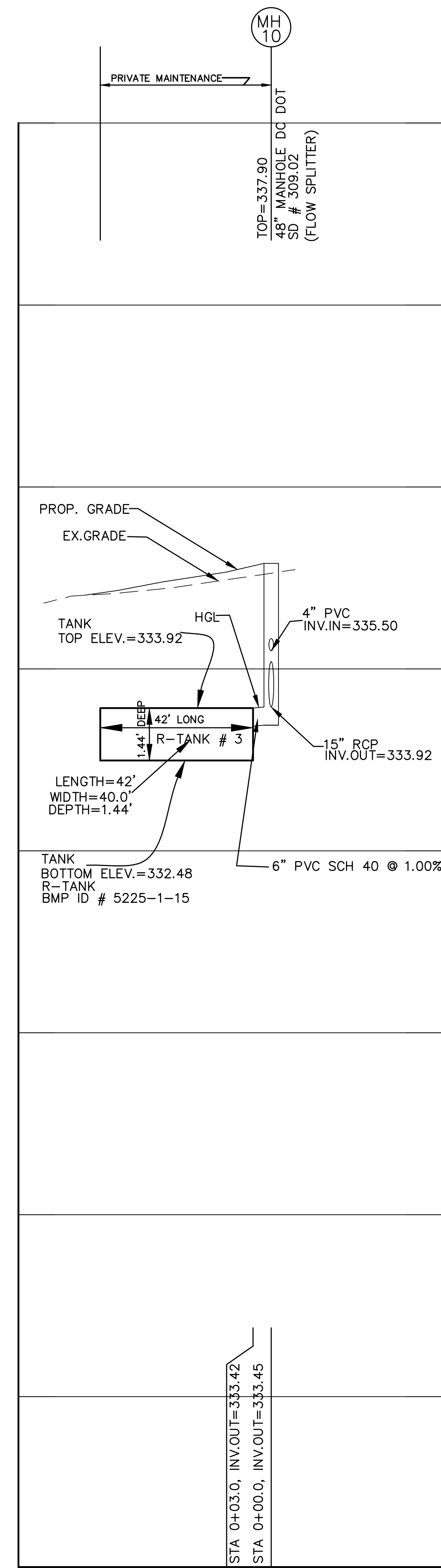
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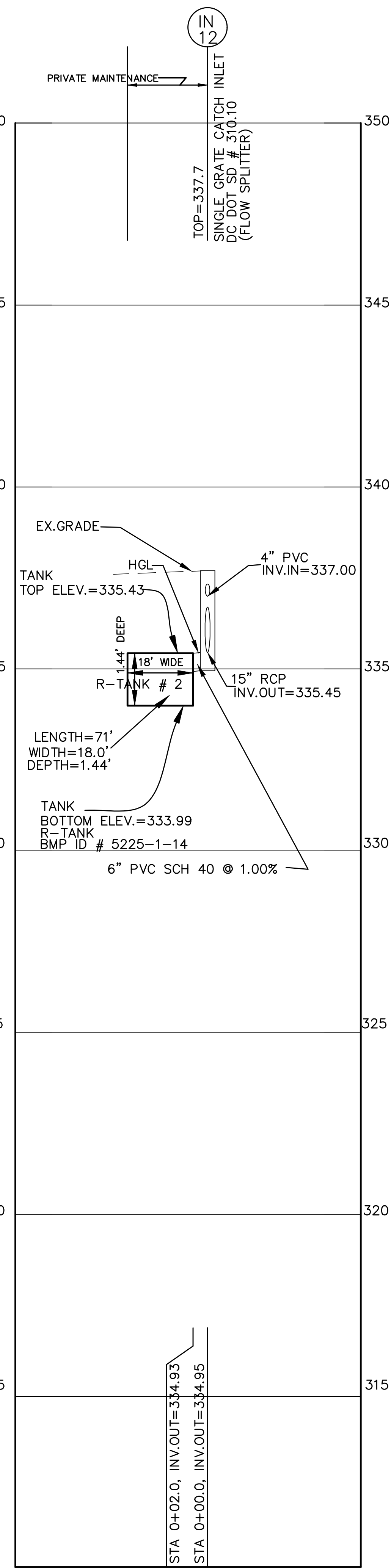
STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)



STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)

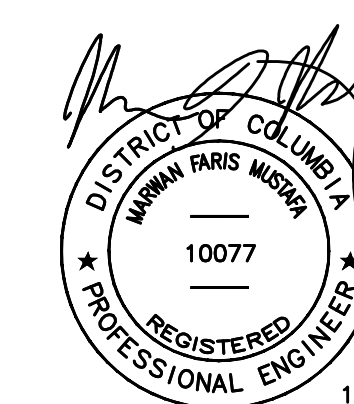


STORM DRAIN PROFILE
SCALE: 1"=20' (H)
1"=2' (V)



STORM DRAIN PROFILE
SCALE: 1"=20' (H)
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STORM DRAIN PROFILES



12-21-2016



R. McGHEE & ASSOCIATES
2031 FLORIDA AVE., NW, 3RD FLOOR, WASHINGTON, DC 20004
T: 202.626.0690

ASSOCIATE ARCHITECT:
hord coplan macht

2000 DUKE ST., #120 ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155 Connecticut Ave. NW, Suite 800 Washington, DC 20036
T: 202.659.2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016 T: 703.691.2115

Civil: CDDI - 701 12th St NW #2 Washington, DC 20018 T: 301.937.3501

Technology: Educational Systems Planning 49 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

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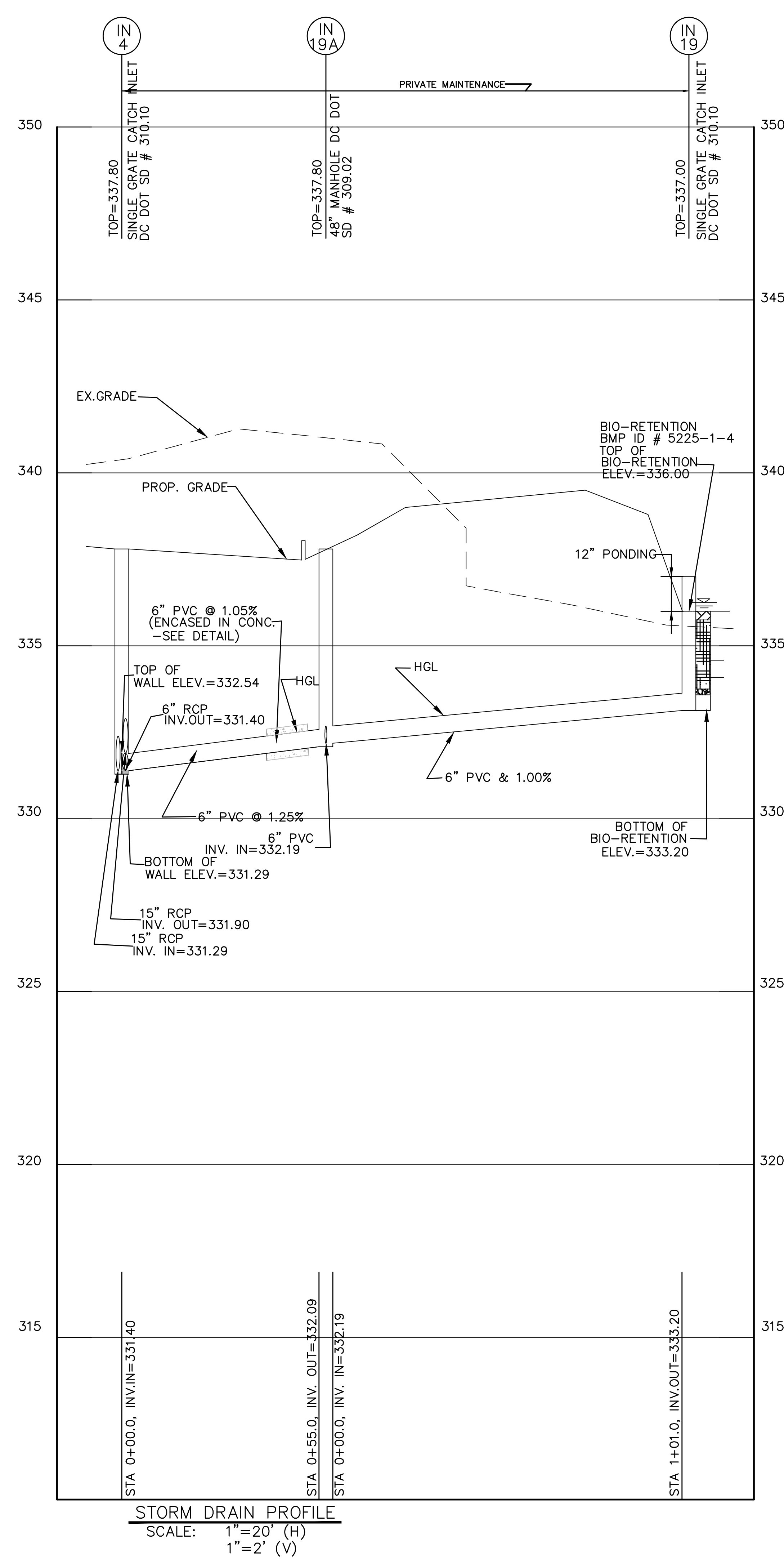
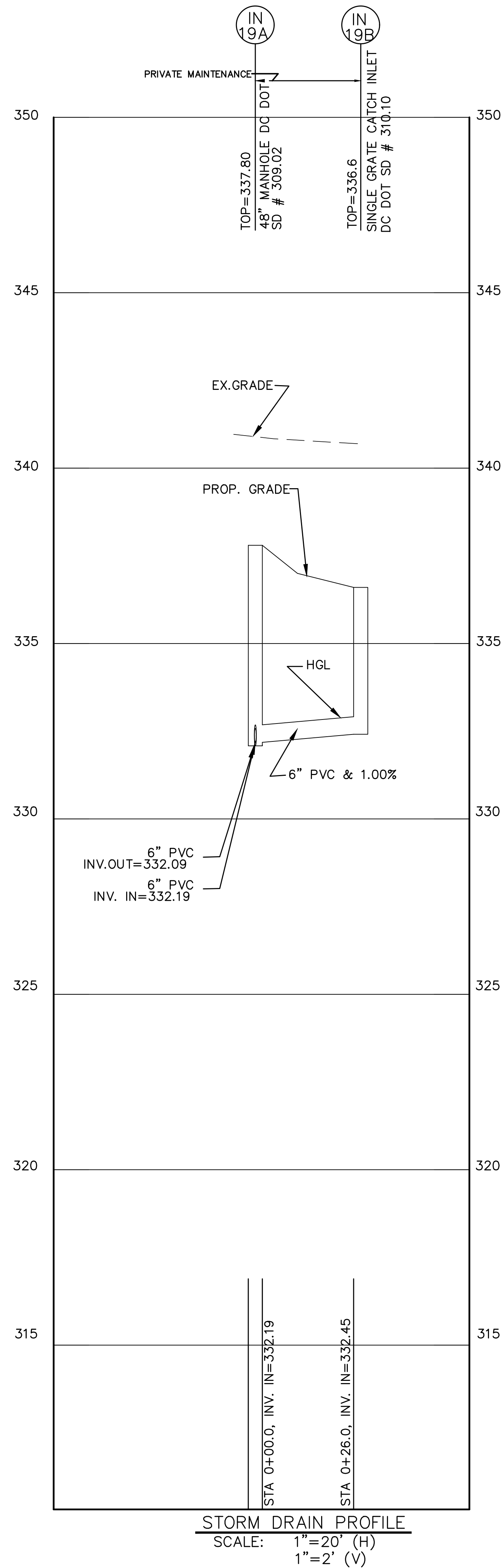
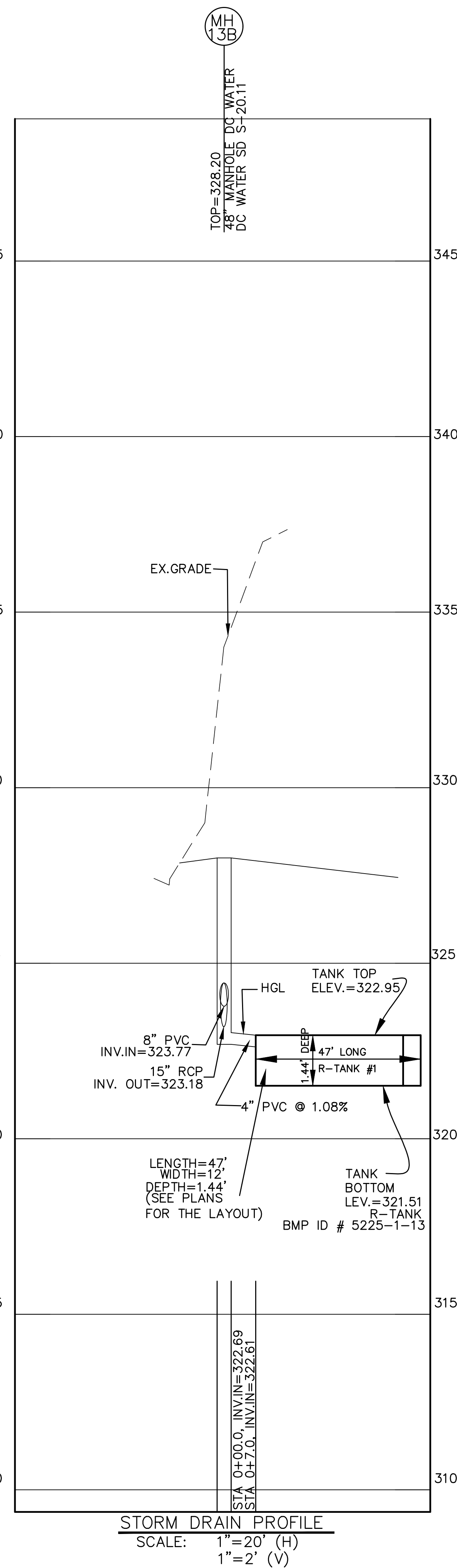
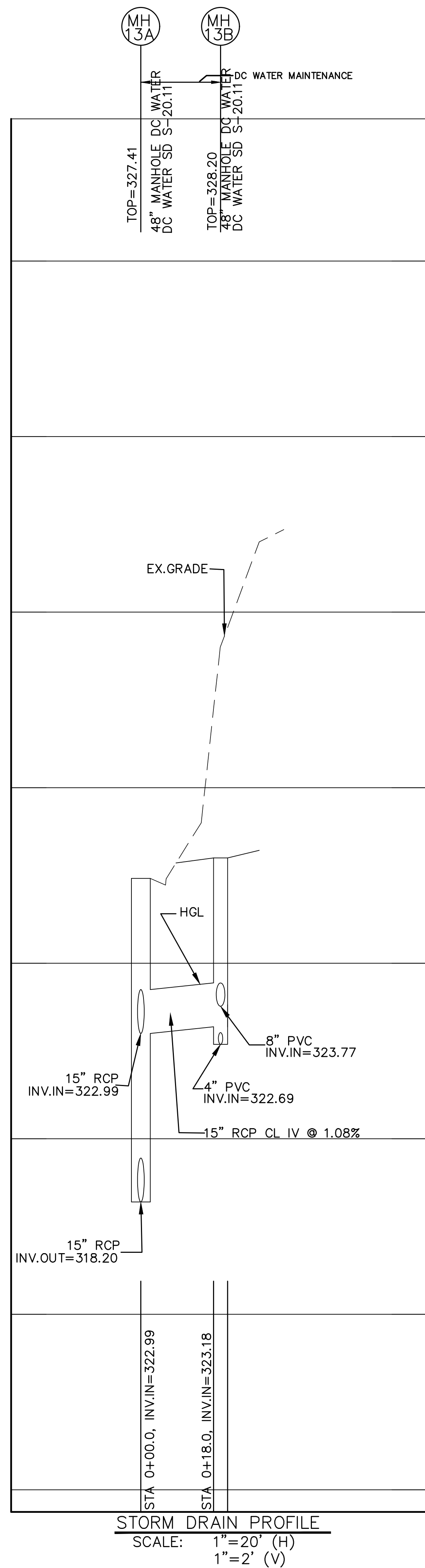
Kitchen: Nyikos Associates - 18219-A Flower Hill Way Gaithersburg, MD 20879 T: 240-683-9530

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4810 36TH ST. NW
WASHINGTON DC, 20008

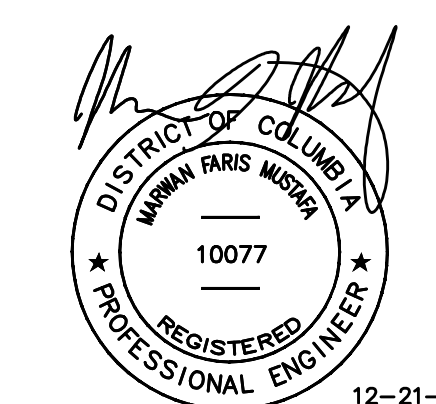
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STORM DRAIN PROFILES



ASSOCIATE ARCHITECT:
herd | coplan | macht
2000 DUKE ST., #120
ALEXANDRIA, VA 22314
T: 571.388.7761
F: 410.837.6530

Structural: SK&A - 1155
Connecticut Ave, NW,
Suite 800 Washington, DC 20036
T: 202.659.2520

MEP: Setty & Associates - 5185
MacArthur Blvd NW, Suite 220
Washington, DC 20016T T:
703.691.2115

Civil: ODDI - 701 12th St NW #2
Washington, DC 20018 T:
301.937.3501

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Planning
49 Old Solomon's Island Rd, Suite
301
Annapolis, MD 21401 T:
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7509 L'Hirondelle Club Rd Ruxton,
MD 21204
T: 410-821-5930

Landscape Architect: Jordan
Honeyman - 711 Florida Ave NW
Washington, DC 20001 T:
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18219-A Flower Hill Way
Gaithersburg, MD 20879 T:
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Sheet Title: STORM DRAIN PROFILES

Sheet Number: CIV506

12-21-2016

Structure		Area	R=C	AxR	Sum of	Te	Te	I	Q	Size	Velocity	Min	Length	Invert	Invert	Actual	Capacity	Velocity
From	To	Incr. Area	(sub-area)	(sub-area)	(sub-area)	(sub-area)	(sub-area)	in/hr	in	in	in	in	feet	out	in	slope (ft/ft)	eff.	(Max) fpm
IN6	IN5	0.120	0.90	0.11	0.108	5.0	5.0	7.56	0.82	15	0.67	0.02%	118.0	7.96	333.04	332.70	0.0105	6.63
IN5	IN4	0.670	0.90	0.60	0.711	5.0	5.0	7.56	5.38	15	4.38	0.69%	115.0	6.34	332.60	331.39	0.0105	6.63
IN19	CO2	0.700	0.67	0.47	0.469	5.0	5.0	7.56	3.55	15	2.89	0.30%	25.0	5.14	333.13	332.87	0.0105	6.63
CO2	CO1	0.000	0.00	0.00	0.469	5.0	5.0	7.56	3.55	15	2.89	0.30%	31.0	6.08	332.87	332.54	0.0105	6.63
CO1	IN4	0.000	0.00	0.00	0.469	5.0	5.0	7.56	3.55	15	2.89	0.30%	50.0	6.19	332.54	332.14	0.0080	5.78
IN4	IN3	0.160	0.76	0.12	1.302	5.0	5.0	7.56	9.84	18	5.57	0.88%	141.0	5.42	331.29	329.81	0.0105	10.76
IN12	MH11	0.130	0.90	0.12	0.117	5.0	5.0	7.56	0.88	15	0.72	0.02%	57.0	6.32	333.45	334.85	0.0105	6.63
MH11	MH9	0.000	0.00	0.00	0.117	5.0	5.0	7.56	0.88	15	0.72	0.02%	127.0	8.84	334.75	333.42	0.0105	6.61
MH10	MH9	0.170	0.90	0.15	0.153	5.0	5.0	7.56	1.16	15	0.94	0.03%	51.0	6.80	333.92	333.42	0.0100	6.48
MH9	IN8	0.000	0.00	0.00	0.270	5.0	5.0	7.56	2.04	15	1.66	0.10%	86.0	7.66	333.32	332.41	0.0105	6.62
IN8	IN7	0.300	0.84	0.33	0.598	5.0	5.0	7.56	4.52	15	3.68	0.49%	50.0	6.13	332.31	331.79	0.0105	6.61
IN7	IN3	0.060	0.84	0.05	0.648	5.0	5.0	7.56	4.90	15	3.99	0.58%	144.0	6.50	331.53	330.02	0.0105	6.61
IN3	IN2	0.130	0.65	0.08	2.034	5.0	5.0	7.56	15.38	18	8.70	2.14%	28.0	5.95	329.71	329.42	0.0104	10.69
IN2	MH1	0.040	0.65	0.03	2.000	5.0	5.0	7.56	15.57	18	8.81	2.20%	50.0	5.99	329.32	328.80	0.0104	10.71
MH18	MH14	0.020	0.90	0.02	0.018	5.0	5.0	7.56	0.14	15	0.11	0.00%	73.0	15.97	333.30	333.13	0.0105	6.63
MH14	MH13	0.000	0.00	0.00	0.320	5.0	5.0	7.56	2.42	15	1.97	0.14%	39.0	6.23	330.95	328.49	0.1400	24.17
IN16	IN15	0.150	0.58	0.09	0.087	5.0	5.0	7.56	0.66	8	1.88	0.30%	42.0	5.37	332.59	332.15	0.0105	1.24
IN15	MH14	0.260	0.69	0.18	0.266	5.0	5.0	7.56	2.01	15	1.64	0.10%	24.0	6.14	331.30	331.05	0.0105	6.61
MH17	MH14	0.040	0.90	0.04	0.036	5.0	5.0	7.56	0.66	15	0.54	0.01%	7.0	6.12	331.53	331.83	0.0100	6.46
CO13	MH13B	0.170	0.90	0.15	0.153	5.0	5.0	7.56	1.16	6	3.89	4.25%	34.0	5.10	332.15	330.00	0.0632	1.41
MH13C	MH13B	0.000	0.90	0.09	0.090	5.0	5.0	7.56	0.68	6	3.47	1.47%	15.0	5.07	332.23	331.00	0.0820	1.61
MH13B	MH13A	0.000	0.00	0.00	0.243	5.0	5.0	7.56	1.84	15	1.50	0.08%	19.0	6.11	326.02	324.70	0.0647	16.44
MH13	EX13A	0.000	0.00	0.00	0.320	5.0	5.0	7.56	2.42	15	1.97	0.14%	76.0	5.64	329.39	323.54	0.0243	10.08
MH13A	EX1	0.000	0.00	0.00	0.563	5.0	5.0	7.56	4.26	15	3.47	0.43%	93.0	5.45	323.99	321.13	0.0243	10.07

Structure		Outlet Pipe	Inlet Pipe #1	Angle	Q	V	Inlet Pipe #2	Angle	Q	V	Inlet Pipe #3	Angle	Q	V	Result Vel. (ft/s)	Head Loss
Number	Number	Q	V	degrees	ft ³ /s	ft/s	ft ³ /s	degrees	ft ³ /s	ft/s	ft ³ /s	degrees	ft ³ /s	ft/s	ft/s	feet
IN6	IN5	0.82	0.67	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
IN5	IN4	5.38	4.38	18	0.82	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.35	
IN19	CO2	3.55	2.89	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	
CO2	CO1	3.55	2.89	5	3.55	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89	0.05	
CO1	IN4	3.55	2.89	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	
IN4	IN3	9.84	5.57	6	3.55	2.89	IN5	90	5.38	0.00	0.00	0.00	0.00	1.04	0.52	
IN12	MH11	0.88	0.72	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	
MH11	MH9	0.88	0.72	90	0.88	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.05	
MH10	MH9	1.16	0.94	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	
MH9	IN8	2.04	1.66	90	0.00	0.00	MH11	0	0.88	0.72	0.00	0.00	0.00	0.31	0.09	
IN8	IN7	4.52	3.68	19	2.04	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.25		
IN7	IN3	4.90	3.99	21	4.52	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.34	0.12		
IN3	IN2	15.38	8.70	90	9.84	5.57	MH7	0	0.00	0.00	0.00	0.00	0.00	1.23		
IN2	MH1	15.57	8.81	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26		
MH18	MH14	0.14	0.11	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	
MH14	MH13	2.42	1.97	90	0.14	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	
IN16	IN15	0.66	0.54	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11		
IN15	MH14	2.01	1.64	35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09		
MH17	MH14	0.66	0.54	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05		
CO13	MH13B	1.16	0.94	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59		
MH13C	MH13B	0.68	0.54	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24		
MH13B	MH13A	1.84	1.50	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08		
MH13	EX13A	2.42	1.97	90	2.42	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11		
MH13A	EX1	4.26	3.47	90	0.00	0.00	1.97	1.59	0.00	0.00	0.00	0.00	0.00	0.24		

Pipe Segment		Inverts	Pipe Data	Slope and Invert Warnings	HGL Elevations	Pressure Flow Warnings						
From	To	Upstream	Downstream	Length (ft)	Diameter (inches)	Computed Slope (%)	Slope	Invert Differential	Upstream	Downstream	Head (ft) above crown	Gasket Requirements
IN6	IN5	333.91	332.70	118.0	15	1.05%	OK	Drop < HL	335.19	334.20	0.25	None
IN5	IN4	332.60	331.39	115.0	15	1.05%	OK	Drop < HL	333.85	332.64	0.00	None
IN19	CO2	333.13	332.87	25.0	15	1.05%	OK	Drop < HL	334.38	334.12	0.00	None
CO2	CO1	332.87	332.54	31.0	15	1.05%	OK	Drop < HL	334.12	333.79	0.00	None
CO1	IN4	332.54	332.14	50.0	15	0.80%	OK	Drop < HL	333.79	333.39	0.00	None
IN4	IN3	331.29	329.81	141.0	18	1.05%	OK	Drop < HL	332.79	331.31	0.00	None
IN12	MH11	333.45	334.85	57.0	15	1.05%	OK	Drop < HL	336.70	336.10	0.00	None
MH11	MH9	334.75	333.42	127.0	15	1.05%	OK	Drop < HL	336.00	334.67	0.00	None
MH10	MH9	333.92	333.42	51.0	15	1.00%	OK	Drop < HL	335.17	334.67	0.00	None
MH9	IN8	333.32	332.41	86.0	15	1.05%	OK	Drop < HL	334.57	333.66	0.00	None
IN8	IN7	332.31	331.79	50.0	15	1.05%	OK	Drop < HL	333.56	333.04	0.00	None
IN7	IN3	331.53	330.02	144.0	15	1.05%	OK	Drop < HL	332.78	331.27	0.00	None
IN3	IN2	329.71	329.42	28.0	18	2.37%	OK	Drop < HL	330.46	329.80	0.00	None
IN2	MH1	328.20	327.02	50.0	18	2.56%	OK	Drop < HL	329.70	328.52	0.00	None
MH18	MH14	335.90	335.13	73.0	15	1.05%	OK	Drop < HL	337.15	336.38	0.00	None
MH14	MH13	330.95	328.49	39.0	15	14.00%	OK	Drop < HL	332.20	326.74	0.00	None
IN16	IN15	332.59	332.15	42.0	8	1.05%	OK	Drop < HL	333.26	332.82	0.00	None
IN15	MH14	331.30	331.05	24.0	15	1.05%	OK	Drop < HL	332.55	332.30	0.00	None
MH17	MH14	335.90	335.83	7.0	15	1.00%	OK	Drop < HL	337.15	337.08	0.00	None
CO13	MH13B	332.15	330.00	34.0	6	6.32%	OK	Drop < HL	332.65	330.50	0.00	None
MH13C	MH13B	332.23	331.00	15.0	6	8.20%	OK	Drop < HL	332.73	331.50	0.00	None
MH13B	MH13A	326.02	324.70	19.0	15	6.47%						

PERMEABLE PAVEMENT - Area #1 (Turf @ 36 St & Davenport St)		BMP ID # 5225-1-1	
East(Total) @ Davenport & 36th Streets			
$S_v = A_p[(d_p \times \eta_p) + (i \times t_p)]$			
Sv = Storage Volume (ft ³)			
Permeable Pavement surface area	3921 ft ²		
Depth of reservoir layer (d _p)	1 ft		
Field verified infiltration rate (i)	0 ft/day		If impermeable liner is used then i=0
Effective porosity (η _p)	0.35		
Time to fill (t _f)	0.083 days		
Is the permeable pavement: has an infiltration sump? <input type="checkbox"/> Y/N ENHANCED STANDARD *ENHANCED AT SUMP			
has water quality filter? <input type="checkbox"/> Y/N N Y			
Underdrain? <input type="checkbox"/> Y/N N Y			
* Provide 100% retention value for only the storage within the sump			
Enhanced Permeable Pavement Receive 100% Retention Value			
Standard Permeable Pavement Receive 4.5CFRetention Value Per 100SF			
Sv =	1372.35 ft ³	Storage Volume	
Rvstd=	176.445 ft ³		Max. Rv eligible for discount is Rv1.2"
RvEnh=	1372.35 ft ³		
Rvstd=	1319.8086 gallons		
RvEnh=	10265.178 gallons		

PERMEABLE PAVEMENT - Area #2		BMP ID # 5225-1-2	
East(Total) @ Davenport			
$S_v = A_p[(d_p \times \eta_p) + (i \times t_p)]$			
Sv = Storage Volume (ft ³)			
Permeable Pavement surface area	3188 ft ²		
Depth of reservoir layer (d _p)	1 ft		
Field verified infiltration rate (i)	0 ft/day		If impermeable liner is used then i=0
Effective porosity (η _p)	0.35		
Time to fill (t _f)	0.083 days		
Is the permeable pavement: has an infiltration sump? <input type="checkbox"/> Y/N ENHANCED STANDARD *ENHANCED AT SUMP			
has water quality filter? <input type="checkbox"/> Y/N N Y			
Underdrain? <input type="checkbox"/> Y/N N Y			
* Provide 100% retention value for only the storage within the sump			
Enhanced Permeable Pavement Receive 100% Retention Value			
Standard Permeable Pavement Receive 4.5CFRetention Value Per 100SF			
Sv =	1115.8 ft ³	Storage Volume	
Rvstd=	143.46 ft ³		Max. Rv eligible for discount is Rv1.2"
RvEnh=	1115.8 ft ³		
Rvstd=	1073.0808 gallons		
RvEnh=	8346.184 gallons		

PERMEABLE PAVEMENT - Area #3-		BMP ID # 5225-1-3	
West(Total) @ Ellicott & 36th Streets			
$S_v = A_p[(d_p \times \eta_p) + (i \times t_p)]$			
Sv = Storage Volume (ft ³)			
Permeable Pavement surface area	1921 ft ²		
Depth of reservoir layer (d _p)	1 ft		
Field verified infiltration rate (i)	0 ft/day		If impermeable liner is used then i=0
Effective porosity (η _p)	0.35		
Time to fill (t _f)	0.083 days		
Is the permeable pavement: has an infiltration sump? <input type="checkbox"/> Y/N ENHANCED STANDARD *ENHANCED AT SUMP			
has water quality filter? <input type="checkbox"/> Y/N N Y			
Underdrain? <input type="checkbox"/> Y/N N Y			
* Provide 100% retention value for only the storage within the sump			
Enhanced Permeable Pavement Receive 100% Retention Value			
Standard Permeable Pavement Receive 4.5CFRetention Value Per 100SF			
Sv =	672.35 ft ³	Storage Volume	
Rvstd=	86.445 ft ³		Max. Rv eligible for discount is Rv1.2"
RvEnh=	672.35 ft ³		
Rvstd=	646.6086 gallons		
RvEnh=	5029.178 gallons		

GREEN ROOF #A - Area # A		BMP ID # 5225-1-7	
Proposed Building			
$S_v = SA \times [(d \times \eta) + (DL \times \eta_2)] / 12$			
Sv = Storage Volume	180.9167		
Green Roof Area (SA)	835 ft ²		
Media Depth (d)	2 in		
Drainage Layer Depth (DL)	12 in		
Media Volume of Voids (η ₂)	0.4		If unknown use 0.15
Drainage Layer Volume of Voids (η ₂)	0.15		
Green Roof Receive 100% Retention Value			
Sv =	180.9 ft ³		Max. Rv eligible for discount is Rv1.2"
Sv =	1333.3 gallons		

GREEN ROOF #B - Area # B		BMP ID # 5225-1-9	
Proposed Building			
$S_v = SA \times [(d \times \eta) + (DL \times \eta_2)] / 12$			
Sv = Storage Volume	83.2		
Green Roof Area (SA)	384 ft ²		
Media Depth (d)	2 in		
Drainage Layer Depth (DL)	12 in		
Media Volume of Voids (η ₂)	0.4		If unknown use 0.15
Drainage Layer Volume of Voids (η ₂)	0.15		
Green Roof Receive 100% Retention Value			
Sv =	83.2 ft ³		Max. Rv eligible for discount is Rv1.2"
Sv =	622.3 gallons		

GREEN ROOF #C - Area # C		BMP ID # 5225-1-11	
Proposed Building			
$S_v = SA \times [(d \times \eta) + (DL \times \eta_2)] / 12$			
Sv = Storage Volume	83.2		
Green Roof Area (SA)	384 ft ²		
Media Depth (d)	2 in		
Drainage Layer Depth (DL)	12 in		
Media Volume of Voids (η ₂)	0.4		If unknown use 0.15
Drainage Layer Volume of Voids (η ₂)	0.15		
Green Roof Receive 100% Retention Value			
Sv =	83.2 ft ³		Max. Rv eligible for discount is Rv1.2"
Sv =	622.3 gallons		

GREEN ROOF #D - Area # D		BMP ID # 5225-1-12	
Proposed Building			
$S_v = SA \times [(d \times \eta) + (DL \times \eta_2)] / 12$			
Sv = Storage Volume	445.25		
Green Roof Area (SA)	2055 ft ²		
Media Depth (d)	2 in		
Drainage Layer Depth (DL)	12 in		
Media Volume of Voids (η ₂)	0.4		If unknown use 0.15
Drainage Layer Volume of Voids (η ₂)	0.15		
Green Roof Receive 100% Retention Value			
Sv =	445.3 ft ³		Max. Sv eligible for discount is
Sv =	3330.5 gallons		

R-TANK DESIGN #1 (East Side @ 36th & Davenport St.)		BMP ID Number- 5225-1-13	
$S_v = SA \times [d + (i \times t)]$			
$S_v = SA \times [(d^* \eta) + (i \times t)]$			
Sv = Storage Volume (ft ³)			
Surface Area (SA)	592 ft ²		
Infiltration Depth (d)	1.44 ft		
Field verified infiltration rate (i)	2.04 ft/day		
R-Tank Effective porosity (η _r)	0.95		
Time to fill (t _f)	0.083 days		
Infiltration R-Tank Receive 95% Retention Value			
Sv ₉₅ =	541.5592 ft ³		Max. Rv eligible for discount is Rv1.2"
Svt =	515.9848 ft ³		Chosen for R-Tank
Sv ₉₅ =	4050.863055 gallons		
Svt =	3859.566543 gallons		

R-TANK DESIGN #2 (To WEST Side @ 36th & Ellicott St.)		BMP ID # 5225-1-14	
$S_v = SA \times [d + (i \times t)]$			
$S_v = SA \times [(d^* \eta) + (i \times t)]$			
Sv = Storage Volume (ft ³)			
Surface Area (SA)	1270 ft ²		
Infiltration Depth (d)	1.44 ft		
Field verified infiltration rate (i)	2.04 ft/day		
R-Tank Effective porosity (η _r)	0.95		
Time to fill (t _f)	0.083 days		
Infiltration R-Tank Receive 95% Retention Value			
Sv ₉₅ =	1161.7909 ft ³		Max. Rv eligible for discount is Rv1.2"
Svt =	1106.9269 ft ³		Chosen for R-Tank
Sv ₉₅ =	8690.196082 gallons		
Svt =	8279.813362 gallons		

R-TANK DESIGN #3 (TO WEST Side @ Ellicott St.)		BMP ID # 5225-1-15	
$S_v = SA \times [d + (i \times t)]$			
$S_v = SA \times [(d^* \eta) + (i \times t)]$			
Sv = Storage Volume (ft ³)			
Surface Area (SA)	1695 ft ²		
Infiltration Depth (d)	1.44 ft		
Field verified infiltration rate (i)	2.04 ft/day		
R-Tank Effective porosity (η _r)	0.95		
Time to fill (t _f)	0.083 days		
Infiltration R-Tank Receive 95% Retention Value			
Sv ₉₅ =	1550.5792 ft ³		Max. Rv eligible for discount is Rv1.2"
Svt =	1477.3552 ft ³		Chosen for R-Tank
Sv ₉₅ =	11598.33257 gallons		
Svt =	11050.61705 gallons		

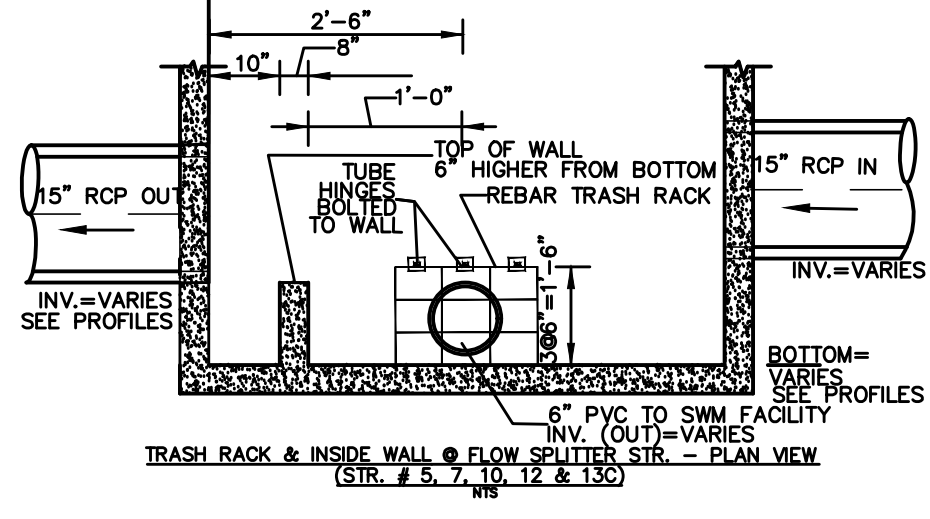
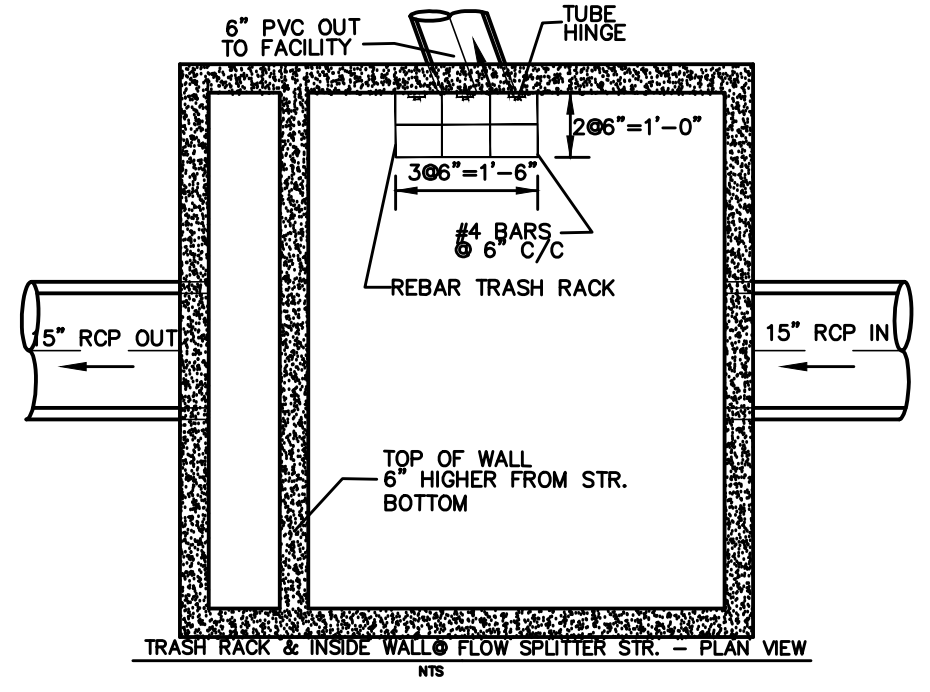
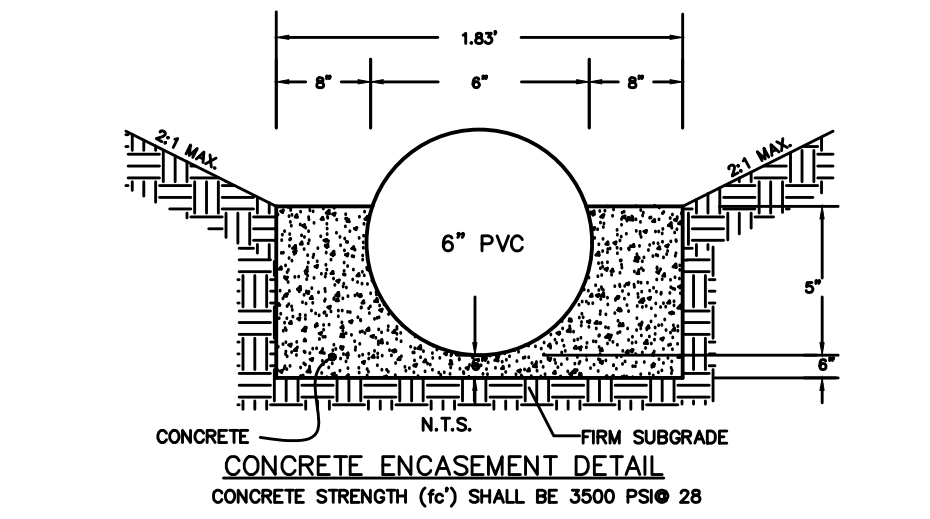
R-TANK DESIGN #4 (TO WEST Side @ Reno Rd. & Ellicott)		BMP ID # 5225-1-10	
$S_v = SA \times [d + (i \times t)]$			
$S_v = SA \times [(d^* \eta) + (i \times t)]$			
Sv = Storage Volume (ft ³)			
Surface Area (SA)	7842 ft ²		
Infiltration Depth (d)	1.44 ft		
Field verified infiltration rate (i)	2.04 ft/day		
R-Tank Effective porosity (η _r)	0.95		
Time to fill (t _f)	0.083 days		
Infiltration R-Tank Receive 95% Retention Value			
Sv ₉₅ =	7173.8302 ft ³		Max. Rv eligible for discount is Rv1.2"
Svt =	6835.0558 ft ³		Chosen for R-Tank
Sv ₉₅ =	53660.25014 gallons		
Svt =	51126.21762 gallons		

BIOFILTRATION W-R-TANK - AREA #2 (EAST)		BMP IN Number-5225-1-5	
Upper @ 36th Street			
$S_v = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$			
$S_v = SA_{bottom} \times [(R-Tank \times Tank Porosity)]$			
Sv = Storage Volume			
Bottom Surface Area (SA _{bottom})	398 ft ²		
Depth of Filter Media (d _{media})	2 ft		
Filter Media Effective Porosity (η _{media})	0.25		
Depth of Gravel Layer (d _{gravel})	0.5 ft		
Gravel Layer Effective Porosity (η _{gravel})	0.4		
Depth of R-Tank	1		
R-Tank Effective Porosity	0.95		
Average Surface Area (SA _{average})	398 ft ²		1/2x(top area+bottom area)
Max. Ponding Depth (d _{ponding})	1 ft		
media & gravel	Sv	676.6 ft ³	5061.319832
R-Tank	Sv	378.1 ft ³	
Total	Sv	1054.7 ft ³	
60% Sv	Standard BR		Underdrain < 24" filter media
95% Sv	R-Tank		Infiltrate in 72hr OR Underdrain + 24" filter media + Sump
100% Sv	Enhanced BR		
Total	Sv standard	765.155 ft ³	Max. Rv eligible for discount is Rv1.2"
	Sv enhanced	676.6 ft ³	
	Sv standard	5723.3594 gallons	
	Sv enhanced	5060.968 gallons	

BIOFILTRATION W-R-TANK - AREA #3 (EAST)		BMP IN Number-5225-1-6	
Lower @ 36th Street			
$S_v = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$			
$S_v = SA_{bottom} \times [(R-Tank \times Tank Porosity)]$			
Sv = Storage Volume			
Bottom Surface Area (SA _{bottom})	383 ft ²		
Depth of Filter Media (d _{media})	2 ft		
Filter Media Effective Porosity (η _{media})	0.25		
Depth of Gravel Layer (d _{gravel})	0.5 ft		
Gravel Layer Effective Porosity (η _{gravel})	0.4		
Depth of R-Tank	1		
R-Tank Effective Porosity	0.95		
Average Surface Area (SA _{average})	383 ft ²		1/2x(top area+bottom area)
Max. Ponding Depth (d _{ponding})	1 ft		
media & gravel	Sv	651.1 ft ³	4870.566572
R-Tank	Sv	363.85 ft ³	
Total	Sv	1014.95 ft ³	
60% Sv	Standard BR		Underdrain < 24" filter media
95% Sv	R-Tank		Infiltrate in 72hr OR Underdrain + 24" filter media + Sump
100% Sv	Enhanced BR		
Total	Sv standard	736.3175 ft ³	Max. Rv eligible for discount is Rv1.2"
	Sv enhanced	651.1 ft ³	
	Sv standard	5507.655 gallons	
	Sv enhanced	4870.228 gallons	

BIOFILTRATION W-R-TANK - AREA #1 (WEST)		BMP ID Number- 5225-1-4	
Reno Road & Davenport Street			
$S_v = SA_{bottom} \times [(d_{media} \times \eta_{media}) + (d_{gravel} \times \eta_{gravel})] + (SA_{average} \times d_{ponding})$			
$S_v = SA_{bottom} \times [(R-Tank \times Tank Porosity)]$			
Sv = Storage Volume			
Bottom Surface Area (SA _{bottom})	781 ft ²		
Depth of Filter Media (d _{media})	2 ft		
Filter Media Effective Porosity (η _{media})	0.25		
Depth of Gravel Layer (d _{gravel})	0.5 ft		
Gravel Layer Effective Porosity (η _{gravel})	0.4		
Depth of R-Tank	1		
R-Tank Effective Porosity	0.95		
Average Surface Area (SA _{average})	781 ft ²		1/2x(top area+bottom area)
Max. Ponding Depth (d _{ponding})	1 ft		
media & gravel	Sv	1327.7 ft ³	9931.886404
R-Tank	Sv	741.95 ft ³	
Total	Sv	2069.65 ft ³	
60% Sv	Standard BR		Underdrain < 24" filter media
95% Sv	R-Tank		Infiltrate in 72hr OR Underdrain + 24" filter media + Sump
100% Sv	Enhanced BR		
Total	Sv standard	1501.4725 ft ³	Max. Rv eligible for discount is Rv1.2"
	Sv enhanced	1327.7 ft ³	
	Sv standard	11231.0143 gallons	
	Sv enhanced	9931.196 gallons	

PERMEABLE ASPHALT - Area #8- Basketball Field		BMP ID # 5225-1-8	
West(Total) @ Ellicott & 36th Streets			
$S_v = A_p[(d_p \times \eta_p) + (i \times t_p)]$			
Sv = Storage Volume (ft ³)			
Permeable Pavement surface area	21075 ft ²		
Depth of reservoir layer (d _p)	2 ft		
Field verified infiltration rate (i)	0 ft/day		If impermeable liner is used then i=0
Effective porosity (η _p)	0.35		
Time to fill (t _f)	0.083 days		
Is the permeable pavement: has an infiltration sump? <input type="checkbox"/> Y/N ENHANCED STANDARD *ENHANCED AT SUMP			
has water quality filter? <input type="checkbox"/> Y/N N Y			
Underdrain? <input type="checkbox"/> Y/N N Y			
* Provide 100% retention value for only the storage within the sump			
Enhanced Permeable Pavement Receive 100% Retention Value			
Standard Permeable Pavement Receive 4.5CFRetention Value Per 100SF			
Sv =	14752.5 ft ³	Storage Volume	
Rvstd=	948.375 ft ³		Max. Rv eligible for discount is Rv1.2"
RvEnh=	14752.5 ft ³		
Rvstd=	7093.845 gallons		
RvEnh=	110348.7 gallons		



STORM DRAIN DETAIL AND NOTES

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN DISTRICT OF COLUMBIA

This is to certify that the engineering features of the stormwater discharge facility have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal

Stormwater Management Plan Compliance Data

Site Address: 4810 36TH STREET NW Plan number: 5225
 Stormwater Management Plan? Yes Green Area Ratio? No - GAR does not apply to this property
 Soil Erosion and Sediment Control? Yes Floodplain Review? No
 Type of Activity: More than one type of activity AWDZ? Non-AWDZ
 Is the entire site in the CSS? No

Total Area (sf)	Site Area	PROW	Curve Numbers
Natural	0	0	□ Additional Detention Provided
Compacted	40,072	40,072	Pre-development 70 2-year storm adjusted CN 40
Impervious	102,554	102,554	Pre-project 89 15-year storm adjusted CN 63
BMP	28,830	28,830	100-year storm adjusted CN 70
Total	171,456	171,456	

Requirements Summary	(total is the sum of PROW and Parcel)	PROW (ft²)	Parcel (ft²)	Total (ft²)	Total (Gallons)
SWRv		12,619	12,619	94,393	
WQTV		0	0	0	
On-site retention achieved		13,276	13,276	99,307	
On-site treatment achieved		2,697	2,697	20,173	
% of SWRv met on-site		105%	105.21%	105.21%	
SRC eligibility			4,913		
Offv			0		

Compliance data last updated: 11-28-2016 02:22 PM
 Plan 5225 Page 1 of 5

Site Drainage Area Compliance Data

Site Drainage Area ID	Public Right of Way	Total area (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Vehicular access area	SWRv (cubic feet)	WQTV (cubic feet)	Volume retained (cubic feet)	Volume treated (cubic feet)	2-year storm adjusted Curve Number	15-year storm adjusted Curve Number	100-year storm adjusted Curve Number	SDA Minimum Compliance
5225-1	□	171,456		40,072	102,554	28,830		12,619		13,276	2,697	40	63	70	Yes

Site BMP Compliance Data

Compliance data last updated: 11-28-2016 02:22 PM
 Plan 5225 Page 2 of 5

BMP ID number	Type	Total CDA (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Total Post project vehicular access area	Volume received from upstream BMPs (cubic feet)	Max volume received by BMP (cubic feet)	Storage volume (cubic feet)	Retention calculation	Volume retained (cubic feet)	Volume treated (cubic feet)	Downstream BMP ID Numbers
5225-1-1	Permeable pavers - Standard	3,921				3,921			528	1,372	4.5 cubic feet per 100 square feet	176	351	
5225-1-11	Extensive green roof	384				384			52	83	100% of storage volume	52		5225-1-16
5225-1-12	Extensive green roof	2,055				2,055			277	445	100% of storage volume	277		5225-1-16
5225-1-13	Infiltration trench	5,054			4,462	592		357	1,038	516	100% of storage volume	516		
5225-1-14	Infiltration trench	4,151			2,881	1,270		559	1,107	100% of storage volume	559			5225-1-15
5225-1-15	Infiltration trench	9,063			7,368	1,695		1,220	1,477	100% of storage volume	1,220			5225-1-16
5225-1-16	Infiltration trench	38,832		7,222	23,768	7,842		3,038	7,548	6,835	100% of storage volume	6,835		

Compliance data last updated: 11-28-2016 02:22 PM
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STORM DRAIN DETAIL AND NOTES

BMP ID number	Type	Total CDA (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Total Post project vehicular access area	Volume received from upstream BMPs (cubic feet)	Max volume received by BMP (cubic feet)	Storage volume (cubic feet)	Retention calculation	Volume retained (cubic feet)	Volume treated (cubic feet)	Downstream BMP ID Numbers
5225-1-2	Permeable pavers - Standard	3,188				3,188			429	1,116	4.5 cubic feet per 100 square feet	143	286	
5225-1-3	Permeable pavers - Standard	1,921				1,921			259	672	4.5 cubic feet per 100 square feet	86	172	5225-1-16
5225-1-4	Traditional bioretention - Enhanced	20,439		6,284	13,374	781			2,128	1,150	100% of storage volume	1,150		5225-1-16
5225-1-5	Traditional bioretention - Enhanced	7,443		3,483	3,562	398			656	586	100% of storage volume	586		5225-1-6
5225-1-6	Traditional bioretention - Enhanced	8,667		3,180	5,104	383		70	921	564	100% of storage volume	564		5225-1-13
5225-1-7	Extensive green roof	835				835			112	181	100% of storage volume	112		5225-1-16
5225-1-8	Porous asphalt - Standard	21,075				21,075			2,836	14,752	4.5 cubic feet per 100 square feet	948	1,888	5225-1-16

Compliance data last updated: 11-28-2016 02:22 PM
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BMP ID number	Type	Total CDA (square feet)	Natural (square feet)	Compacted (square feet)	Impervious (square feet)	BMP (square feet)	Total Post project vehicular access area	Volume received from upstream BMPs (cubic feet)	Max volume received by BMP (cubic feet)	Storage volume (cubic feet)	Retention calculation	Volume retained (cubic feet)	Volume treated (cubic feet)	Downstream BMP ID Numbers
5225-1-9	Extensive green roof	384				384			52	83	100% of storage volume	52		5225-1-16

PROW Drainage Area Compliance Data

No records were retrieved.

PROW BMP Compliance Data

No records were retrieved.

Compliance data last updated: 11-28-2016 02:22 PM
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DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY S-12.01 2 OF 2

PIPE DIAMETER	PIPE BEDDING DIMENSION			TRENCH PAY WIDTH	
	D	W	A	UN-SHEETED Wu	SHEETED Ws
12"	12"	5"	3"	6"	3' - 4"
15"	12"	5"	3"	6"	3' - 10"
18"	12"	8"	3"	6"	4' - 1"
21"	12"	7"	3"	6"	3' - 7"
24"	12"	8"	3"	6"	4' - 5"
27"	18"	8"	3"	6"	4' - 9"
30"	18"	9"	4"	9"	5' - 0"
33"	18"	10"	4"	9"	6' - 3"
36"	18"	10"	4"	9"	6' - 7"
42"	18"	13"	4"	9"	6' - 11"
48"	24"	15"	4"	9"	7' - 2"
54"	24"	16"	4"	9"	7' - 9"
60"	24"	18"	4"	9"	8' - 3"
66"	24"	20"	6"	12"	9' - 4"
72"	24"	22"	6"	12"	10' - 1"
78"	24"	23"	6"	12"	10' - 7"
84"	24"	25"	6"	12"	11' - 1"
90"	24"	27"	6"	12"	11' - 7"
96"	24"	28"	6"	12"	12' - 1"
102"	24"	30"	6"	12"	12' - 7"
108"	24"	32"	6"	12"	13' - 1"

NOTES:
 1. IF NECESSARY TO EXCEED W BELOW A HORIZONTAL PLANE 1'-0" ABOVE TOP OF PIPE, SEE SPECIFICATION SECTION 02220.
 2. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWING. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF THE PIPE OR AS DIRECTED BY THE ENGINEER.

APPROVED DATE: June 20, 2003 REVISION NO.: 0 DATE: 6/20/03
 DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES PREPARED BY: OSG/BLV CHECKED BY: W.DARRROW
 STANDARD DETAIL CONCRETE PIPE SEWER TRENCH LAYING CONDITION

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY S-12.01 1 OF 2

NOTES:
 1. IF ROCK IS ENCOUNTERED, NO LEDGE OR UNEXCAVATED MATERIAL SHALL PROJECT BEYOND THIS LINE.
 2. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWING.

APPROVED DATE: June 20, 2003 REVISION NO.: 0 DATE: 6/20/03
 DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES PREPARED BY: OSG/BLV CHECKED BY: W.DARRROW
 STANDARD DETAIL CONCRETE PIPE SEWER TRENCH LAYING CONDITION

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY S-15.01 1 OF 1

PIPE DIAMETER	TRENCH PAY WIDTH (Ws OR Wu)	
	TRENCH WIDTH CLEAR	TRENCH PAY WIDTH
0	0	0
10"	12"	2'-11"
12"	12"	3'-0"
15"	12"	3'-3"
18"	12"	3'-7"
21"	12"	4'-1"
24"	12"	4'-4"
27"	12"	4'-7"

NOTES:
 1. IF NECESSARY TO EXCEED W BELOW A HORIZONTAL PLANE 1'-0" ABOVE TOP OF PIPE, SEE SPECIFICATION SECTION 02220.
 2. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWING.

APPROVED DATE: June 20, 2003 REVISION NO.: 0 DATE: 6/20/03
 DIRECTOR, DEPARTMENT OF ENGINEERING AND TECHNICAL SERVICES PREPARED BY: OSG/BLV CHECKED BY: W.DARRROW
 STANDARD DETAIL POLYVINYL CHLORIDE (PVC) PIPE SEWER TRENCH LAYING CONDITION



R. McGHEE & ASSOCIATES
 2031 FLORIDA AVE, NW, 3RD FLOOR, WASHINGTON, DC 20009
 T: 202.626.0690

ASSOCIATE ARCHITECT:
herd | coplan | macht
 2000 DUKE ST., #120 ALEXANDRIA, VA 22314
 T: 571.388.7761 F: 410.837.6530

Structural: SK&A - 1155 Connecticut Ave, NW, Suite 800 Washington, DC 20036 T: 202.659.2520

MEP: Setty & Associates - 5185 MacArthur Blvd NW, Suite 220 Washington, DC 20016 T: 703.691.2115

Civil: CDDI - 701 12th St NW #2 Washington, DC 20018 T: 301.937.3501

Technology: Educational Systems Planning 49 Old Solomon's Island Rd, Suite 301 Annapolis, MD 21401 T: 410-573-9148

Acoustics: Acoustical Design Collaborative LTD 7509 L'Hirondelle Club Rd Ruxton, MD 21204 T: 410-821-5930

Landscape Architect: Jordan Honeyman - 711 Florida Ave NW Washington, DC 20001 T: 202-986-0711

Kitchen: Nyikos Associates - 18219-A Flower Hill Way Gaithersburg, MD 20879 T: 240-683-9530

MURCH ELEMENTARY SCHOOL ADDITION & MODERNIZATION
 4810 36TH ST. NW WASHINGTON DC, 20008

Project Number: 2015-4810

Revision Number	Revision Date	Revision Description
1	12/21/2016	ISSUE FOR CONSTRUCTION

Issue Date: 12/21/2016

Sheet Title: STORM DRAIN DETAIL AND NOTES

Sheet Number: CIV509

