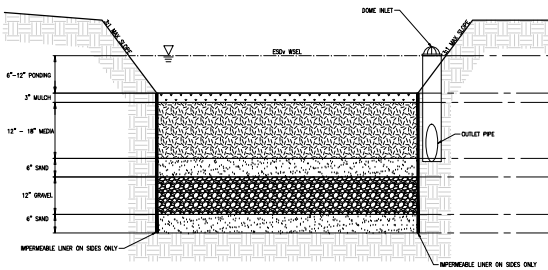
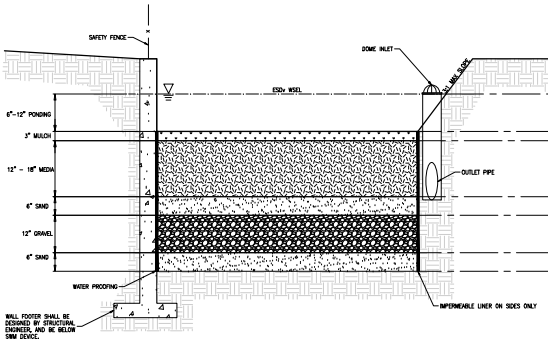


LANDSCAPE INFILTRATION 1,2,5,6,7, & 8 TYPICAL DETAIL

SCALE:N.T.S

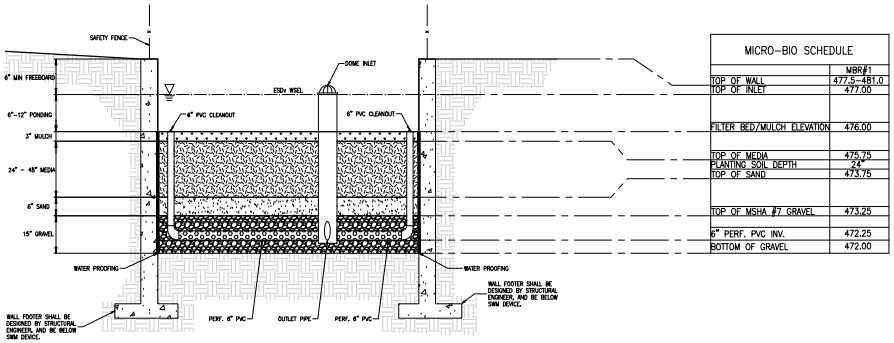
LANDSCAPE INFILTRATION SCHEDULE (NO WALL)							
	LI. #1	LI. #2	LI. #5	LI. #6	LI. #7	LI. #8
TOP OF EMBANKMENT	482.50	478.00	473.25	474.50	476.50	474.50
TOP OF INLET/WEIR CREST	482.00	478.50	472.75	474.00	476.00	474.00
FILTER BED/MULCH ELEVATION	481.00	478.00	472.25	473.50	475.00	473.50
TOP OF MEDIA	480.75	477.75	472.00	473.25	474.75	473.25
PLANTING SOIL DEPTH	18"	18"	18"	18"	18"	18"
TOP OF SAND	479.75	475.75	470.50	471.75	473.25	472.25
TOP OF MSHA #7 GRAVEL	479.25	475.75	470.00	471.25	472.75	471.75
TOP OF SAND	478.25	474.75	469.00	470.25	471.75	470.75
BOTTOM OF SAND	477.75	474.25	468.50	469.75	471.25	470.25



LANDSCAPE INFILTRATION 3 & 4 TYPICAL DETAIL

SCALE:N.T.S

LANDSCAPE INFILTRATION SCHEDULE (WITH WALL)		
	LI. #3	LI. #4
TOP OF EMBANKMENT	475.50	475.00
TOP OF INLET/WEIR CREST	475.00	474.50
FILTER BED/MULCH ELEVATION	474.00	474.00
TOP OF MEDIA	473.75	473.75
PLANTING SOIL DEPTH	18"	15"
TOP OF SAND	472.25	472.50
TOP OF MSHA #7 GRAVEL	471.75	472.00
TOP OF SAND	470.75	471.00
BOTTOM OF SAND	470.25	470.50

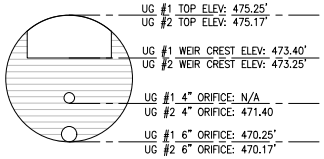


MICRO-BIO SCHEDULE	
	MBR#1
TOP OF WALL	477.5-481.0
TOP OF INLET	477.00
FILTER BED/MULCH ELEVATION	476.00
TOP OF MEDIA	475.75
PLANTING SOIL DEPTH	24"
TOP OF SAND	473.75
TOP OF MSHA #7 GRAVEL	473.25
6" PERF. PVC INV.	472.25
BOTTOM OF GRAVEL	472.00

MICRO BIO RETENTION #1 TYPICAL DETAIL

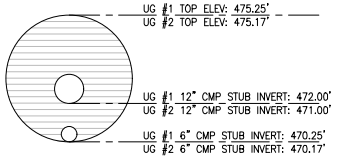
SCALE:N.T.S

Exhibit 19 (c)
OZAH Case No: CU 24-07



UNDERGROUND #1 & #2 INTERNAL WEIR PLATE DETAIL

SCALE:N.T.S



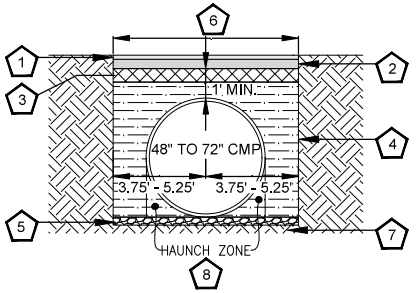
UNDERGROUND #1 & #2 OUTFALL STUB DETAIL

SCALE:N.T.S

MISS UTILITY

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND MAKE FIELD FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

CERTIFICATIONS ON THIS SHEET ARE REQUIRED ON ANY PLAN INVOLVING STORMWATER MANAGEMENT. THE STRUCTURAL CERTIFICATION IS REQUIRED FOR UNDERGROUND STORMWATER MANAGEMENT STRUCTURES WHERE POURED CONCRETE WALLS ARE TO BE UTILIZED, OR ON ANY OTHER STRUCTURE MCDPS DEEMS APPROPRIATE.



48" - 72" UNDERGROUND CMP CROSS SECTION DETAIL

SCALE:N.T.S.

CMP STORAGE SYSTEM			
Material Location	Description	Material Designation	Designation
1 Flexible Pavement (IF APPLICABLE)	3" BITUMINOUS CONCRETE SURFACE,	MC-214.01	PLACED IN 2 - 1.2" LAYERS
2 Road Base (IF APPLICABLE)	7" BITUMINOUS CONCRETE BASE COURSE,	MC-214.01	PLACED IN 3- 3.5" LAYERS
3 Road Base (IF APPLICABLE)	8" GRADED AGGREGATE BASE COURSE,	MC-214.01	PLACED IN 2 4" LAYERS
4 Backfill	WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY,	AASHTO M 145- A-1, A-2, A-3	PLACED IN 6" +/- LOOSE LIFTS AND COMPACTED TO 95% STANDARD PROCTOR PER AASHTO T 99
5 Bedding Stone	WELL GRADED GRANULAR BEDDING MATERIAL W/MAXIMUM PARTICLE SIZE OF 1"	AASHTO M43- 3,357, 4,467, 5, 56, 57	BEDDING MUST EXTEND A MINIMUM OF 6-INCHES BELOW THE BOTTOM OF THE PIPE, AND SHALL EXTEND TO THE SPRINGLINE. FLOWABLE FILL IS ALSO ACCEPTABLE, WITH PROPER ANCHORAGE DURING INSTALLATION. FOR FLEXIBLE PIPE (CMP), FLOWABLE FILL MUST EXTEND TO THE TOP OF THE PIPE.
A Geotextile Layer	NON-WOVEN GEOTEXTILE	CONTECH C-40 or C-45	TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES
*	*Note: Backfill using controlled low-strength material (CLSM, "flash fill" or "flowable fill") when the spacing between the pipes will not allow for placement and adequate compaction of the backfill.*		

6 MINIMUM WIDTH: 1.5 X Ø +12" = 1.5 X 48" + 12" = 7.5' (48" CMP) . 1.5 X 60" + 12" = 9.0' (60" CMP), & 1.5 X 72" + 12" = 10.5' (72" CMP)

7 FOUNDATION/BEDDING PREPARATION

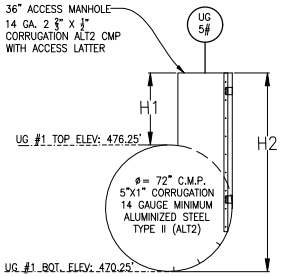
PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

8 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMALLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL

WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

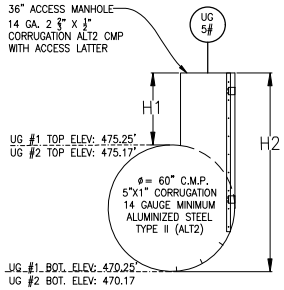
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.



MANHOLE #	TOP ELEV.	DEPTH TO TOP OF CMP (H1)	DEPTH TO BOTTOM OF CMP (H2)
UG1A	480.25'	4.00'	10.00'
UG1B	480.00'	3.75'	9.75'
UG1C	478.04'	1.79'	7.79'
UG1D	477.85'	1.60'	7.60'
UG1E	477.50'	1.25'	7.25'

36" CMP RISER DETAIL FOR UNDERGROUND UG#1 72" CMP

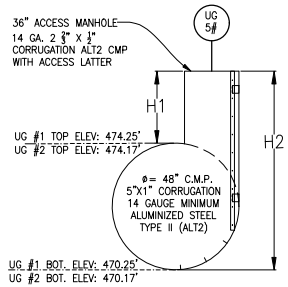
(N.T.S.)



MANHOLE #	TOP ELEV.	DEPTH TO TOP OF CMP (H1)	DEPTH TO BOTTOM OF CMP (H2)
UG1F	478.62'	3.37'	8.37'
UG2A	478.00'	2.83'	7.83'
UG2B	476.25'	1.08'	6.08'

36" CMP RISER DETAIL FOR UNDERGROUND #1 & 2 60" CMP

(N.T.S.)



MANHOLE #	TOP ELEV.	DEPTH TO TOP OF CMP (H1)	DEPTH TO BOTTOM OF CMP (H2)
UG1G	478.00'	3.75'	7.75'
UG1H	476.50'	2.25'	6.25'
UG2C	475.25''	1.08'	5.08'

36" CMP RISER DETAIL FOR UNDERGROUND #1 & #2 48" CMP

(N.T.S.)

PROFESSIONAL CERTIFICATION 5/2/2023

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND,

LICENSE NUMBER : 19199

EXPIRATION DATE : 7/16/2023

SWM CONCEPT SUMMARY & DETAILS
7100-7106 MUNCASTER MILL ROAD
PART OF LOTS 13 & 14

MUNCASTER MILL PROPERTY

ROCKVILLE (4TH) ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape Architects • Surveyors
1751 Elton Rd., Ste. 300 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9394
www.cpja.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • Greenbelt, MD • Frederick, MD • Fairfax, VA

CLIENT: Cathryn Nonas
1255 Beverly Road, Suite 350
Mclean, VA 22101
ATN: Mr. Dale Stein

ESSC GRID:	07-42224W07
TAX MAP:	
DESIGN	AMD/ARJ
SHEET	3 OF 3
DRAFT	AMD/ARJ
DATE	5/2/2023
SCALE	AS SHOWN
TITLE NO.:	2021-1588 (38-01)

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