CMA ENGINEERS, INC.
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June 15, 2015

Mr. Paul M. Gildersleeve, P.E.
Solid Waste Management Bureau
New Hampshire Department of Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

RE: NCES – North Country Environmental Services, Trudeau Rd, Bethlehem, NH
Type IB & II Permit Modification Application for Solid Waste Landfill Facility
DES-SW-SP-03-002
Additional 2015 LFG Improvements
CMA #665-A

Dear Mr. Gildersleeve:

On behalf of North Country Environmental Services (NCES), CMA Engineers, Inc. is transmitting a site plan and detail sheets to be included in the 2015 Landfill Gas Improvements Type I-B and Type II permit modification. The permit modification application was sent to Department on April 15, 2015. These proposed additional improvements will extend the gas collection towards the toe of the northern slope. The proposed work is to include:

- constructing new 8" diameter LFG header piping on the northern slope;
- connecting existing collection wells to the header piping;
- constructing two 6" diameter horizontal gas collectors in a common trench with a portion of the proposed header; and
- connecting the Stage IV leachate cleanout risers to the LFG system as to apply vacuum to the leachate collection system.

If you have any questions, please do not hesitate to contact me at (207) 541-4223.

Very truly yours,
CMA ENGINEERS, INC.

Robert J. Grillo, P.E.
Project Manager

BWS/ams

Enclosures

Supplemental 2015 LFG System Expansion – Sheets 1-3

Cc & ec: April Hibberd, Town of Bethlehem – Administrative Assistant (Certified Mail) admin@bethlehemnh.org
Michael Culver, Town of Bethlehem – Selectboard Chair (Certified Mail) selectman2@bethlehemnh.org

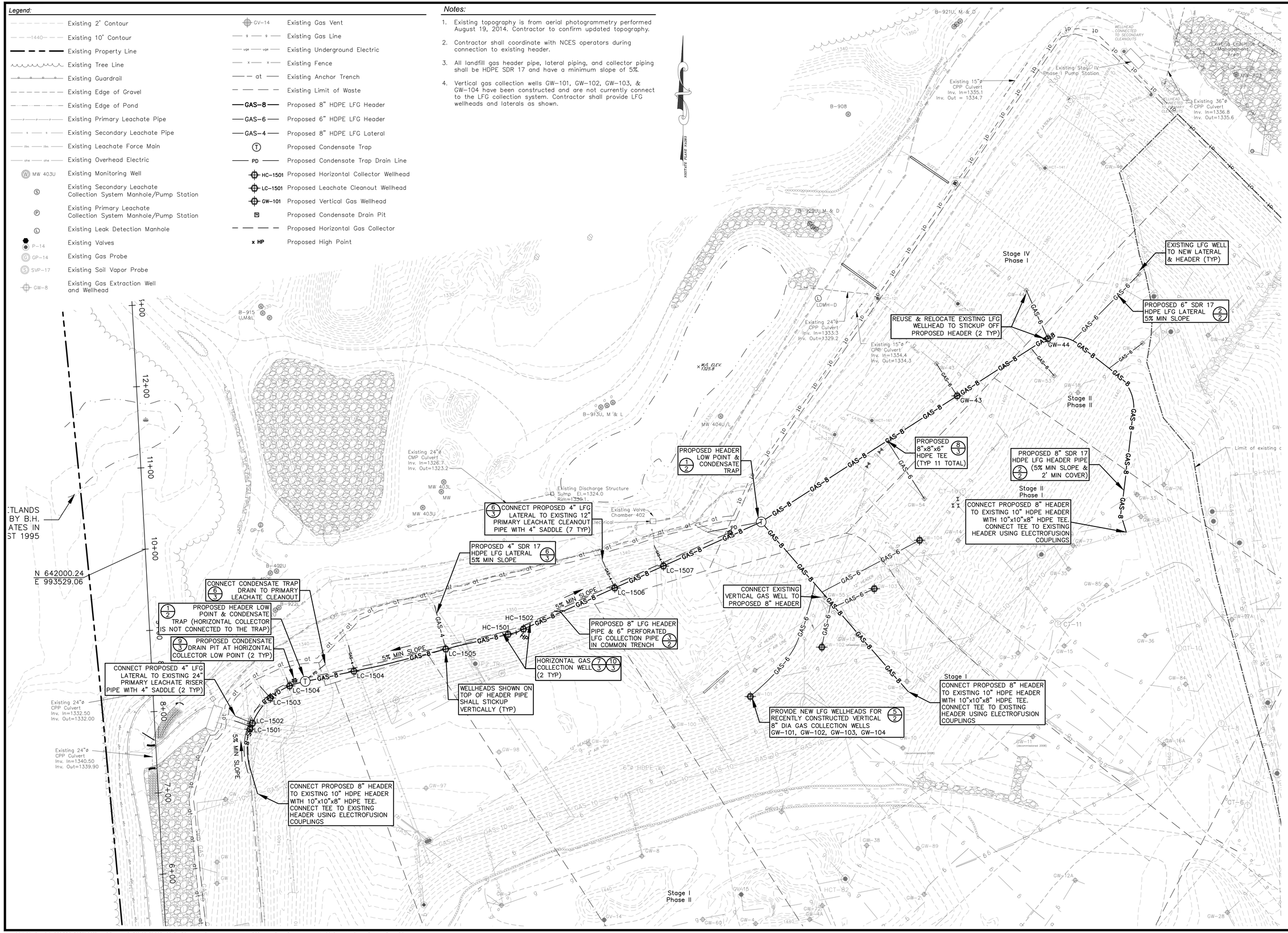
ec: John Gay, NCES john.gay@casella.com
Kevin Roy, NCES kevin.roy@casella.com
Wayne Wheeler, P.E., NHDES-WMD-SWB wayne.wheeler@des.nh.gov
Matt Estabrooks, P.E. SHA mestabrooks@sanbornhead.com
NHDES Onestop

Legend:

- Existing 2' Contour
- Existing 10' Contour
- Existing Property Line
- Existing Tree Line
- Existing Guardrail
- Existing Edge of Gravel
- Existing Edge of Pond
- Existing Primary Leachate Pipe
- Existing Secondary Leachate Pipe
- Existing Leachate Force Main
- Existing Overhead Electric
- MW 403U — Existing Monitoring Well
- Existing Secondary Leachate Collection System Manhole/Pump Station
- Existing Primary Leachate Collection System Manhole/Pump Station
- Existing Leak Detection Manhole
- P-14 — Existing Valves
- GP-14 — Existing Gas Probe
- SVP-17 — Existing Soil Vapor Probe
- GW-8 — Existing Gas Extraction Well and Wellhead
- GV-14 — Existing Gas Vent
- Existing Gas Line
- Existing Underground Electric
- Existing Fence
- Existing Anchor Trench
- Existing Limit of Waste
- GAS-8 — Proposed 8" HDPE LFG Header
- GAS-6 — Proposed 6" HDPE LFG Header
- GAS-4 — Proposed 8" HDPE LFG Lateral
- Proposed Condensate Trap
- PD — Proposed Condensate Trap Drain Line
- HC-1501 — Proposed Horizontal Collector Wellhead
- LC-1501 — Proposed Leachate Cleanout Wellhead
- GW-101 — Proposed Vertical Gas Wellhead
- Proposed Condensate Drain Pit
- Proposed Horizontal Gas Collector
- x HP — Proposed High Point

Notes:

1. Existing topography is from aerial photogrammetry performed August 19, 2014. Contractor to confirm updated topography.
2. Contractor shall coordinate with NCES operators during connection to existing header.
3. All landfill gas header pipe, lateral piping, and collector piping shall be HDPE SDR 17 and have a minimum slope of 5%.
4. Vertical gas collection wells GW-101, GW-102, GW-103, & GW-104 have been constructed and are not currently connect to the LFG collection system. Contractor shall provide LFG wellheads and laterals as shown.



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designed by: RJG/BWS
drawn by: BWS
approved by: RJG
date: June 2015
project no: 665
file name: 665-2015 LFG-North Slope Improvements-PSP.dwg
scale: 1" = 50' (in feet)

North Country Environmental Services
Bethlehem, NH

Supplemental
2015 LFG System Expansion

Northern Slope
Proposed Site Plan

drawing no. 1

sheet: 1 of 3

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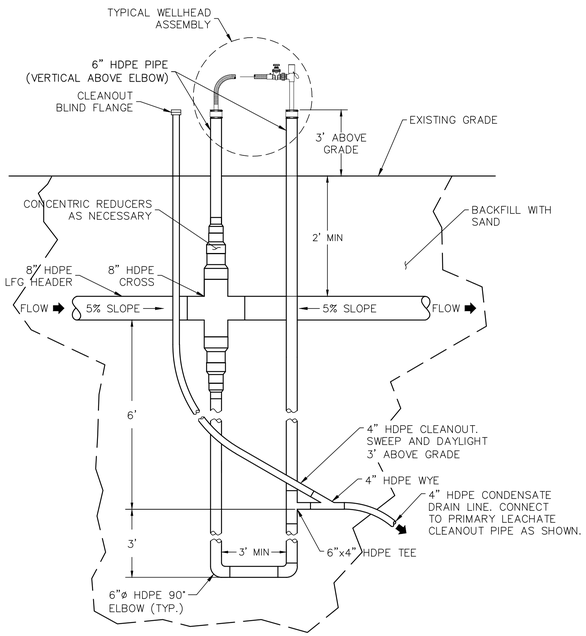
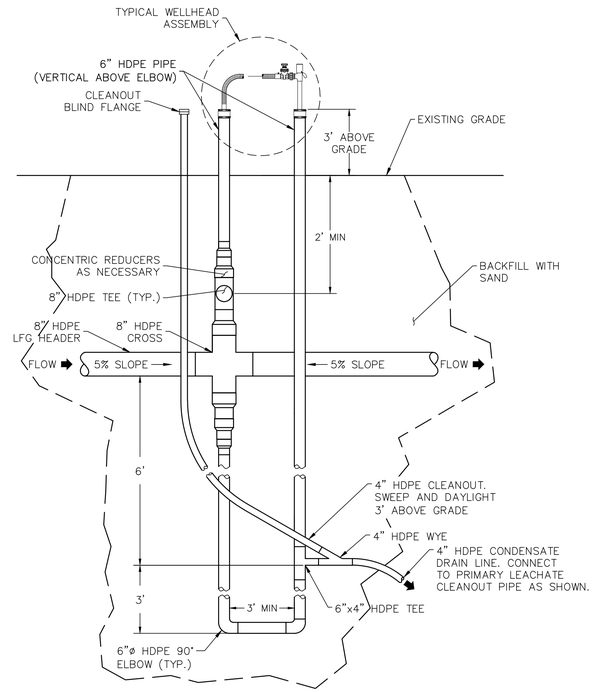


2 Headers

NOTES:

1. ALL CONNECTIONS ARE TO BE BUTT FUSION-WELDED UNLESS ALTERNATIVE APPROVED BY THE ENGINEER.
2. THE TRAP SHALL BE PLACED VERTICALLY WITHIN THE EXISTING WASTE. THE TRAP SHALL RESIST VERTICAL 100" OF WATER COLUMN (SYSTEM VACUUM). CONTRACTOR SHALL CONFIRM LENGTHS OF PIPE TO CONSTRUCT TRAP ON 3:1 SLOPE.
3. WELLHEAD STICKUP SHALL BE VERTICAL.
4. CONTRACTOR SHALL FILL TRAP WITH WATER PRIOR TO PLACING TRAP IN SERVICE.

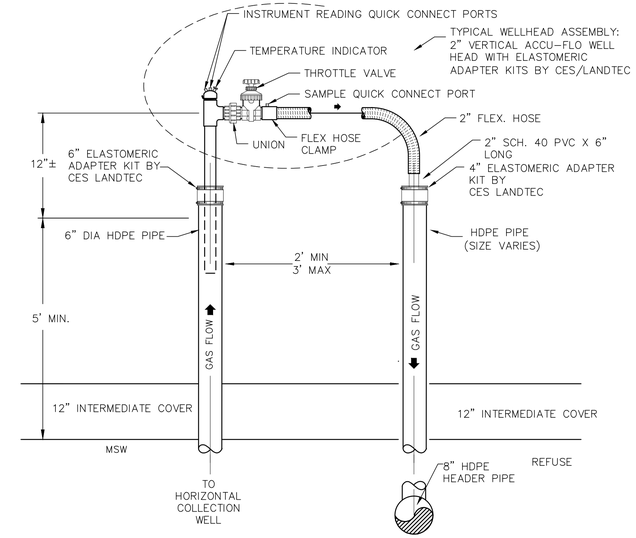


3 Headers

Condensate Trap

Not to Scale

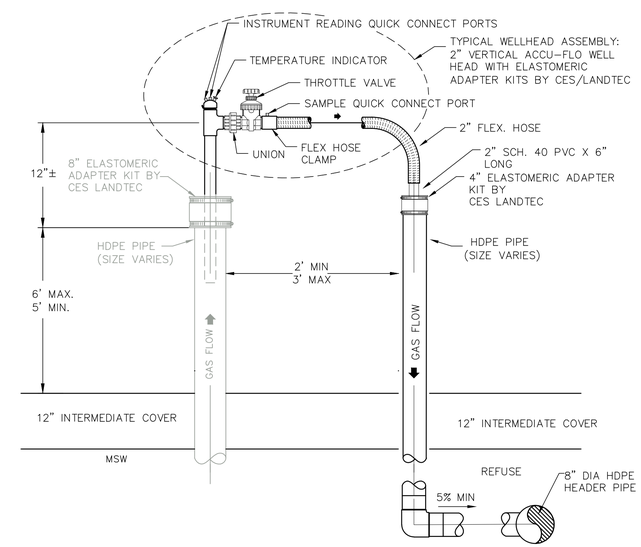
1 / 1



Horizontal Gas Collector

Not to Scale

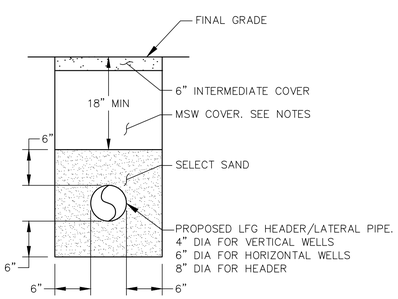
4 / 1



Vertical Wellhead Assembly

Not to Scale

5 / 1



NOTES:

1. 24" MIN COVER FOR LATERALS
2. 5% MIN SLOPE
3. BACKFILL TRENCH ABOVE PIPE BEDDING WITH WASTE EXCAVATED; MAXIMUM PARTICLE SIZE <3".

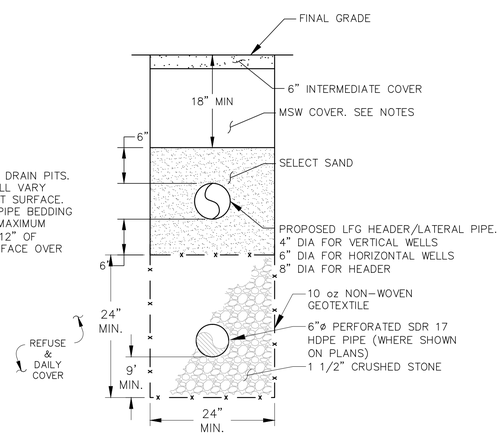
Header/Lateral Trench

Not to Scale

2 / 2

NOTES:

1. 5% MIN SLOPE TO TRENCH DRAIN PITS.
2. ACTUAL TRENCH DEPTH WILL VARY BASED ON TOPOGRAPHY AT SURFACE.
3. BACKFILL TRENCH ABOVE PIPE BEDDING WITH WASTE EXCAVATED; MAXIMUM PARTICLE SIZE <3". USE 12" OF AUTOFLUFF COVER AT SURFACE OVER BACKFILL.



Horizontal Gas Collector Trench

Not to Scale

3 / 1

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project no: 665
file name: 665-2015 LFG-North Slope Improvements-Details.dwg
scale: N.T.S

North Country Environmental Services
Bethlehem NH

Supplemental
2015 LFG System Expansion

Details

drawing no. 2

sheet: 2 of 3

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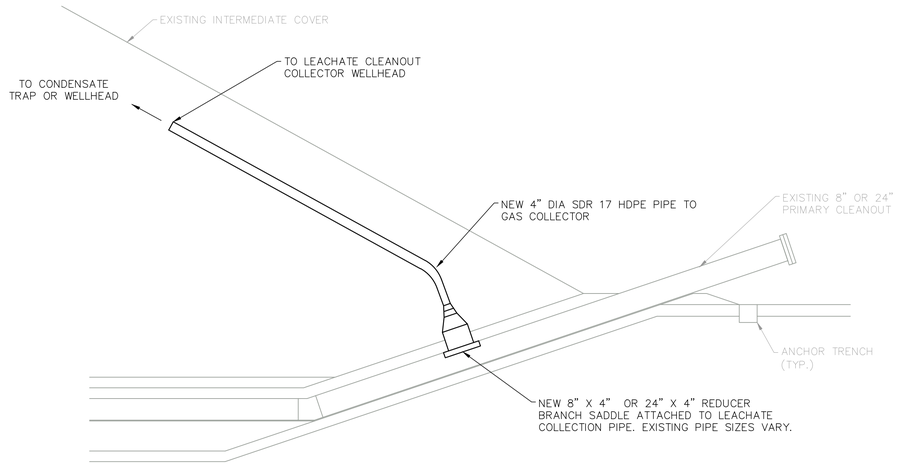
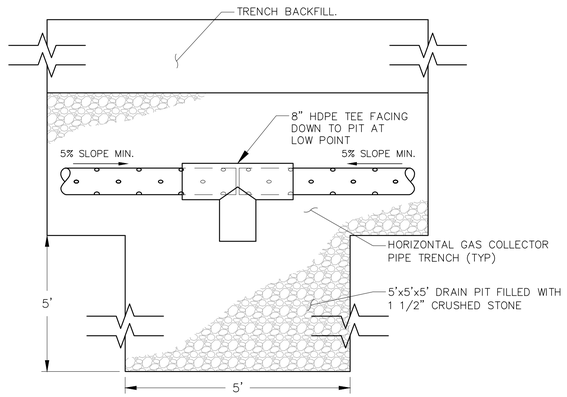


Connection to Existing Leachate Cleanout

Not to Scale

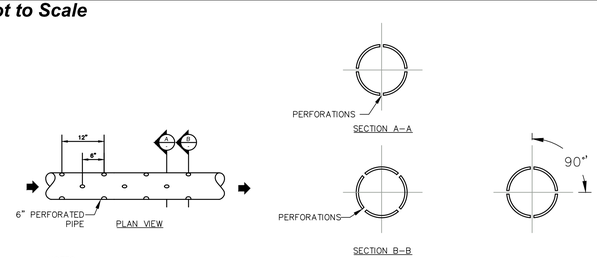
6 / 1



Condensate Drain Pit

Not to Scale

9 / 1



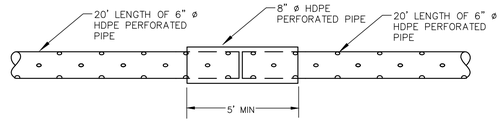
NOTES:

1. HOLES SHALL BE 1/2"ø DRILLED HOLES SPACED 2" APART IN 4 ROWS ALONG THE LENGTH OF THE PIPE. ROWS SHALL BE LOCATED 90°APART OFFSET 6" ALONG THE AXIS OF THE PIPE.

Typical Perforated Pipe

Not to Scale

7 / 1



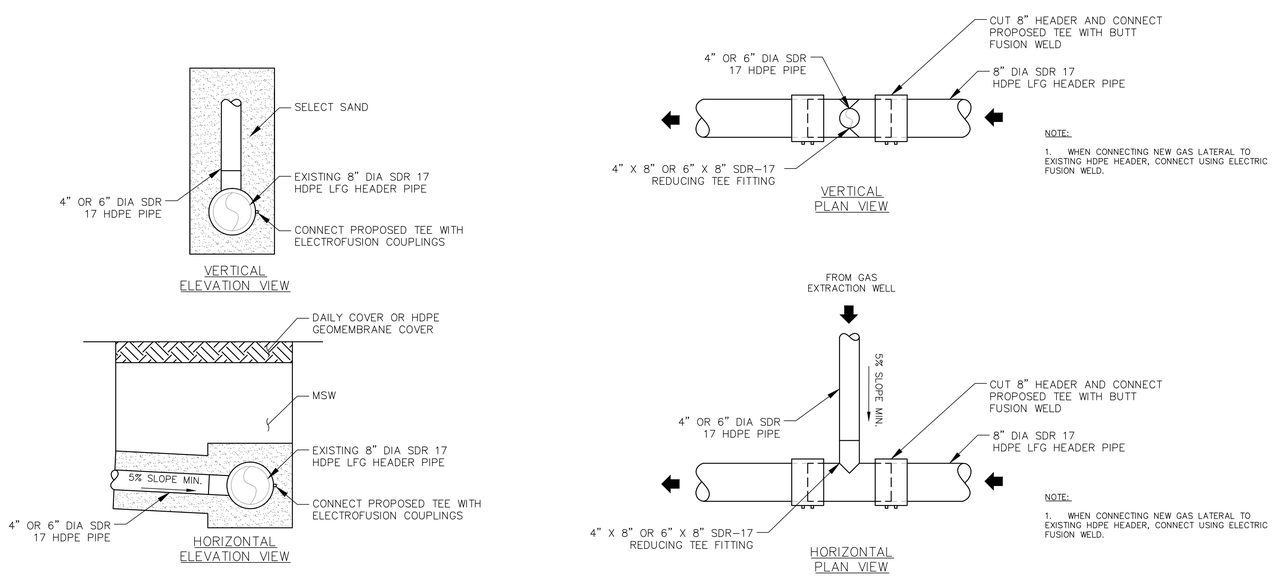
NOTE:

1. SEE PIPE LAYOUT ON PLANS.

Horizontal Collectors and Connections

Not to Scale

10 / 1



NOTE:

1. WHEN CONNECTING NEW GAS LATERAL TO EXISTING HDPE HEADER, CONNECT USING ELECTRIC FUSION WELD.

NOTE:

1. WHEN CONNECTING NEW GAS LATERAL TO EXISTING HDPE HEADER, CONNECT USING ELECTRIC FUSION WELD.

Gas Lateral Tee Connection

Not to Scale

8 / 1

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Details

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