McCollum Park (former Emander Landfill)
Landfill Gas Supplemental Remedial Work Plan

Snohomish County

Snohomish County Public Works
Solid Waste Administration
3000 Rockefeller Ave., M/S 607
Everett, WA 98201

SCS ENGINEERS

04225055.00 | May 2026

2405 140th Ave NE # 107
Bellevue, WA 98005
425-746-4600

Table of Contents

Section Page

1.0 **Background** 1
1.1 Investigations, Cleanup, and Long-Term Controls 1
1.2 Current Setting and Infrastructure 1
1.3 Monitoring Status (Soil Gas, Groundwater, and Building Interiors) 2
1.4 Recent Park-and-Ride Improvements and System Integrity 3
2.0 **Proposed Investigation Areas** 3
2.1.1 Northern Perimeter (128th Street) 3
2.1.2 Eastern Perimeter (Dumas Road) 3
2.1.3 Southern Perimeter (Adjacent to Apartment Complex) 3
2.1.4 Western Perimeter (North Creek Corridor) 3
2.1.5 Other Areas, if warranted 4
3.0 **Survey and Access Coordination** 4
3.1 Survey and Site Control 4
3.2 Access Coordination 5
3.3 Utility Clearance 5
3.4 Health and Safety Plan 5
4.0 **Investigative Approach** 5
4.1 Drilling Method for Soil Gas Sampling 6
4.1.1 Temporary Probe Locations 6
4.1.2 Temporary Probe Depth 6
4.2 Field Sampling/Screening Procedures 7
4.3 Soil Gas Sampling and Laboratory Analysis 7
4.4 Landfill Gas Signature Samples 7
4.5 Data Evaluation 8
5.0 **Follow-up Investigation Considerations** 8
6.0 **Schedule** 8
7.0 **Limitations and Contingencies** 9
8.0 **Certification** 9

Attachments

Attachment 1 Figures
Attachment 2 As-Built Drawings (for Reference)
Attachment 3 Historical Boring Logs (for Reference)
Attachment 4 Adjacent and Nearby Property Parcel Identification and Ownership

1.0 BACKGROUND

The northern half of McCollum Park (600 128th Street SE, Everett, Washington) was formerly operated as the Emander Landfill. Snohomish County acquired the property in 1922, used it as a gravel pit until 1947, after which the City of Everett managed the landfill at the site from 1948 to 1967. After final cover and grading in 1967, the property became McCollum Park in 1969.

1.1 INVESTIGATIONS, CLEANUP, AND LONG-TERM CONTROLS

Between 1990 and 1993, the County installed groundwater monitoring wells and subsurface landfill gas (LFG) detection wells (i.e., gas probes) and performed a master planning effort. A 1993 Final Environmental Impact Statement (FEIS) and 1995–1996 Remedial Investigation/Feasibility Study (RI/FS) set the basis for environmental mitigation, including an engineered final cover system, a LFG collection and control system (i.e., GCCS), stormwater control system, groundwater monitoring well network, and landfill gas probes for long term monitoring. Under Agreed Order DE96TC-N126 (1996), the County implemented a Compliance Monitoring Plan with quarterly groundwater well and gas probe monitoring that continues today.

The 1996 remedy included: (a) re-grading and surface-water controls; (b) installation of a 60-mil textured HDPE geomembrane cover system with drainage/protection soils and vegetation; (c) in-place stabilization of approximately 4,100 cubic yards of sludge/hydrocarbon-impacted refuse with Portland cement; and (d) construction of a GCCS consisting of horizontal collection trenches, LFG conveyance pipe, blower, and flare.

1.2 CURRENT SETTING AND INFRASTRUCTURE

McCollum Park was sited/constructed in conjunction with the environmental controls installed in 1996. McCollum Park contains multiple public use facilities including the following:

- Park-and-Ride/bus terminus in the north;
- Splash pool and changing building to the northwest (now closed);
- BMX facility near the central/southeast area (inactive);
- WSU Extension and Northwest (Adopt A Stream) Center buildings to the southwest; and
- Other public facilities (athletic fields, trails and parking).

A plan view of the site is shown on **Figure 1, Attachment 1**. The approximate landfill and impervious cover system boundaries shown on **Figure 1** are based on the McCollum Park Redevelopment Phase 2 revised grading and drainage as-built drawings prepared by Perteet Engineering, Inc., in April 1995. These as-built drawings are included in **Attachment 2** for reference.

The engineered final cover system is generally in good condition, with relatively shallow grades over the top deck grassy area. There are some localized shallow depressions on the final cover system as a result of ongoing differential settlement associated with long term consolidation of waste. These few localized depressions have disrupted the original designed surface drainage at the site.

The GCCS includes perimeter gas wells (vertical gas wells) along 128th Street SE and near the pool building, interior collection trenches (horizontal gas collectors) connected to a manifold vault beneath the Park-and-Ride, and a blower flare station east of Dumas Road (on old, abandoned segment of Dumas Road). The GCCS has operated in a semi-active mode with the flare operating on auto-ignition when methane concentration at the flare is sufficient; County staff currently monitor the LFG system on a weekly basis and also carried out quarterly groundwater and LFG compliance monitoring. A plan view of the GCCS is shown in **Figure 2, Attachment 1**. Additionally, we have

provided as-built drawings of the landfill gas collection and control system under **Attachment 2** for reference.

The landfill includes perimeter areas where available historical drawings and mapping indicate that the relationship between the extent of the waste, extent of final cover system, roadways, and adjacent properties is not fully resolved. At several locations, the available drawings suggest that refuse may extend beneath or near existing roads, while conservative interpretations of liner mapping suggest that liner may extend beyond the apparent waste footprint. However, field observations and aerial interpretation discussed during project coordination indicate that the areal extent of the final cover system may have been overstated, or that final as-built conditions may differ from earlier design-based mapping. **Figure 1, Attachment 1** shows the site layout.

Additionally, several segments of the landfill perimeter appear to be adjacent to:

- Road rights-of-way or easements;
- Utility corridors;
- Landscaped or vegetated strips;
- Apartment or residential properties; and
- Areas that may contain shallow groundwater or drainage features.

These conditions require a phased approach in which access, survey control, and field verification must be completed before finalizing locations for subsurface LFG investigation activities. Property parcel identification numbers (IDs), addresses, and ownership information for adjacent and nearby parcels are provided in **Attachment 4**.

1.3 MONITORING STATUS (SOIL GAS, GROUNDWATER, AND BUILDING INTERIORS)

The monitoring results from the perimeter gas probes show no detection of methane over the past two years of monitoring data. The monitoring results from the blower flare station have typically measured average methane concentrations below 12 percent by volume, with a range from 0 to 29 percent by volume. These conditions are characteristic of declining LFG generation of a small, closed municipal landfill with cessation of landfilling in 1967 (59 years ago).

Quarterly monitoring at groundwater monitoring wells continues. Exceedances for arsenic, iron, manganese, and vinyl chloride persist at several downgradient wells, an observation that is consistent with redox conditions experienced at older, unlined landfills. In general, overall groundwater quality has improved since implementation of the 1996 remedy. A site plan and location of environmental monitoring locations is shown on **Figure 1, Attachment 1**.

Programmatic controls for protection of workers require continuous testing of the breathing zone for methane, carbon monoxide, hydrogen sulfide, and oxygen during any excavations or confined-space entry. A recent interior building screening event (sub-slab vapor and indoor air sampling) was performed for the presence of chemicals of concern (COCs) at five park structures. Sub-slab vapor samples reportedly did not exceed screening levels for any COCs. While there were several reported exceedances of indoor air cleanup levels, they did not appear to correlate with the sub-slab soil gas data.

1.4 RECENT PARK-AND-RIDE IMPROVEMENTS AND SYSTEM INTEGRITY

The Swift Orange Line improvements were installed on the site from April 19, 2022 through April 1, 2024, as part of the expansion for Snohomish County Community Transit (Community Transit). Work required temporary liner penetrations/repairs, geogrid placement, and relocation/adjustment of the LFG vaults and manifolds with traffic-rated lids. All work was completed by third-party contractors with County and third-party oversight to observe HDPE welding/testing and LFG reconnections. During January–February 2026, the County reviewed 706 construction records prepared by the contractor and third party CQA including but not limited to Inspector Daily Reports (IDRs), photographs, change orders and as-builts records. This review concluded that liner and LFG components were repaired per specifications and the GCCS was restored to equal or better operating conditions.

2.0 PROPOSED INVESTIGATION AREAS

The objective of this LFG Work Plan is to investigate the presence of and assist in defining the extent of subsurface methane in soils along the site boundary and assess the potential for LFG migration. The following detail areas of proposed subsurface investigation for LFG migration. A site plan of the investigation corridors is shown on **Figure 3, Attachment 1**.

2.1.1 Northern Perimeter (128th Street)

A corridor along the roadway/easement area north of the landfill where receptors are present across the road and where access may be possible through public or County-controlled property, depending on ownership and easement confirmation.

2.1.2 Eastern Perimeter (Dumas Road)

A corridor near the eastern edge of the landfill where the estimated waste footprint and potential receptor locations appear to be in relatively close proximity. Segments of this area may require confirmation of whether sufficient room exists for screening location/point between the waste/liner boundary and the receptor side of the corridor.

2.1.3 Southern Perimeter (Adjacent to Apartment Complex)

An area south/southeast of the landfill near the apartment complex and adjacent access road where available mapping, historic drawings, and field observations suggest uncertainty regarding actual liner extent and the corresponding available investigation corridor. This area may require additional survey control and limited field verification before final screening location is determined.

2.1.4 Western Perimeter (North Creek Corridor)

Although North Creek (refer to Figure 3) provides a natural hydraulic and physical barrier that limits the potential for lateral landfill gas migration toward receptors west of the landfill, a supplemental investigation corridor along the western landfill boundary has been included as a precautionary measure. This screening corridor has been designated along the western perimeter, as shown on Figure 3, to evaluate conditions in anticipation of potential future development in this area. This corridor will provide confirmation that LFG migration is not occurring beyond the landfill boundary and will establish baseline conditions should receptors be introduced in the future.

2.1.5 Other Areas, if warranted

If additional receptor-side screening is requested by the County or regulators, or if field observations suggest potential migration pathways associated with drainage features or utility corridors, the work plan allows for inclusion of additional limited screening points, subject to access and utility clearance.

3.0 SURVEY AND ACCESS COORDINATION

Survey and access coordination is necessary to establish feasible locations for screening (i.e., exploratory drilling activities), which will subsequently determine any needed locations for additional gas probes. Based on review of available records, the following uncertainties are relevant to the proposed work:

- Waste limits are approximate in certain perimeter areas and appear to be based in part on historical mapping.
- Liner extent may be conservatively depicted on some available drawings and may not fully reflect final field conditions.
- In at least some areas, there is reason to believe the actual liner boundary may be closer to the interior landfill than shown on some conceptual mapping, based on field observations such as mature tree growth and apparent long-term vegetation patterns.
- Certain roads may overlie waste and/or liner, thereby constraining the ability to install meaningful off-waste screening points from the landfill side.

Access to preferred investigation corridors may depend on:

- Confirmation of County ownership;
- Rights within easements or public right-of-way;
- Permission from private property owners, and/or whether safe equipment access is feasible;
- Utility conflicts may limit final boring/probe locations; and
- Groundwater may be relatively shallow in certain investigation areas, which may limit probe depth and influence sampling and monitoring results.

Because of these uncertainties, the investigation will begin with survey and access tasks intended to improve location control before intrusive work is initiated.

3.1 SURVEY AND SITE CONTROL

Prior to the intrusive investigation, a surveyor or qualified field team will establish the investigation corridor limits and assist with translating available historical drawings into approximate field positions. This task is intended to:

- Confirm accessible corridors for field work;
- Approximate the location of property boundaries, easements, and landfill perimeter features;
- Identify the likely relationship between the available investigation corridor and the estimated waste/liner limits; and
- Aligned with the approach outlined in Section 4.1.1, locate approximate locations (i.e., coordinates and surface elevation) for temporary exploratory boring/investigation.

Where feasible, available as-built or closure drawings may be overlain on current site mapping and used by the survey team to develop approximate staked or otherwise marked field reference points. These field references are not intended to constitute a legal redefinition of waste limits or liner limits, but rather to support reasonable placement of screening points relative to the best available information.

3.2 ACCESS COORDINATION

Prior to field mobilization, the County and/or project team will evaluate ownership and access rights in the targeted investigation areas. This may include coordination associated with:

- County-owned property.
- Easement areas.
- Public right-of-way.
- Adjacent private parcels.
- Apartment complex access.
- Any other areas needed for equipment staging or temporary entry.

The field program is contingent upon access availability. If access cannot be obtained for a preferred investigation area, the work may be modified to use alternative locations or methods, or certain screening locations may be omitted.

3.3 UTILITY CLEARANCE

Public and private utility locate services will be used before intrusive work begins. Clearance activities may include standard utility notification procedures as well as review of available utility drawings or corridor information. Utility constraints may affect both boring location and boring depth and may require field adjustments at the time of investigation.

3.4 HEALTH AND SAFETY PLAN

Field activities will be completed under a site-specific health and safety framework appropriate for intrusive landfill perimeter work. This will include consideration of:

- Utility hazards;
- Traffic or roadside work;
- Uneven terrain;
- Leachate and combustible gas;
- Equipment operation in landscaped or developed settings, and
- Potential subsurface refusal or unstable ground conditions.

Traffic control may be required in areas adjacent to roads or access driveways.

4.0 INVESTIGATIVE APPROACH

The investigation will primarily consist of installing temporary soil gas screening points in selected locations to obtain landfill gas measurements. Depending on field findings, the investigation may also include targeted collection of gas samples for laboratory analysis and collection of representative landfill gas signature samples from within the landfill gas management system or another suitable on-site source.

The objective of this investigation is to obtain enough information to identify whether there is evidence of landfill gas migration along the investigated corridors and whether more permanent infrastructure (e.g., gas probes) is needed for future data acquisition.

4.1 DRILLING METHOD FOR SOIL GAS SAMPLING

Temporary soil gas sampling points (temporary probes) will be installed along the proposed investigation areas shown in Figure 3, Attachment 1 using one of the following methods, depending on access and subsurface conditions:

- Preferred method: Direct-push drilling techniques using a small Geoprobe rig or similar compact equipment; or
- Alternative method: Manual boring or hand-advanced temporary probe installation where direct-push access is not feasible, or where subsurface conditions or site constraints make smaller-scale methods more appropriate.

The work plan intentionally allows flexibility regarding installation/sampling methods as several of the proposed locations may involve narrow corridors, landscaped edges, parking lot access, or areas where a full-size rig is not practical. Smaller direct-push platforms may be considered where surface disturbance must be minimized.

4.1.1 Temporary Probe Locations

Temporary probes will generally be located along the established exploration corridor and spaced at no more than approximately 100 feet apart along the accessible segments of the investigation corridors. This spacing is intended to provide a practical perimeter screening density while recognizing current uncertainties in access and exact corridor layout.

Probe spacing may be adjusted in the field to account for:

- Utility conflicts;
- Changes in terrain;
- Access limitations;
- Survey refinements;
- Receptor proximity; and/or
- Areas where more focused spacing is warranted if elevated concentrations of methane are detected.

4.1.2 Temporary Probe Depth

Initial screening points are anticipated to be installed to depths on the order of approximately 5 to 10 feet below ground surface (bgs). In areas where site conditions support deeper investigation, or where it is important to evaluate conditions below shallow biologically active soils, selected points may be advanced to approximately 10 to 15 feet bgs.

Final depth selection will be based on:

- Access constraints;
- Subsurface conditions (referring historical boring logs provided in Attachment 3);
- Probe installation feasibility;
- Utility restrictions; and

- Groundwater elevation (if encountered or anticipated).

Where practical, selected points may be advanced deeper to provide improved screening near the water table or to evaluate whether shallow detections are limited to near-surface organic soils.

4.2 FIELD SAMPLING/SCREENING PROCEDURES

All probes will be screened using a portable gas analyzer/data recorder (e.g., QED GEM 5000 or Elkins Earthworks Envision). During field screening, methane (CH_4), carbon dioxide (CO_2), and oxygen (O_2) concentrations will be recorded. The instrument will be calibrated both prior to and following field activities to ensure data quality. Readings will be collected at depth intervals of 5, 10, 15, and 20 feet (where accessibility to depth allows).

The gas analyzer will be calibrated in accordance with the manufacturer's recommendations prior to the start of daily field activities and verified following completion of monitoring to ensure data reliability. Calibration gases and records will be maintained as part of the project quality assurance documentation.

Field screening results will be used to: identify zones of elevated LFG and methane concentrations; evaluate vertical concentration gradients; and guide the selection of depth intervals for confirmatory soil gas sampling for laboratory analysis.

4.3 SOIL GAS SAMPLING AND LABORATORY ANALYSIS

If field screening identifies elevated methane, reduced oxygen, or other anomalous gas conditions suggestive of landfill gas influence, one or more targeted gas samples may be collected in canisters or equivalent laboratory (lab) sampling media for analytical evaluation. Specifically, these targeted samples will be lab tested for EPA Air Method, Toxic Organics - 15 (TO-15), i.e., for Volatile Organic Compounds (VOCs).

The purpose of these samples is to support interpretation of gas origin by evaluating compounds commonly associated with landfill gas and comparing the analytical profile of perimeter samples to representative landfill gas samples collected from within the site.

Laboratory sample collection is expected to be selective rather than routine and will be based on field conditions. The work plan allows such sampling to be implemented at the time of field screening if appropriate conditions are encountered.

4.4 LANDFILL GAS SIGNATURE SAMPLES

To aid in data analysis, the project team may collect one or more reference gas samples from within the landfill gas system or another representative on-site source, such as near the blower flare station or another suitable collection point. Similar to the method detailed in Section 4.3, these landfill gas samples will be collected in canisters to conduct TO-15 lab analysis so that comparative landfill gas signature can be established.

Where feasible, representative reference samples may be collected from more than one general area of the landfill gas system to support comparison to perimeter detections. This comparison is important because low-level methane detections in shallow soils can occur from natural degradation of organic material and may not, by themselves, indicate lateral migration of landfill gas. A representative landfill gas signature provides an additional line of evidence in distinguishing between these possibilities.

4.5 DATA EVALUATION

Field screening and laboratory analytical data will be evaluated to assess the presence, magnitude, and spatial distribution of methane along the site boundary. Results will be compared to applicable regulatory criteria and guidance values for landfill gas migration. Data interpretation will consider site history, subsurface conditions, existing landfill gas control infrastructure, and long-term monitoring trends.

The evaluation will focus on whether observed gas conditions are more consistent with:

- Landfill gas migration, which may be indicated by elevated methane, elevated carbon dioxide, depressed oxygen, consistent with landfill gas; or
- Background biogenic soil gas, which may occur in shallow organic-rich soils and may produce methane at relatively low concentrations without indicating migration from the landfill.

Interpretation will also consider whether detections appear isolated or systematic along a corridor and whether the screening results suggest the need for any additional monitoring or mitigation measures.

5.0 FOLLOW-UP INVESTIGATION CONSIDERATIONS

This Work Plan is intended for initial screening and does not itself assume installation of permanent monitoring points. However, if the screening results identify conditions warranting follow-up, potential next steps may include:

- Installation of permanent gas probes at selected locations;
- Repeat monitoring to evaluate temporal variability;
- Additional perimeter screening in unsampled areas;
- Deeper screening points;
- Further verification of waste or final cover system boundaries in specific areas;
- Investigation of the performance of the GCCS; and/or
- Additional laboratory analysis.

Permanent monitoring locations, if warranted, would be selected based on the results of the temporary probe screening, access considerations, and the refined understanding of site boundaries developed during the pre-field survey effort.

6.0 SCHEDULE

Field activities will be scheduled following completion of the following prerequisites, as applicable:

- Survey and site control.
- Utility clearance.
- Access coordination.

If access, utility, or survey activities identify limitations that affect the proposed work, the investigation approach may be adjusted in coordination with the County before field implementation.

7.0 LIMITATIONS AND CONTINGENCIES

This work plan is based on currently available site information and includes several contingencies. Key limitations include:

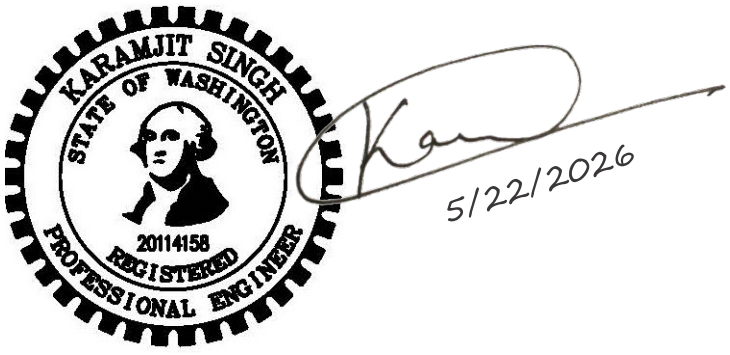
- The exact waste footprint and liner extent are not fully confirmed in all areas.
- Segments of the preferred investigation corridor may be unavailable due to property access limitations or utility conflicts.
- Roadway proximity, easements, shallow groundwater, poor access, and/or soil conditions may affect the ability to install probes at ideal locations and depths.
- Manual methods may be needed in some areas if direct-push equipment cannot access the location or if refusal is encountered.
- Some investigation locations may need to be shifted in the field to maintain safe and practical operations.

Accordingly, the final field program may differ modestly from the conceptual layout described in this work plan, provided that any field modifications remain consistent with the overall objective of screening the landfill perimeter between the estimated waste boundary and nearby receptors.

8.0 CERTIFICATION

This Landfill Gas Remedial Work Plan was prepared under my direction and supervision. I certify that I am a qualified Professional Engineer, licensed in the State of Washington, who has sufficient training and experience in Landfill Gas and Groundwater Remediation and related fields as demonstrated by state registration and completion of accredited university courses that enable me to make sound, professional judgments regarding this Landfill Gas Supplemental Remedial Work Plan. The information contained within this plan is to the best of my knowledge and belief, true, accurate, and complete.

Firm:
SCS Engineers



Karamjit Singh, P.E.
WA License No.: 20114158
Project Director

Cc: Greg Helland, SCS
Dan Venchiarutti, SCS
Ted Massart, SCS
Alija, Kabir, SCS

Attachment 1

Figures



SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

PROJECT NO. 04225055.00	DES BY LEL	SITE PLAN AND ENVIRONMENTAL MONITORING LOCATIONS	DATE MAY 2026
SCALE 1" = 250'	CHK BY D.V.	McCOLLUM PARK (FORMER EMANDER LANDFILL) SNOHOMISH COUNTY, WASHINGTON	FIGURE 1
CAD FILE FIGURE 1	APP BY K.S.		

G:\04225055.00\Deliverables\Figures\Cad System 2020-04-09\Dwgs\Figure 2.34 v0.04.dwg 5/26/2026 8:40:59 AM, DWG To PDF.pc3



SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

PROJECT NO.	04225055.00
DES BY	LEL
SCALE	1" = 250'
CHK BY	A.K.
CAD FILE	FIGURE 2
APP BY	K.S.

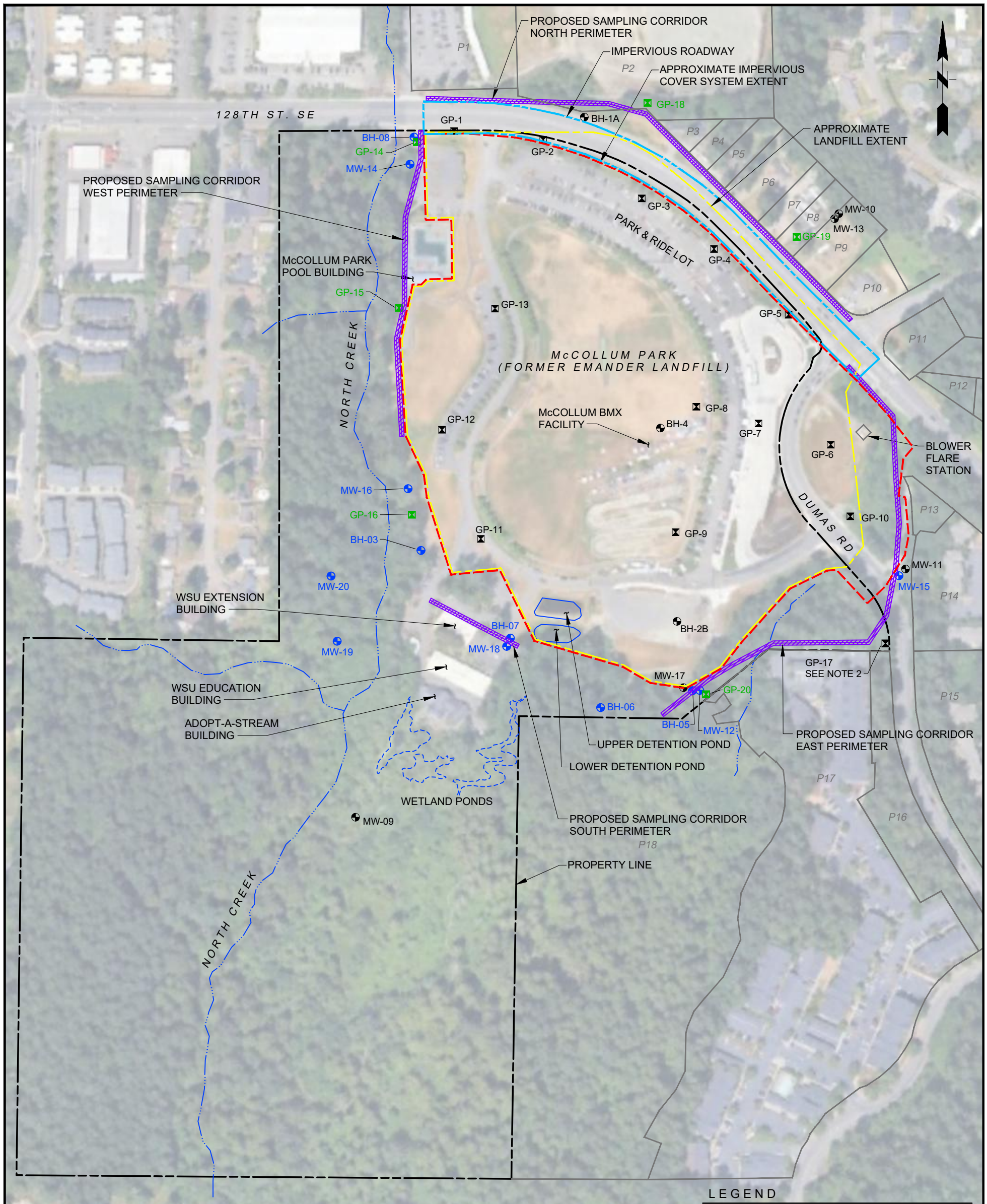
LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS)

McCOLLUM PARK (FORMER EMANDER LANDFILL)
SNOHOMISH COUNTY, WASHINGTON

DATE MAY 2026

FIGURE 2

G:\04225055.00\Deliverables\Figures\Gas System 2026-04-09\Dwgs\Figure 2 34 x 0.04.dwg 5/26/2026 8:41:44 AM, DWG To PDF.pc3



NOTES:

1. APPROXIMATE LANDFILL EXTENT AND IMPERVIOUS COVER SYSTEM EXTENT BOUNDARIES ARE BASED ON McCOLLUM PARK REDEVELOPMENT PHASE 2 REVISED GRADING AND DRAINAGE AS-BUILT DRAWINGS, PREPARED BY PERTEET ENGINEERING, INC. IN APRIL 1995.
2. GP-17 IS LOST AND COULD NOT BE LOCATED.

GRAPHIC SCALE:

0 100 200 300 400

SCALE IN FEET

LEGEND

GP-19	ACTIVE LANDFILL PROBES
BH-06	ACTIVE SHALLOW GROUNDWATER MONITORING WELLS
MW-12	ACTIVE DEEP GROUNDWATER MONITORING WELLS
GP-13	NON-ACTIVE LANDFILL PROBES
BH-2B	NON-ACTIVE SHALLOW GROUNDWATER MONITORING WELLS
MW-17	NON-ACTIVE DEEP GROUNDWATER MONITORING WELLS
	PROPOSED SAMPLING CORRIDOR
P10	PARCEL BOUNDARIES

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

PROJECT NO. 04225055.00	DES BY LEL	PROPOSED SAMPLING CORRIDORS	DATE MAY 2026
SCALE 1" = 250'	CHK BY A.K.	McCOLLUM PARK (FORMER EMANDER LANDFILL) SNOHOMISH COUNTY, WASHINGTON	FIGURE 3
CAD FILE FIGURE 3	APP BY K.S.		

G:\04225055.00\Deliverables\Figures\Gas System 2026-04-09\Dwgs\Figure 2.3-4 v015.dwg, 5/29/2026 7:34:09 AM, DWG To PDF.pc3

Attachment 2

As-Built Drawings (for Reference)

A. Phase 2 Development; and

B. Landfill Gas

128th ST. S.E. / DUMAS ROAD

PARK & RIDE

C.R.P. NO. 91-951
T.I.B. NO. 9P-031 (004)-2

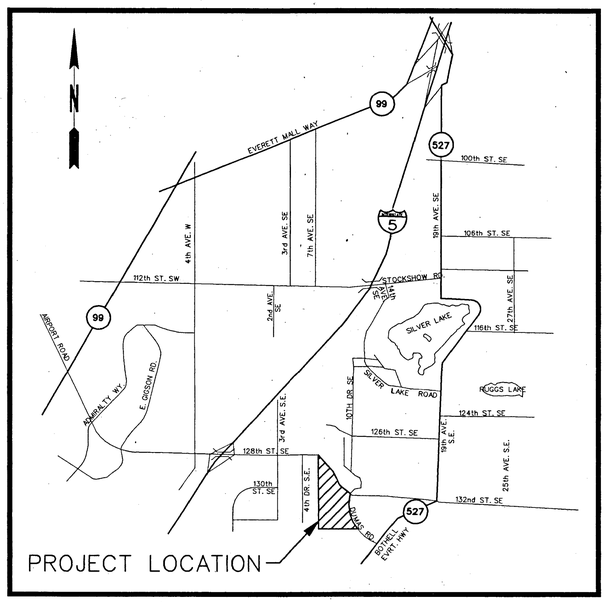
McCOLLUM PARK REDEVELOPMENT - PHASE 2
REVISED GRADING AND DRAINAGE

SHEET NAME	PAGE
TITLE SHEET	1
TESCP	2
LINER AND GRADING AREA PLAN	3
GRADING PLANS	4-5
DRAINAGE PLANS	6-7
TYPICAL ROADWAY SECTIONS	8-9
DETAILS	10-12

NOTE TO CONTRACTOR:

ALL WORK SHALL BE IN ACCORDANCE TO THE CONTRACT DOCUMENTS FOR 128th STREET SE / DUMAS ROAD PARK AND RIDE CRP #91-951

VICINITY MAP



APPLICANT: MR. STEVE HANSEN
SNOHOMISH COUNTY PUBLIC WORKS
2930 WETMORE AVENUE
EVERETT, WA 98201
PH. (206) 388 - 6679

SITE ADDRESS: McCOLLUM PARK
128TH STREET & DUMAS ROAD
EVERETT, WA

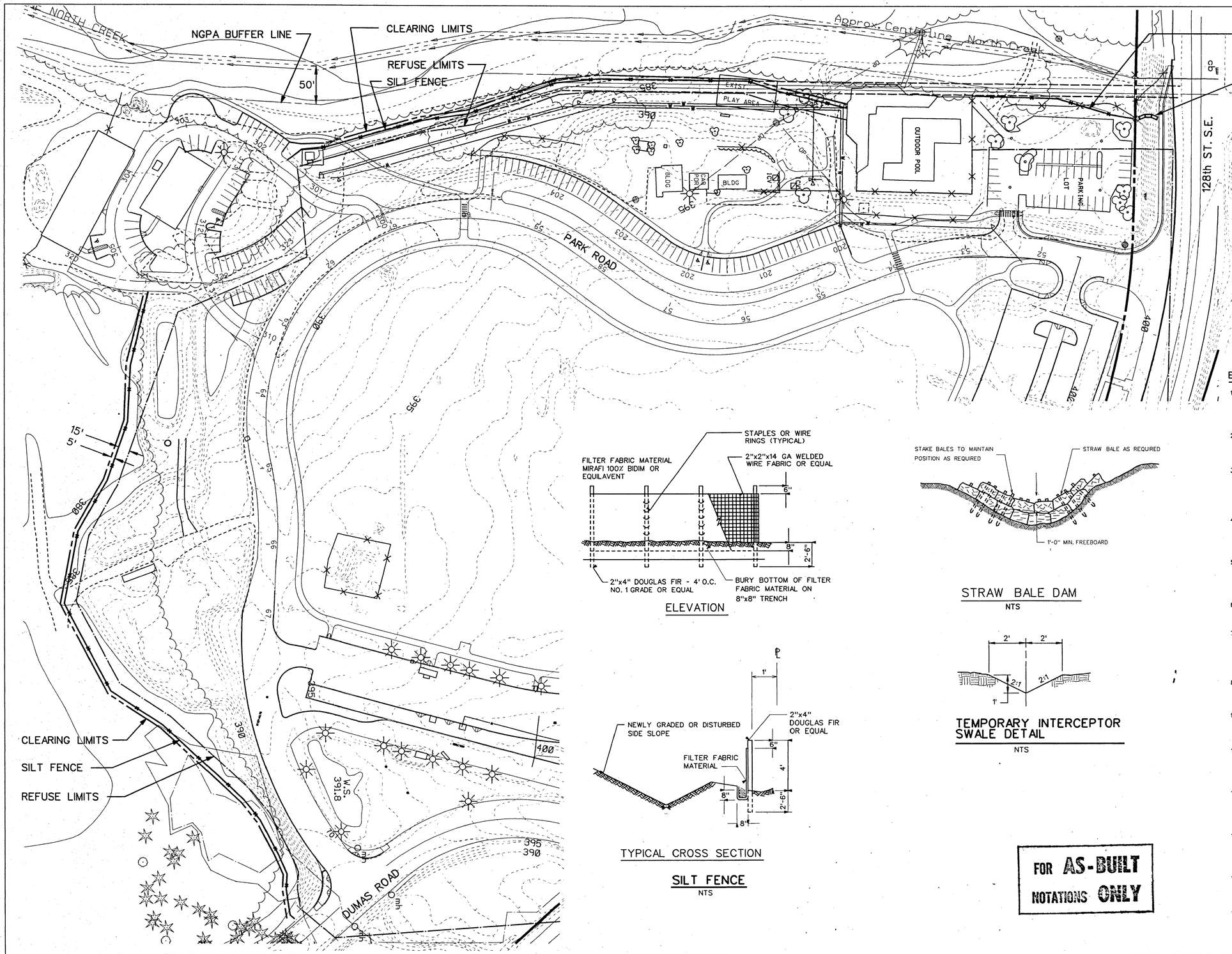
PROPERTY TAX ACCOUNT NO.: 302805 - 3 - 021 - 0006
302805 - 3 - 024 - 0003
302805 - 3 - 002 - 0000

APPROXIMATE GRADING QUANTITIES:

FILL = 43,100 CUBIC YARDS
CUT = 670 CUBIC YARDS

PERTEET
ENGINEERING, INC.
Civil and Transportation Consultants
2828 Colby Avenue, Suite 410
Everett, WA 98201 (206) 252-7233

FOR AS-BUILT NOTATIONS ONLY



ELEVATION

TYPICAL CROSS SECTION

SILT FENCE
NTS

STRAW BALE DAM
NTS

TEMPORARY INTERCEPTOR SWALE DETAIL
NTS

FOR AS-BUILT NOTATIONS ONLY

EROSION / SEDIMENTATION CONTROL NOTES:

1 APPROVAL OF THE EROSION SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).

2 THE IMPLEMENTATION OF THE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.

3 THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THE PLAN SHALL BE CLEARLY FLAGGED BY THE ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

4 THE ESC FACILITIES SHOWN ON THE PLAN MUST BE CONSTRUCTION IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS.

5 THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED (E.G. ADDITIONAL SUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS.

6 THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS DIRECTED BY THE ENGINEER OR AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

7 ANY AREA STRIPPED OF VEGETATION, INCLUDING ROADWAY EMBANKMENTS, WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF 2 DAYS, SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G. SEEDING, MULCHING, NETTING, EROSION BLANKETS, ETC.). PRELOAD SHALL BE COVERED WITH PLASTIC SHEETING ONCE FILLED TO PRELOAD GRADE.

8 ANY AREA NEEDING ESC MEASURE, NOT REQUIRING IMMEDIATE ATTENTION, SHALL BE ADDRESSED WITHIN TWO (2) DAYS.

9 THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A STORM EVENT.

10 AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEARING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

11 STABILIZED CONSTRUCTION ENTRANCES AND WASH PADS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

12 ANY PERMANENT RETENTION/DETENTION FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. NO UNDERGROUND DETENTION TANKS, OR VAULTS SHALL BE USED AS A TEMPORARY SETTLING BASIN.

13 WHERE SEEDING FOR TEMPORARY EROSION CONTROL IS REQUIRED, FAST GERMINATING GRASSES SHALL BE APPLIED AT AN APPROPRIATE RATE (E.G. ANNUAL OR PERENNIAL RYE APPLIED AT APPROXIMATELY 80 POUNDS PER ACRE).

14 WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF TWO INCHES.

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L. PERRET — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — 4-25-95
EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

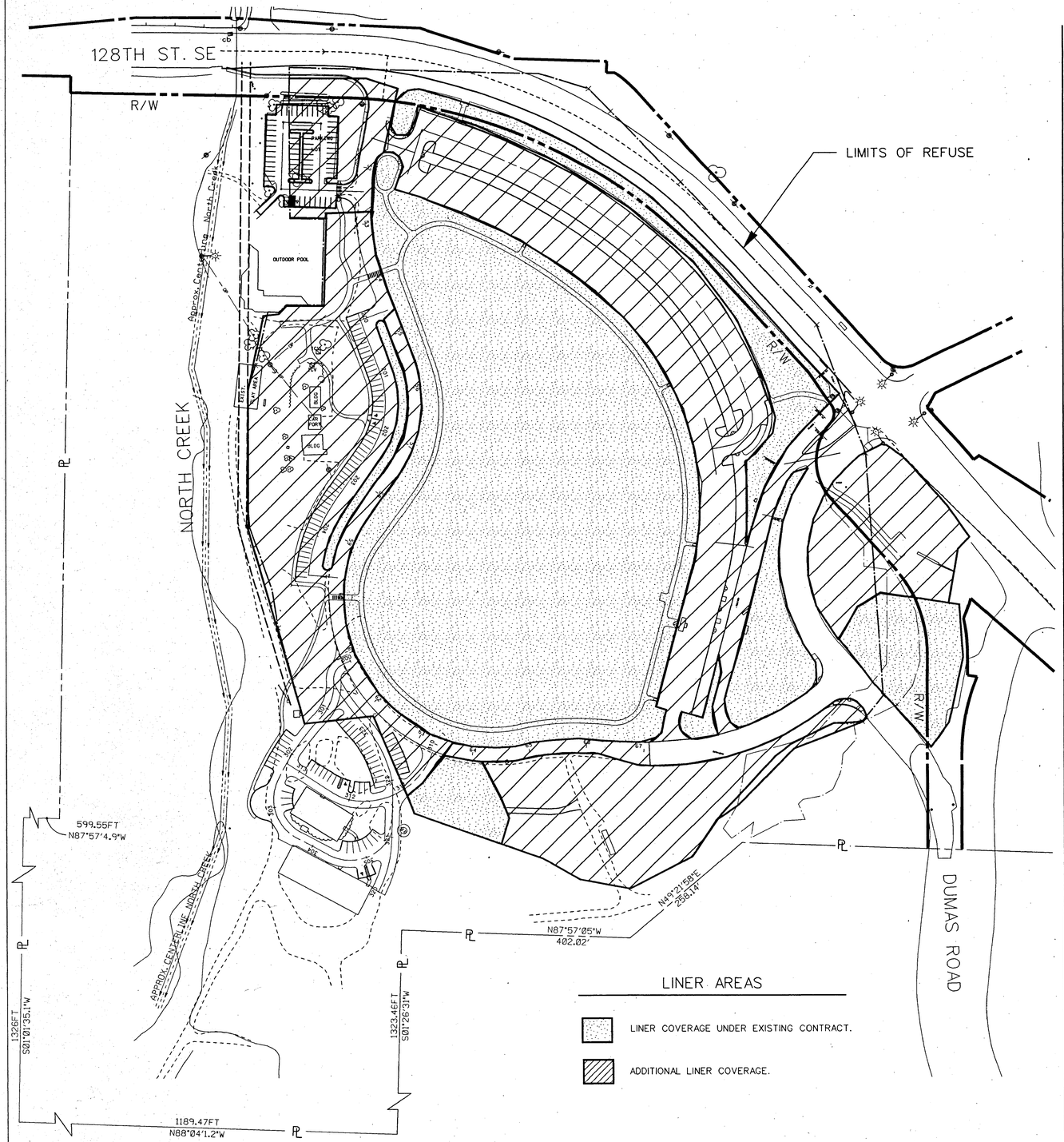
MCCOLLUM PARK REGRADE

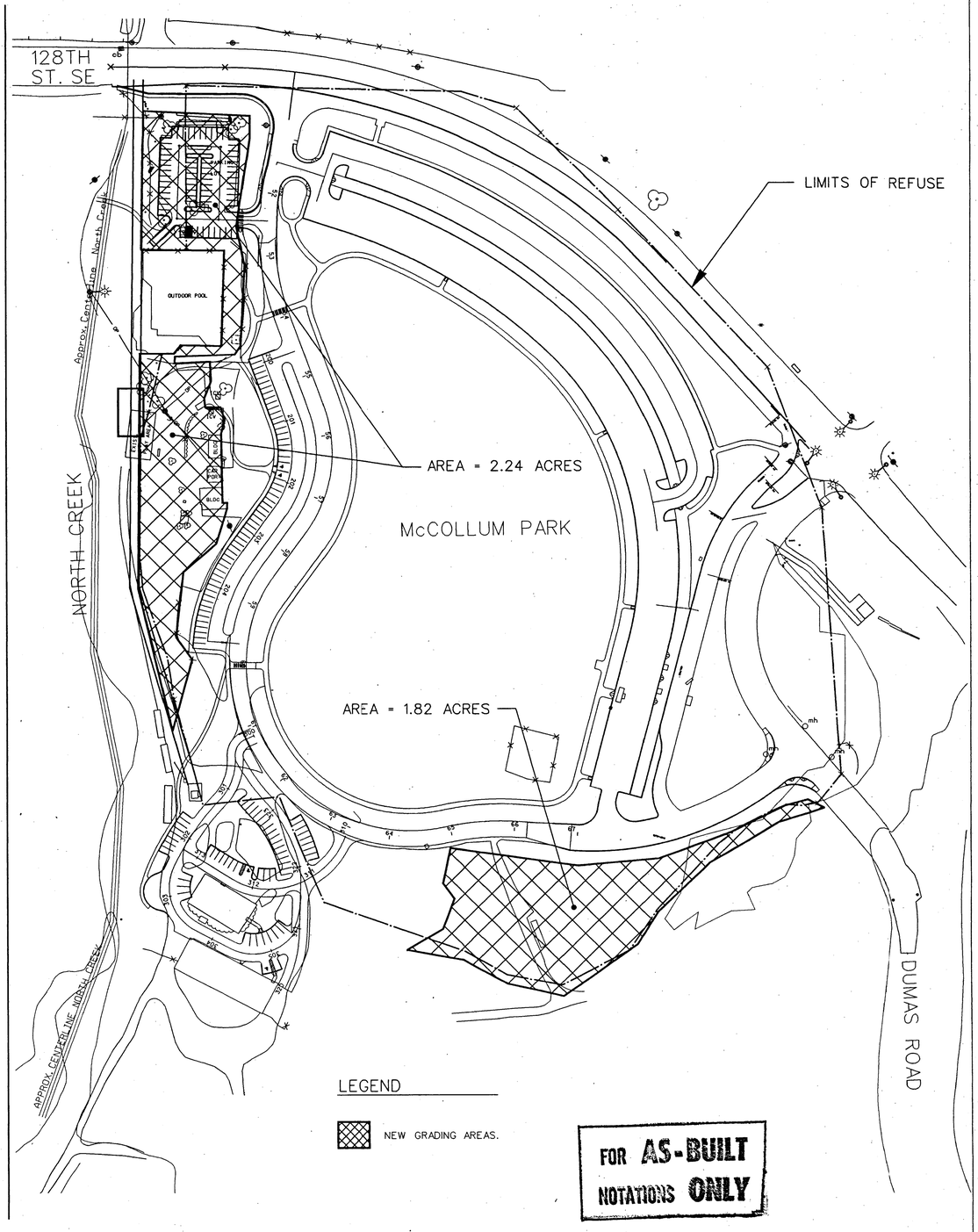
T.E.S.C.P.

SURVEY NO.

SHEET 2 OF 12 SHEETS

I:\dgn\park\501tesp.dgn Apr. 25, 1995 13:44:26





PLAN CHECK	BY	DATE						
			DATE	NO.	REVISION		BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L. PERTEET — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

LINER & GRADING AREA PLAN

SURVEY NO.

SHEET 3 OF 12 SHEETS

SEC 30, T28N, R5E, W.M.

SCALE IN FEET 0 50 100 150

CONSTRUCTION NOTES

1. PLAY AREA EQUIPMENT TO BE REMOVED AND RESET AS DIRECTED IN THE FIELD.
2. BENCH TO BE REMOVED AND RESET AS DIRECTED IN THE FIELD.
3. BUILDING TO BE DEMOLISHED
4. BIOFILTRATION TRENCH PER DETAIL SHEET 12.
5. IRRIGATION CONTROL VALVES TO BE REMOVED.
6. UTILITY POLE TO BE RELOCATED BY OTHERS.
7. ACCESS ROAD AND PAD PER DETAIL SHEET 12.
8. NATIVE GROWTH PROTECTION AREA SIGN PER DETAIL SHEET 11.
9. CONSTRUCT LINER BOOT PER DETAIL 1, SHEET C18 OF ORIGINAL PLAN SET.
10. CONSTRUCT LINER BOOT PER DETAIL SHEET 12.
11. CONSTRUCT LINER BOOT PER DETAIL 3, SHEET C18 OF ORIGINAL PLAN SET.
12. EXISTING OVERHEAD TELEPHONE SERVICE TO BE ABANDONED AND NEW UNDERGROUND SERVICE TO BE PROVIDED BY OTHERS. NEW SERVICE TO BE ROUTED TO THE POOL OFFICE & WSU EXSTENSION SERVICE BUILDING WITHIN THE EXISTING UTILITY EASEMENT.
13. New Water Valve Vault & Lid

FOR AS-BUILT NOTATIONS ONLY

LIMITS OF REFUSE

BUFFER LINE

Approx. Center Line North Creek

128th ST. SE

PARK ROAD

DUMAS ROAD

PARKING LOT

OUTDOOR POOL

BLDG

CAR PORT

ICV

F.G.-402.75

GRADE BREAK

F.G.-402.75

TYPICAL EACH LUMINAIRE (10)

TYPICAL EACH FOOTING (9)

MATCH LINE - STA 60+00 (PARK ROAD)

EAST DISPOSAL AREA

PLAN CHECK	BY	DATE						
			DATE	NO.	REVISION		BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD, BOOK(S):	

RICHARD L. PERTEET STATE OF WASHINGTON 12040 REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

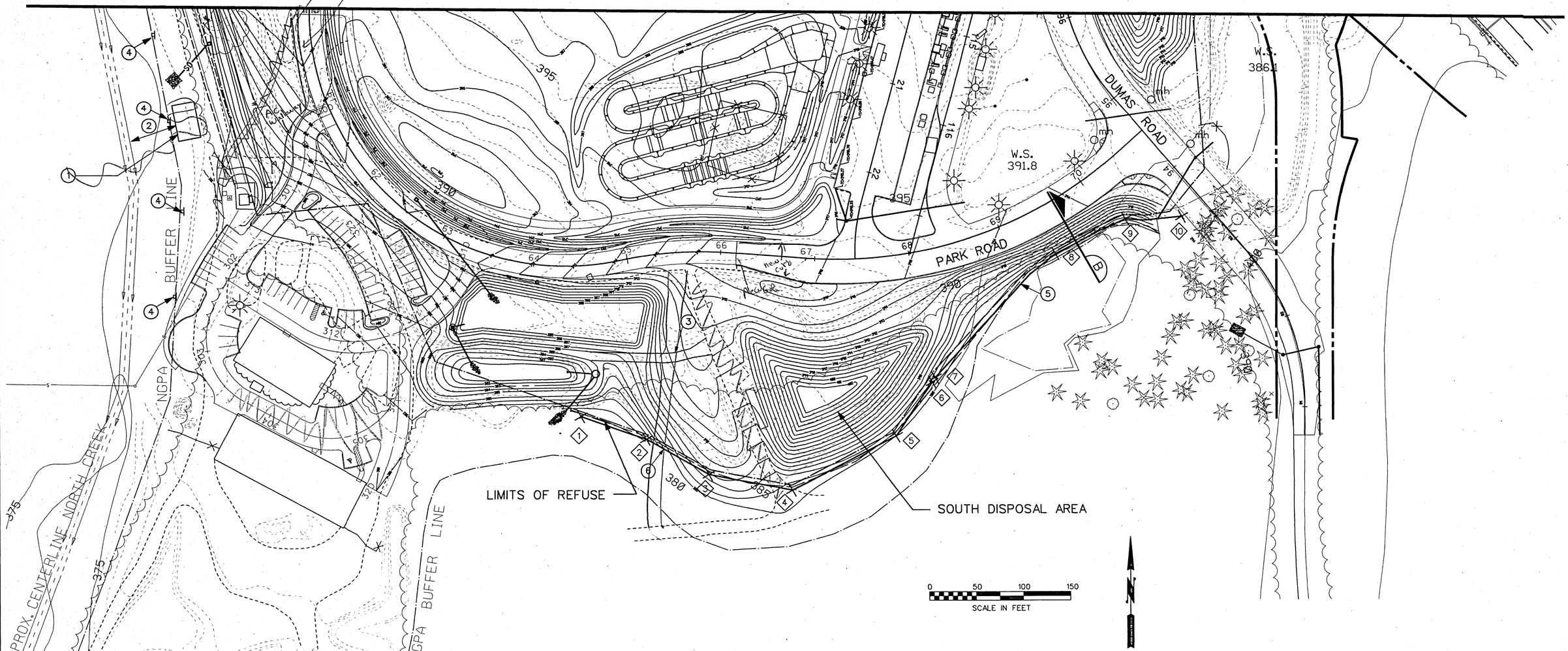
REVISED GRADING PLAN (NORTH)

SURVEY NO.

SHEET 4 OF 12 SHEETS

SEC 30, T28N, R5E, W.M.

MATCH LINE - STA 60+00 (PARK ROAD)



POINT NO.	NORTHING	EASTING	ELEVATION
1	N323497.9630	E1659567.1740	
2	N323473.7760	E1659636.6190	
3	N323436.3210	E1659702.7840	
4	N323419.3290	E1659791.9420	
5	N323476.6640	E1659901.7530	
6	N323534.4070	E1659940.1280	
7	N323539.0190	E1659943.2840	
8	N323671.6960	E1660071.7390	
9	N323708.5470	E1660146.6840	
10	N323711.2470	E1660207.9180	

CONSTRUCTION NOTES

1. ~~PROPOSED CARETAKERS RESIDENCE.~~ Deleted
2. BUILDING STREAM SETBACK = 50'(MIN)
3. POND ACCESS ROAD
4. NATIVE GROWTH PROTECTION AREA SIGN PER DETAIL, SHEET 11.
5. LINER TERMINATION EDGE. SEE DETAIL, SHEET 11.
6. TOE ANCHOR TRENCH. SEE DETAIL, SHEET 11.

PLAN CHECK	BY	DATE		NO.	REVISION	BY
			DATE			

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L PERLEY — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96
7.25.95

SNOHOMISH COUNTY ENGINEER

FOR AS-BUILT NOTATIONS ONLY

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

REVISED GRADING PLAN (SOUTH)

SURVEY NO.

SHEET 5 OF 12 SHEETS

R:\prj\McLean\510\grd.dgn Apr. 25, 1995 14:06:28

SEC 30, T28N, R5E, W.M.

SCALE IN FEET 0 50 100 150

CONSTRUCTION NOTES

1. INTERCEPTOR TRENCH TO BE TIGHTLINED TO EXISTING CB. EXISTING PERFORATED DRAIN PIPE TO BE REMOVED. SEE DETAIL SHT.11.
2. INTERCEPTOR/ANCHOR TRENCH SEE DETAIL SHT. 11.
3. BIOSWALE SLOPE @ 1% SEE DETAIL SHT. 11.

DRAINAGE NOTES:

1. EXISTING CONCRETE INLET RIM EL=391.2 +/- I.E.= 390.2
2. 49 LF 8" SOLID PVC @ 3.0%
3. G.E.= 392.2 +/- I.E.= 391.67
4. 107 LF 8" PVC PERF PIPE @ 0.5%
5. CLEANOUT SEE DETAIL SHEET 11
6. G.E.= 393.0 +/- I.E.= 389.8
7. 133 LF 8" PVC PERF PIPE @0.5%
8. G.E.= 393.0 +/- I.E.= 390.5
9. G.E.= 392.0 +/- I.E.= 388.8
10. 68 LF 8" PVC PERF PIPE @ 6.3%
11. 470 LF 8" PVC PERF PIPE @ 1.2%
12. 95 L.F. 8" CMP @ 0.7%
13. I.E. = 393.67
14. I.E. = 93.0

LIMITS OF REFUSE

PARKING LOT

OUTDOOR POOL

Approx. Center Line of NGPA BUFFER

Playarea did not move

50' (TYP.)

PLAY AREA

EXISTING

BLDG

CAR PORT

BLDG

128th ST. SE

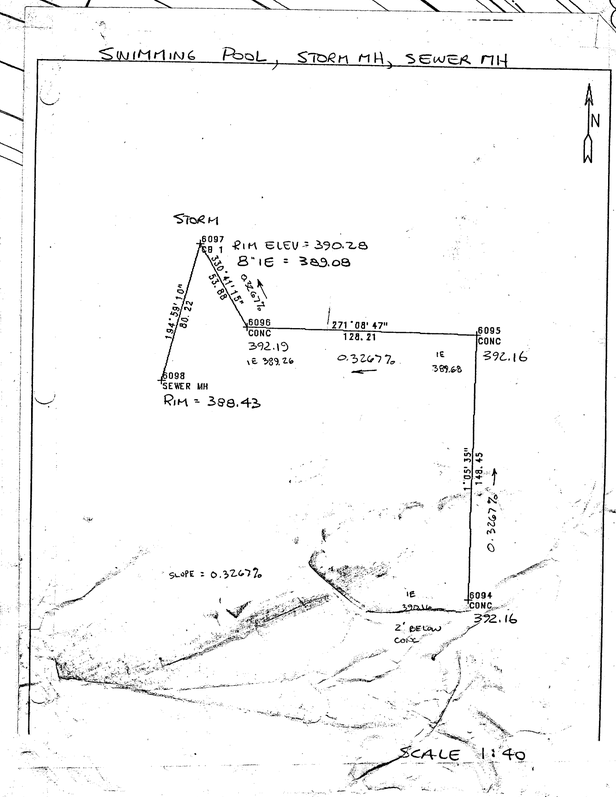
PARK ROAD

DUMAS ROAD

Extend Curb

ICV

SWIMMING POOL, STORM MH, SEWER MH



PT.NO.	NORTHING	EASTING	ELEVATION
1	N324598.5450	E1659133.9320	
2	N324598.4200	E1659259.1890	
3	N324444.8040	E1659255.3940	
4	N324432.7590	E1659151.8730	
5	N324367.3310	E1659137.1450	
6	N324233.4360	E1659123.1360	
7	N324028.7010	E1659132.2640	
8	N324800.2290	E1659183.2640	
9	N324805.3540	E1659267.7230	
10	N324815.2920	E1659183.8110	
11	N324729.7560	E1659143.2050	

FOR AS-BUILT NOTATIONS ONLY

MATCH LINE - STA 60+00 (PARK ROAD)

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L. PEARCE — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — EXPIRE 9/30/96 — 4-25-96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

REVISED DRAINGE PLAN (NORTH)

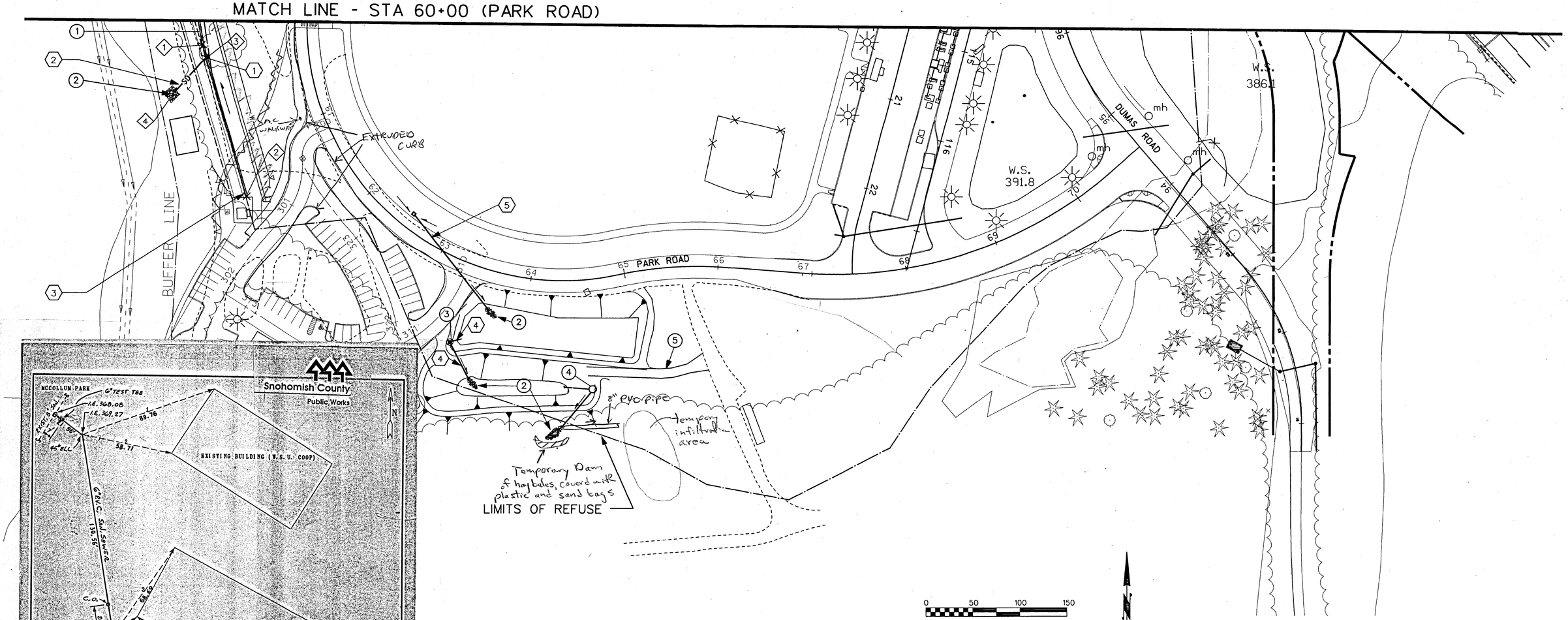
SURVEY NO.

SHEET 6 OF 12 SHEETS

Apr 25, 1996 13:17:26 I:\SURVEY\DGN\MCCOLLUM.dgn

SEC 30, T28N, R5E, W.M.

MATCH LINE - STA 60+00 (PARK ROAD)



POINT NO.	NORTHING	EASTING	ELEVATION
1	N323910.7420	E1659164.3300	
2	N323748.7730	E1659210.8230	
3	N323897.7630	E1659168.2570	
4	N323862.8170	E1659135.3840	

CONSTRUCTION NOTES:

1. INTERCEPTOR TRENCH SEE DETAIL SHEET 11.
2. STABILIZE DISCHARGE POINT WITH QUARRY SPLASH PAD PER WSDOT STANDARD SPEC. 9-13-6.
3. NEW OUTLET CONTROL STRUCTURE. SEE DETAIL SHEET 11.
4. MODIFY EXISTING FLOW RESTRICTOR BY REPLACING EXISTING 8.5" ORIFICES WITH 3.0" DIAM. ORIFICES.
5. POND ACCESS ROAD.

DRAINAGE NOTES:

1. TYPE 1 CB G.E. 382.5 I.E. 378.5
2. 45 LF 8" PERF PIPE @ 4% TO DAYLIGHT TO SPLASH PAD.
3. G.E. = 381.2 +/- I.E. = 379.5
4. 45 LF 12" CMP WITH ANTI-SEEP COLLARS @ 8.9% .
5. 125 LF 12" D.I. PIPE @ 1.8% SEE SHEET C8 OF ORIGINAL PLAN SET
6. 13 LF 12" CMP WITH ANTI-SEEP COLLARS @ 0.1%

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L. PERKINS, STATE OF WASHINGTON, 12040, REGISTERED PROFESSIONAL ENGINEER, 4-25-95, EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

FOR AS-BUILT NOTATIONS ONLY

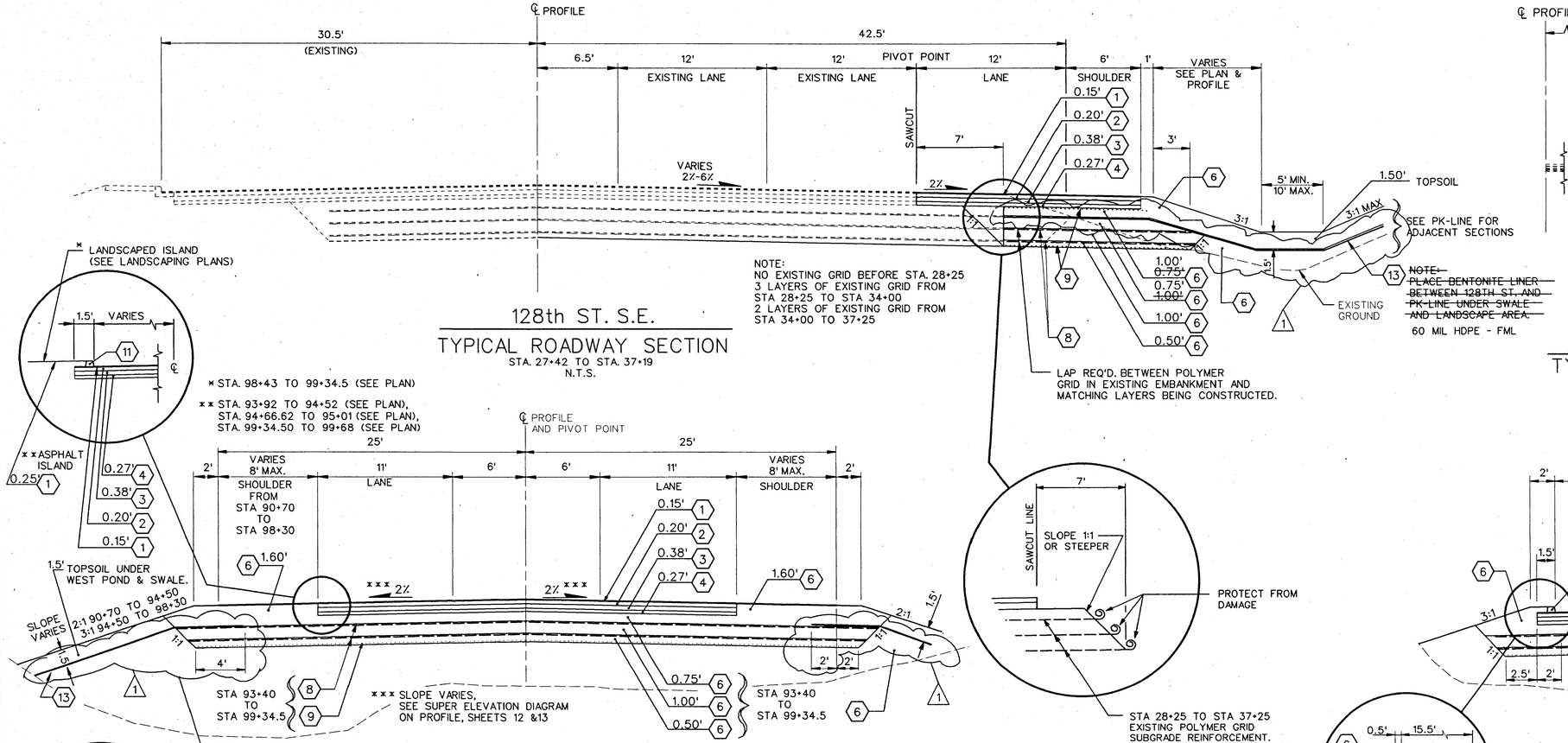
McCOLLUM PARK REGRADE
REVISED DRAINAGE PLAN (SOUTH)

SURVEY NO.

SHEET 7 OF 12 SHEETS

APPROVED

dsgn/mcpark/s1016b2.dgn Apr 26, 1995 12:15:49



PLAN CHECK	BY	DATE					
			4/25	1	ADD HDPE LINER	HJJ	
			DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		7

DESIGNED BY: | DRAWN BY:

DATE APPROVED: | FIELD BOOK(S):

RICHARD L. PERTEET, STATE OF WASHINGTON, 12040, REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96
7-25-95

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

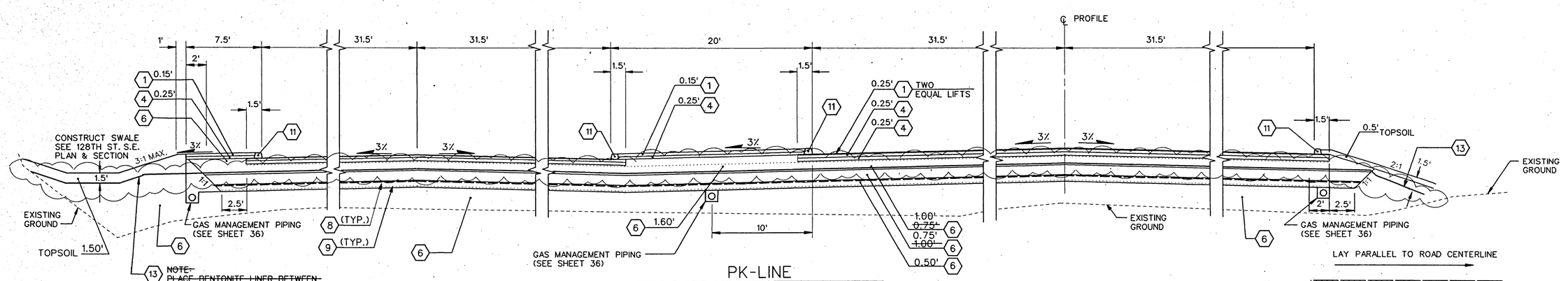
PARK REGRADE

REVISED ROAD SECTIONS AND DETAILS

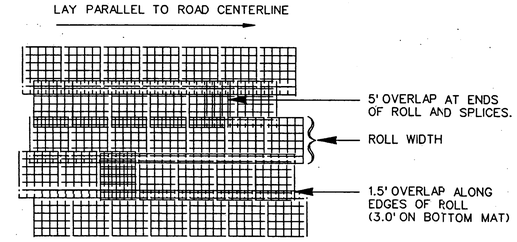
SURVEY NO.

SHEET 8 OF 12 SHEETS

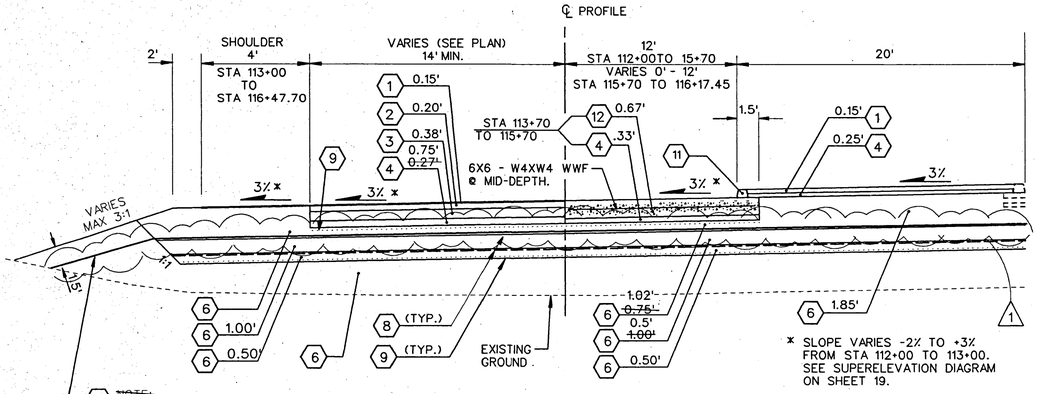
ss\dgn\pk_rdsec.dgn 12:01:19 12-Jul-1996



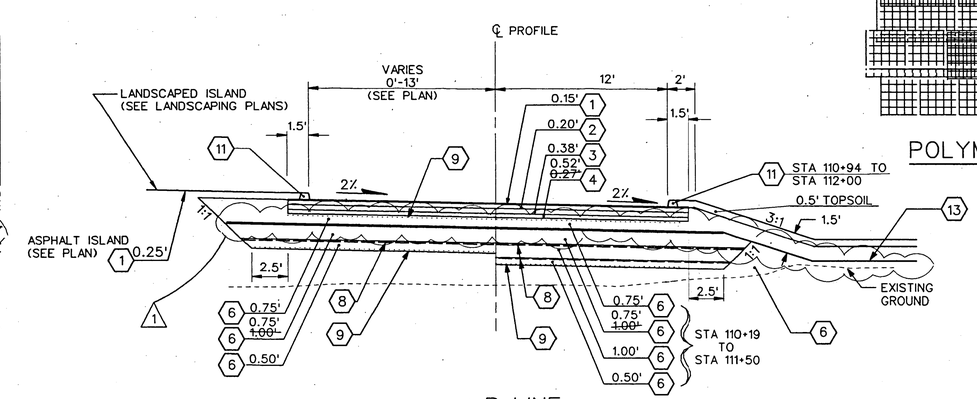
PK-LINE
TYPICAL ROADWAY SECTION
STA 10+00 TO STA 17+00
N.T.S.



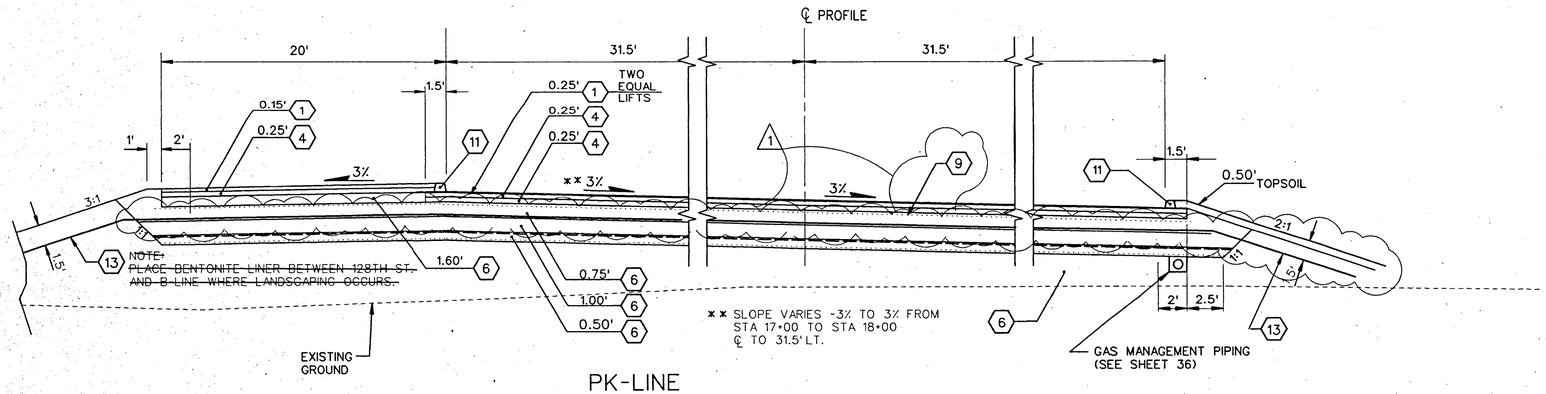
POLYMER GRID LAYOUT DETAIL (TYP.)



B-LINE
TYPICAL ROADWAY SECTION
STA 112+00 TO STA 113+75
N.T.S.



B-LINE
TYPICAL ROADWAY SECTION
STA. 110+19 TO STA. 112+00
N.T.S.



PK-LINE
TYPICAL ROADWAY SECTION
STA. 17+00 TO STA. 22+20
N.T.S.

LEGEND

1. ASPHALT CONC. PVMT. CL.'B' WEARING COURSE.
2. ASPHALT CONC. PVMT. CL.'B' LEVELING COURSE.
3. ASPHALT TREATED BASE.
4. CRUSHED SURFACING TOP COURSE.
5. CRUSHED SURFACING BASE COURSE.
6. GRAVEL BORROW, DEPTH VARIES.
7. CEMENT CONC. SIDEWALK, 4" THICK. SEE STD. PLAN F-5.
8. POLYMER GRID SUBGRADE REINFORCEMENT.
9. CONSTRUCTION GEOTEXTILE FABRIC FOR SOIL STABILIZATION AS DIRECTED BY THE ENGINEER.
10. CEMENT CONCRETE CURB AND GUTTER. SEE STD. PLAN F-1.
11. EXTRUDED CEMENT CONCRETE CURB, TYPE 6. SEE STD. PLAN F-2b.
12. PORTLAND CEMENT CONCRETE PAVEMENT WITH ~~6X6-W4XW4 WWF~~ #3 REBAR 16" CENTER AT MID-DEPTH.
13. ~~IMPERVIOUS BENTONITE LINER~~ (SEE PLAN FOR LIMITS) 60 MIL HDPE FML

MATERIAL THICKNESS
MATERIAL NUMBER → 4 0.50'

TYPICAL MATERIAL CALLOUT

FOR AS-BUILT NOTATIONS ONLY

BY	DATE	NO.	REVISION	BY
	4/25	1	ADD HDPE LINER	HJJ

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		

DESIGNED BY: | DRAWN BY:
DATE APPROVED: | FIELD BOOK(S):

RICHARD L. PERLEY — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

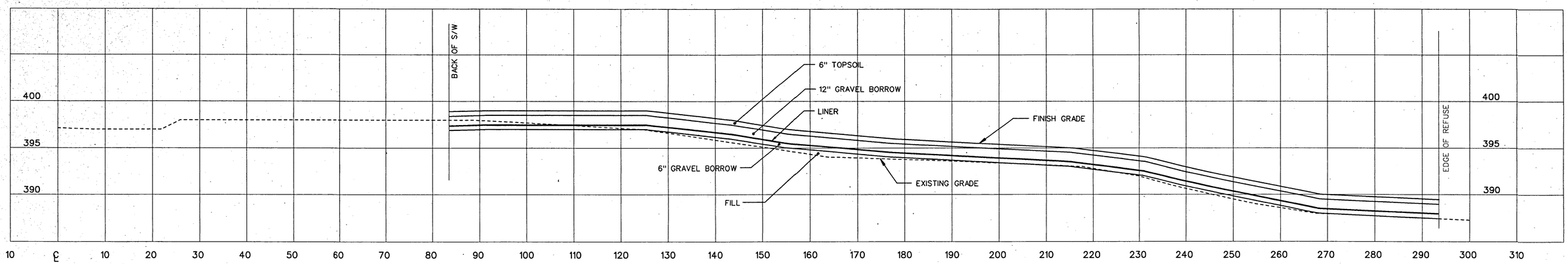
SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

McCOLLUM PARK REGRADE
REVISED ROAD SECTIONS AND DETAILS

SURVEY NO.

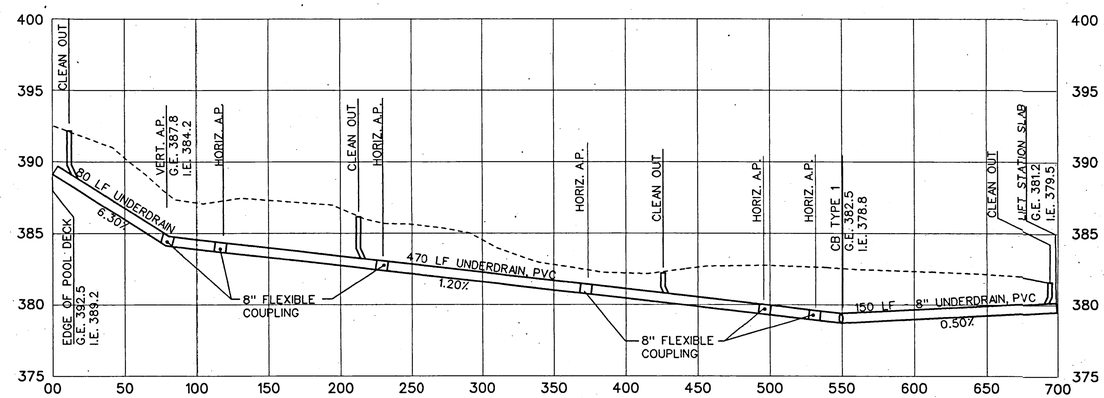
SHEET 9 OF 12 SHEETS

\\Engfile\Projects\2000\2000sdp\dgn\2000sdp_sht09.dgn APR. 25, 1996 11:03:20



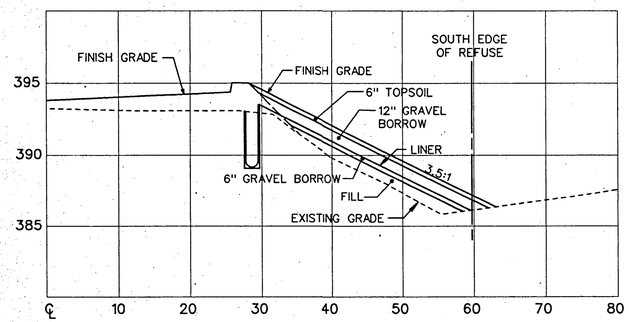
TYPICAL SECTION (A)

SCALE: VERT. 1" = 5'
HORZ. 1" = 50'



SOUTH INTERCEPTOR TRENCH PROFILE

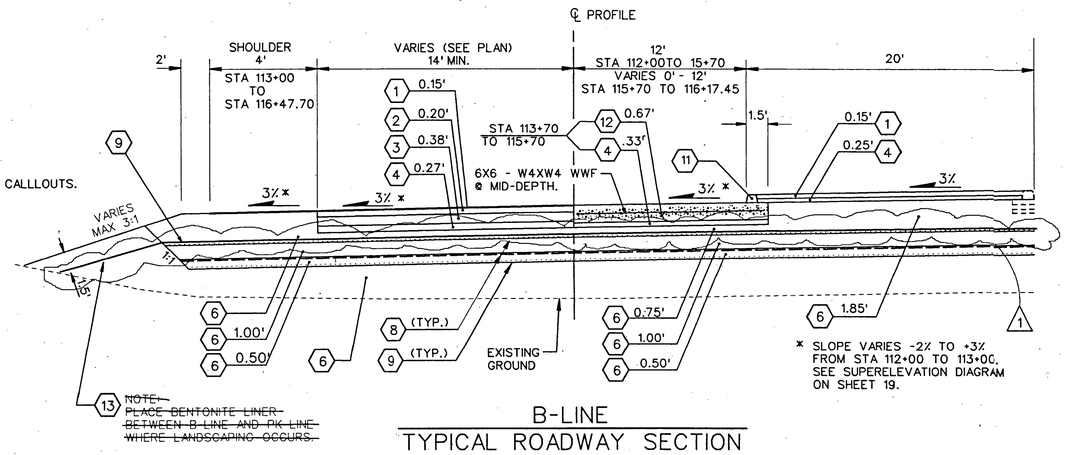
SCALE: VERT. 1" = 5'
HORZ. 1" = 50'



TYPICAL SECTION (B)

SCALE: VERT. 1" = 5'
HORZ. 1" = 50'

NOTE:
SEE SHEET 9 LEGEND FOR MATERIAL CALLLOUTS.



B-LINE
TYPICAL ROADWAY SECTION

STA 113+75 TO STA 117+40.75

N.T.S.

FOR AS-BUILT NOTATIONS ONLY

PLAN CHECK	BY	DATE						
			DATE	NO.	REVISION		BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L PERTEE — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — 4-25-95
EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

SNOHOMISH COUNTY PARK REGRADE

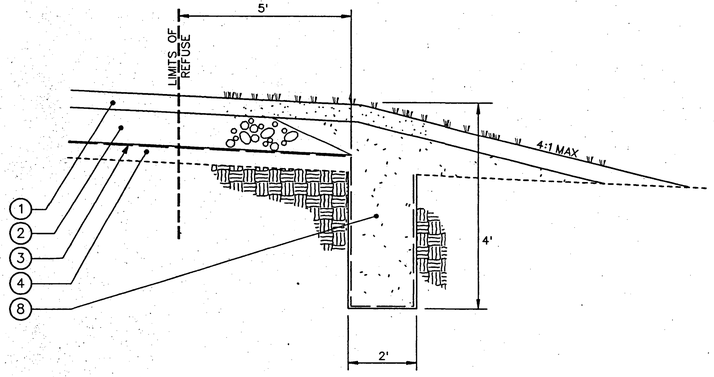
PROFILES

SURVEY NO.

SHEET 10 OF 12 SHEETS

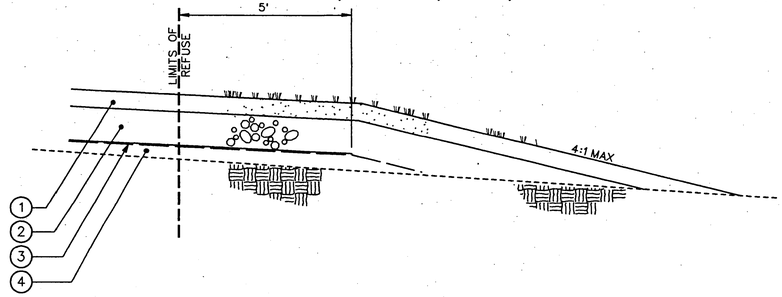
Bas-pm\Mapsheet\3501603.dgn Apr 25, 1995 14:38:14

SEC 30, T28N, R5E, W.M.



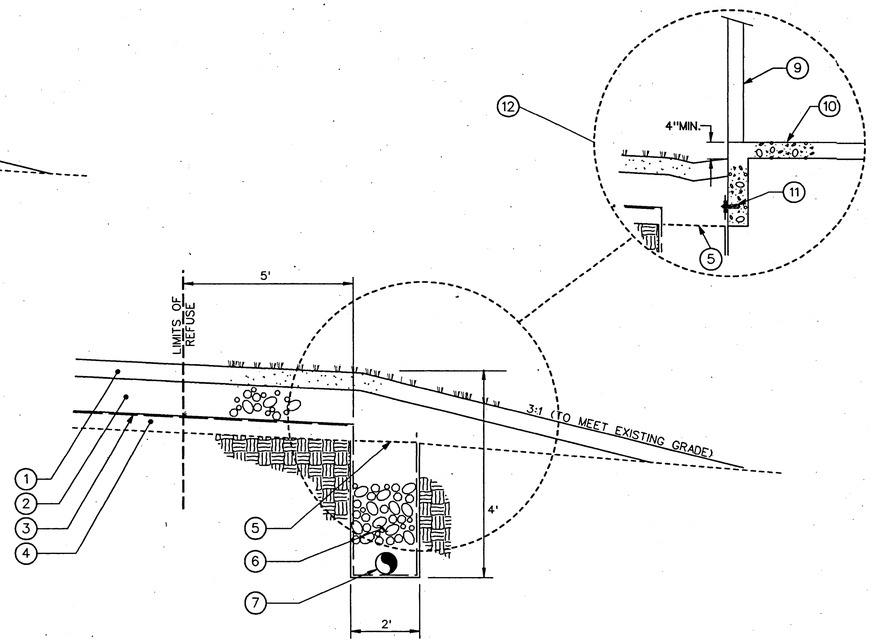
TOE ANCHOR TRENCH DETAIL

SCALE: NTS



LINER TERMINATION DETAIL

SCALE: NTS

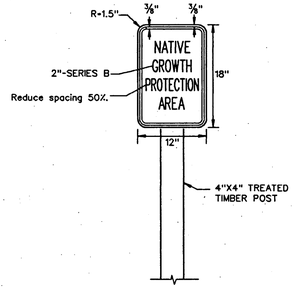


INTERCEPTOR TRENCH DETAIL

SCALE: NTS

CONSTRUCTION NOTES:

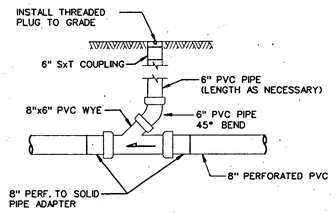
1. 6" TOPSOIL & GRASS SEED
2. 12" GRAVEL BORROW (INCL. HAUL)
3. 60 MIL. HDPE LINER (TEXTURED)
4. 6" GRAVEL BORROW (INCL. HAUL)
5. GEOTEXTILE FABRIC
6. DRAIN ROCK PER WSDOT STANDARD SPEC. 9-03.12(4). NO. 5 CONCRETE.
7. 8" RIGID PVC PERFORATED DRAIN PIPE PER WSDOT STANDARD SPEC. SEC. 9.05.2(6)
8. NATIVE BACKFILL
9. CHAIN LINK FENCE
10. POOL DECK
11. LINER BOOT BATTEN PER ORIGINAL PLAN SET
12. POOL AREA ONLY



COLORS
LEGEND - WHITE
BACKGROUND - BROWN
INSTALL PER STD. PLAN G-4a.

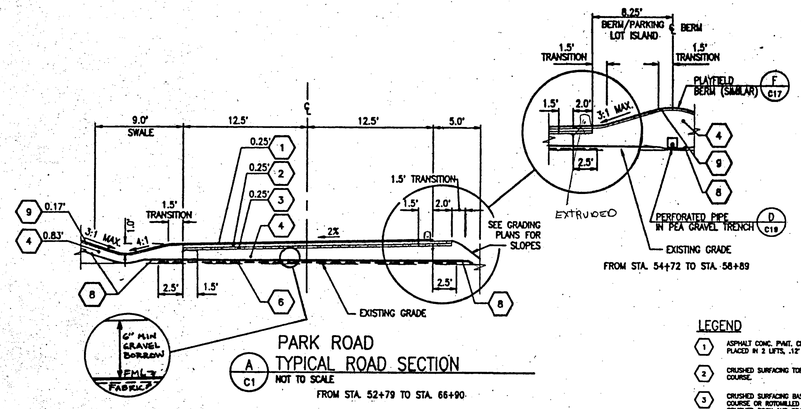
NGPA SIGN DETAIL

(NTS)



CLEANOUT DETAIL

(NTS)



PARK ROAD TYPICAL ROAD SECTION

A C1 NOT TO SCALE

FROM STA. 52+79 TO STA. 66+90

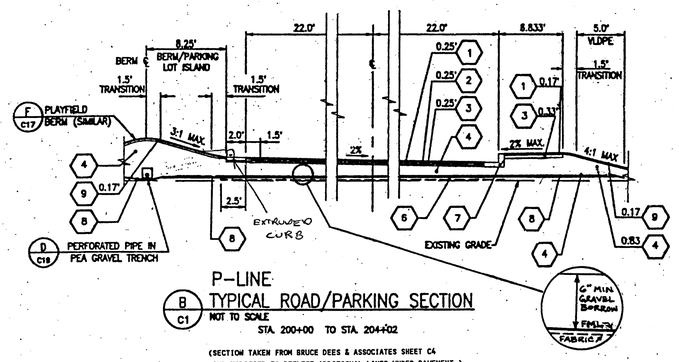
(SECTION TAKEN FROM BRUCE DEES & ASSOCIATES SHEET C4 AND MODIFIED TO REFLECT ADDITIONAL LINER UNDER PAVEMENT.)

LEGEND

1. ASPHALT CONC. PVMT., CL. "B" PLACED IN 2 LIFTS, 12" MIN.
2. CRUSHED SURFACING TOP COURSE.
3. CRUSHED SURFACING BASE COURSE OR ROTOMILLED ASPHALT, CRUSHED ROCK AND GRAVEL SURFACING.
4. GRAVEL BORROW (SEE NOTE).
5. POLYMER GRID
6. CONSTRUCTION GEOTEXTILE FOR PAVEMENT REINFORCEMENT.
7. CEMENT CONCRETE BARRIER CURB AND GUTTER. SEE STD. PLAN F-1.
8. HDPE-FML.
9. TOPSOIL

NOTE:

1. GRAVEL BORROW OVER CONSTRUCTION GEOTEXTILE FOR PAVEMENT REINFORCEMENT SHALL BE PLACED A MINIMUM OF .5' DEPTH.
2. EXISTING SUBGRADE SHALL BE REMOVED TO HDPE-FML GRADE AND PROOFROLLED PRIOR TO PLACING FML.

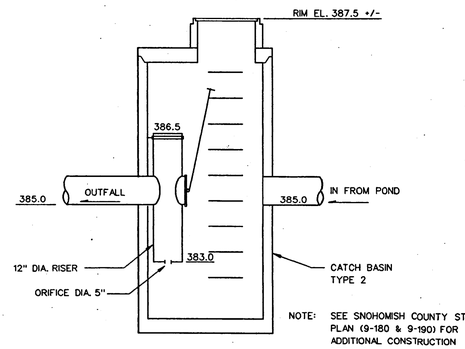


P-LINE TYPICAL ROAD/PARKING SECTION

B C1 NOT TO SCALE

STA. 200+00 TO STA. 204+02

(SECTION TAKEN FROM BRUCE DEES & ASSOCIATES SHEET C4 AND MODIFIED TO REFLECT ADDITIONAL LINER UNDER PAVEMENT.)



NOTE: SEE SNOHOMISH COUNTY STD. PLAN (9-180 & 9-190) FOR ADDITIONAL CONSTRUCTION DETAILS.

CONTROL STRUCTURE UPPER POND

6

FOR AS-BUILT NOTATIONS ONLY

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L PERTEET — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — 4-25-95 — EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

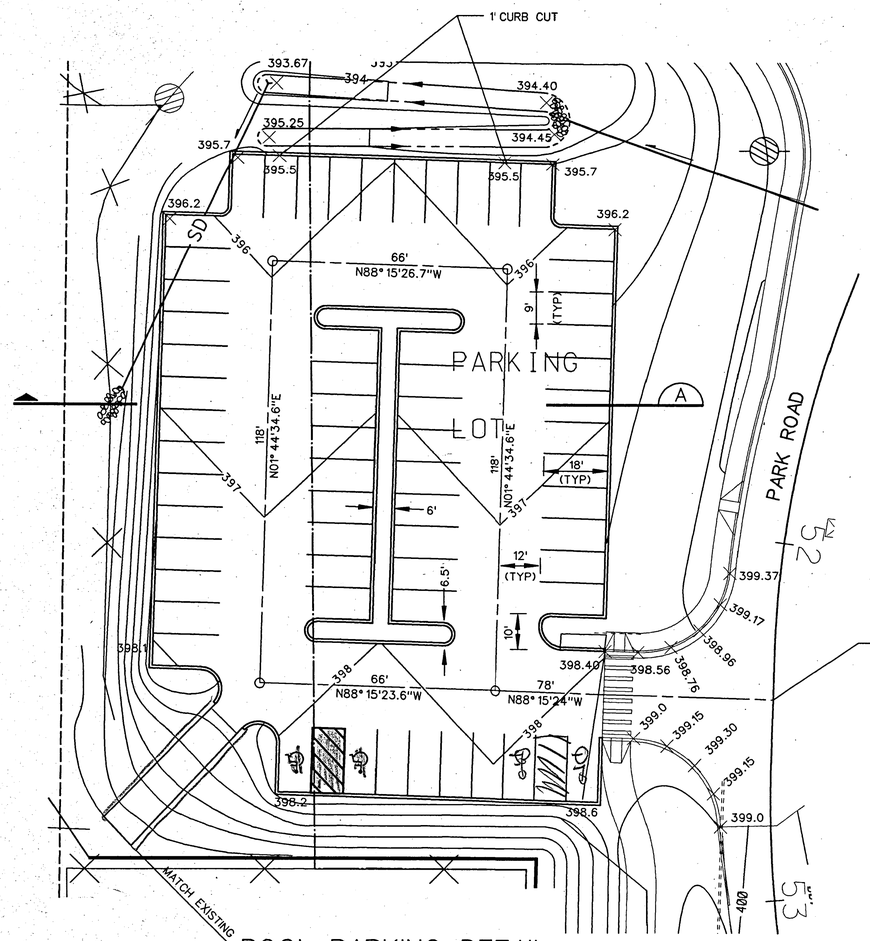
MCCOLLUM PARK REGRADE

SECTIONS AND DETAILS

SURVEY NO.

SHEET 11 OF 12 SHEETS

96 23 21 dgn 25 1995 Apr
sig:\dgn\15110101.dgn

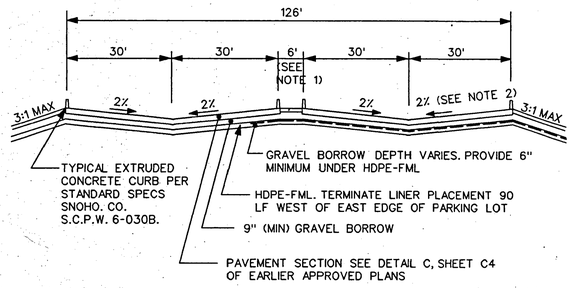


POOL PARKING DETAIL

SCALE: 1"=20'

0 20 40 60

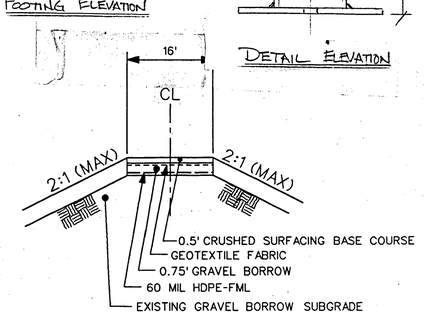
SCALE IN FEET



NOTE:
1) PROVIDE 6" MINIMUM TOPSOIL. LANDSCAPING PER SNOHOMISH COUNTY PARKS DEPARTMENT
2) SEE PARKING LOT PLAN FOR FINISHED GRADES

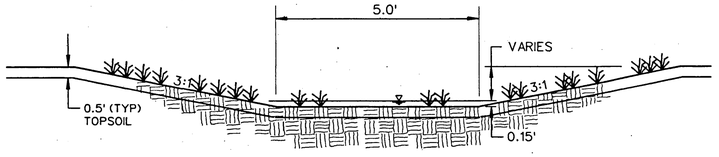
TYPICAL POOL PARKING LOT SECTION (A)

NTS



TYPICAL ACCESS ROAD SECTION (B)

NTS



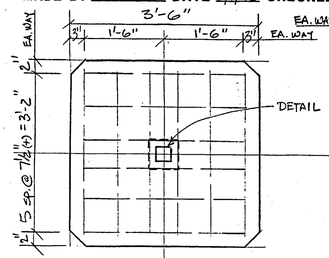
BIOFILTRATION SWALE DETAIL

NTS

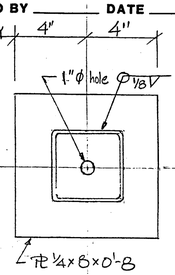
DESIGN CALCULATIONS

SHEET NO. 1 OF 2
JOB NO.

PROJECT McCollum Park
CALCULATIONS FOR SIGN SUPPORT
MADE BY DEA DATE 6/1/95 CHECKED BY ____ DATE ____

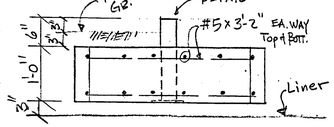


FOOTING PLAN

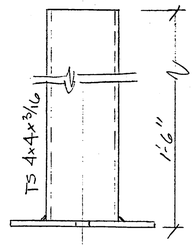


DETAIL PLAN

Conc - 3,000 psi min.
Rebar - GR 40 min.
STEEL - A36/Hot Dip Galv After Fab.

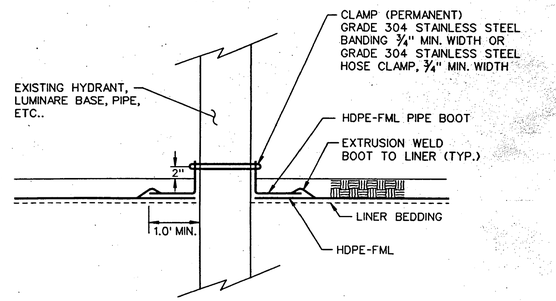


FOOTING ELEVATION



DETAIL ELEVATION

Revised FLARE COMPOUND



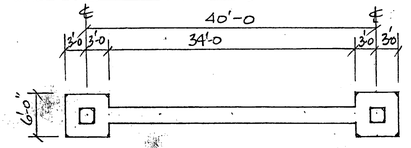
VERTICAL LINER PROTRUSION BOOT SECTION

N.T.S.

DESIGN CALCULATIONS

SHEET NO. 2 OF 2
JOB NO.

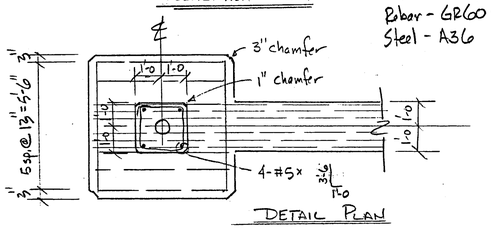
PROJECT McCollum Park
CALCULATIONS FOR Gate Post Foundation
MADE BY DEA DATE 2 Jun 95 CHECKED BY ____ DATE ____



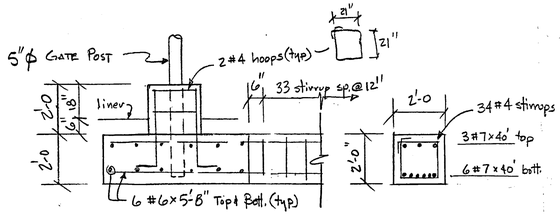
KEN
-GRADE BEAM INCREASE IN SIZE DUE TO TRAFFIC LOADING
Tom H.

FOUNDATION PLAN

Conc - 3000 psi min.
Rebar - GR60 min
Steel - A36



DETAIL PLAN



DETAIL ELEVATION

DETAIL SECTION

FOR AS-BUILT NOTATIONS ONLY

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L PERTEET STATE OF WASHINGTON 12040 REGISTERED PROFESSIONAL ENGINEER
EXPIRE 9/30/96
4-25-95

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. ____

McCOLLUM PARK REGRADE

DETAILS

SURVEY NO.

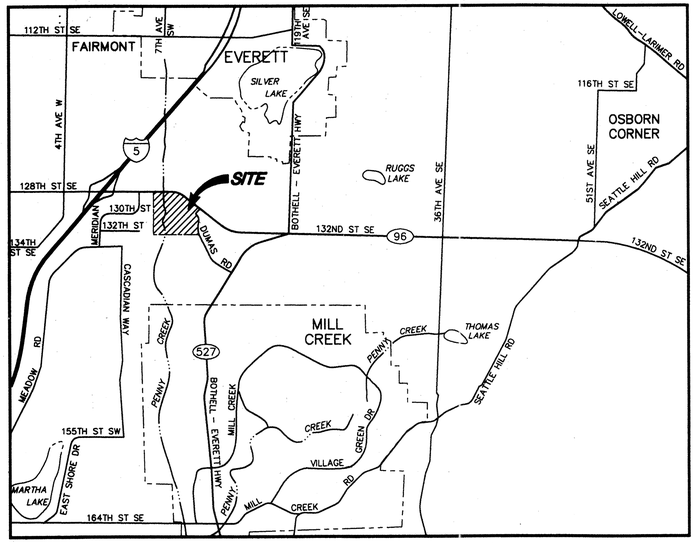
SHEET 12 OF 12 SHEETS

I:\sign\McPark\SIGN2.dgn Apr 25, 1995 14:53:49

McCOLLUM PARK PROJECT
128th STREET SE AND DUMAS ROAD
SNOHOMISH COUNTY, WASHINGTON

LANDFILL GAS MANAGEMENT SYSTEM
CONSTRUCTION PLAN

VICINITY MAP



INDEX OF DRAWINGS

SHEET NUMBER	DESCRIPTION
GENERAL	
G1	VICINITY MAP AND INDEX OF DRAWINGS
CIVIL	
C1	SITE PLAN WITH SYSTEM LAYOUT
C2	PIPING LAYOUT – NORTH SECTION
C3	PIPING LAYOUT – SOUTH SECTION
C4	PIPING DETAILS
C5	ACCESS VAULTS AND WELL DETAILS AND SECTIONS
C6	GAS COLLECTION TRENCH DETAILS AND SECTIONS
C7	ISOLATION VAULT AND SUMP DETAILS AND SECTIONS
MECHANICAL	
M1	MANIFOLD VAULT LAYOUT
M2	FLARE PAD LAYOUT

ADDENDUM TO CONSTRUCTION PLANS:
REPLACE SHEETS 36, 37, 38a, & 38b WITH THE FOLLOWING.

LEGEND

MW-16	EXISTING MONITORING WELL NUMBER AND LOCATION
LB15/PZ-3	EXISTING LANDFILL BORING/PIEZOMETER NUMBER AND LOCATION
GMP-23	PROPOSED GAS MANAGEMENT PERIMETER WELL: 4" DIA. HDPE CASING, 15' DEEP
GMV-3	PROPOSED GAS MANAGEMENT VENT WELL: 4" DIA. HDPE CASING, 15' DEEP
	PROPOSED 4' x 6' CONCRETE ACCESS VAULT (PERIMETER SYSTEM); NOTE SIZE EXAGGERATED FOR CLARITY ON SHEET C1
	PROPOSED 4' x 6' CONCRETE ACCESS VAULT (VENT SYSTEM); NOTE SIZE EXAGGERATED FOR CLARITY ON SHEET C1
	PROPOSED 4' x 4' CONCRETE ISOLATION VAULT
	PROPOSED 4" DIA. CONDENSATE SUMP RISER
----------	PROPOSED GAS MANAGEMENT TRENCH "TYPE I": 2" DIA. SLOTTED HDPE IN GRAVEL-FILLED TRENCH
==========	PROPOSED GAS MANAGEMENT TRENCH "TYPE II": 2" OR 4" DIA. SLOTTED HDPE IN GRAVEL-FILLED TRENCH
————	PROPOSED 2" OR 4" DIA. BLANK HDPE HEADER
—·—·—	PROPOSED 6" DIA. BLANK HDPE HEADER
.....	EXISTING 2" OR 4" DIA. HDPE PIPE TO BE ABANDONED IN PLACE
=======●=======	PROPOSED 10.5" DIA. HOLLOW STEM AUGER LOCATION; GRAVEL FILLED, 10' DEEP
—·—·—·—	PROPOSED ELECTRICAL CONDUIT
▲	LOCATION OF PROPOSED AMBIENT COMBUSTIBLE GAS SENSOR/ALARM
	AREA LUMINAIRE ON 12.2 METER CONCRETE POLE, SINGLE AND TANDEM
	CONCRETE HANDHOLE, LUMINAIRE POWER

JAMES S. DRANGSETH — STATE OF WASHINGTON — 23161 — REGISTERED PROFESSIONAL ENGINEER

4/27/95

EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\G1.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		1 OF 10
DESIGNED BY: MARTIN FOX		DRAWN BY: MARTIN FOX	
DATE APPROVED:		FIELD BOOK(S):	

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4569 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

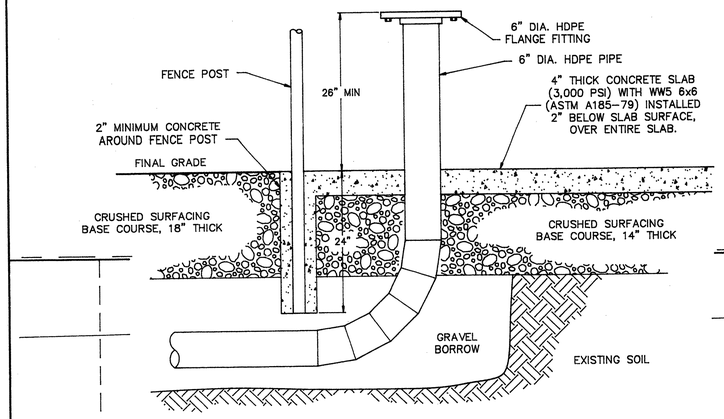
VICINITY MAP AND INDEX OF DRAWINGS

SURVEY NO.

SHEET G1

Plans 12/7/96 Ref. Swa. # 3321 & Co. PW Project #91-951 file: Swa. 3321

DigiPrint™



AA / A1 FLARE PAD SLAB SECTION

SCALE: 1"=12"

NOTES:

1. ALL PIPES ENTERING COMPOUND SHALL TERMINATE 2'-0" ABOVE FINAL SLAB GRADE. SPACING BETWEEN ALL PIPES SHALL BE A MINIMUM OF (2) PIPE DIAMETERS, OR AS DIRECTED BY THE ENGINEER.
2. LABEL ALL PIPE CLEARLY WITH TERMINUS LOCATION.
3. ALL PIPE RISERS SHALL BE PLUMB, AND ALIGN WITH THE OTHERS IN THE ROW.

1 / A1 FLARE PAD SLAB DETAIL

NOT TO SCALE

NOTES:

1. FOR FLARE PAD EQUIPMENT LAYOUT, SEE DETAIL 1, SHEET M2 OF CONSTRUCTION PLANS.

JAMES S. DRANSFIELD
STATE OF WASHINGTON
PROFESSIONAL ENGINEER
8/2/95
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M2.DWG

PLAN CHECK	BY	DATE					
			7/10/95	1	EXPANDED SLAB 5' TO SW	MJF	
			DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		1 OF 1
DESIGNED BY: MARTIN FOX		DRAWN BY: MARTIN FOX	
DATE APPROVED:		FIELD BOOK(S):	

AGRA
Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

EDGE OF GRAVEL SURFACING

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

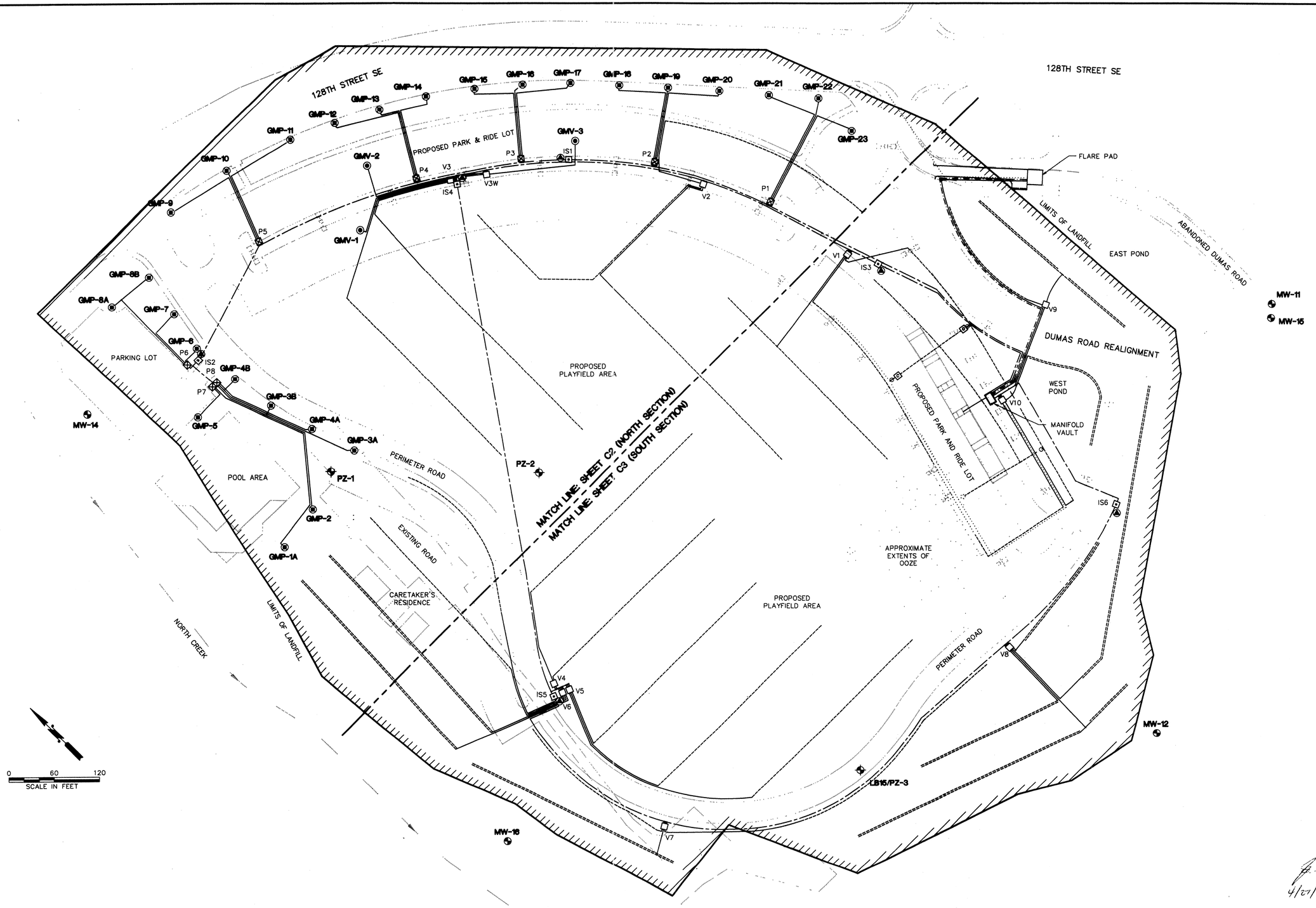
ADDENDUM 01: FLARE PAD SLAB DETAIL

SURVEY NO.

SHEET A1 REV 1

signed 12/17/96

Sne 332



JAMES S. DRANSFIELD
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
4/27/97
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C1.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		2 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX

DATE APPROVED: | FIELD BOOK(S):

AGRA
Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

SITE PLAN WITH SYSTEM LAYOUT

SURVEY NO.

SHEET C1

12/17/96

DigiPrint™

NOTES:

1. ALL HDPE BLANK PIPE TO GAS COLLECTION WELLS SHALL BE 4" DIAMETER UNLESS OTHERWISE NOTED.
2. ALL HDPE BLANK PIPE TO GAS COLLECTION TRENCHES SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED.
3. ALL HDPE SLOTTED PIPE SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED. IN GENERAL, ALL TRENCHES WITHIN THE PERIMETER ROAD SHALL CONTAIN 2" DIAMETER PIPE.

CONDENSATE FLOW DIRECTION

N

0 40 80
SCALE IN FEET

NOTE: SEE SHEET G1 FOR LEGEND

GMP-1A
GMP-2
GMP-3A
GMP-3B
GMP-4A
GMP-4B
GMP-5
GMP-6
GMP-7
GMP-8A
GMP-8B
GMP-9
GMP-10
GMP-11
GMP-12
GMP-13
GMP-14
GMP-15
GMP-16
GMP-17
GMP-18
GMP-19
GMP-20
GMP-21
GMP-22 (ABANDONED)
GMP-23
GMV-1
GMV-2
GMV-3
PZ-1
PZ-2
MW-10
MW-13
MW-14
IS1
IS1A
IS2
IS7
P1
P2
P3
P4
P5
P6
P7
P8
V2
V3
V3W

3/C5 TYPICAL GAS COLLECTION WELL

2/C5 TYPICAL PERIMETER ACCESS VAULT DETAIL

1/C7 TYPICAL ISOLATION VAULT AND SUMP DETAIL

128TH STREET SE

PROPOSED PARK AND RIDE LOT

PROPOSED PARK AND RIDE LOT

PARKING LOT

POOL AREA

EXISTING CARETAKER'S HOUSE

PROPOSED PLAYFIELD

MOBILE HOME PARK

MOBILE HOME PARK

APPROXIMATE LIMITS OF LANDFILL

APPROXIMATE LIMITS OF LANDFILL

NORTH CREEK

PERIMETER ROAD

NOTE: HEADER LIES OVER COLLECTION PIPE

6" DIA. HDPE TEE

4" DIA. SLOTTED HDPE PIPE

GRAVEL-FILLED BORE HOLES (ABANDONED)

128TH STREET SE

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 13143 — REGISTERED PROFESSIONAL ENGINEER

EXPIRES 12/19/ 97

6/6/96

MATCH LINE - SEE SHEET C3

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C2-R1.DWG

PLAN CHECK	BY	DATE				
		5/17/95	1	SPLIT VENT & PERIMETER SYSTEMS	MJF	
		DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		3 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX

DATE APPROVED: | FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. 11-07764-04

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

PIPING LAYOUT NORTH SECTION

SURVEY NO.

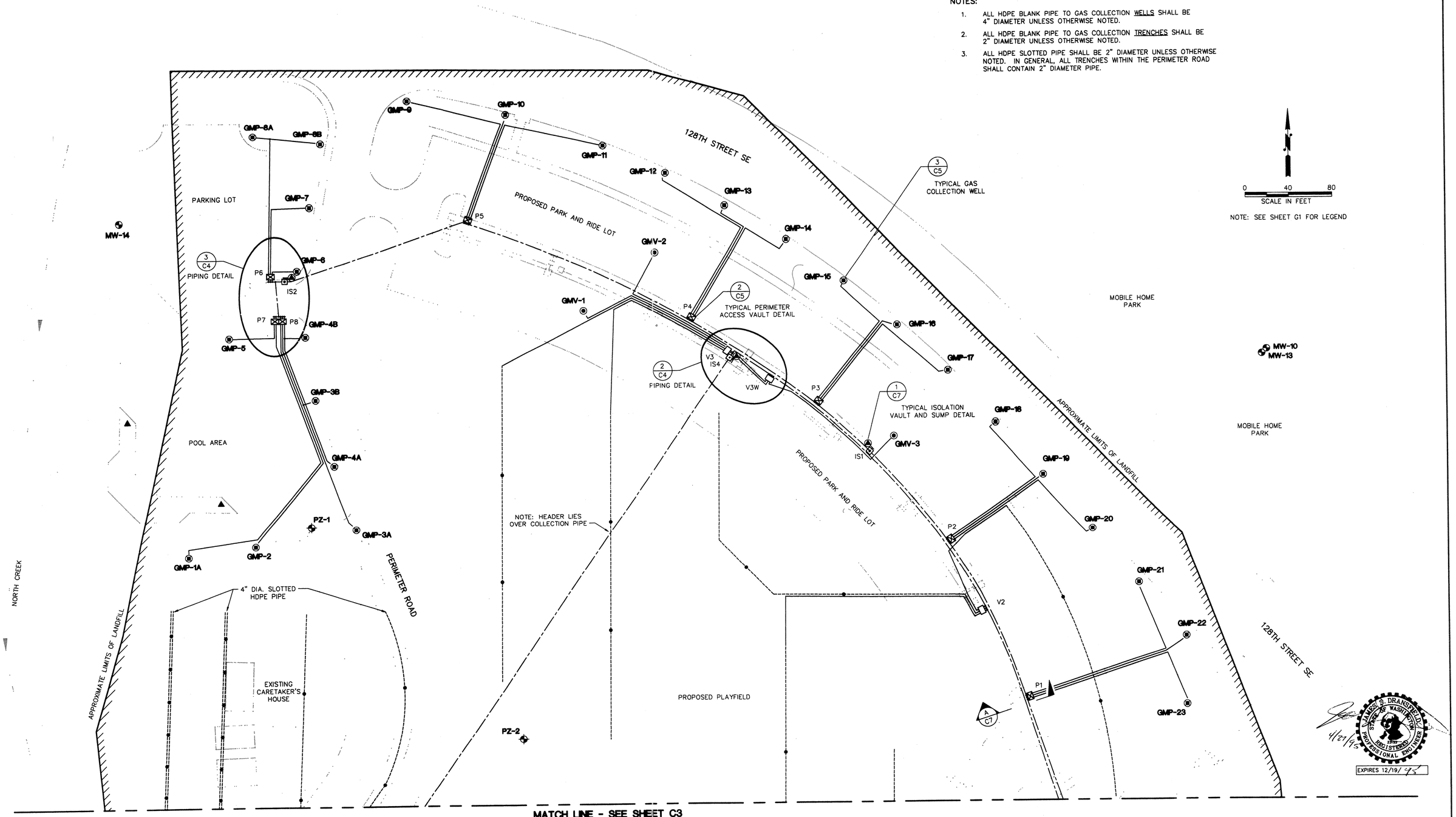
SHEET C2 REV 1

12/17/96

SHT. 33 of

NOTES:

1. ALL HDPE BLANK PIPE TO GAS COLLECTION WELLS SHALL BE 4" DIAMETER UNLESS OTHERWISE NOTED.
2. ALL HDPE BLANK PIPE TO GAS COLLECTION TRENCHES SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED.
3. ALL HDPE SLOTTED PIPE SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED. IN GENERAL, ALL TRENCHES WITHIN THE PERIMETER ROAD SHALL CONTAIN 2" DIAMETER PIPE.



NOTE: SEE SHEET G1 FOR LEGEND

MATCH LINE - SEE SHEET C3

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 23159 — REGISTERED PROFESSIONAL ENGINEER
4/29/96
EXPIRES 12/19/ 97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C2.DWG

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		3 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX

DATE APPROVED: | FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820--4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. 11-07764-04

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

PIPING LAYOUT NORTH SECTION

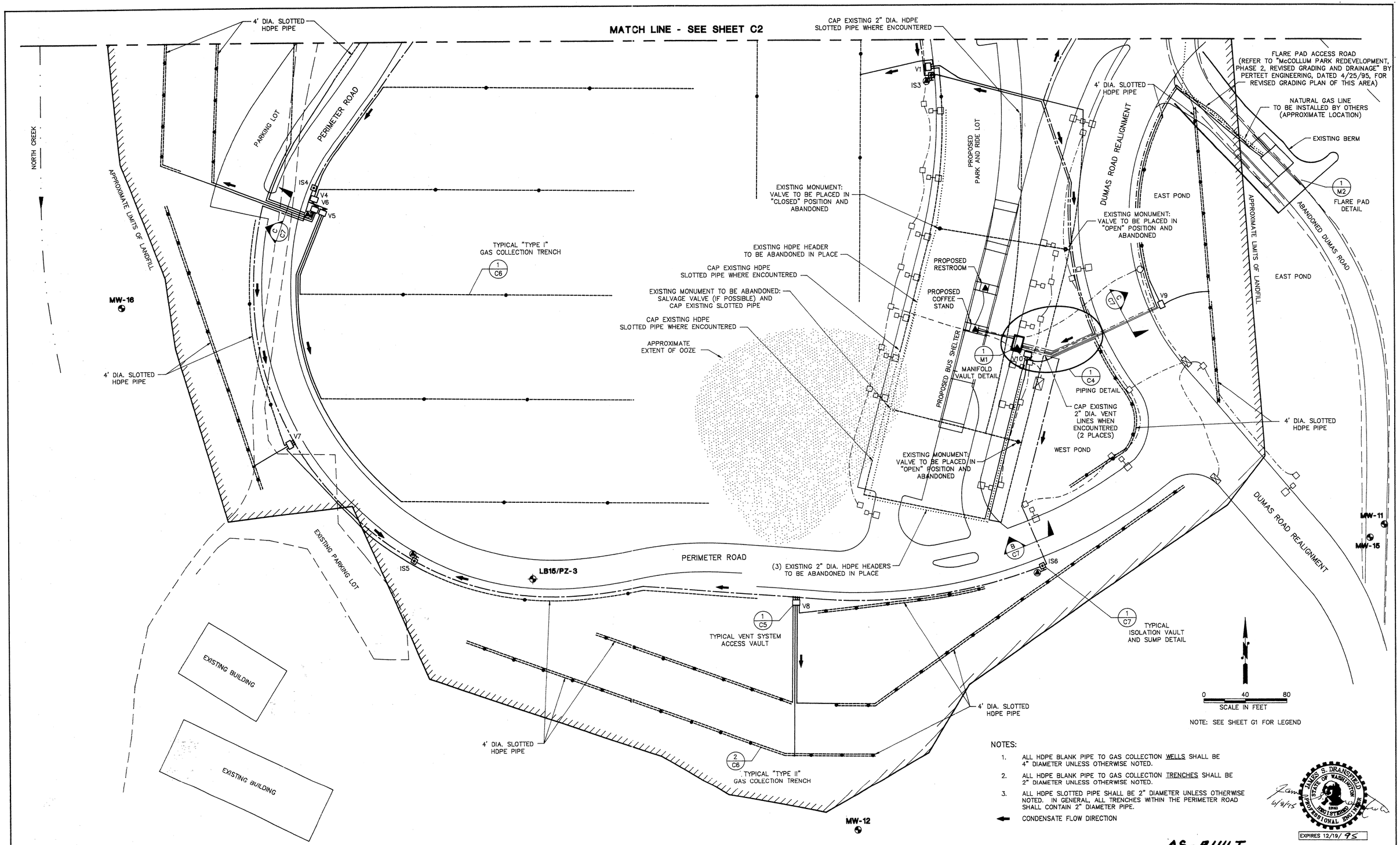
SURVEY NO.

SHEET C2

filmed 12/17/96

Sqa. 33 21

DigiPrint™



NOTE: SEE SHEET G1 FOR LEGEND

NOTES:

1. ALL HDPE BLANK PIPE TO GAS COLLECTION WELLS SHALL BE 4" DIAMETER UNLESS OTHERWISE NOTED.
2. ALL HDPE BLANK PIPE TO GAS COLLECTION TRENCHES SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED.
3. ALL HDPE SLOTTED PIPE SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED. IN GENERAL, ALL TRENCHES WITHIN THE PERIMETER ROAD SHALL CONTAIN 2" DIAMETER PIPE.

← CONDENSATE FLOW DIRECTION

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 20143 — REGISTERED PROFESSIONAL ENGINEER
5/8/95
EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C3-R1.DWG

PLAN CHECK	BY	DATE					
			5/17/95	1	SPLIT VENT & PERIMETER SYSTEMS	MJF	
			DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		4 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX

DATE APPROVED: — FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

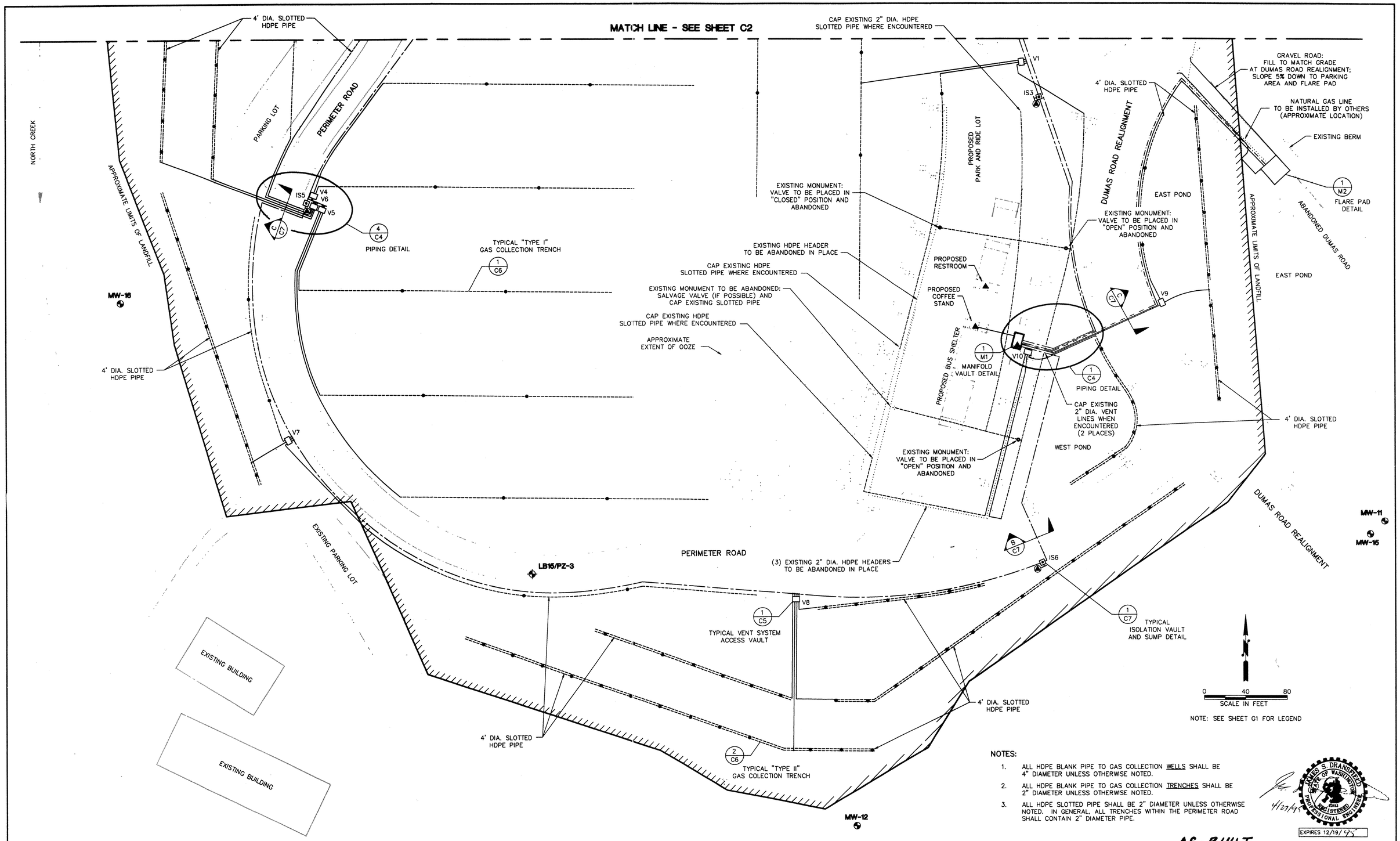
PIPING LAYOUT SOUTH SECTION

SURVEY NO.

SHEET C3 REV 1

filmed 12/17/96

sue_8321



NOTE: SEE SHEET G1 FOR LEGEND

NOTES:

1. ALL HDPE BLANK PIPE TO GAS COLLECTION WELLS SHALL BE 4" DIAMETER UNLESS OTHERWISE NOTED.
2. ALL HDPE BLANK PIPE TO GAS COLLECTION TRENCHES SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED.
3. ALL HDPE SLOTTED PIPE SHALL BE 2" DIAMETER UNLESS OTHERWISE NOTED. IN GENERAL, ALL TRENCHES WITHIN THE PERIMETER ROAD SHALL CONTAIN 2" DIAMETER PIPE.

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 21151 — REGISTERED PROFESSIONAL ENGINEER
4/27/95
EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C3.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		4 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX

DATE APPROVED: | FIELD BOOK(S):

AGRA
Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD LANDFILL GAS MANAGEMENT SYSTEM

PIPING LAYOUT SOUTH SECTION

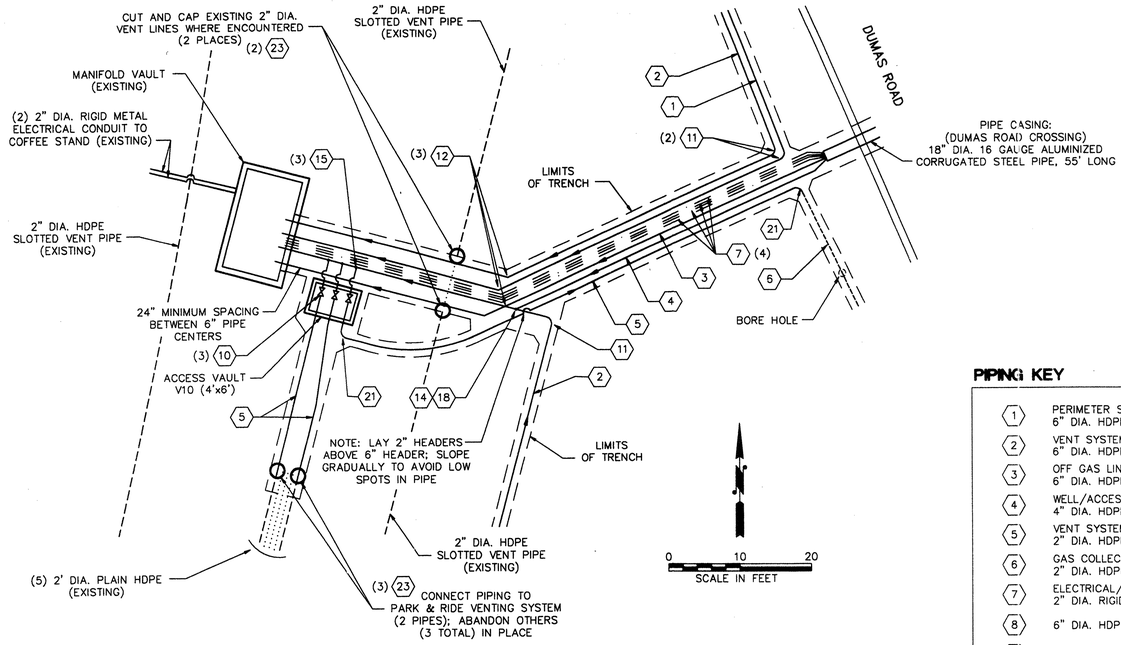
SURVEY NO.

SHEET C3

filmed 12/17/96

file: Sept 3321

DigiPrint™

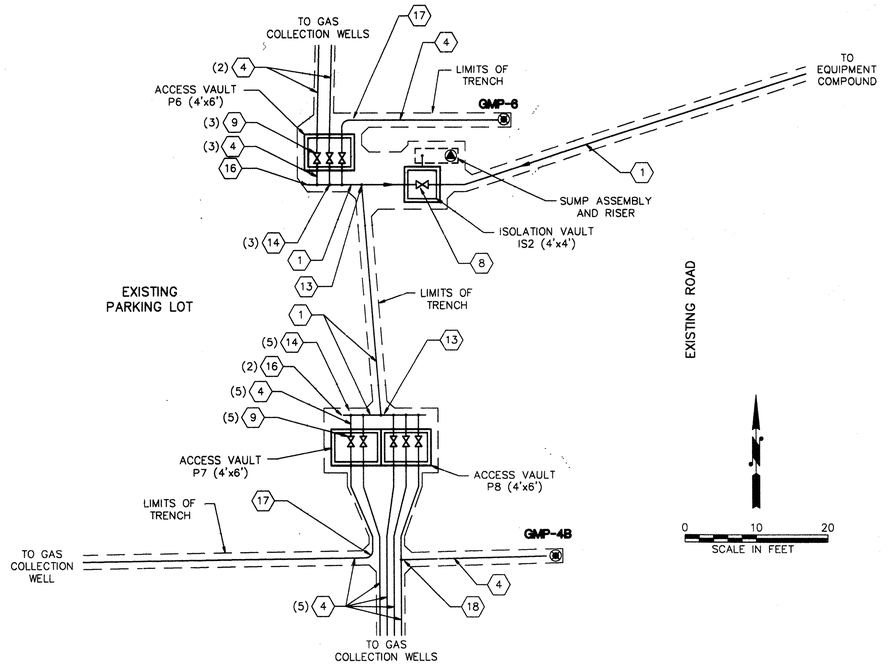


1/C4 PIPING DETAIL - EQUIPMENT VAULT AREA

SCALE: 1"=10'

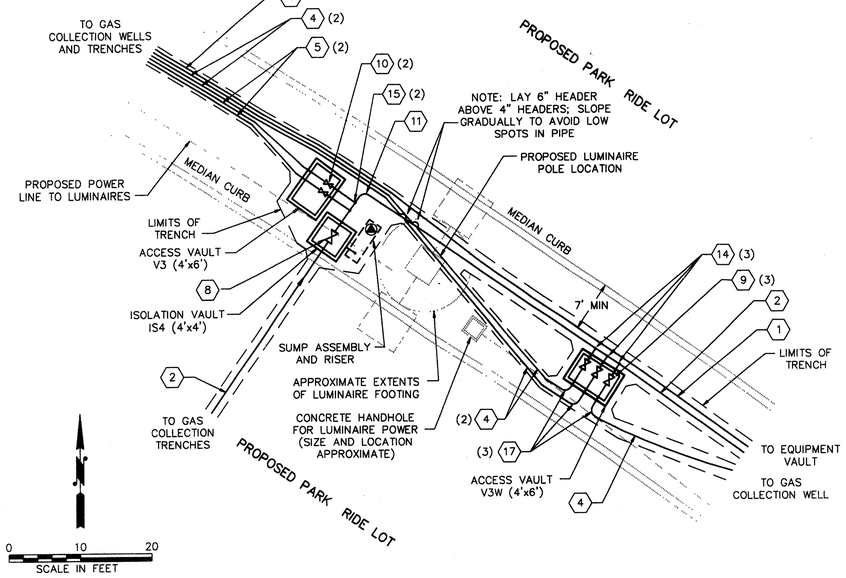
PIPING KEY

1	PERIMETER SYSTEM HEADER: 6" DIA. HDPE PIPE
2	VENT SYSTEM HEADER: 6" DIA. HDPE PIPE
3	OFF GAS LINE TO FLARE PAD: 6" DIA. HDPE PIPE
4	WELL/ACCESS VAULT HEADER: 4" DIA. HDPE PIPE
5	VENT SYSTEM LATERAL HEADER: 2" DIA. HDPE PIPE
6	GAS COLLECTION VENT PIPE: 2" DIA. HDPE PIPE WITH 0.020" SLOTS
7	ELECTRICAL/SENSOR LINE: 2" DIA. RIGID ELECTRICAL CONDUIT
8	6" DIA. HDPE BALL VALVE, FLANGED
9	4" DIA. HDPE BALL VALVE, FLANGED
10	2" DIA. HDPE BALL VALVE, FLANGED
1'	6" DIA. HDPE ELBOW, SWEEP 90
12	6" DIA. HDPE ELBOW, 45
13	6" DIA. HDPE TEE
14	6 x 6 x 4 HDPE REDUCER TEE
15	6 x 6 x 2 HDPE REDUCER TEE
16	6" DIA. HDPE END CAP
17	4" DIA. HDPE ELBOW, SWEEP 90
18	4" DIA. HDPE ELBOW, 45
19	4" DIA. HDPE TEE
20	4 x 4 x 2 HDPE REDUCER TEE
21	2" DIA. HDPE ELBOW, SWEEP 90
22	2" DIA. HDPE ELBOW, 45
23	2" DIA. HDPE END CAP
(2) X	INDICATES NUMBER OF PIPE/FITTINGS (IF GREATER THAN ONE)
	INDICATES GENERAL DOWN SLOPE OF PIPE
	APPROXIMATE LIMITS OF TRENCH



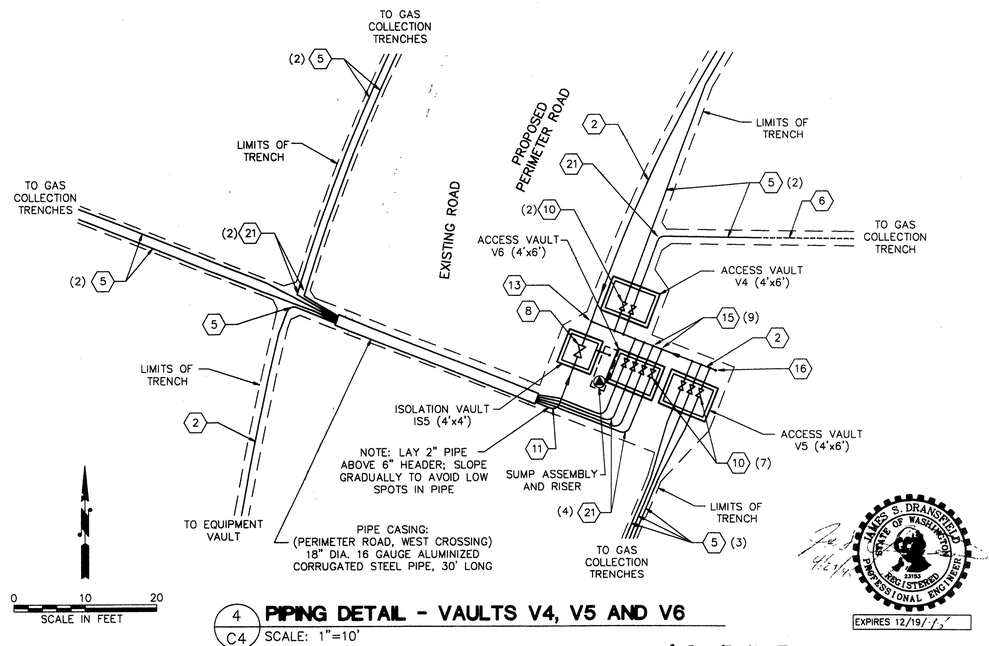
3/C4 PIPING DETAIL - VAULTS P6, P7 AND P8

SCALE: 1"=10'



2/C4 PIPING DETAIL - VAULTS V3 AND V3W

SCALE: 1"=10'



4/C4 PIPING DETAIL - VAULTS V4, V5 AND V6

SCALE: 1"=10'

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 10788 — REGISTERED PROFESSIONAL ENGINEER

EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C4.DWG

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		5 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX

DATE APPROVED: — FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

PIPING DETAILS

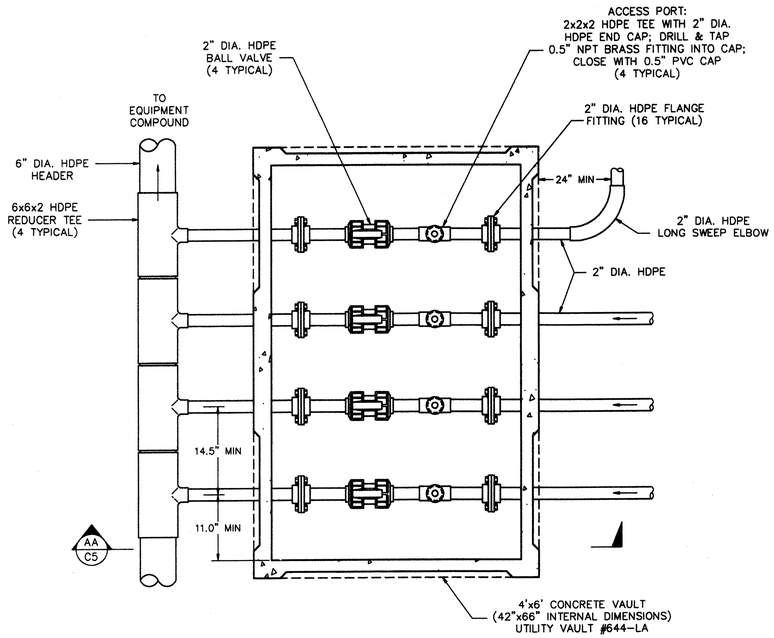
SURVEY NO.

SHEET C4

filmed 12/17/96

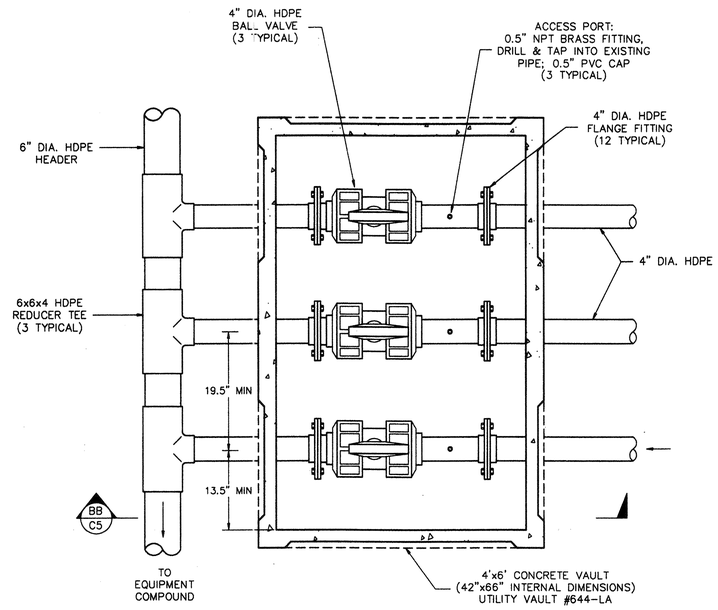
Sm 3821

DigiPrint™



VENT SYSTEM ACCESS VAULT V8 (PLAN VIEW)

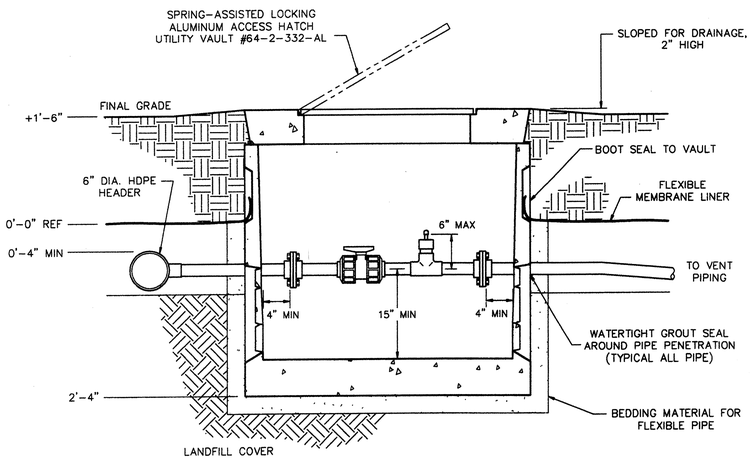
1 / C5 SCALE: 1"=12"



PERIMETER SYSTEM ACCESS VAULT P4 (TYPICAL PLAN VIEW)

2 / C5 SCALE: 1"=12"

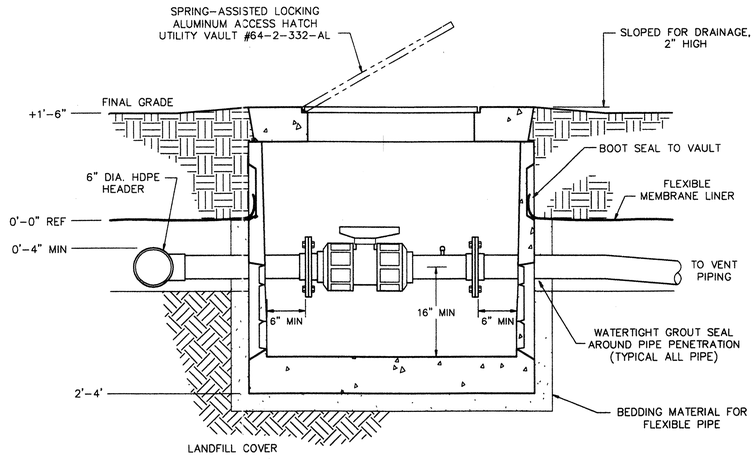
1' 0 1'
SCALE: 1"=1'-0"



VENT SYSTEM ACCESS VAULT V8 (TYPICAL SECTION VIEW)

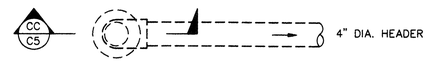
AA / C5 SCALE: 1"=12"

1' 0 1'
SCALE: 1"=1'-0"



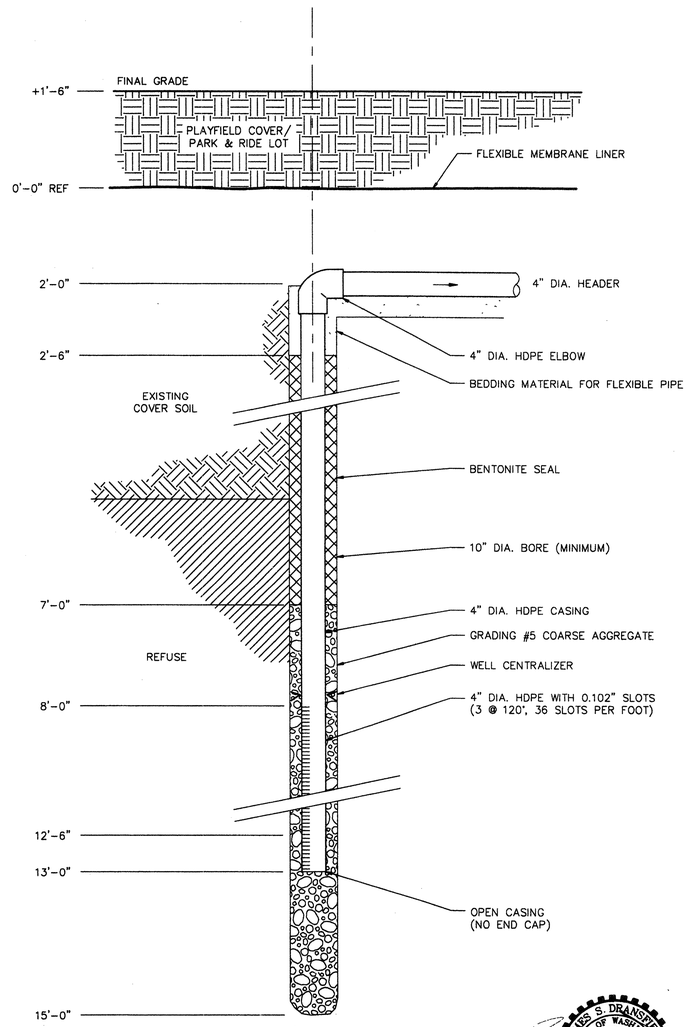
PERIMETER SYSTEM ACCESS VAULT P4 (TYPICAL SECTION VIEW)

BB / C5 SCALE: 1"=12"



GAS COLLECTION WELL TYPICAL DETAIL

3 / C5 NOT TO SCALE



GAS COLLECTION WELL TYPICAL SECTION

CC / C5 NOT TO SCALE

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 23153 — REGISTERED PROFESSIONAL ENGINEER — 4/27/95

EXPIRES 12/19/ [illegible]

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C5.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		6 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX

DATE APPROVED: — FIELD BOOK(S):

AGRA
Earth & Environmental
11335 N.E. 122rd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

ACCESS VAULTS AND WELL DETAILS AND SECTIONS

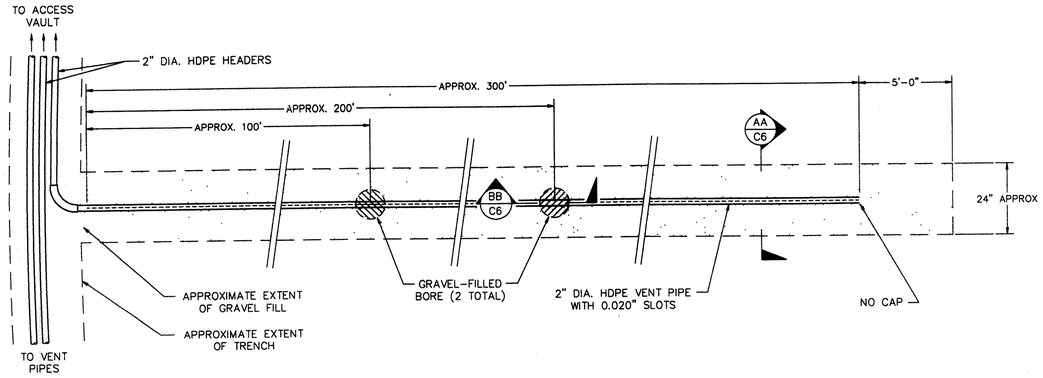
SURVEY NO.

SHEET C5

filmed 12/17/96

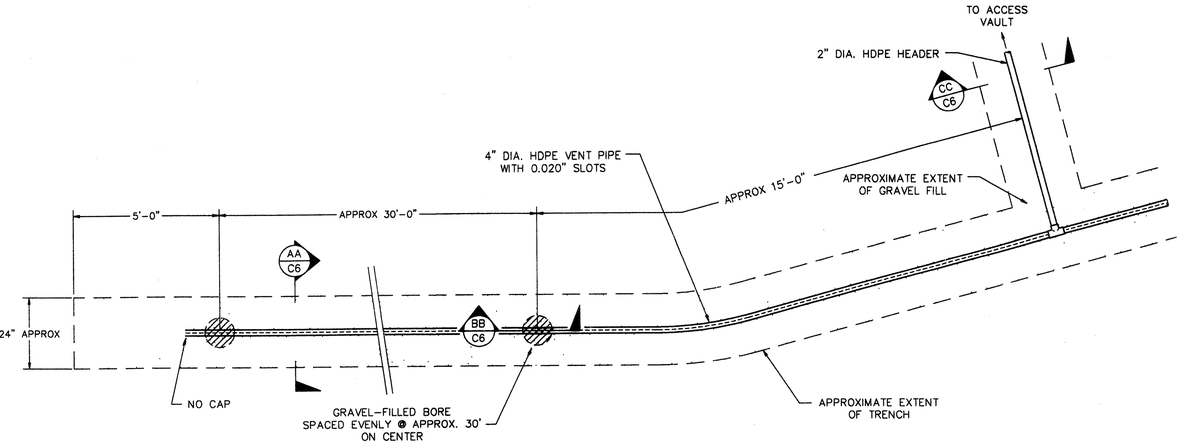
Sno. 3321

DigiPrint™



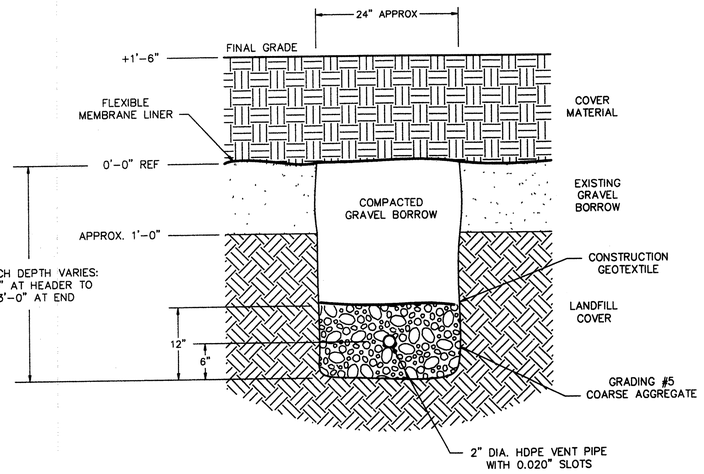
GAS COLLECTION TRENCH "TYPE I" TYPICAL DETAIL

1 / C6 NOT TO SCALE



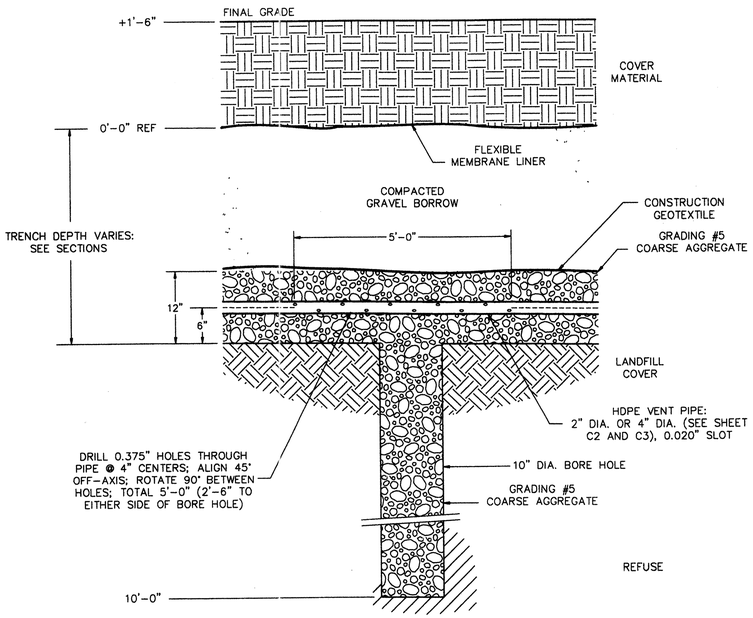
GAS COLLECTION TRENCH "TYPE II" TYPICAL DETAIL

2 / C6 NOT TO SCALE



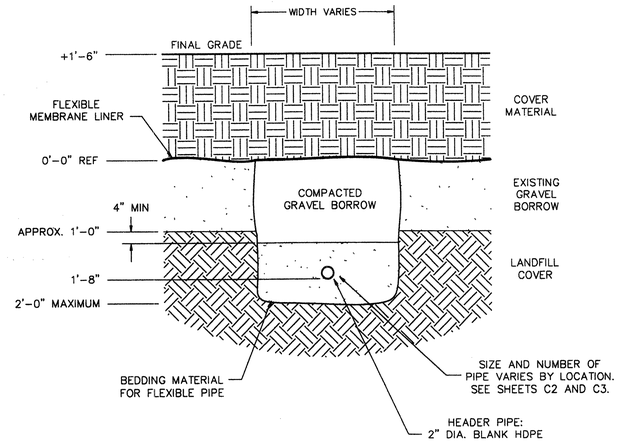
GAS COLLECTION TRENCH "TYPES I & II" TYPICAL SECTION

AA / C6 NOT TO SCALE



GRAVEL-FILLED BORE, TYPICAL SECTION

BB / C6 NOT TO SCALE



HEADER TRENCH "TYPE III" TYPICAL SECTION

CC / C6 NOT TO SCALE

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 19361 — REGISTERED PROFESSIONAL ENGINEER — 4/27/95

EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C6.DWG

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		7 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX

DATE APPROVED: — FIELD BOOK(S):

AGRA
Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

GAS COLLECTION TRENCH DETAILS AND SECTIONS

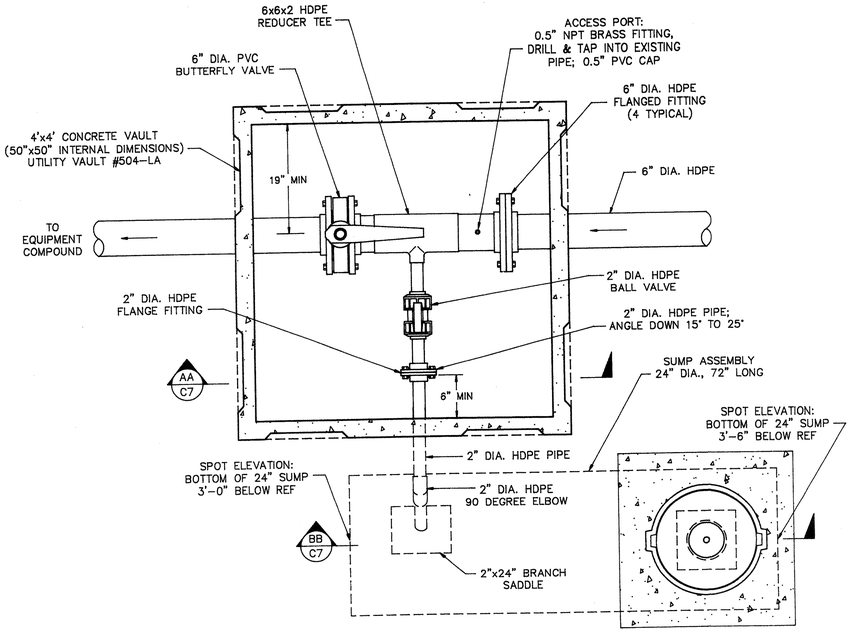
SURVEY NO.

SHEET C6

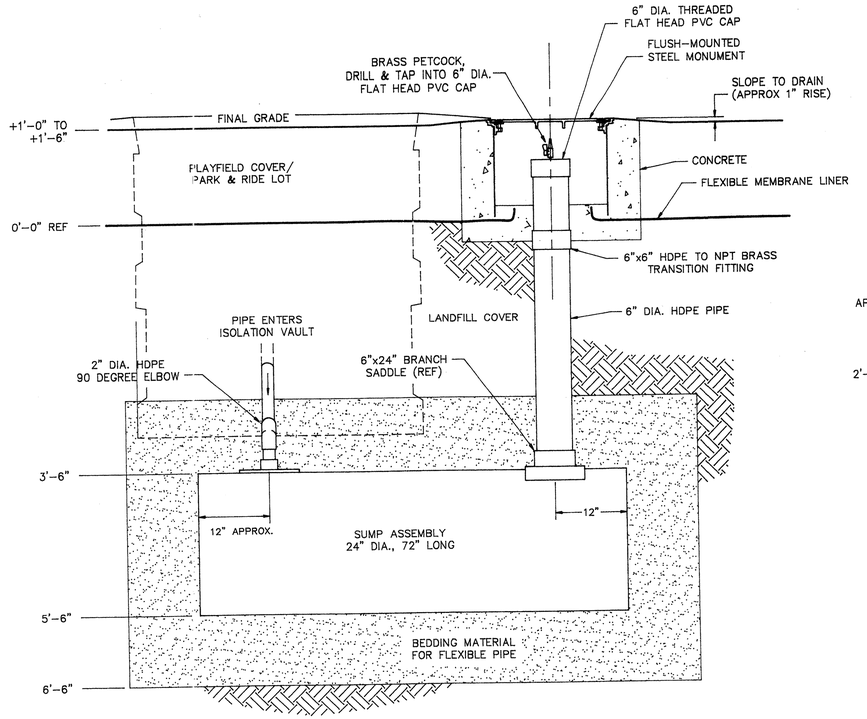
Plotted 12/17/96

Job No. 3321

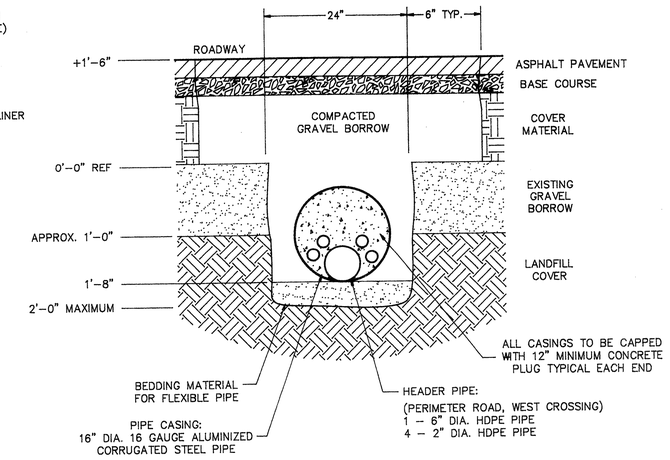
DigiPrint™



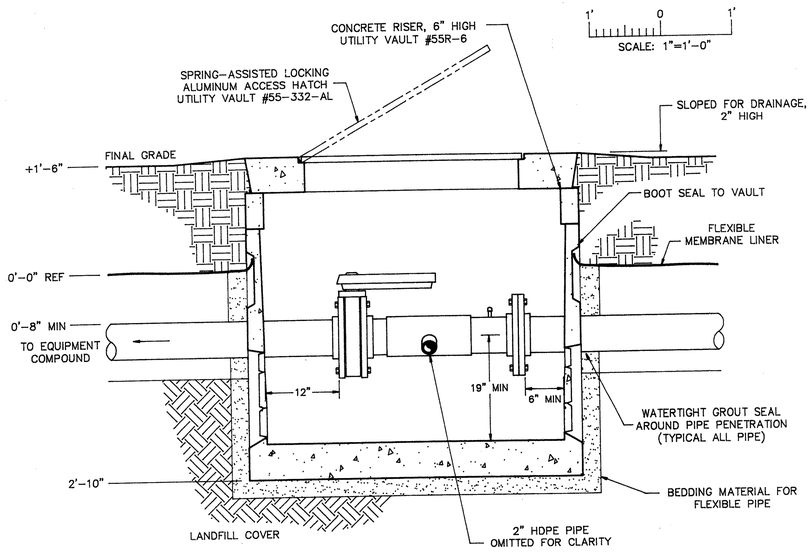
1 C7 **ISOLATION VAULT AND SUMP DETAIL**
SCALE: 1"=12"



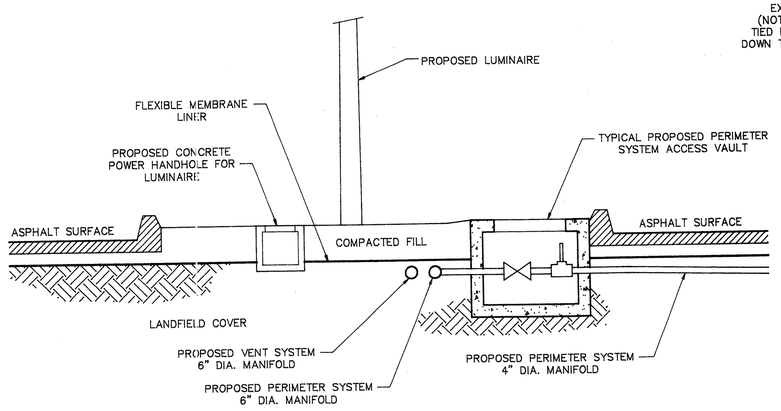
3B C7 **SUMP ASSEMBLY (TYPICAL SECTION)**
NOT TO SCALE



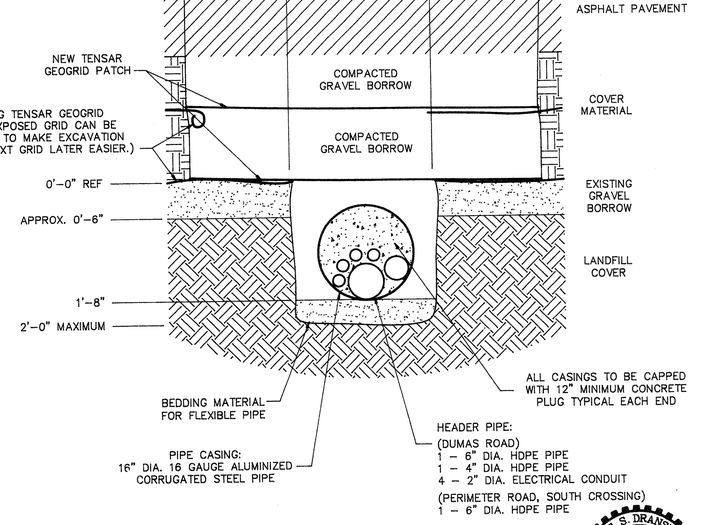
B C7 **PERIMETER ROAD WEST TRENCH CROSSING**
NOT TO SCALE



AA C7 **ISOLATION VAULT (TYPICAL SECTION)**
SCALE: 1"=12"



A C7 **TYPICAL MEDIAN CROSS SECTION (LOOKING WEST)**
NOT TO SCALE



C C7 **PERIMETER ROAD SOUTH AND DUMAS ROAD TRENCH CROSSINGS**
NOT TO SCALE

JAMES S. DRANSFIELD STATE OF WASHINGTON 22132 REGISTERED PROFESSIONAL ENGINEER
5/2/95
EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07784-04\C7-R1.DWG

PLAN CHECK	BY	DATE				
		7/27/95	1	ADDED 6" PVC CAP TO SECTION BB	MJF	
		DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		8 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX
DATE APPROVED: | FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

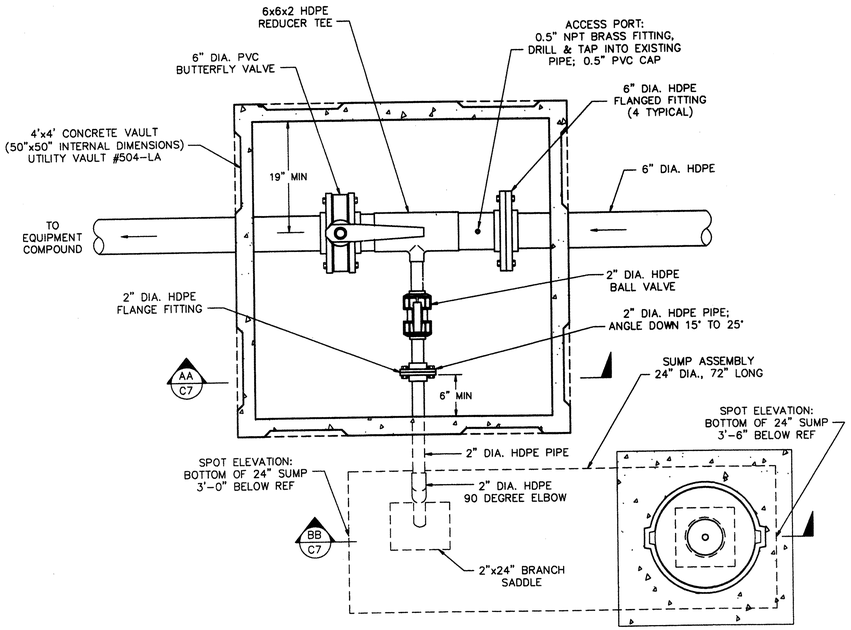
ISOLATION VAULT AND SUMP DETAILS AND SECTIONS

SURVEY NO.

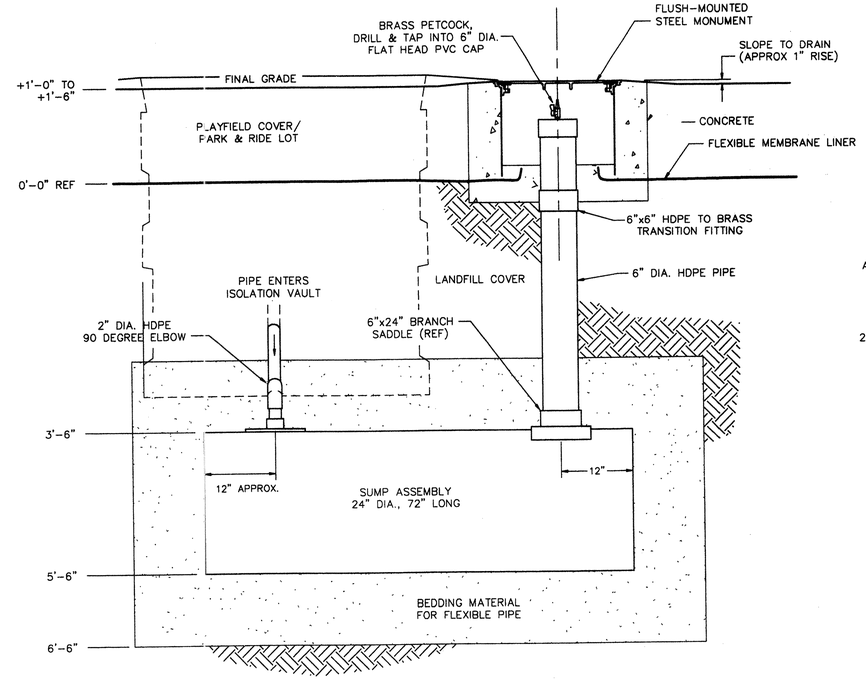
SHEET C7 REV 1

12/17/96

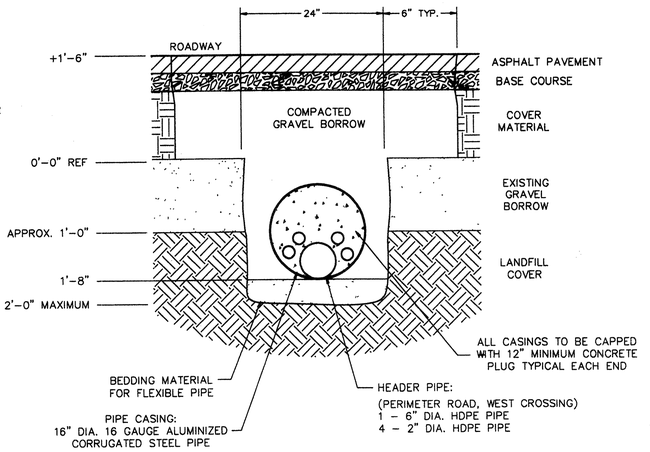
SHEET 7321



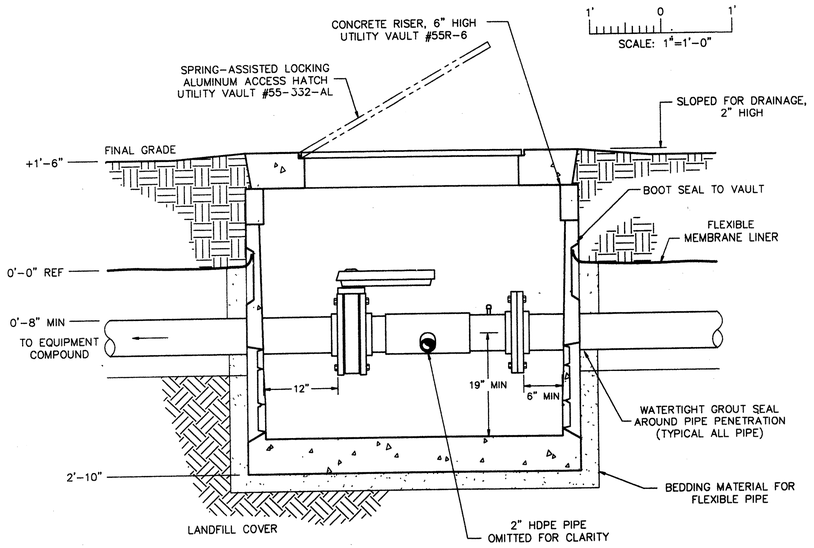
1 C7 **ISOLATION VAULT AND SUMP DETAIL**
SCALE: 1"=12"



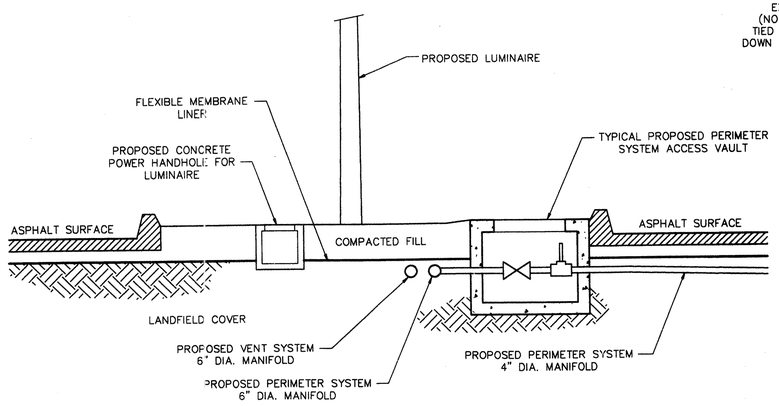
EB C7 **SUMP ASSEMBLY (TYPICAL SECTION)**
NOT TO SCALE



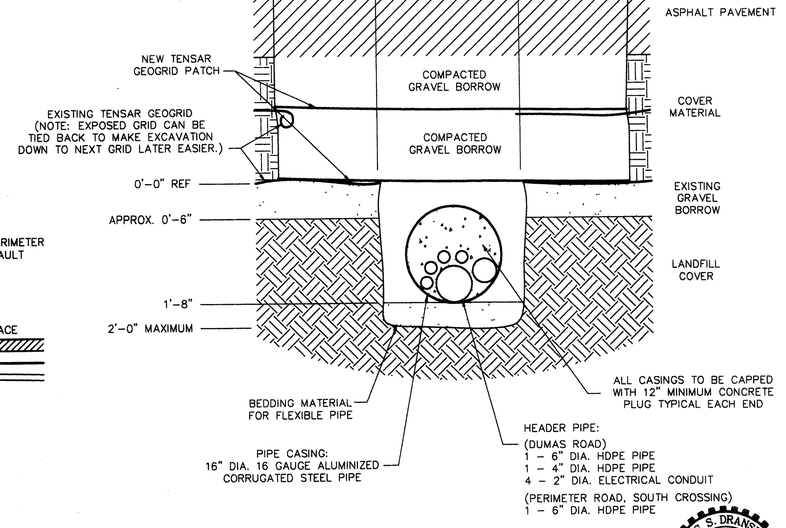
B C7 **PERIMETER ROAD WEST TRENCH CROSSING**
NOT TO SCALE



AA C7 **ISOLATION VAULT (TYPICAL SECTION)**
SCALE: 1"=12"



A C7 **TYPICAL MEDIAN CROSS SECTION (LOOKING WEST)**
NOT TO SCALE



C C7 **PERIMETER ROAD SOUTH AND DUMAS ROAD TRENCH CROSSINGS**
NOT TO SCALE

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 19843 — REGISTERED PROFESSIONAL ENGINEER
12/27/96
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\C7.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		8 OF 10
DESIGNED BY: MARTIN FOX		DRAWN BY: MARTIN FOX	
DATE APPROVED:		FIELD BOOK(S):	

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

ISOLATION VAULT AND SUMP DETAILS AND SECTIONS

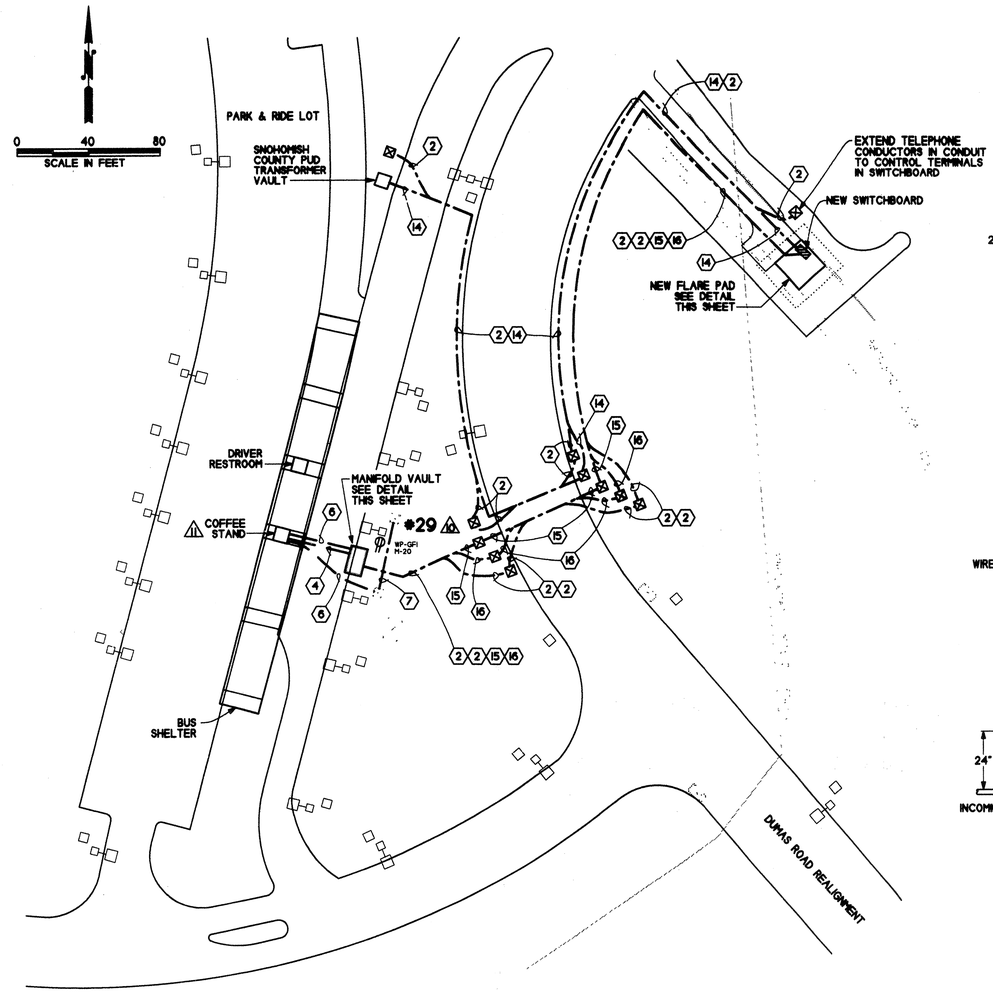
SURVEY NO.

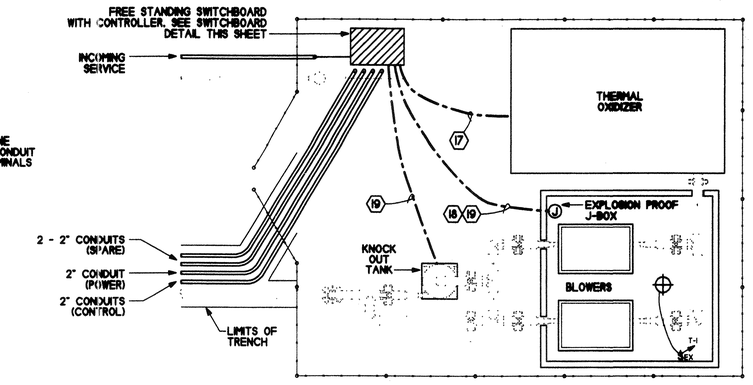
SHEET C7

Plotted 12/17/96

Sur. 3321

DigiPrint™





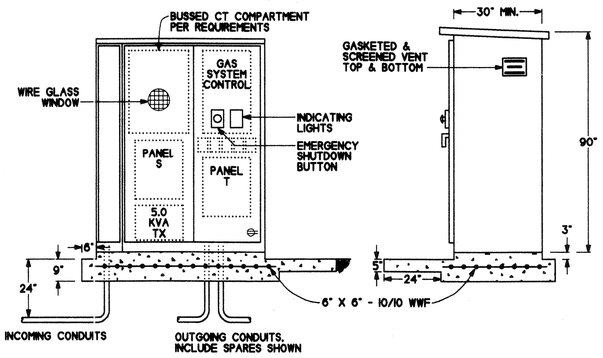
FLARE PAD DETAIL
SCALE 1/4" = 1'

KEY

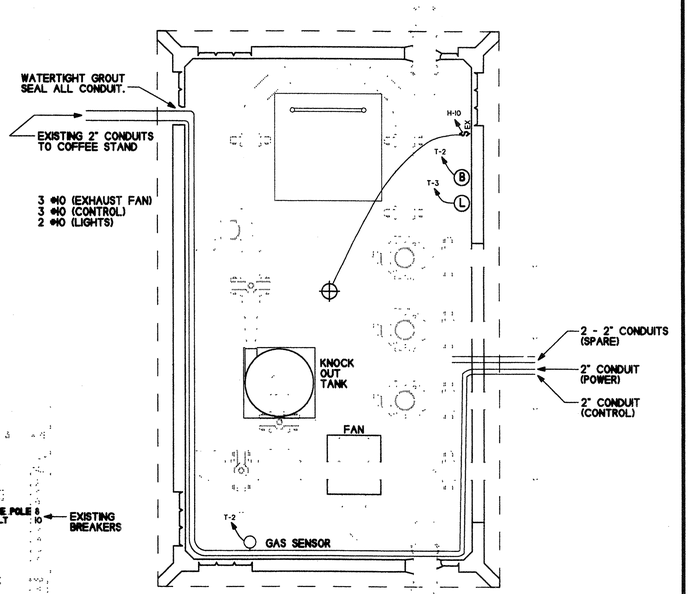
⊕	EXPLOSION RESISTANT LUMINAIRE, 120 VOLT, 150 WATT INCANDESCENT, HUBBELL #HLEM120
(B)	EMERGENCY SHUTDOWN BUTTON, EXPLOSION PROOF, ALLEN BRADLEY #4HZ4 OR APPROVED EQUAL
(L)	INDICATOR LIGHTS (TWO EACH), 30.5mm, EXPLOSION PROOF ALLEN BRADLEY #800H OR APPROVED EQUAL
⊠	STRUCTURAL PLASTIC HANDHOLE, SIMILAR TO WSDOT J-Ile TYPE 1
WP-GFI	DUPLEX RECEPTACLE 20A., 120 VOLT (WEATHERPROOF COVER, GROUND FAULT INTERRUPTER)
S_{EX}	EXPLOSION PROOF SWITCH SPST SS COVER 20 A. 120 V.
(14)	2" C. 4 #2
(2)	2" C. WITH NYLON PULL STRING (FUTURE OR TELEPHONE)
(4)	EXISTING 2" C. WITH 1 - 25/c BELDON #9948
(6)	EXISTING 2" C. WITH 6 #10, 1 #10 GRND. ADD 2 #10.
(15)	2" C. 1 - 11/c #14, 1 #10 GRND.
(16)	2" C. 2 - SHIELDED CABLE, 18GA/4c BELDON #9418
(17)	2" C. 3 #10, 1 - 11/c #14, 1 #10 GRND.
(18)	2" C. 11 #10, 1 - 11/c #14, 1 #10 GRND.
(19)	1" C. 1 - SHIELDED CABLE, 18GA/4c BELDON #9418

KEY

(10)	REPLACE CONCRETE LIGHTING STANDARD #29 WITH SAME EXCEPT WITH FESTOON OUTLET
(11)	PROVIDE SIZE 0 MOTOR STARTER WITH HOA AND PILOT LIGHT IN COFFEE STAND (EXHAUST FAN)



SWITCHBOARD DETAIL
NO SCALE



MANIFOLD VAULT DETAIL
SCALE 1/2" = 1'

PANEL SCHEDULE

NO. S — LOCATION: SWITCHBOARD, SERVING: FLARE PAD — 277/480 VOLTS, 3 PHASE, 4 WIRE, 100 AMP WITH MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	BLOWER	3.0	30	30	3.0	BLOWER	2
7	THERMAL OXIDIZER	5.0	30	30	1.5	EXHAUST FAN (BLOWER ROOM)	8
13	SPARE		30	30		SPARE	14
19	SPARE		20			SPACE ONLY	20
21	SPARE		20			SPACE ONLY	22
23	SPARE		20			SPACE ONLY	24
25	SPACE ONLY					SPACE ONLY	26
27	SPACE ONLY			20	2.0	5.0 KVA TX TO PANEL T	28
29	SPACE ONLY						

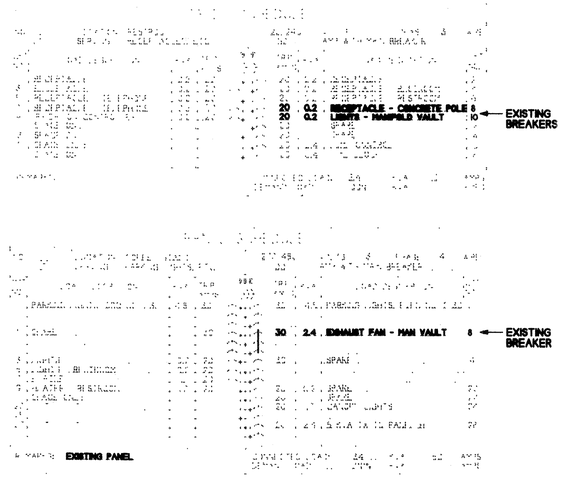
REMARKS: — CONNECTED LOAD: 15.0 KVA 18.0 AMPS; DEMAND LOAD: 100% KVA AMPS

PANEL SCHEDULE

NO. T — LOCATION: SWITCHBOARD, SERVING: FLARE PAD CONTROL — 120/240 VOLTS, 1 PHASE, 3 WIRE, 50 AMP WITH MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	LIGHTS - BLOWER ROOM	0.5	20	20	0.5	GAS SENSORS \ STOP BUTTONS	2
3	INDICATOR LIGHTS	0.5	20	20		SPARE	4
5	RECEPTACLE - SWITCHBOARD	0.5	20	20		SPARE	6
7	SPARE		20	20		SPARE	8
9	SPARE		20	20		SPARE	10
11	SPARE		20	20		SPARE	12
13	SPACE ONLY					SPACE ONLY	14
15	SPACE ONLY					SPACE ONLY	16
17	SPACE ONLY					SPACE ONLY	18

REMARKS: — CONNECTED LOAD: 2.0 KVA 8.3 AMPS; DEMAND LOAD: 100% KVA AMPS



J. DELVIN ARMSTRONG — STATE OF WASHINGTON — 19935 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 5 AUGUST 1995

COPYRIGHT © J. DELVIN ARMSTRONG 1995

AS-BUILT

PLAN CHECK	BY	DATE

DATE	NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		E-4

DESIGNED BY: J. D. ARMSTRONG — DRAWN BY: C. B. FOTE — DATE APPROVED: — FIELD BOOK(S):

21
JD-21 ENGINEERS
1840 - 130th AVENUE N.E. SUITE 15
BELLEVUE, WASHINGTON 98005
(206) 885-2105 FAX (206) 885-9797

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. W-7764

McCollum Park
PARK & RIDE / TRANSIT CENTER

FLARE PAD ELECTRICAL

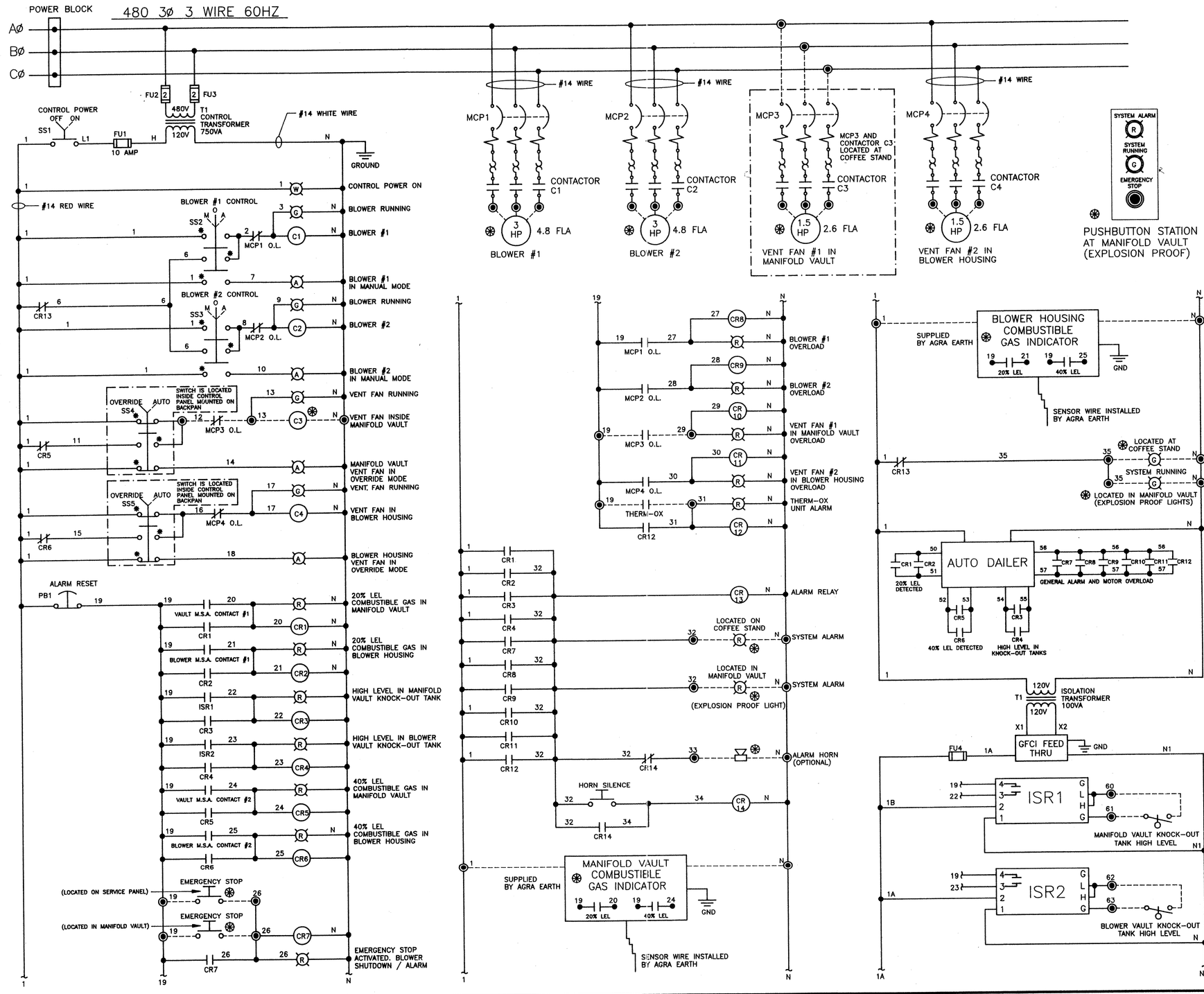
SURVEY NO.

SHEET OF SHEETS

1578-E4

PLOT DATE: 8 JUNE 1995

plan 6/27/95 (G. replotted) mylar PW Sign #3321 Mylar Sign #3321



LIST OF MATERIALS

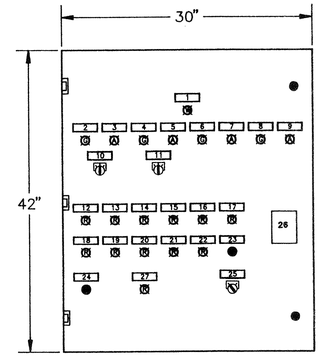
ITEM	QTY	DESCRIPTION	MFGR.

NOTES

---- DENOTES WIRING EXTERNAL TO CONTROL PANEL
◉ DENOTES TERMINAL INSIDE CONTROL PANEL
⊛ DENOTES DEVICE NOT SUPPLIED BY SUPERIOR CUSTOM CONTROLS

NAMEPLATES

1–CONTROL POWER ON
2–BLOWER #1 RUNNING
3–BLOWER #1 IN MANUAL MODE
4–BLOWER #2 RUNNING
5–BLOWER #2 IN MANUAL MODE
6–VENT FAN IN MANIFOLD VAULT RUNNING
7–VENT FAN IN MANIFOLD VAULT IN OVERRIDE MODE
8–VENT FAN IN BLOWER HOUSING RUNNING
9–VENT FAN IN BLOWER HOUSING IN OVERRIDE MODE
10–BLOWER #1 CONTROL
11–BLOWER #2 CONTROL
12–20% LEL COMBUSTIBLE GAS IN MANIFOLD VAULT
13–20% LEL COMBUSTIBLE GAS IN BLOWER HOUSING
14–HIGH LEVEL IN MANIFOLD VAULT KNOCK–OUT TANK
15–HIGH LEVEL IN BLOWER KNOCK–OUT TANK
16–40% LEL COMBUSTIBLE GAS IN MANIFOLD VAULT
17–40% LEL COMBUSTIBLE GAS IN BLOWER HOUSING
18–EMERGENCY STOP ACTIVATED
19–BLOWER #1 OVERLOAD
20–BLOWER #2 OVERLOAD
21–VENT FAN IN MANIFOLD VAULT OVERLOAD
22–VENT FAN IN BLOWER HOUSING OVERLOAD
23–ALARM RESET
24–HORN SILENCE
25–CONTROL POWER
26–WARNING 480 VOLTS KEEP OUT
27–THERM–OX UNIT ALARM



SHERMAN K. BURD P.E.
1631 108th AVE. S.E. BELLEVUE, WA 98004
PHONE: (206) 454–3581 FAX: (206) 454–3581

SCALE: 1/8=1" | DATE: 21 JUNE 95 REV 2 | DRAWN BY: MO/MJ

SNOHOMISH DEPARTMENT OF PUBLIC WORKS
McCOLLUM PARK AND RIDE TRANSIT CENTER

LANDFILL GAS MANAGEMENT SYSTEM
CONTROL PANEL SCHEMATIC

DRAWING 2588 E–5

SHERMAN K. BURD — STATE OF WASHINGTON — 11569 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 1-28-97
6-22-95

filmed 12/17/96

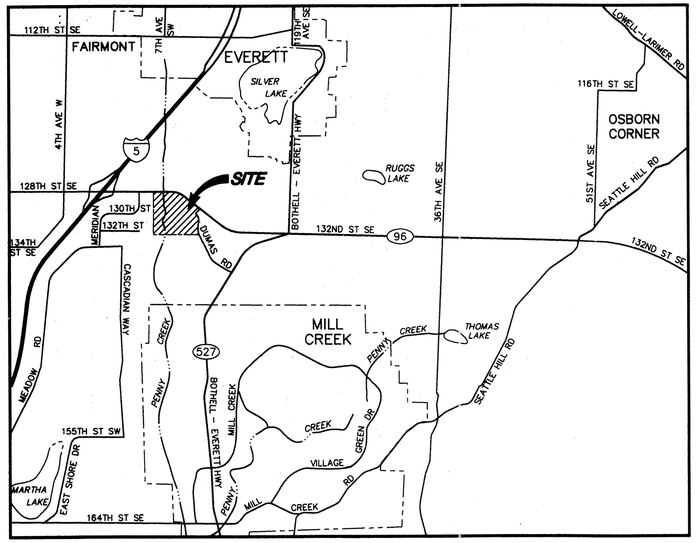
Ref. Co. PW Svc# 3321 # Proj. #91-951

AS-BUILT

McCOLLUM PARK PROJECT
128th STREET SE AND DUMAS ROAD
SNOHOMISH COUNTY, WASHINGTON

LANDFILL GAS MANAGEMENT SYSTEM
CONSTRUCTION PLAN

VICINITY MAP



INDEX OF DRAWINGS

SHEET NUMBER	DESCRIPTION
GENERAL	
G1	VICINITY MAP AND INDEX OF DRAWINGS
CIVIL	
C1	SITE PLAN WITH SYSTEM LAYOUT
C2	PIPING LAYOUT – NORTH SECTION
C3	PIPING LAYOUT – SOUTH SECTION
C4	PIPING DETAILS
C5	ACCESS VAULTS AND WELL DETAILS AND SECTIONS
C6	GAS COLLECTION TRENCH DETAILS AND SECTIONS
C7	ISOLATION VAULT AND SUMP DETAILS AND SECTIONS
MECHANICAL	
M1	MANIFOLD VAULT LAYOUT
M2	FLARE PAD LAYOUT

ADDENDUM TO CONSTRUCTION PLANS:
REPLACE SHEETS 36, 37, 38a, & 38b WITH THE FOLLOWING.

LEGEND

MW-16	EXISTING MONITORING WELL NUMBER AND LOCATION
LB15/PZ-3	EXISTING LANDFILL BORING/PIEZOMETER NUMBER AND LOCATION
GMP-23	PROPOSED GAS MANAGEMENT PERIMETER WELL: 4" DIA. HDPE CASING, 15' DEEP
GMV-3	PROPOSED GAS MANAGEMENT VENT WELL: 4" DIA. HDPE CASING, 15' DEEP
	PROPOSED 4' x 6' CONCRETE ACCESS VAULT (PERIMETER SYSTEM); NOTE SIZE EXAGGERATED FOR CLARITY ON SHEET C1
	PROPOSED 4' x 6' CONCRETE ACCESS VAULT (VENT SYSTEM); NOTE SIZE EXAGGERATED FOR CLARITY ON SHEET C1
	PROPOSED 4' x 4' CONCRETE ISOLATION VAULT
	PROPOSED 4" DIA. CONDENSATE SUMP RISER
----------	PROPOSED GAS MANAGEMENT TRENCH "TYPE I": 2" DIA. SLOTTED HDPE IN GRAVEL-FILLED TRENCH
==========	PROPOSED GAS MANAGEMENT TRENCH "TYPE II": 2" OR 4" DIA. SLOTTED HDPE IN GRAVEL-FILLED TRENCH
————	PROPOSED 2" OR 4" DIA. BLANK HDPE HEADER
—·—·—	PROPOSED 6" DIA. BLANK HDPE HEADER
.....	EXISTING 2" OR 4" DIA. HDPE PIPE TO BE ABANDONED IN PLACE
=======●=======	PROPOSED 10.5" DIA. HOLLOW STEM AUGER LOCATION; GRAVEL FILLED, 10' DEEP
—·—·—·—	PROPOSED ELECTRICAL CONDUIT
▲	LOCATION OF PROPOSED AMBIENT COMBUSTIBLE GAS SENSOR/ALARM
	AREA LUMINAIRE ON 12.2 METER CONCRETE POLE, SINGLE AND TANDEM
	CONCRETE HANDHOLE, LUMINAIRE POWER

JAMES S. DRANGSETH — STATE OF WASHINGTON — 23161 — REGISTERED PROFESSIONAL ENGINEER

4/27/95

EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\G1.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		1 OF 10
DESIGNED BY: MARTIN FOX		DRAWN BY: MARTIN FOX	
DATE APPROVED:		FIELD BOOK(S):	

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4569 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

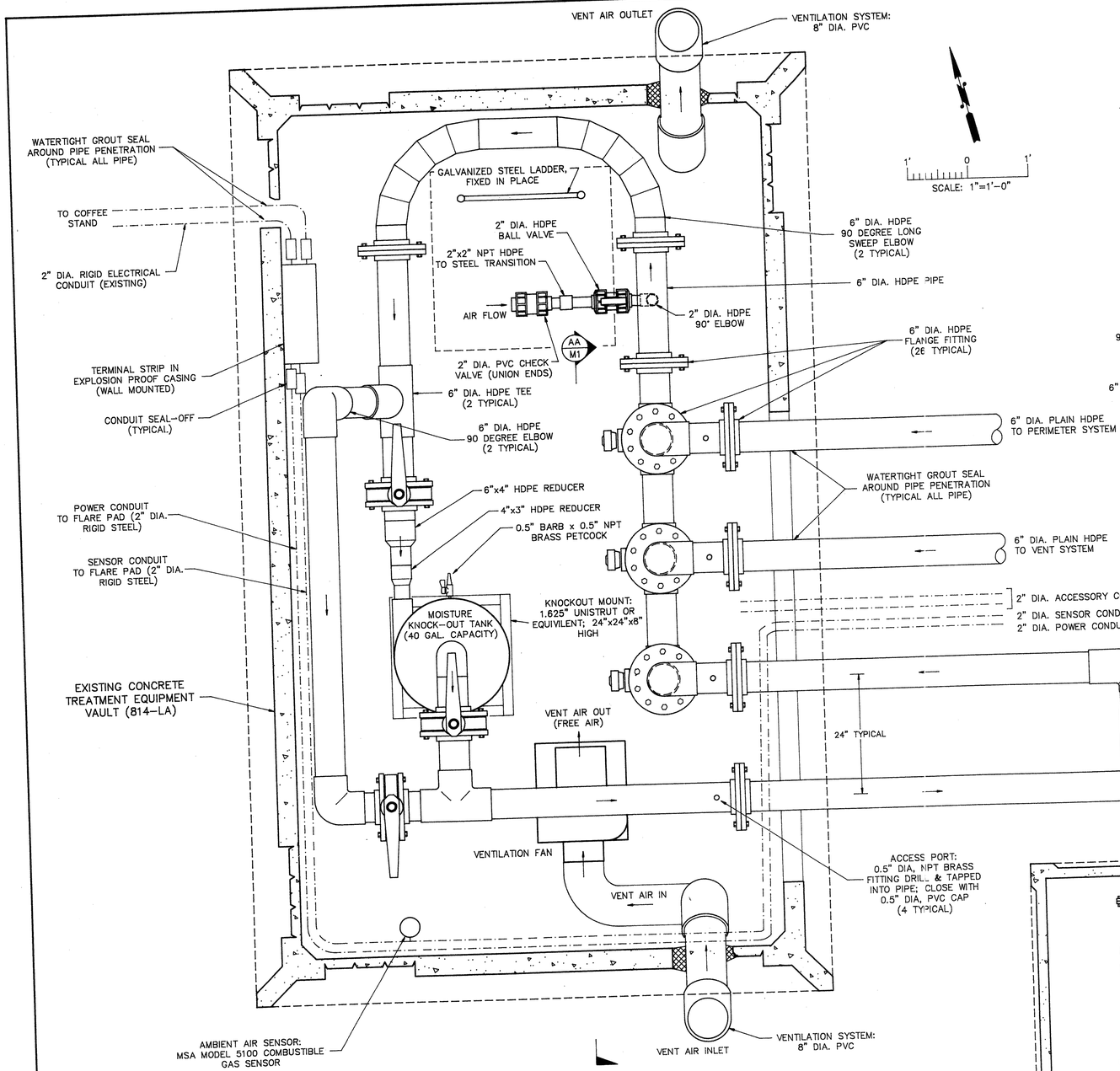
VICINITY MAP AND INDEX OF DRAWINGS

SURVEY NO.

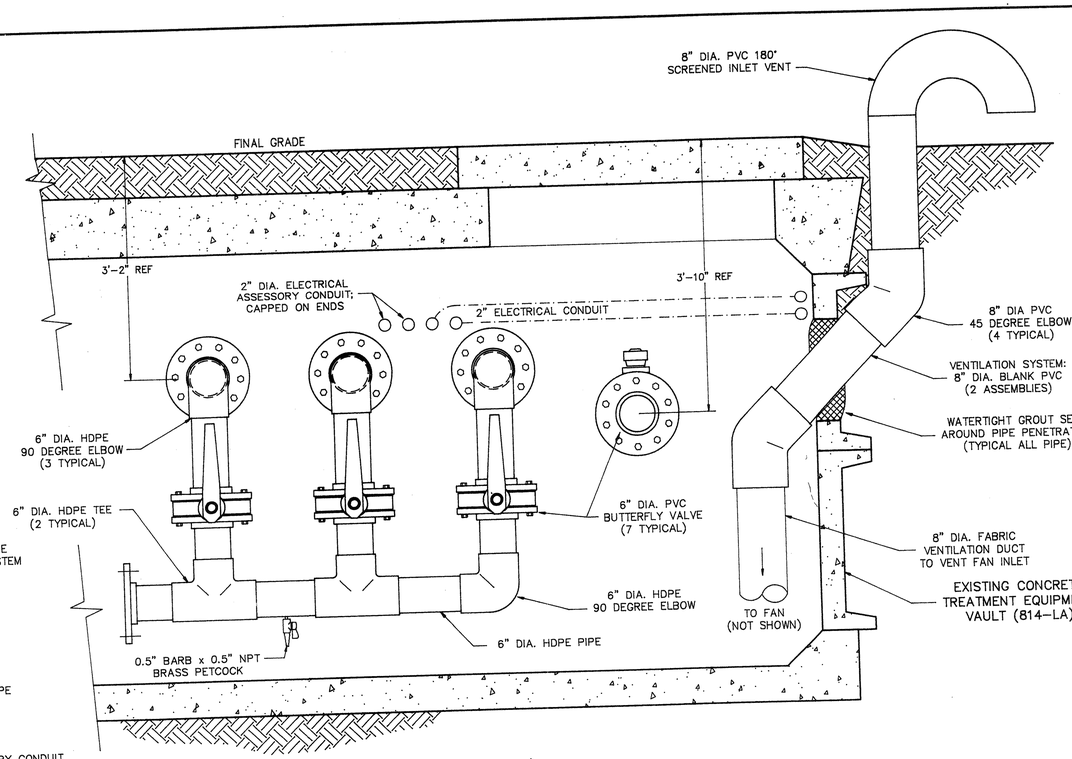
SHEET G1

Plans 12/7/96 Ref. Swa. # 3321 & Co. PW Project #91-951 file: Swa. 3321

DigiPrint™



1 / M1 MANIFOLD VAULT LAYOUT
SCALE; 1"-12"



AA / M1 VAULT ELEVATION: EAST WALL
NOT TO SCALE

AS-BUILT

JAMES S. DRANGSFELD — STATE OF WASHINGTON — 15965 — REGISTERED PROFESSIONAL ENGINEER — 9/2/1995

EXPIRES 12/19/97

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M1-R1.DWG

PLAN CHECK	BY	DATE				
		10/2/95	1	ADDED BLEED AND CHECK VALVE	MJF	
		DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		9 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX

DATE APPROVED: — FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

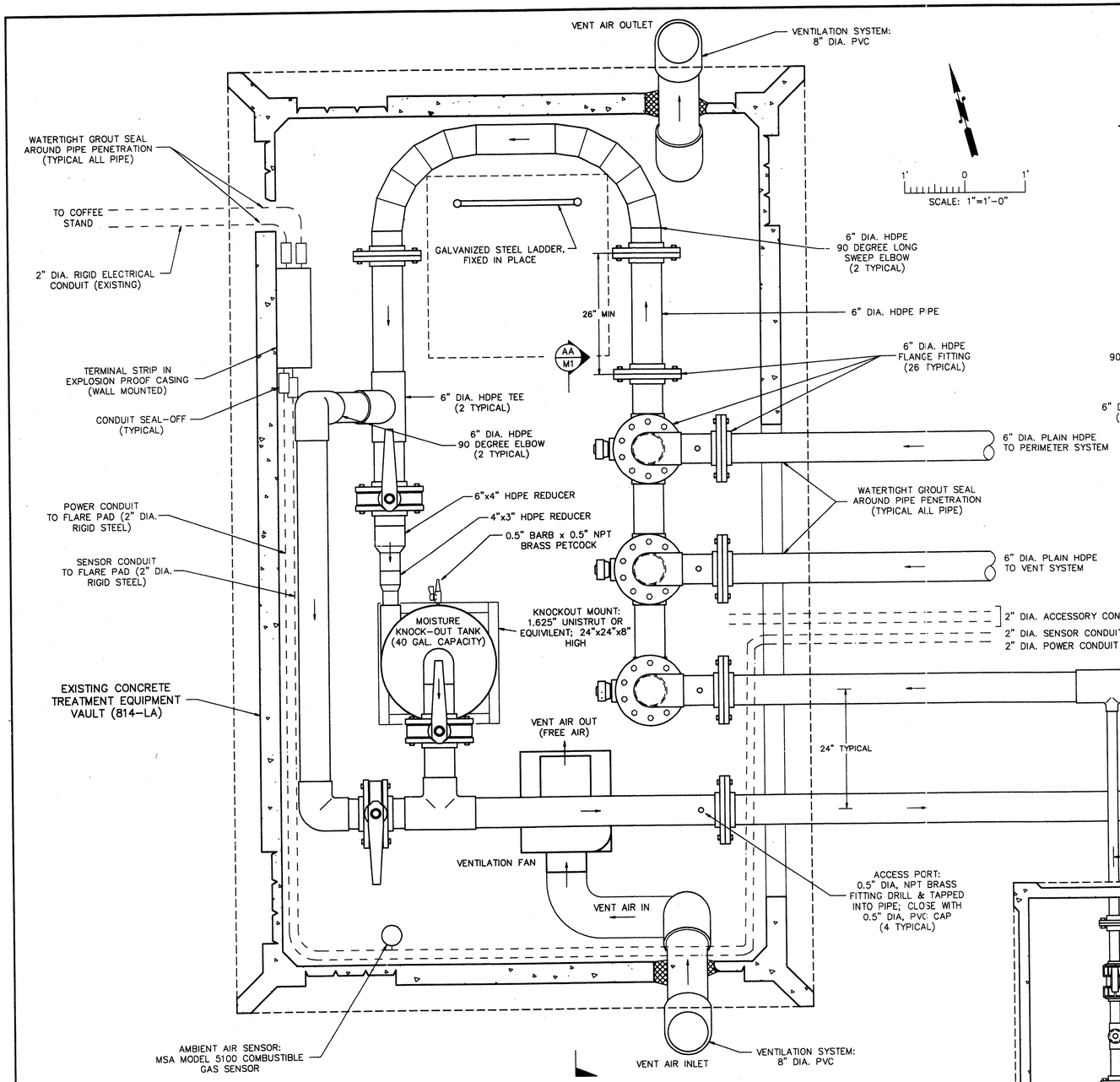
MANIFOLD VAULT LAYOUT

SURVEY NO.

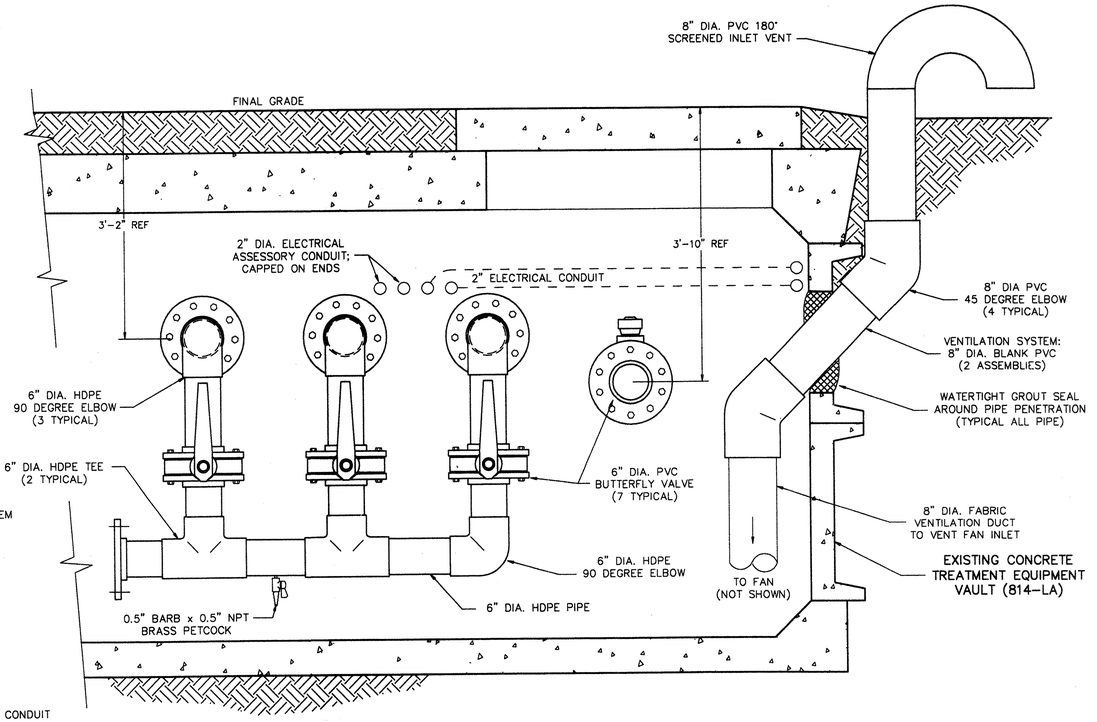
SHEET **M1** REV 1

filmed 12/17/96

540.332



1 / M1 **MANIFOLD VAULT LAYOUT**
SCALE; 1"-12"



AA / M1 **VAULT ELEVATION: EAST WALL**
NOT TO SCALE

JAMES S. DRANGSFELDT — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
4/29/97
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M1.DWG

PLAN CHECK	BY	DATE		NO.	REVISION	BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		9 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX
DATE APPROVED: | FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

MANIFOLD VAULT LAYOUT

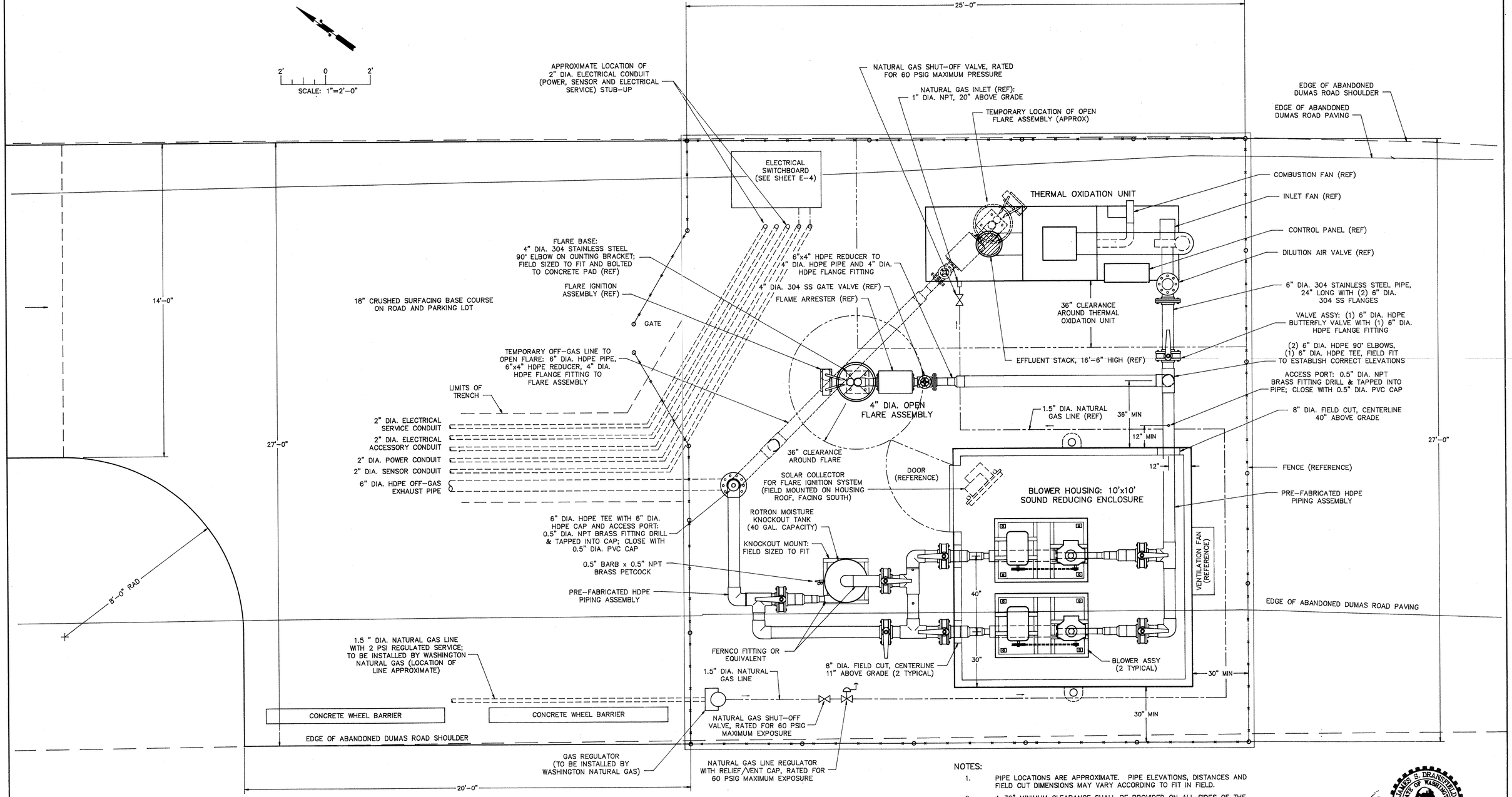
SURVEY NO.

SHEET M1

filmed 12/17/96

file: Sharry 332.1

DigiPrint™



1/M2 **FLARE PAD DETAIL**
NOT TO SCALE

NOTES:

1. PIPE LOCATIONS ARE APPROXIMATE. PIPE ELEVATIONS, DISTANCES AND FIELD CUT DIMENSIONS MAY VARY ACCORDING TO FIT IN FIELD.
2. A 36" MINIMUM CLEARANCE SHALL BE PROVIDED ON ALL SIDES OF THE THERMAL OXIDATION UNIT. NATURAL GAS VENT LINES, OFF GAS ACCESS PORTS, BLEED VALVE EFFLUENTS, SLATTED FENCE BOARDS, AND OTHER POTENTIALLY FLAMMABLE MATERIALS SHALL BE LOCATED OUTSIDE OF THIS CLEARANCE.
3. THE BLOWER HOUSING SHALL BE LOCATED A MINUMUM DISTANCE OF 30" FROM THE FENCE.
4. REFER TO "SWITCHBOARD DETAIL", SHEET E-4 FOR CONCRETE SLAB INFORMATION AND DIMENSIONS.

JAMES S. DRANSFIELD, STATE OF WASHINGTON, 13403, REGISTERED PROFESSIONAL ENGINEER
8/2/95
EXPIRES 12/19/95

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M2-R1.DWG

PLAN CHECK	BY	DATE				
		7/10/95	1	EXPANDED SLAB, RECONFIGURED EQUIP	MJF	
		DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		10 OF 10

DESIGNED BY: MARTIN FOX | DRAWN BY: MARTIN FOX
DATE APPROVED: | FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

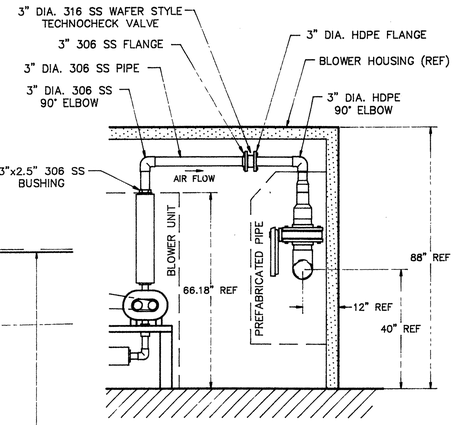
FLARE PAD LAYOUT

SURVEY NO.

SHEET **M2** REV 1

filed 12/17/96

Sue 3521



AA / M2 **BLOWER EXIT PIPING SECTION**
NOT TO SCALE

1 / M2 **FLARE PAD DETAIL**
NOT TO SCALE

NOTES:

1. PIPE LOCATIONS ARE APPROXIMATE. PIPE ELEVATIONS, DISTANCES AND FIELD CUT DIMENSIONS MAY VARY ACCORDING TO FIT IN FIELD.
2. A 36" MINIMUM CLEARANCE SHALL BE PROVIDED ON ALL SIDES OF THE THERMAL OXIDATION UNIT. NATURAL GAS VENT LINES, OFF GAS ACCESS PORTS, BLEED VALVE EFFLUENTS, SLATTED FENCE BOARDS, AND OTHER POTENTIALLY FLAMMABLE MATERIALS SHALL BE LOCATED OUTSIDE OF THIS CLEARANCE.
3. THE BLOWER HOUSING SHALL BE LOCATED A MINUMUM DISTANCE OF 30" FROM THE FENCE.
4. REFER TO "SWITCHBOARD DETAIL", SHEET E-4 FOR CONCRETE SLAB INFORMATION AND DIMENSIONS.

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 12906 — REGISTERED PROFESSIONAL ENGINEER — 9.3.95
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M2-R2.DWG

PLAN CHECK	BY	DATE					
		8/18/95	2	ADDED (2) BLOWER CHECK VALVES	MJF		
		7/10/95	1	EXPANDED SLAB, RECONFIGURED EQUIP	MJF		
		DATE	NO.	REVISION	BY		

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		10 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX
DATE APPROVED: — FIELD BOOK(S):

AGRA *Earth & Environmental*
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

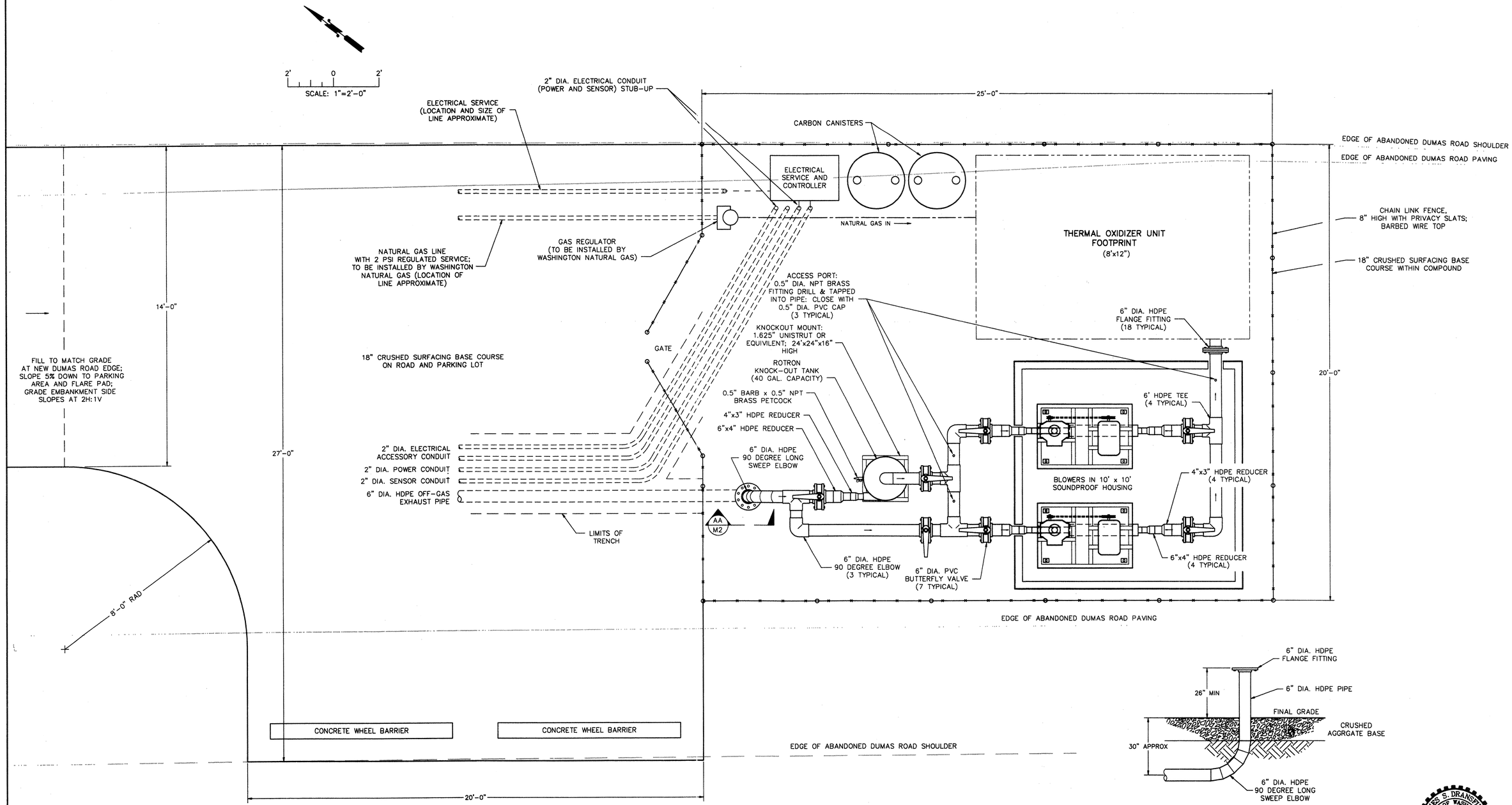
FLARE PAD LAYOUT

SURVEY NO.

SHEET **M2** REV 2

filmed 12/17/96

SUR. 3321



1/M2 **FLARE PAD DETAIL**
NOT TO SCALE

AA/M2 **STUB-UP DETAIL**
NOT TO SCALE

JAMES S. DRANSFIELD — STATE OF WASHINGTON — 19745 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 12/19/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M2.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION		BY

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		10 OF 10

DESIGNED BY: MARTIN FOX — DRAWN BY: MARTIN FOX
DATE APPROVED: — FIELD BOOK(S):

AGRA Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034-6918
Tel (206) 820-4669 Fax (206) 821-3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS
PROJECT NO. _____

128th ST. S.E. / DUMAS ROAD LANDFILL GAS MANAGEMENT SYSTEM

FLARE PAD LAYOUT

SURVEY NO.

SHEET M2

filmed 12/17/96

Sht 2321

DigiPrint™

LEGEND

(FP) FLARE PAD
(BH) BLOWER HOUSING
(MV) MANIFOLD VAULT
(CS) COFFEE STAND

INCOMING POWER: P1A, P1B, P1C, N

FLARE PAD SWITCHBOARD

PANEL S
277/480 VOLTS
3 PHASE

INCOMING POWER	INCOMING POWER	INCOMING POWER	NEUTRAL		CONTROLLER POWER	CONTROLLER POWER	CONTROLLER POWER	NEUTRAL		THERMAL OXIDATION UNIT	THERMAL OXIDATION UNIT	THERMAL OXIDATION UNIT	NEUTRAL				
P1A	P1B	P1C	N		P2A	P2B	P2C	N		TA	TB	TC	N				

THERMAL OXIDIZER

N, TC, TB, TA, 19, 31

THERM–OX POWER

BLOWER HOUSING

BLOWER No. 1	BLOWER No. 2	VENT FAN No. 2	MSA SENSOR
B1A, B1B, B1C, N	B2A, B2B, B2C, N	V2A, V2B, V2C, N	B1, B2, S

BLOWER HOUSING POWER

BLOWER HOUSING CONTROL

MANIFOLD VAULT POWER

THERM–OX CONTROL

CONTROLLER

CONTROLLER POWER	P2A
CONTROLLER POWER	P2B
CONTROLLER POWER	P2C
277/480V NEUTRAL	N
BLOWER #1	B1A
BLOWER #1	B1B
BLOWER #1	B1C
277/480V NEUTRAL	N
BLOWER #2	B2A
BLOWER #2	B2B
BLOWER #2	B2C
277/480V NEUTRAL	N
VENT FAN (BH)	V2A
VENT FAN (BH)	V2B
VENT FAN (BH)	V2C
277/480V NEUTRAL	N
VENT FAN (MV)	V1A
VENT FAN (MV)	V1B
VENT FAN (MV)	V1C
277/480V NEUTRAL	N
MSA CONTROL POWER	1
THERMAL OXIDATION UNIT ALARM	19
EMERGENCY STOP (MV)	19
EMERGENCY STOP (FP)	19
MSA CONTACT #1 (MV) "WARNING"	19
MSA CONTACT #1 (BH) "WARNING"	19
MSA CONTACT #2 (MV) "ALARM"	19
MSA CONTACT #2 (BH) "ALARM"	19
MSA CONTACT #1 (MV) "WARNING"	20
MSA CONTACT #1 (BH) "WARNING"	21
MSA CONTACT #2 (MV) "ALARM"	24
MSA CONTACT #2 (BH) "ALARM"	25
EMERGENCY STOP (FP)	26
EMERGENCY STOP (MV)	26
THERMAL OXIDATION UNIT ALARM	31
RED INDICATOR LIGHT (CS)	32
RED INDICATOR LIGHT (MV)	32
ALARM HORN (OPTIONAL)	33
GREEN INDICATOR LIGHT (CS)	35
GREEN INDICATOR LIGHT (MV)	35
K/O TANK FLOAT SWITCH (MV)	60
K/O TANK FLOAT SWITCH (MV)	61
K/O TANK FLOAT SWITCH (FP)	62
K/O TANK FLOAT SWITCH (FP)	63
RED/GREEN INDICATOR LIGHT (CS)	N
RED/GREEN INDICATOR LIGHT (MV)	N
ALARM HORN (OPTIONAL)	N
MSA CONTROL POWER	N
TELEMETRY UNIT	T1
TELEMETRY UNIT	T2
TELEMETRY UNIT	T3
TELEMETRY UNIT	T4

TO MSA CONTROL

120V NEUTRAL

TO CONTROLLER

MSA SENSOR CONTROL

CHANNEL B (BH): 21, 19, 25, 19
CHANNEL A (MV): 20, 19, 24, 19
1, N
B1, B2, S
A1, A2, S

EMERGENCY STOP: 19, 26

KNOCKOUT TANK CONTROL

KNOCKOUT TANK: 62, 63

MANIFOLD VAULT CONTROL

TELEPHONE LINE

INCOMING TELEPHONE

MANIFOLD VAULT

- VENT FAN No. 1: V1A, V1B, V1C, N
- MSA SENSOR: A1, A2, S
- EMERGENCY STOP: 19, 26
- INDICATOR LIGHT BANK: 32, 35, N
- KNOCKOUT TANK: 60, 61

COFFEE STAND

- INDICATOR LIGHT BANK: 32, 35, N

JAMES S. DRANSFIELD, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER — 10/17/95 — EXPIRES 12/10/97

AS-BUILT

AGRA EARTH & ENVIRONMENTAL, INC. DRAWING No. \PLAN-SET\11\07764-04\M3.DWG

PLAN CHECK	BY	DATE					
			DATE	NO.	REVISION	BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO
10	WASH.		
DESIGNED BY: MARTIN FOX		DRAWN BY: MARTIN FOX	
DATE APPROVED:		FIELD BOOK(S):	

AGRA
Earth & Environmental
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington, U.S.A. 98034–6918
Tel (206) 820–4669 Fax (206) 821–3914

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. 11–07764–04

128th ST. S.E. / DUMAS ROAD
LANDFILL GAS MANAGEMENT SYSTEM

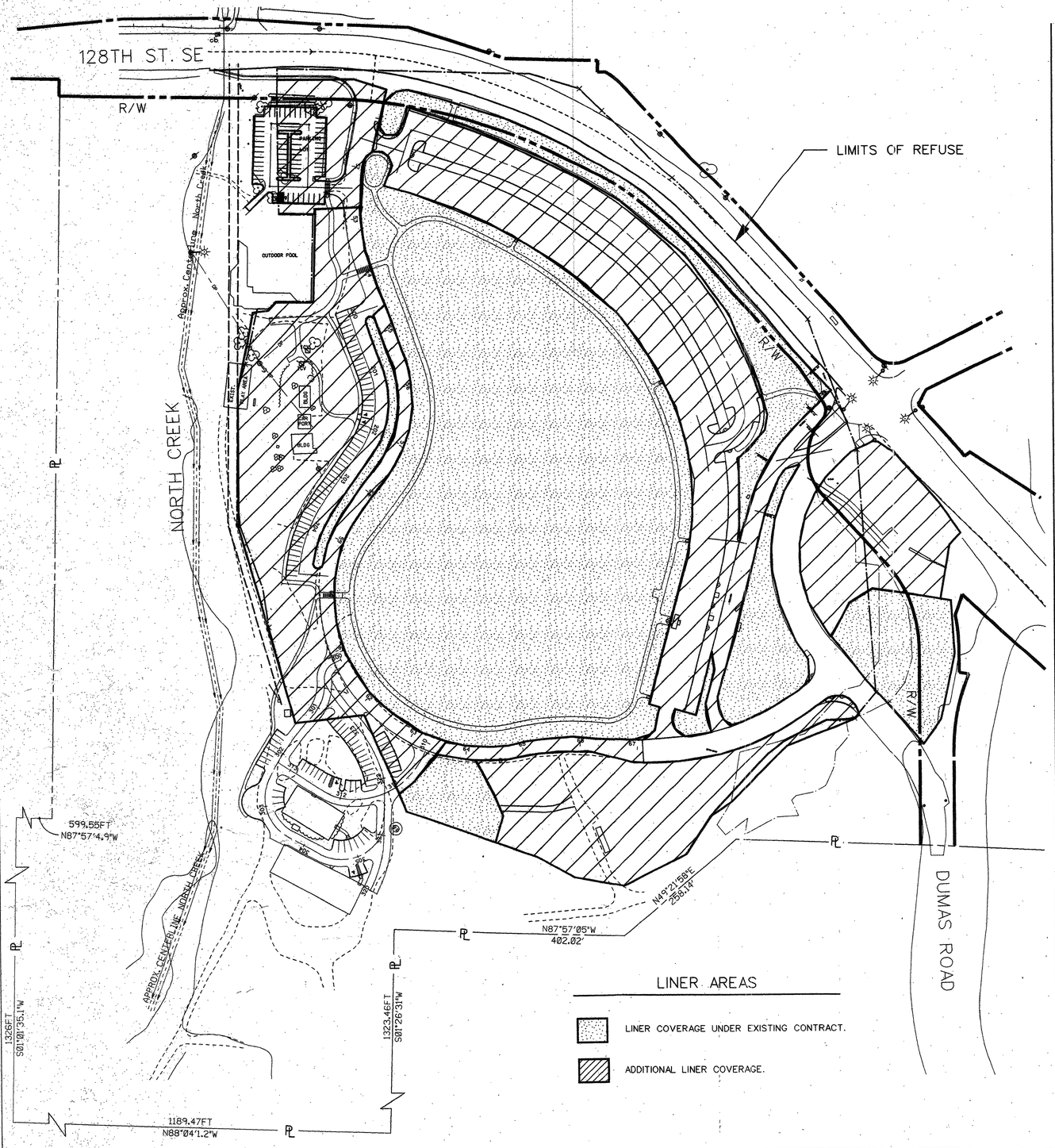
LANDFILL GAS SYSTEM CONTROL DIAGRAM

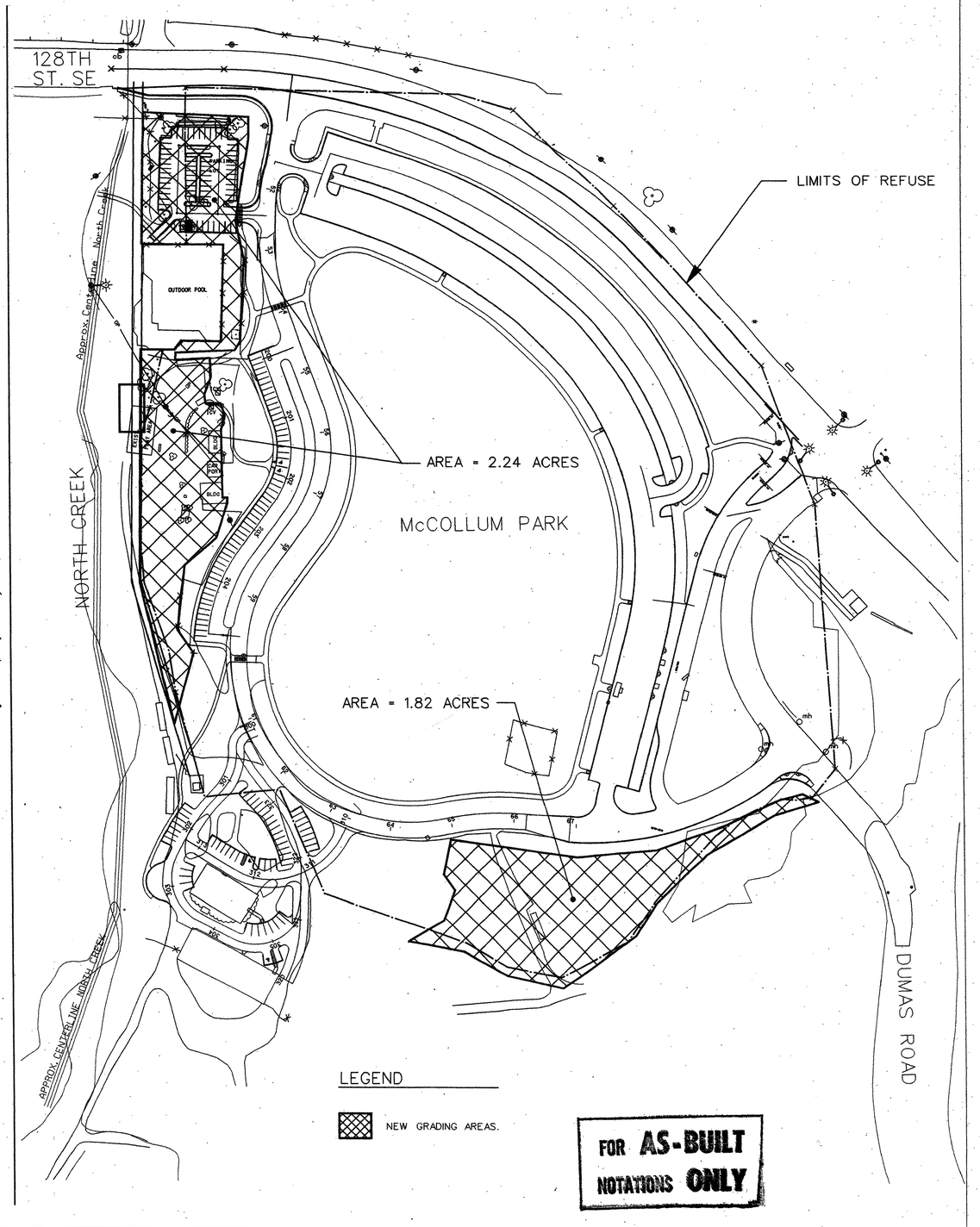
SURVEY NO.

SHEET M3

Filmed 12/17/96

SHR. 3321





PLAN CHECK	BY	DATE								
			DATE	NO.	REVISION				BY	

REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
DATE APPROVED:		FIELD BOOK(S):	

RICHARD L. PERRY — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

LINER & GRADING AREA PLAN

SURVEY NO.

SHEET 3 OF 12 SHEETS

SEC 30, T28N, R5E, W.M.

SCALE IN FEET 0 50 100 150

CONSTRUCTION NOTES

1. PLAY AREA EQUIPMENT TO BE REMOVED AND RESET AS DIRECTED IN THE FIELD.
2. BENCH TO BE REMOVED AND RESET AS DIRECTED IN THE FIELD.
3. BUILDING TO BE DEMOLISHED
4. BIOFILTRATION TRENCH PER DETAIL SHEET 12.
5. IRRIGATION CONTROL VALVES TO BE REMOVED.
6. UTILITY POLE TO BE RELOCATED BY OTHERS.
7. ACCESS ROAD AND PAD PER DETAIL SHEET 12.
8. NATIVE GROWTH PROTECTION AREA SIGN PER DETAIL SHEET 11.
9. CONSTRUCT LINER BOOT PER DETAIL 1, SHEET C18 OF ORIGINAL PLAN SET.
10. CONSTRUCT LINER BOOT PER DETAIL SHEET 12.
11. CONSTRUCT LINER BOOT PER DETAIL 3, SHEET C18 OF ORIGINAL PLAN SET.
12. EXISTING OVERHEAD TELEPHONE SERVICE TO BE ABANDONED AND NEW UNDERGROUND SERVICE TO BE PROVIDED BY OTHERS. NEW SERVICE TO BE ROUTED TO THE POOL OFFICE & WSU EXSTENSION SERVICE BUILDING WITHIN THE EXISTING UTILITY EASEMENT.
13. New Waterline Vault & Lid

LIMITS OF REFUSE

128th ST. SE

PARKING LOT

OUTDOOR POOL

Approx. Centerline North Creek

NGPA BUFFER

EXIST. PLAY AREA

ICV

BLDG

CAR PORT

PARK ROAD

F.G.=402.75

GRADE BREAK

F.G.=402.75

TYPICAL EACH LUMINAIRE

TYPICAL EACH FOOTING

DUMAS ROAD

EAST DISPOSAL AREA

MATCH LINE - STA 60+00 (PARK ROAD)

FOR AS-BUILT NOTATIONS ONLY

PLAN CHECK	BY	DATE							REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.
									10	WASH.		
									DESIGNED BY:		DRAWN BY:	
									DATE APPROVED:		FIELD, BOOK(S):	
			DATE	NO.	REVISION		BY					

RICHARD L. PERTEET — STATE OF WASHINGTON — 12040 — REGISTERED PROFESSIONAL ENGINEER — 9-25-95 — EXPIRE 9/30/96

SNOHOMISH COUNTY ENGINEER

SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS

PROJECT NO. _____

McCOLLUM PARK REGRADE

REVISED GRADING PLAN (NORTH)

SURVEY NO.

SHEET 4 OF 12 SHEETS

Attachment 3

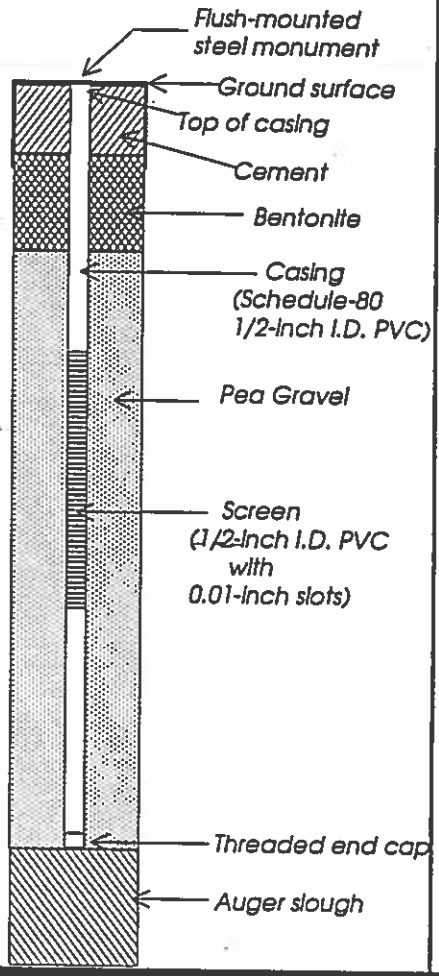
Historical Boring Logs (for Reference)

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-1*

Elevation reference: *Topographic Map* Gas Probe Installed: *28 February 1992*
Ground surface elevation: *395.6'* Casing elevation: *395.4'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	TOPSOIL						
	Dense, wet, tan, silty, gravelly SAND (Fill)		S-1	46	2		
5	Refuse-wet, some to moderate decomposition with 25% dirt-plastic, paper, glass						
10	Becoming more decomposed with depth and 50% dirt						
15	Dense to very dense, wet, gray, gravelly SAND with some silt Blowcount overstated-rock		S-2	50/3"	14	ATD	
20	Boring terminated at 18.3 feet.						
25							
30							



LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

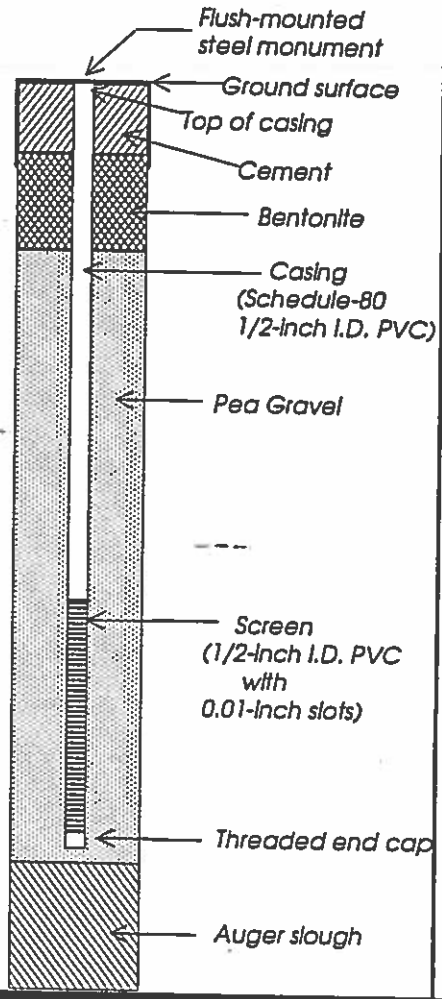
Drilling started: *28 February 1992* Drilling completed: *28 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-2*

Elevation reference: *Topographic Map* Gas Probe Installed: *28 February 1992*
Ground surface elevation: *396.3'* Casing elevation: *396.1'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	TOPSOIL						
	Dense, wet, gray-tan, silty, gravelly, SAND with scattered organics (Fill)		S-1	33	2		
5	Refuse-wet, some to moderate decomposition, with 75% dirt-paper, plastic, wood						
10							
15							
	Very dense, wet, bluish gray, silty, fine to medium SAND with trace gravel		S-2	85	1	ATD	
20	Boring terminated at 19 feet.						
25							
30							



LEGEND

I 2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

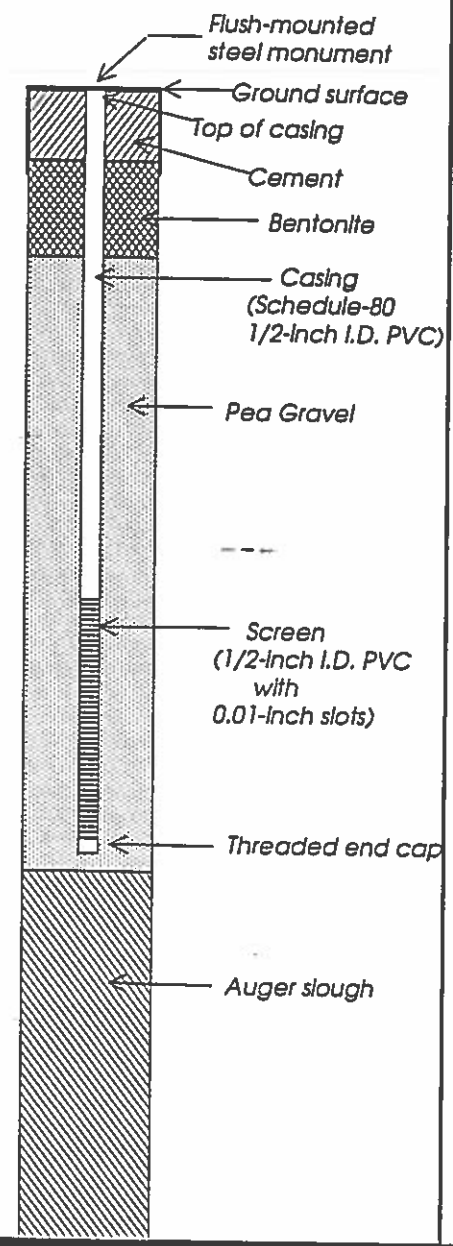
Drilling started: *28 February 1992* Drilling completed: *28 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-3*

Elevation reference: *Topographic Map*
Ground surface elevation: *395.6'*
Gas Probe Installed: *26 February 1992*
Casing elevation: *395.4'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	TOPSOIL					
	Medium dense, moist to wet, tan-brown, silty, fine to medium SAND with some gravel and organics (Fill)		S-1	35	4	
	Medium dense to dense, wet, gray, silty, gravelly SAND (Fill)		S-2	23	24	
5						
	Refuse-wet, some to moderate decomposition, with 50% dirt, plastic, glass, wood debris		S-3	33		
10						
			S-4	11	4	
15						
	Wood debris in shoe dirt has organics		S-5	11	2	
20						
	Medium dense to dense, wet, gray, gravelly SAND with some silt, trace fabric at 23 1/2 (Reworked)					
	Very dense, wet, gray gravelly SAND with some silt		S-6	52	2	ATD
25	Boring terminated at 24 feet.					
30						



TESTING

LEGEND

- 2-inch O.D. split-spoon sample
- Sample not recovered
- Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

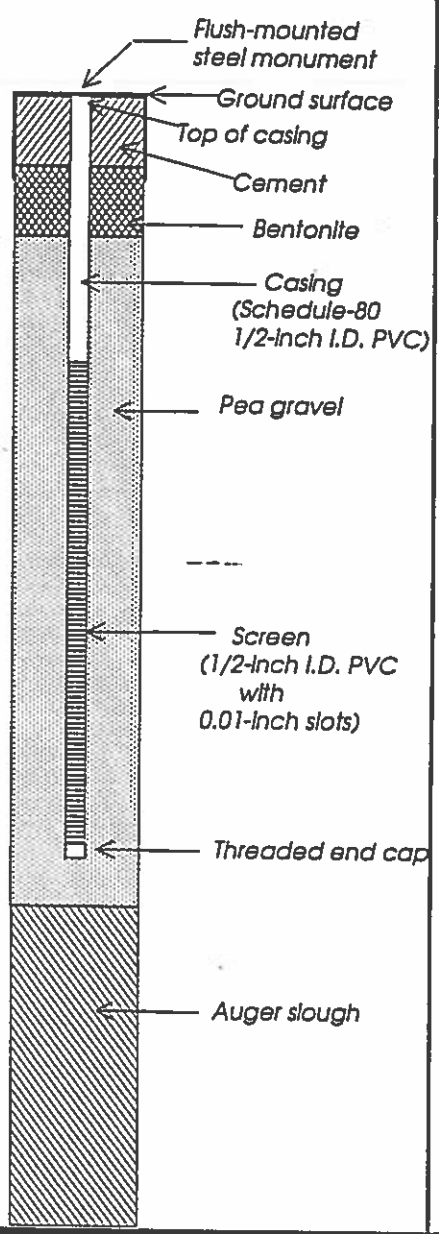
Drilling started: *26 February 1992* Drilling completed: *26 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-4*

Elevation reference: *Topographic Map* Gas Probe Installed: *27 February 1992*
Ground surface elevation: *396.9'* Casing elevation: *396.7'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	TOPSOIL					
	Medium dense, wet, gray, silty, gravelly SAND with occasional cobbles (Till fill)		S-1	29	0	
			S-2	24	0	
5	Refuse-Wet, some to moderate decomposition, 50% dirt-plastic, paper, metal, glass.					
	Blow count overstated debris		S-3	50/ 3"	5	
10						
	Becoming 75% dirt		S-4	20	7	
15						ATD
	Medium dense, wet, blackish gray, silty, gravelly, SAND with trace of debris (Reworked)		S-5	22	2	
20	Dense, wet, gray, gravelly, medium to coarse SAND with some silt					
	Blowcount overstated-heave		S-6	50/ 4"	0	
	Boring terminated at 23.9 feet.					
25						
30						



TESTING

8240
8270
TCLP
PH

LEGEND

2-inch O.D. split-spoon sample

8240 8270 TCLP PH — Chemical analysis

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

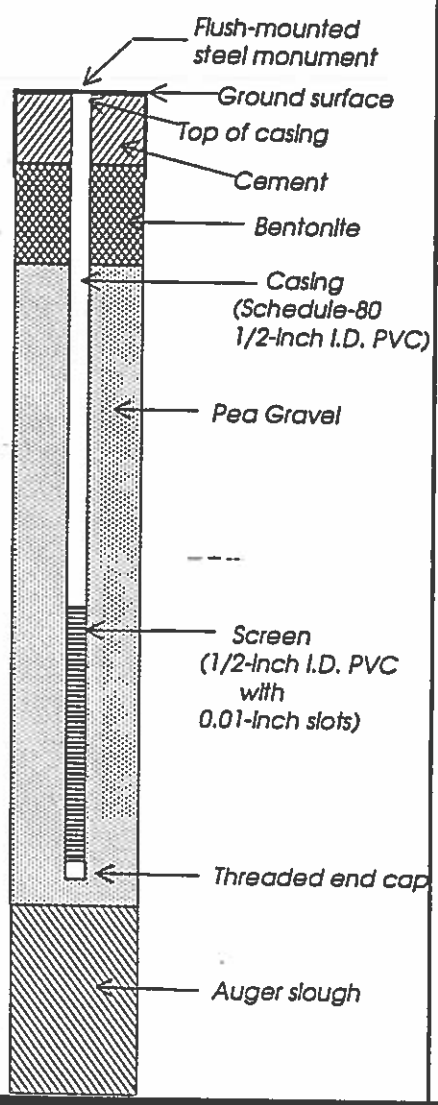
Drilling started: *26 February 1992* Drilling completed: *26 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-5*

Elevation reference: *Topographic Map*
Ground surface elevation: *395.1'*
Gas Probe Installed: *27 February 1992*
Casing elevation: *394.9'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	TOPSOIL						
	Medium dense, wet, mixed tan-gray, silty, gravelly SAND (Fill) Blow count overstated rocks		S-1	50/ 3"	5		
	Refuse-wet, some to moderate decomposition, 50% dirt-metal, glass, wood-dirt is light brown						
5							
10	Dirt becoming blackish with organics						
15						ATD	
	Blow count overstated		S-2	50/ 3"			
20	Dense to very dense, wet, tan silty SAND with some gravel		S-3	50/ 5"	2		
	Boring terminated at 21 feet.						
25							
30							



LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

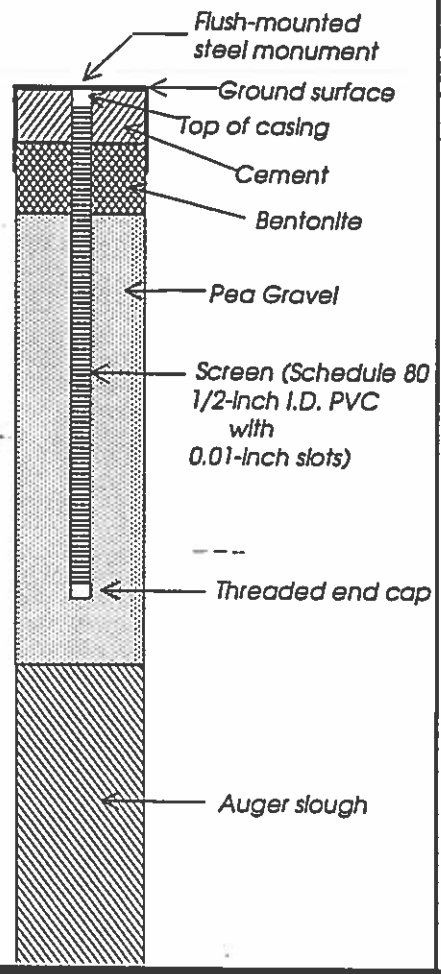
Drilling started: *27 February 1992* Drilling completed: *27 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-6*

Elevation reference: *Topographic Map* Gas Probe Installed: *28 February 1992*
Ground surface elevation: *389.8'* Casing elevation: *389.6'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	TOPSOIL						
	Loose, moist, tan, silty, fine to medium SAND with trace of gravel and rootlets (Fill)		S-1	5	2		
	Refuse-wet, some decomposition, 0-25% dirt-plastic, stuffed animals, metal, glass (whole bottles)						
5							
10							
						ATPI	
	Dense to very dense, wet to saturated, gray, gravelly SAND with some silt						
15						ATD	
			S-2	50/6"	4		
	Boring terminated at 18.5 feet.						
20							
25							
30							



LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

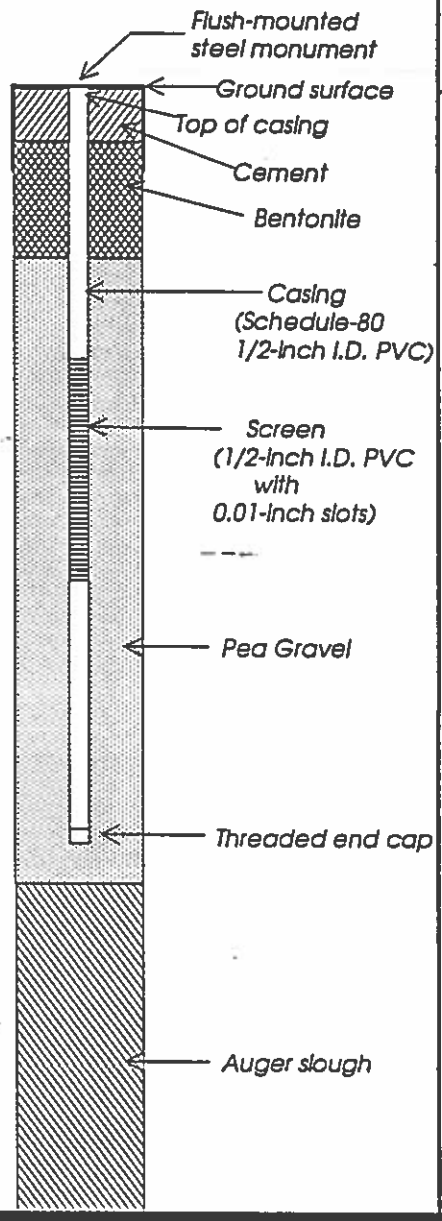
Drilling started: *28 February 1992* Drilling completed: *28 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-7*

Elevation reference: *Topographic Map* Gas Probe Installed: *27 February 1992*
Ground surface elevation: *397.2'* Casing elevation: *397'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	*TOPSOIL*						
	Dense, wet, gray-tan, silty, gravelly, SAND with occassional cobbles (Till fill)		*S-1*	*53*	*2*		
5	*Refuse-wet, some to moderate decomposition, 50-75% dirt-plastic, paper, wire, pieces concrete and glass*						
10							
15						ATD	
20	*Dense to very dense, wet, gray, gravelly SAND with some silt*						
	Blowcount overstated-rock		*S-2*	*50/5"*	*0*		
25	*Boring terminated at 23.5 feet.*						
30							



LEGEND

2-Inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

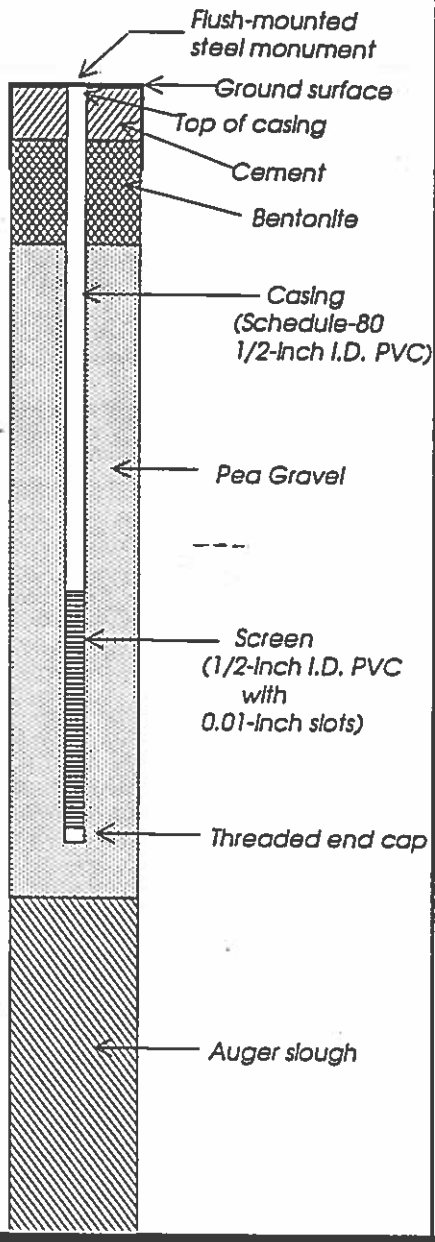
Drilling started: *27 February 1992* Drilling completed: *27 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-8*

Elevation reference: *Topographic Map* Gas Probe Installed: *27 February 1992*
Ground surface elevation: *397.6'* Casing elevation: *397.4'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	*TOPSOIL*						
	Medium dense, wet, gray, silty, gravelly, SAND (Till fill)		*S-1*	*13*			
5	*Refuse- wet, some to moderate decomposition, 50% dirt-plastic, wood, glass, flagging*						
10	*Becoming 50-75% dirt*						
15	*Becoming 95% dirt medium dense, wet, gray, silty gravelly, SAND with some wood debris- Blowcount overstated-wood*		*S-2*	*56*			
20	*Very dense, wet, gray, gravelly, SAND with some silt.*		*S-3*	*72*	*10*	ATD -	
25	*Boring terminated at 24 feet.*						
30							



LEGEND

I 2-inch O.D. split-spoon sample

ATD Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *27 February 1992* Drilling completed: *27 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-9*

Elevation reference: *Topographic Map* Gas Probe Installed: *24 February 1992*
Ground surface elevation: *394.7'* Casing elevation: *394.5'±*

AS-BUILT DESIGN

Page 1 of 1

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER	TESTING
0	*TOPSOIL*						
	Medium dense, moist to wet, tan, silty, gravelly SAND with scattered organics (Fill)		*S-1*	*12*	*4*		
	Refuse-wet, moderate decomposition, 50% dirt-plastic, wire, paper, glass, wood		*S-2*	*3*	*19*		
5							
	Becoming saturated with hydrocarbon sheen on sample Blow count overstated		*S-3*	*50/ 5"*	*wet*		
10							
	Sheen on sample		*S-4*	*10*	*500*	ATD	
15							
	Plastic in shoe Blow count overstated		*S-5*	*50/ 6"*	*58*		
20	*Dense to very dense, wet, gray, gravelly, medium to coarse SAND with some silt*		*S-6*	*56*	*10*		
25	*Boring terminated at 24 feet.*						
30							

Flush-mounted steel monument
Ground surface
Top of casing
Cement
Bentonite
Casing (schedule-80 1/2-inch I.D. PVC)
Pea Gravel
Screen (1/2-inch I.D. PVC with 0.01-inch slots)
Threaded end cap
Auger slough

8240 8270 TCLP PCB PH
8240 8270 TCLP PH

LEGEND

2-inch O.D. split-spoon sample

8240 8270 TCLP PH Chemical analysis

ATD Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group
11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *24 February 1992* Drilling completed: *24 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-10*

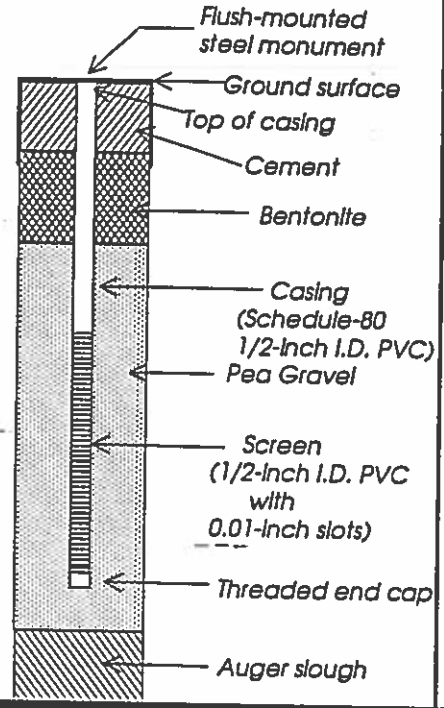
Elevation reference: *Topographic Map* Gas Probe Installed: *28 February 1992*
Ground surface elevation: *389.0'* Casing elevation: *388.8'±*

AS-BUILT DESIGN

Page 1 of 1

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	TOPSOIL Loose, wet, tan, silty, fine to medium SAND with trace of gravel (Fill)		S-1	8	0	
	Refuse- wet, some decomposition, 25% dirt-glass, plastic, paper, metal					ATPI
10	Dense, wet, gray, gravelly SAND with some silt Blowcount overstated		S-2	50/5"	3	ATD
	Boring terminated at 13 feet.					
15						
20						
25						
30						

TESTING



LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed; ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *28 February 1992* Drilling completed: *28 February 1992* Logged by: *HWB*

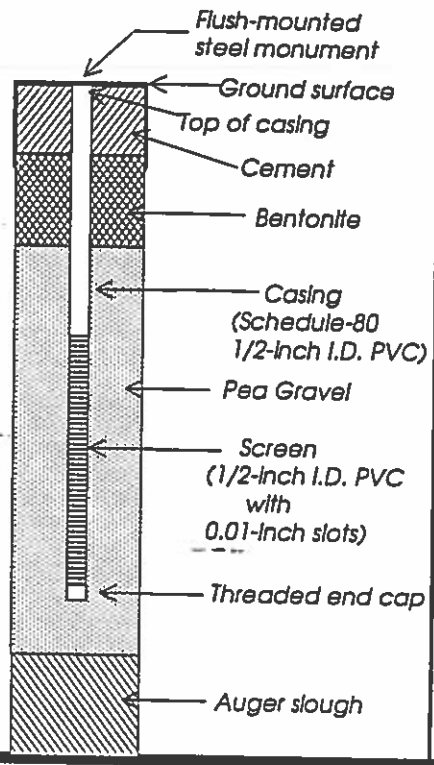
PROJECT: *McCollum Park- Park & Ride Lot* W.O. *W-7764* WELL NO. *GP-11*

Elevation reference: *Topographic Map*
Ground surface elevation: *387.7'*
Gas Probe Installed: *25 February 1992*
Casing elevation: *387.5'±*

AS-BUILT DESIGN

Page 1 of 1

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*TOPSOIL*					
	Medium dense, moist, tan-brown, silty, SAND with some gravel (Fill)		S-1	12	4	
	Refuse- wet, moderate to much decomposition, 25-50% dirt-mostly wood, plastic, glass. Blowcount overstated		S-2	50/ 2.5"	0	
5						
	Dense, wet, tan, silty, SAND with some gravel		S-3	33	4	
10						
	Very dense, wet, gray, silty, fine to medium SAND with some gravel		S-4	81	7	ATD
15	*Boring terminated at 14 feet.*					
20						
25						
30						



TESTING

LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed; ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *25 February 1992* Drilling completed: *25 February 1992* Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot*

W.O. *W-7764*

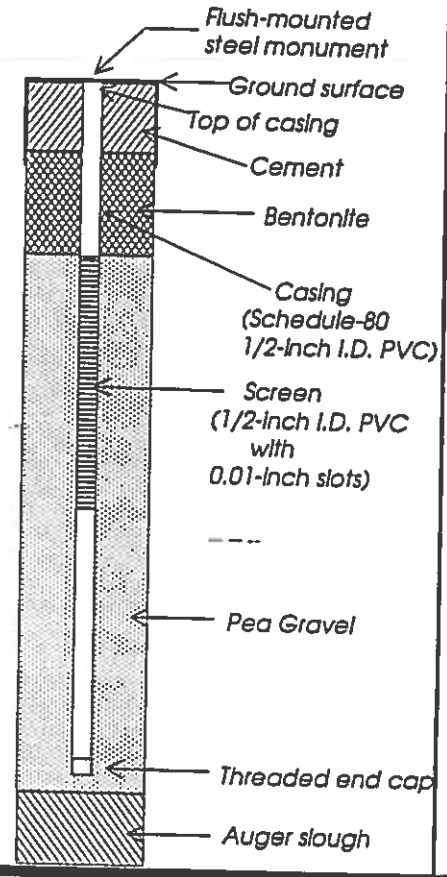
WELL NO. *GP-12*

Elevation reference: *Topographic Map*
Ground surface elevation: *389.8'*

Gas Probe Installed: *25 February 1992*
Casing elevation: *389.6'±*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	*TOPSOIL*					
	Medium dense, moist, tan-brown, silty, fine to medium SAND with scattered organics and rootlets (Fill)		S-1	13	4	
	Loose, wet, dark brow, silty, fine SAND with some gravel and trace glass (Fill)		S-2	5	7	
5	*Refuse-wet, some to moderate decomposition, 0-25% dirt-plastic*					
			S-3	14	16	
10	*Becoming 75% dirt plastic, wood, glass*					ATD
			S-4	73	7	
15	*Dense to very dense, wet, gray silty, fine to medium SAND with some gravel*		S-5	36	7	
	Boring terminated at 16.5 feet.					
20						
25						
30						



TESTING

LEGEND

2-inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed; ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *25 February 1992*

Drilling completed: *25 February 1992*

Logged by: *HWB*

PROJECT: *McCollum Park- Park & Ride Lot*

W.O. *W-7764*

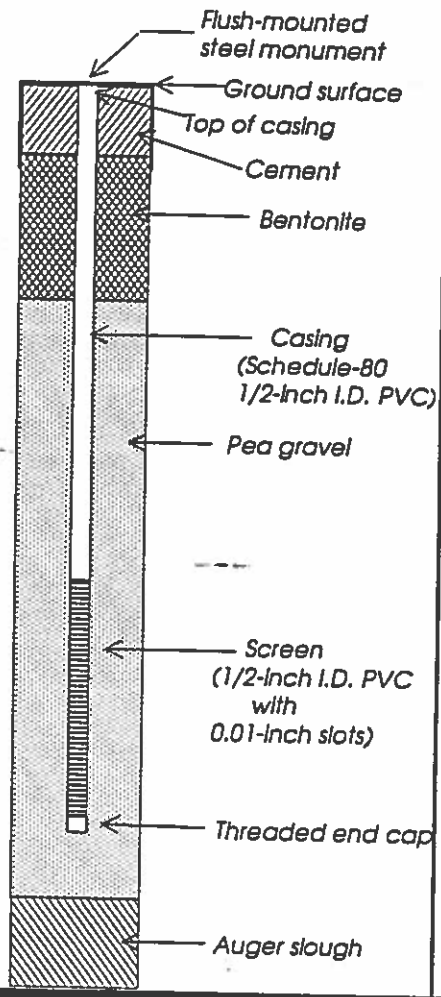
WELL NO. *GP-13*

Elevation reference: *Topographic Map*
Ground surface elevation: *397.0'*

Gas Probe Installed: *25 February 1992*
Casing elevation: *396.8'±.*

AS-BUILT DESIGN

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING	GROUND WATER
0	TOPSOIL					
	Loose-medium dense, wet, brown, silty, fine to medium SAND with some gravel and scattered organics (Fill)		S-1	21	4	
	Refuse-wet, moderate decomposition, 25% dirt-paper, plastic, wood, glass		S-2	7	16	
5						
	Blow count overstated		S-3	50/4"	40	
10						
	Organic soils with hydrocarbon sheen on sample		S-4	9	141	
15						ATD
	Very dense, wet, gray, silty, gravelly, SAND with sheen on water		S-5	70	16	
20	Boring terminated at 19 feet.					
25						
30						



TESTING

LEGEND

I — 2-Inch O.D. split-spoon sample

ATD — Observed groundwater level (ATD = at time of drilling; 0/00/00 = date observed; ATPI= at time of probe installation)

RZA AGRA, Inc.
Geotechnical & Environmental Group

11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034-6918

Drilling started: *25 February 1992*

Drilling completed: *25 February 1992*

Logged by: *HWB*

AGI TECHNOLOGIES

APPENDIX A

Perimeter Landfill Gas Probe Logs From AGI's Previous Investigation

SN 34576

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 5% FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

LEGEND

SAMPLE

- "Undisturbed"
- Bulk/Grab
- Not Recovered
- Recovered, Not Retained

CONTACT BETWEEN UNITS

- Well Defined Change
- Gradational Change
- Obscure Change
- End of Exploration

LABORATORY TESTS

Consol	-	Consolidation
LL	-	Liquid Limit
PL	-	Plastic Limit
Gs	-	Specific Gravity
SA	-	Size Analysis
TxS	-	Triaxial Shear
TxP	-	Triaxial Permeability
Perm	-	Permeability
Po	-	Porosity
MD	-	Moisture/Density
DS	-	Direct Shear
VS	-	Vane Shear
Comp	-	Compaction

UU - Unconsolidated, Undrained
CU - Consolidated, Undrained
CD - Consolidated, Drained

BLOWS/FOOT

Hammer is 140 pounds with 30-inch drop, unless otherwise noted

S - SPT Sampler (2.0-inch O.D.)
T - Thin Wall Sampler (2.8-inch Sample)
H - Split Barrel Sampler (2.4-inch Sample)

MOISTURE DESCRIPTION

Dry	-	Considerably less than optimum for compaction
Moist	-	Near optimum moisture content
Wet	-	Over optimum moisture content
Saturated	-	Below water table, in capillary zone, or in perched groundwater

AGI TECHNOLOGIES

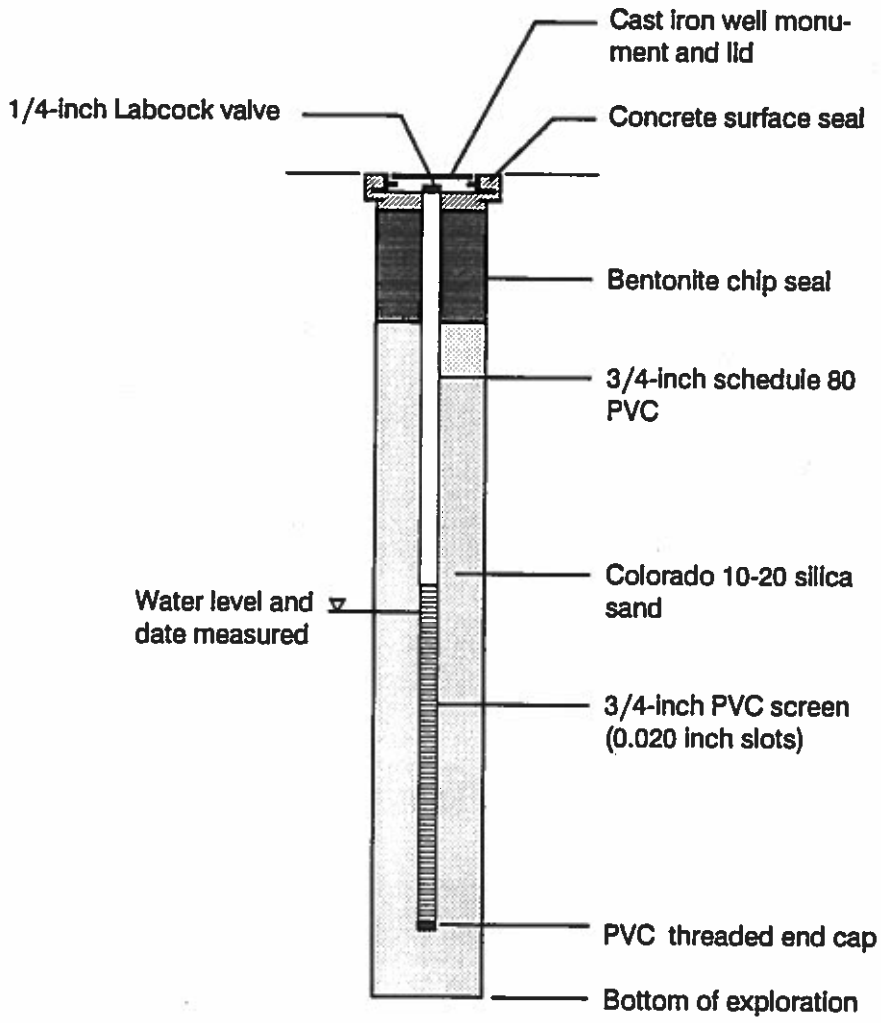
Soil Classification/Legend

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE **A1**

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	JFL/KM	20 May 94			

SN 34577



SN 34578

AGI TECHNOLOGIES

Gas Probe Construction

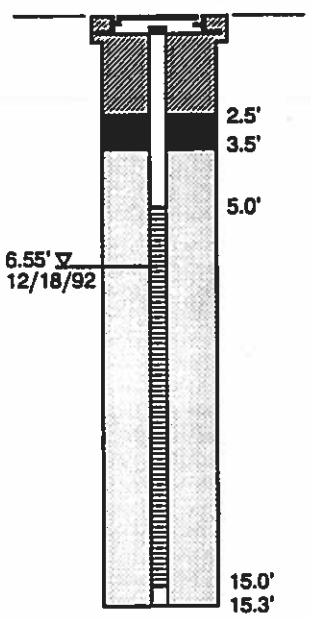
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE
A2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	20 May 94			

Equipment Mobile Drill B-61

Land Surface Elevation NR* Date 12/15/92



Sample	Depth	Blows per Foot	OVM	% LEL
	0			
	5	12	ND	12
	10	14	ND	0
	15	17	ND	1
	20			
	25			
	30			
	35			
	40			

BROWN SILTY SAND (SM) medium dense, moist; fine to coarse grained, with a trace of fine gravel.

Becomes brown gray.
BROWN SILT (ML) stiff, wet.

BROWN SILTY SAND (SM) medium dense, saturated; fine to coarse grained, with a trace of fine gravel.

Boring completed as a gas probe/piezometer on 12/15/92.

Groundwater encountered at 7 feet during drilling.

SN 34579

***Notes:**
Water level is referenced from ground surface.
LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

AGI TECHNOLOGIES

Log of Gas Probe 14

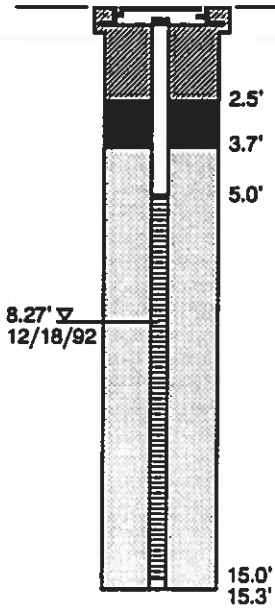
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A3

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

Equipment Mobile Drill B-61

Land Surface Elevation NR Date 12/15/92



Depth	Sample	% LEL	OVM	Blows per Foot
0		0	ND	50/6"
5		0	ND	80
10		1	ND	60
15				
20				
25				
30				
35				
40				

BROWN SAND (SW) very dense, moist; fine to medium grained, with some silt, and a trace of fine gravel.

BROWN GRAVELLY SAND (SW) very dense, wet; medium to coarse grained, with some silt.

Boring completed as a gas probe/piezometer on 12/15/92.

Groundwater encountered at 8 feet during drilling.

*Notes:
Water level is referenced from ground surface.
LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

SN 34580

AGI TECHNOLOGIES

Log of Gas Probe 15

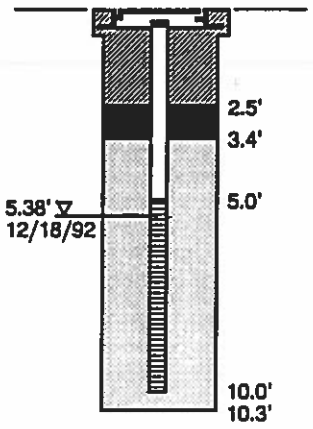
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A4

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

Equipment Mobile Drill B-61

Land Surface Elevation NR Date 12/15/92



Depth	Sample	% LEL	OVM	Blows per Foot
0				
		0	ND	28
5				
		0	ND	80
10				
15				
20				
25				
30				
35				
40				

BROWN SAND (SW) medium dense, moist; fine to medium grained, with some silt and fine gravel.

GRAY SAND (SP-SW) very dense, saturated; fine to medium grained, with some silt and fine gravel.

Boring completed as a gas probe/piezometer on 12/15/92.
Groundwater encountered at 6 feet during drilling.

*Notes:
Water level is referenced from ground surface.
LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

SN 34581

AGI TECHNOLOGIES

Log of Gas Probe 16

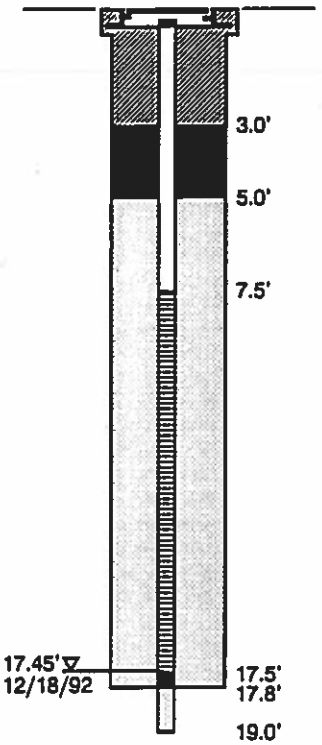
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A5

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

Equipment Mobile Drill B-61

Land Surface Elevation NR Date 12/16/92



% LEL	OVM	Blows per Foot	Depth	Sample	
			0		BROWN GRAVELLY SAND (SW) loose, moist; fine to medium grained sand, fine gravel, with some silt.
1	ND	7	5		BROWN SANDY GRAVEL (GW) very dense, moist; medium to coarse grained sand, with a trace of silt.
0	1.6	80	10		BROWN GRAVELLY SAND (SW) very dense, saturated; coarse grained, with some silt.
0	ND	51	15		Becomes wet, medium to coarse grained, with a trace of silt.
0	ND	57	20		Boring completed as a gas probe/piezometer on 12/16/92. Groundwater encountered at 12 feet during drilling.
			25		
			30		
			35		
			40		

*Notes:
Water level is referenced from ground surface.
LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

SN 34582

AGI TECHNOLOGIES

Log of Gas Probe 17

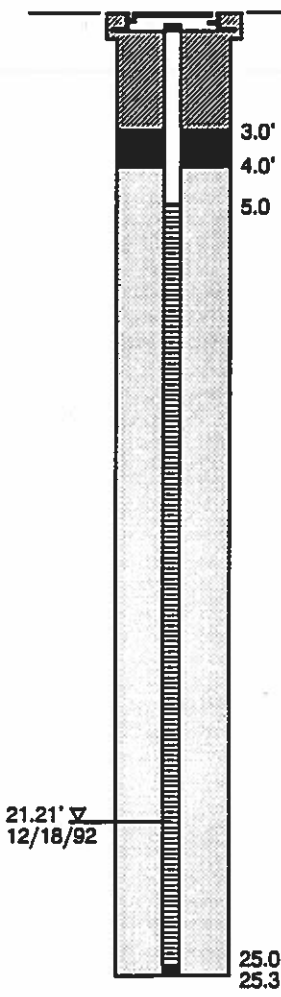
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A6

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

Equipment Mobile Drill B-61

Land Surface Elevation NR Date 12/16/92



Depth	Sample	% LEL	OVM	Blows per Foot	
0					BROWN GRAVELLY SAND (SW) very dense, moist; fine to coarse grained, with some silt.
		13	1.8	68	
5					GRAY SAND (SW) very dense, moist; fine to coarse grained, with a trace of fine silt and some gravel.
		2	0.8	68	
10					
		3	ND	83	
15					BROWN GRAVELLY SAND (SW) very dense, moist; medium grained, with a trace of silt.
		19	1.6	50/5"	
20					GRAY SAND (SP) dense, saturated; medium grained, with a trace of silt and fine gravel.
		16	0.5	43	
25					Boring completed as a gas probe/piezometer on 12/16/92.
					Groundwater encountered at 21 feet during drilling.
30					
35					
40					

***Notes:**

Water level is referenced from ground surface.

LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

SN 34583

AGI TECHNOLOGIES

Log of Gas Probe 18

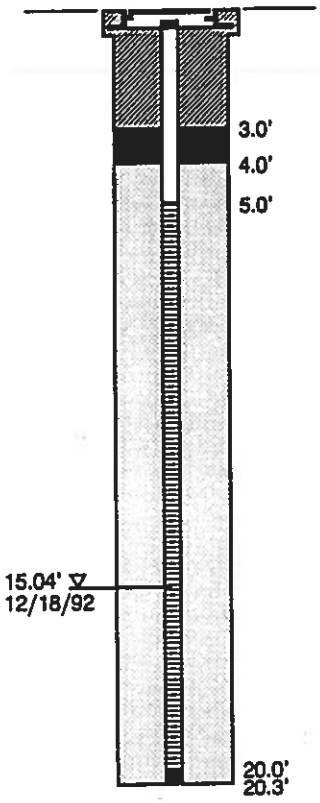
Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A7

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

Equipment Mobile Drill B-61

Land Surface Elevation NR Date 12/17/92



Depth	Sample	% LEL	OVM	Blows per Foot	
0					BROWN GRAVELLY SAND (SW) medium dense, moist; fine to medium grained, with a trace of silt.
		0	ND	17	
5					BROWN SAND (SP) dense, moist; fine grained, with a trace of fine gravel and silt.
		1	ND	37	
10					BROWN SAND (SW) very dense, moist; fine to medium grained, with a trace of gravel and silt.
		0	ND	89	
15					BROWN GRAVELLY SAND (SW) very dense, saturated; medium to coarse grained, with a trace of silt.
		0	ND	63	
20					Boring completed as a gas probe/piezometer on 12/17/92.
					Groundwater encountered at 16 feet during drilling.
25					
30					
35					
40					

*Notes:
Water level is referenced from ground surface.
LEL - Lower Explosive Limit
OVM - Organic Vapor Meter
NR - Not Recorded
ND - Not Detected

SN 34584

AGI TECHNOLOGIES

Log of Gas Probe 19

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE A8

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	28 Dec 92			20 May 94

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 5% FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASITICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

LEGEND

SAMPLE

- "Undisturbed"
- Bulk/Grab
- Not Recovered
- Recovered, Not Retained

CONTACT BETWEEN UNITS

- Well Defined Change
- Gradational Change
- Obscure Change
- End of Exploration

LABORATORY TESTS

Consol	-	Consolidation
LL	-	Liquid Limit
PL	-	Plastic Limit
Gs	-	Specific Gravity
SA	-	Size Analysis
TxS	-	Triaxial Shear
TxP	-	Triaxial Permeability
Perm	-	Permeability
Po	-	Porosity
MD	-	Moisture/Density
DS	-	Direct Shear
VS	-	Vane Shear
Comp	-	Compaction

UU - Unconsolidated, Undrained
CU - Consolidated, Undrained
CD - Consolidated, Drained

BLOWS/FOOT

Hammer is 140 pounds with 30-inch drop, unless otherwise noted
S - SPT Sampler (2.0-Inch O.D.)
T - Thin Wall Sampler (2.8-Inch Sample)
H - Split Barrel Sampler (2.4-Inch Sample)

MOISTURE DESCRIPTION

Dry	-	Considerably less than optimum for compaction
Moist	-	Near optimum moisture content
Wet	-	Over optimum moisture content
Saturated	-	Below water table, in capillary zone, or in perched groundwater

AGI TECHNOLOGIES

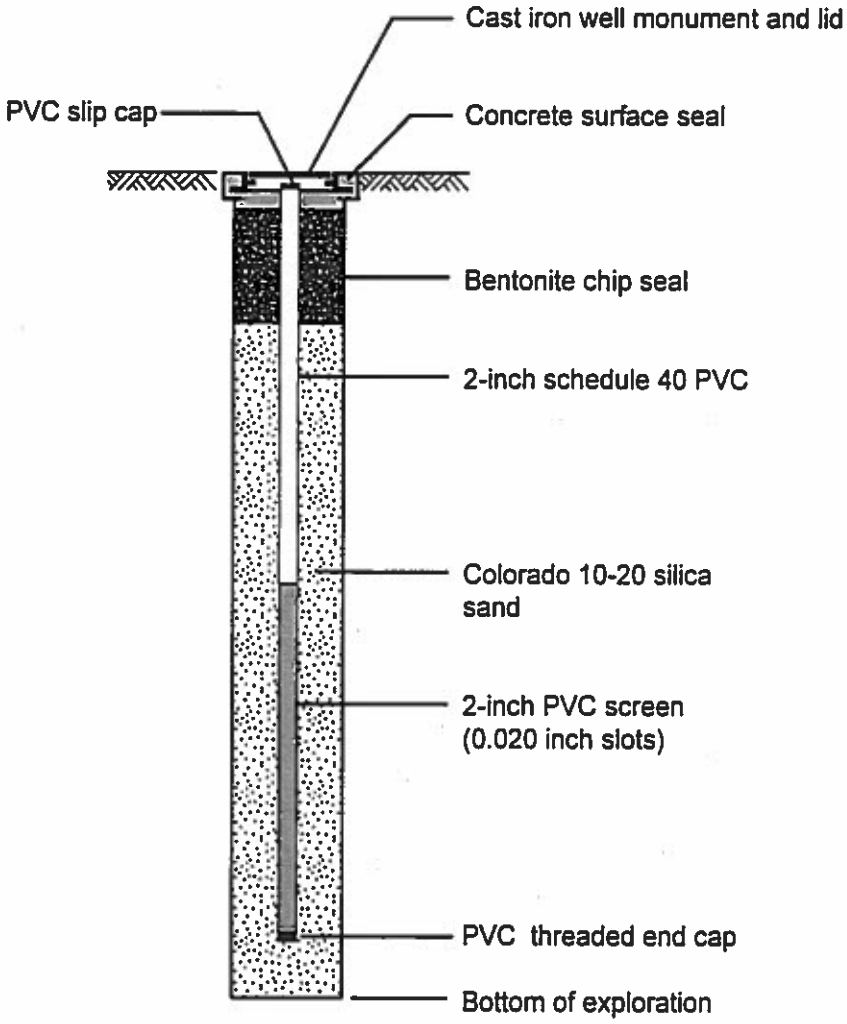
Soil Classification/Legend

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE **B1**

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	JFL/KM	20 May 94			

SN 34587



SN 34588

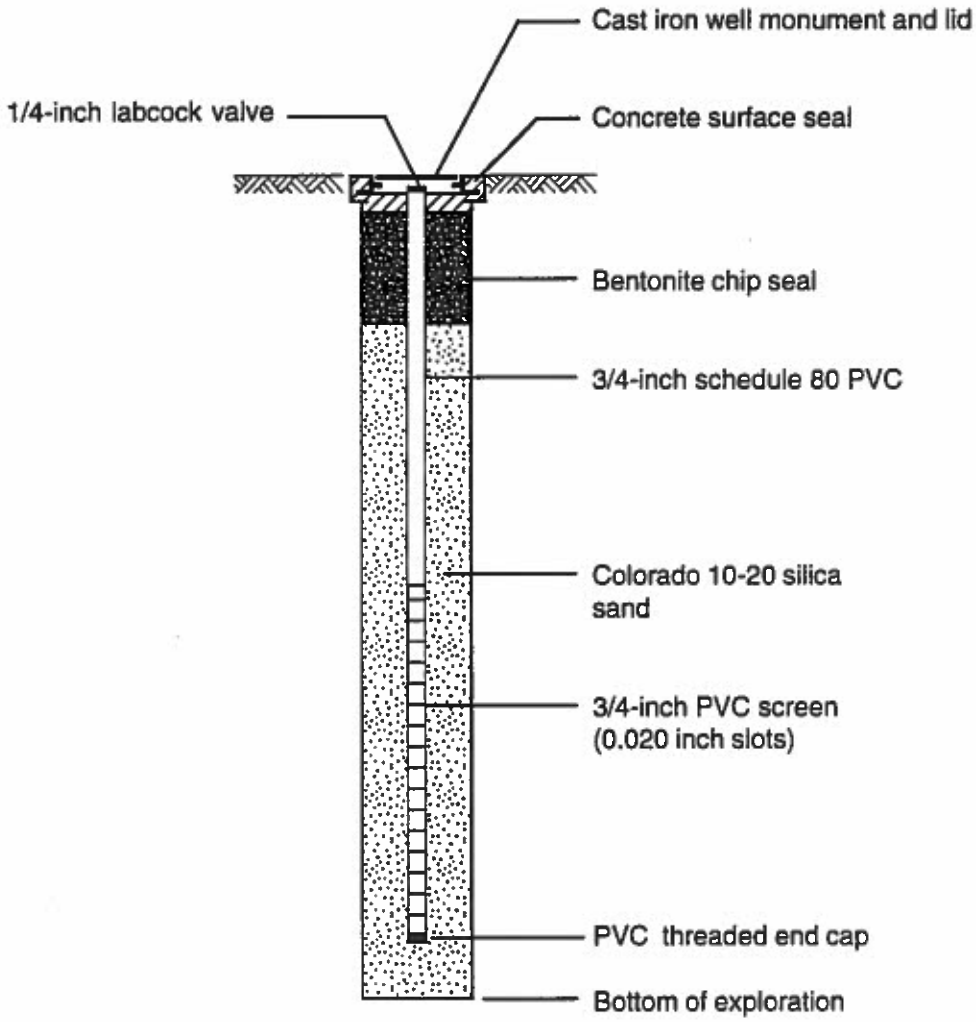
AGI TECHNOLOGIES

Monitoring Well Construction

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE
B2

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	20 May 94			



SN 34589

AGI TECHNOLOGIES

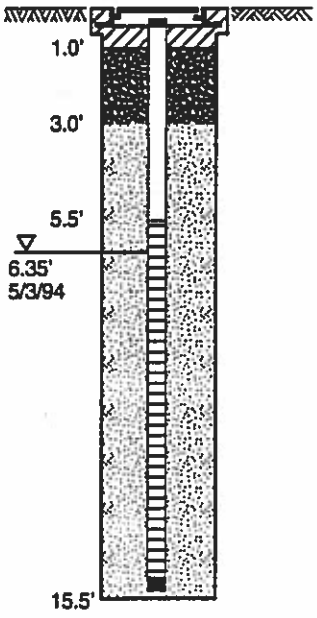
Gas Probe Construction

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE
B3

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.105	KM	20 May 94			

Well Construction Summary



Casing rim elevation: 383.38 feet

Equipment Acker

Land Surface Elevation ~384 feet Date 3/21/94

OVM	Blows per Foot	Depth	Sample	
		0		GRAY BROWN GRAVELLY SAND (SP) loose, moist; fine to coarse grained, gravel is fine to coarse grained, with some silt (Fill).
	5			
ND	17	5		BROWN GRAVELLY SAND (SP) medium dense, moist; fine to coarse grained, gravel is fine to coarse, with a trace of silt.
ND	70			Becomes saturated and very dense.
	29	10		Becomes medium dense.
		15		Boring terminated on 3/21/94. Groundwater encountered at 6.8 feet during drilling. Boring converted into monitoring well on 3/21/94.
		20		
		25		
		30		
		35		
		40		

SN 34591

AGI TECHNOLOGIES

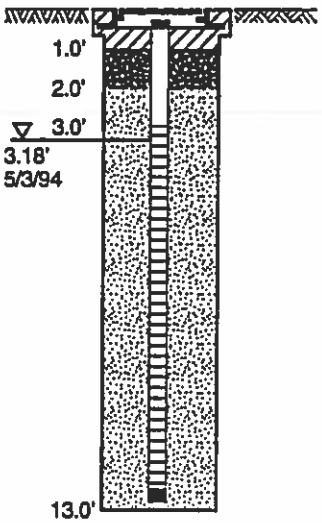
Log of Monitoring Well BH-5

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE B5

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
512105MW.pm5	15,512.105	KM	22 June 94		

Well Construction Summary



Casing rim elevation: 380.08 feet.

Equipment Acker

Land Surface Elevation ~380.5 feet Date 3/21/94

OVM	Blows per Foot	Depth	Sample	
		0		
	34			BROWN GRAVELLY SAND (SP) loose, moist; fine to coarse grained, with a trace of silt (Fill).
				DARK BROWN SANDY SILT (ML) soft, moist; with roots and organics.
		5		GRAY BROWN GRAVELLY SAND (SP) medium dense, wet; fine to coarse grained, with some silt, mottled.
	87			Becomes very dense.
		10		
	64			GRAY SAND (SP) very dense, saturated; fine grained.
		15		Boring terminated on 3/21/94.
				Groundwater encountered at 3 feet during drilling.
				Boring converted into monitoring well on 3/21/94.
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Monitoring Well BH-6

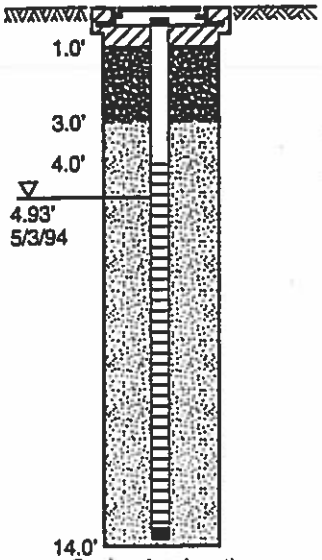
Snohomish Co. Public Works Dept./McCollum Park

Everett, Washington

PLATE **B6**

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
512105MW.pm5	15,512.105	KM	22 June 94		

Well Construction Summary



Casing rim elevation: 382.31 feet.

Equipment Acker

Land Surface Elevation ~383 feet Date 3/22/94

OVM	Blows per Foot	Depth	Sample	
		0		
1	7			BROWN SILTY SAND (SM) very loose, moist; fine to coarse grained, with a trace of fine gravel, roots and organics.
		5		Becomes saturated. BROWN GRAVELLY SAND (SP) medium dense, saturated; fine to coarse grained, with fine to coarse grained gravel, and a trace of silt.
-	34			
		10		
		15		Boring terminated on 3/22/94. Groundwater encountered at 4.5 feet during drilling. Boring converted into monitoring well on 3/21/94.
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

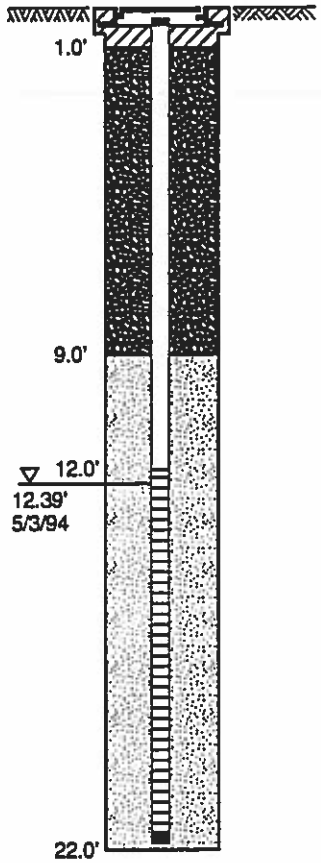
Log of Monitoring Well BH-7

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE B7

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
512105MW.pm5	15,512.105	KM	22 June 94		

Well Construction Summary



Casing rim elevation: 393.97 feet.

Equipment Acker

Land Surface Elevation ~394.3 Date 3/22/94

OVM	Blows per Foot	Depth	Sample	
		0		DARK BROWN SILTY SAND (SM) loose, moist; fine grained, with a trace of fine gravel, roots, and organics.
	12			
		5		GRAY SILT (ML) soft, moist to saturated, mottled.
	5			
		10		BROWN SILTY SAND (SM) very dense, moist; fine grained.
	85			
		15		Becomes saturated.
				BROWN SAND (SP) dense, saturated; fine to coarse grained, with some coarse gravel and silt.
	65			
		20		Becomes very dense.
	77			
				Boring terminated on 3/22/94.
				Groundwater encountered at 14.5 feet during drilling.
				Perched groundwater encountered at 6 feet during drilling.
				Boring converted into monitoring well on 3/21/94.
		25		
		30		
		35		
		40		

SN 34594

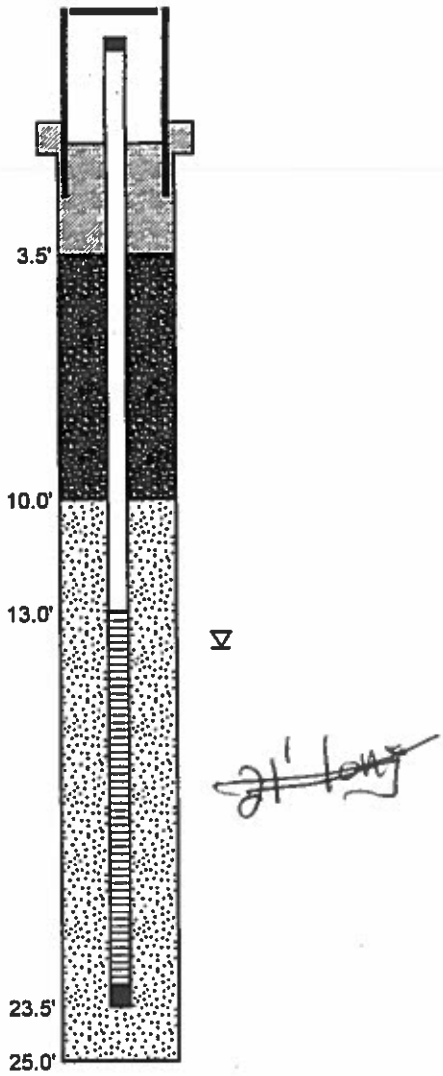
AGI TECHNOLOGIES

Log of Monitoring Well BH-8

Snohomish Co. Public Works Dept./McCollum Park
Everett, Washington

PLATE B8

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
512105MW.pm5	15,512.105	KM	22 June 94		



Equipment AP 1000

Land Surface Elevation 393.6 feet Date 2/7/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP) dense, moist; coarse grained, with medium grained sand and a trace of silt and cobbles.
5		
10		
15		Becomes wet.
20		Becomes gray, saturated, and fine to coarse grained.
25		Boring terminated at 25 feet bgs. Groundwater encountered at 20 feet bgs during drilling.
30		
35		
40		

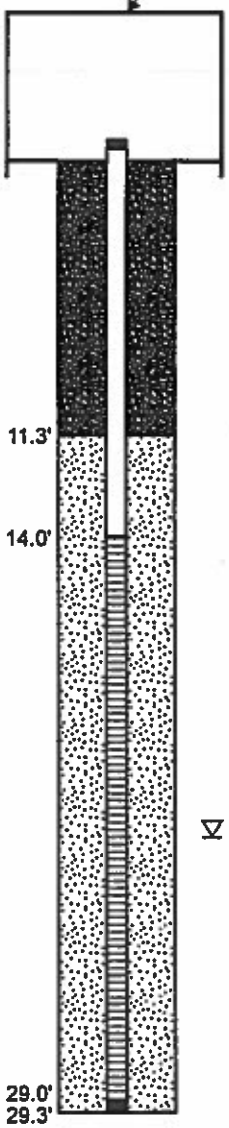
AGI TECHNOLOGIES

Log of Monitoring Well MW10

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C44

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW10.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95



27' log

Equipment Ap 1000

Land Surface Elevation 400.3 feet Date 1/30/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP-GM) dense, wet; coarse grained, with fine to medium grained sand, some silt, and a trace of cobbles.
5		
10		Becomes moist.
15		
20		Becomes wet.
25		GRAY SANDY GRAVEL (GP) dense, saturated; coarse, with medium to coarse grained sand and a trace of silt.
		Boring terminated at 29.3 feet bgs. Groundwater encountered at 25 feet bgs during drilling.
30		
35		
40		

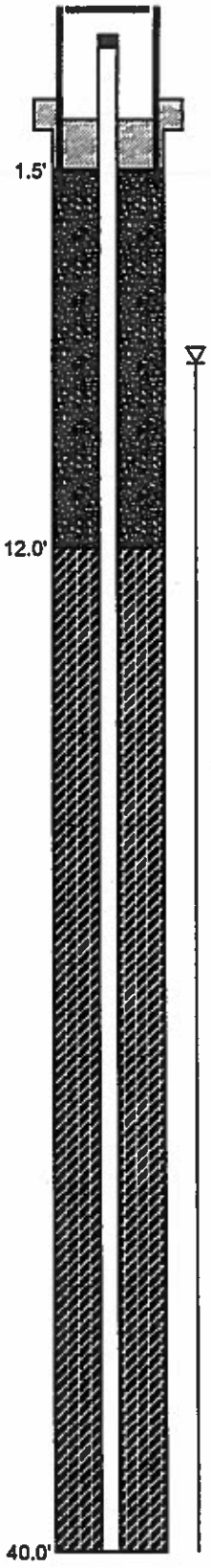
AGI TECHNOLOGIES

Log of Monitoring Well MW11

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C45

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW11.cdr	15,512.275	JFL	21 Feb. 95	ADC	DFF	11 May 95



Equipment CME75

Land Surface Elevation 384.3 feet Date 2/2/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP-GM) very dense, moist; coarse grained, with fine to medium sand, some silt, and a trace of cobbles.
5		Becomes wet.
		Becomes saturated.
10		BROWN SANDY GRAVEL (GP) very dense, saturated; fine to coarse grained, sand is medium to coarse grained, with a trace of silt and cobbles.
15		
20		Becomes gray, with coarse grained sand.
		GRAY SAND (SP) dense, saturated; fine to medium grained with a trace of silt.
25		
30		
35		Becomes gray brown.
40		

AGI TECHNOLOGIES

Log of Monitoring Well MW12 (0'-40')

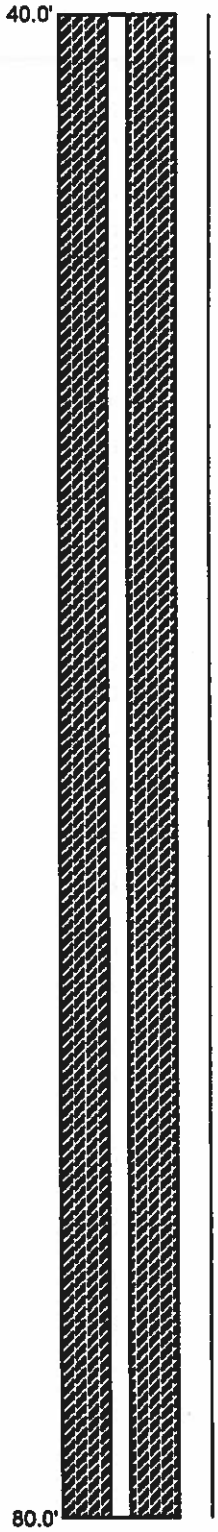
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

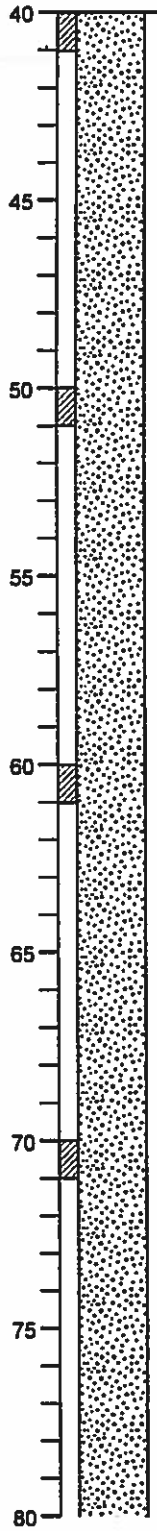
PLATE C46a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW12.cdr	15,512.275	JFL	21 Feb. 95	ADC	DFF	11 May 95

Equipment CME75

Land Surface Elevation 384.3 feet Date 2/2/95





With some fine to coarse gravel.

Log of Monitoring Well MW12 (40'-80')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

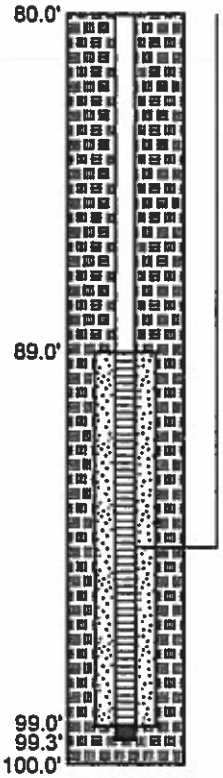
PLATE C46b

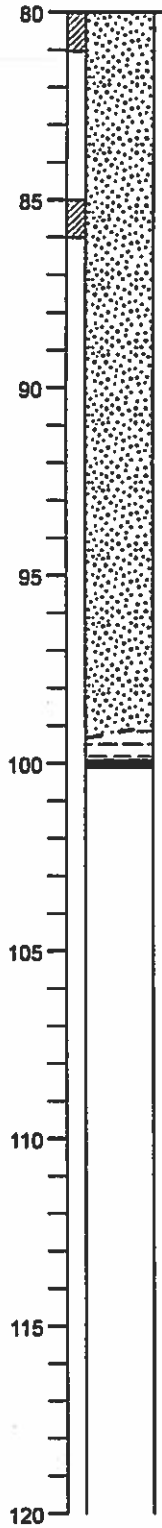
AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW12.cdr	15,512.275	JFL	21 Feb. 95	ADC	DFF	11 May 95

Equipment CME75

Land Surface Elevation 384.3 feet Date 2/2/95





Note: Thin silt interbeds from 97-99 feet.
GRAY SILT (ML) stiff, wet; contact inferred by drilling difficulty.
Boring terminated at 100 feet bgs.
Groundwater encountered at 8 feet bgs during drilling.

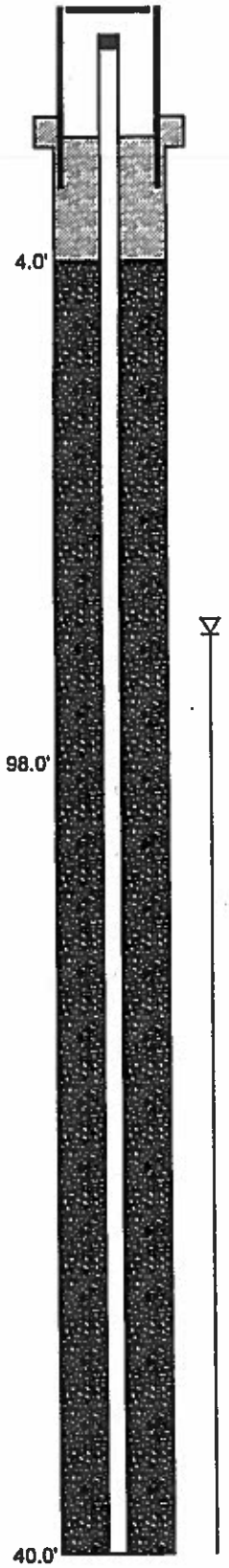
AGI TECHNOLOGIES

Log of Monitoring Well MW12 (80'-100')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C46c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW12.cdr	15,512.275	JFL	21 Feb. 95	ADC	DFF	11 May 95



Equipment AP 1000

Land Surface Elevation 393.7 feet Date 2/7/95

Depth (feet) Sample

0

BROWN SANDY GRAVEL (GP) dense, moist; coarse grained, sand is fine to medium grained, with a trace of silt and cobbles.

5

10

15

Becomes wet.

20

Becomes gray saturated.

25

30

35

40

Log of Monitoring Well MW13 (0-40')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

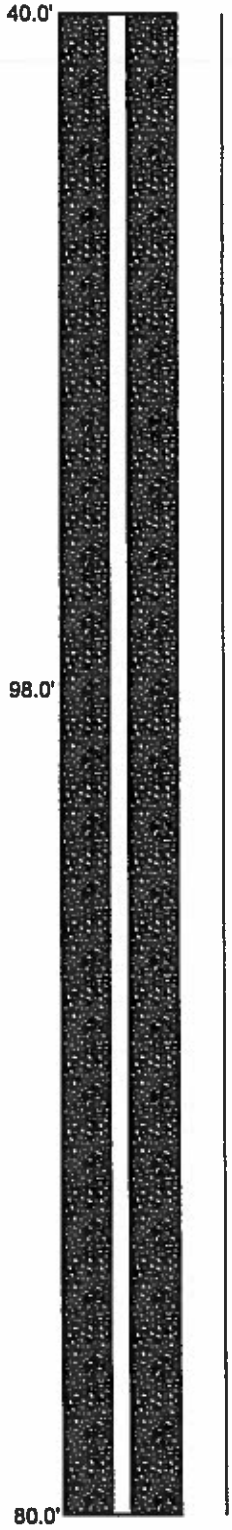
PLATE C47a

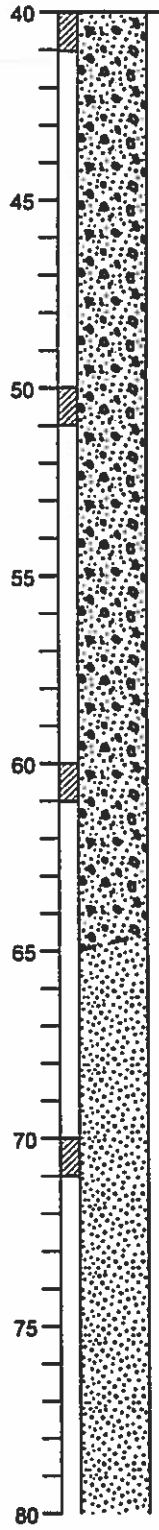
AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW13.cdr	15,512.275	JFL	21 Feb. 95	AQ	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 393.7 feet Date 2/7/95





GRAY BROWN SAND (SP) dense, saturated; fine to medium grained with a trace of silt and fine gravel.

Log of Monitoring Well MW13 (40'-80')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

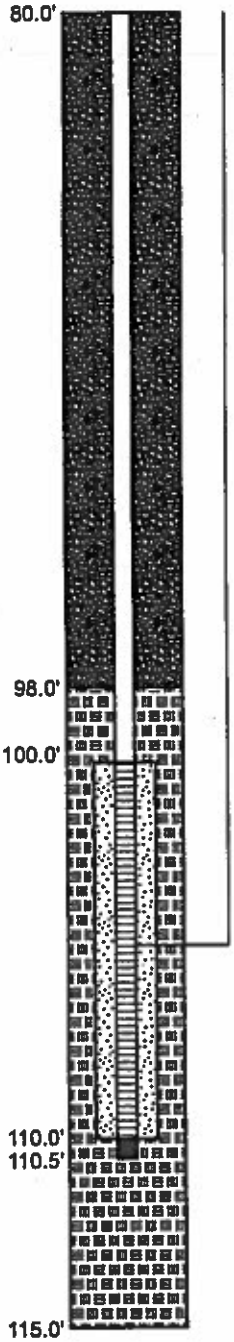
PLATE C47b

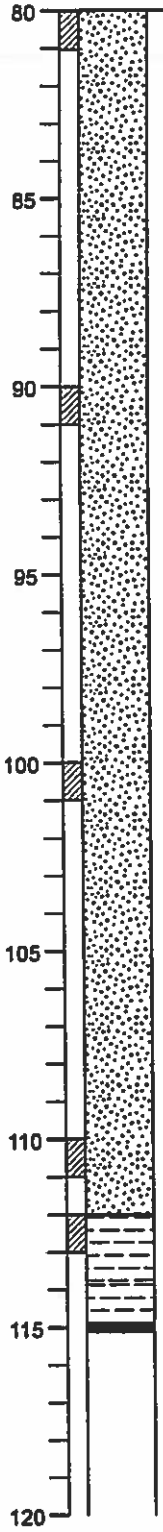
AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW13.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 393.7 feet Date 2/7/95





GRAY SILT (ML) hard, moist.

Boring terminated at 115 feet bgs.
Groundwater encountered at 14.5 feet bgs during drilling.

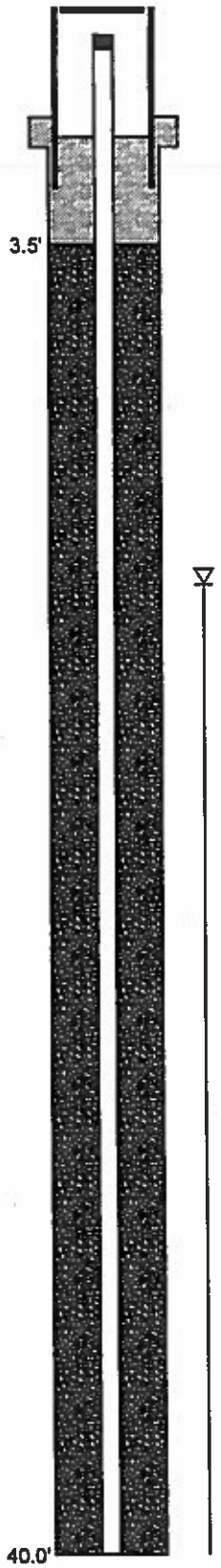
AGI TECHNOLOGIES

Log of Monitoring Well MW13 (80'-115')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C47c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW13.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95



Equipment AP 1000

Land Surface Elevation 392.4 feet Date 1/30/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP) medium dense, moist; coarse grained, sand is medium grained, with a trace of silt and fine gravel.
5		
10		BROWN SANDY GRAVEL (GP-GM) dense, moist; coarse grained, sand is medium to coarse grained, with some silt and cobbles.
15	83	GRAY BROWN SAND (SP) very dense, wet; fine to medium grained, with a trace of silt.
20	60	Becomes saturated.
25	90	Lenses of coarse grained sand.
30	40	
35		
40		

AGI TECHNOLOGIES

Log of Monitoring Well MW14 (0-40')

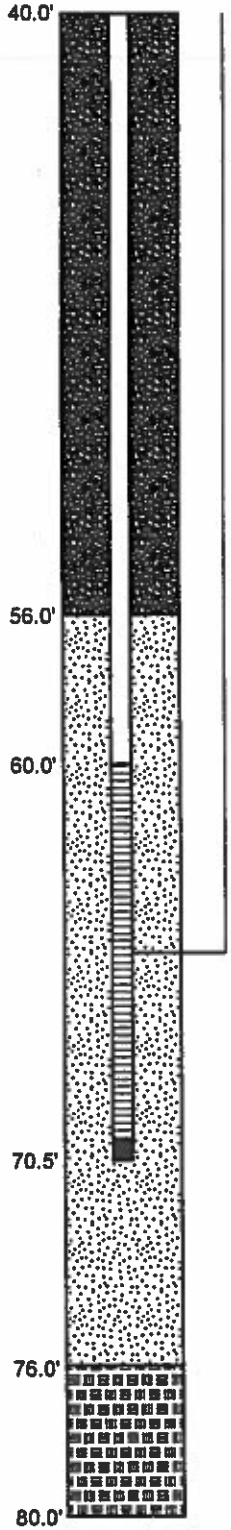
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

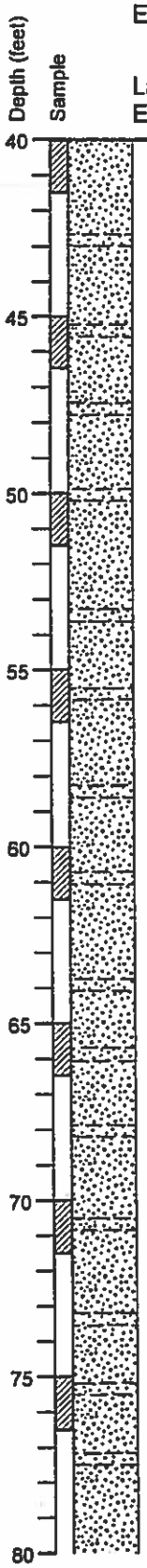
PLATE C48a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW14.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 392.4 feet Date 1/30/95





GRAY BROWN SAND (SP) very dense, wet; fine to medium grained, with a trace of silt.

AGI TECHNOLOGIES

Log of Monitoring Well MW14 (40'-80')

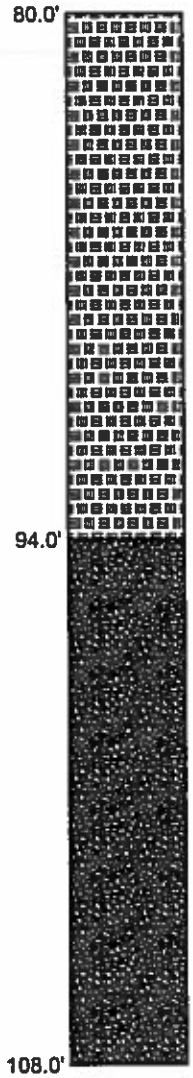
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

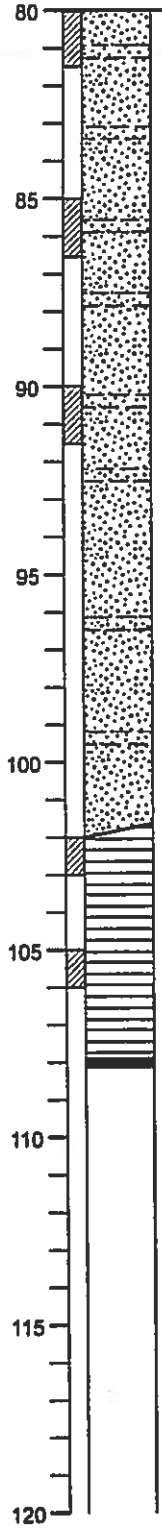
PLATE C48b

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW14.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 392.4 feet Date 1/30/95





Note hard gray and brown silt interlayers between 85 feet and 103 feet (Transition zone).

GRAY SILTY CLAY (CL) hard, moist.

Becomes moist to dry.

Boring terminated at 108 feet bgs.
Groundwater encountered at 20 feet bgs during drilling.

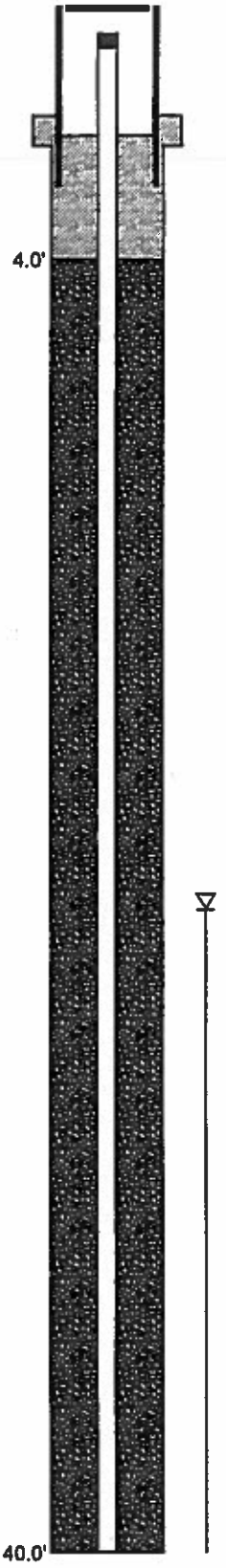
AGI TECHNOLOGIES

Log of Monitoring Well MW14 (80'-108')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C48c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW14.cdr 15,512.275	JFL	21 Feb. 95	AR	DFF	11 May 95



Equipment AP 1000

Land Surface Elevation 400.5 feet Date 2/1/95

Depth (feet) | Sample

0

BROWN SANDY GRAVEL (GP-GM) dense, wet; coarse grained, with fine to medium grained sand, some silt, and a trace of cobbles.

5

10

Becomes moist.

15

20

Becomes wet.

25

GRAY SANDY GRAVEL (GP) dense, saturated; fine grained, sand is medium to coarse grained, with a trace of silt.

30

35

40

AGI TECHNOLOGIES

Log of Monitoring Well MW15 (0-40')

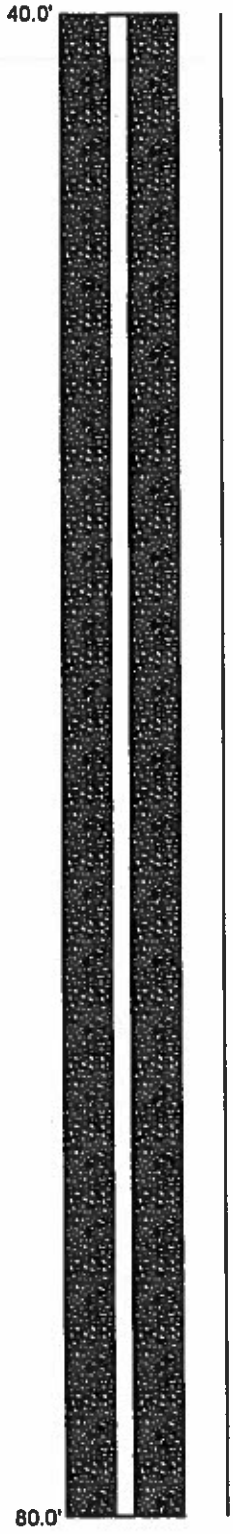
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

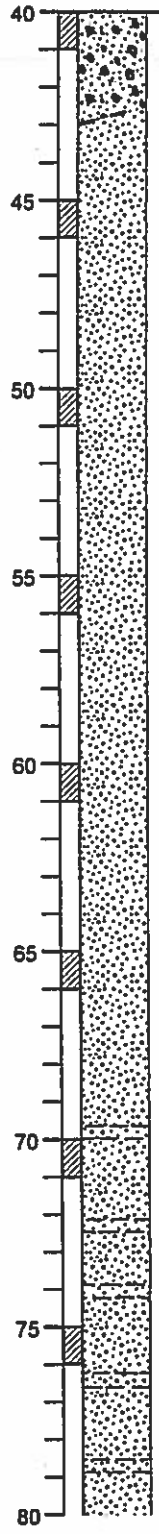
PLATE C49a

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
MW15.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 400.5 feet Date 2/1/95





Sand becomes fine to medium grained.

GRAY SAND (SP) dense, saturated; fine to medium grained, with a trace of silt.

Note: Thin brown, hard silt interbeds between 70'-80'.

AGI TECHNOLOGIES

Log of Monitoring Well MW15 (40'-80')

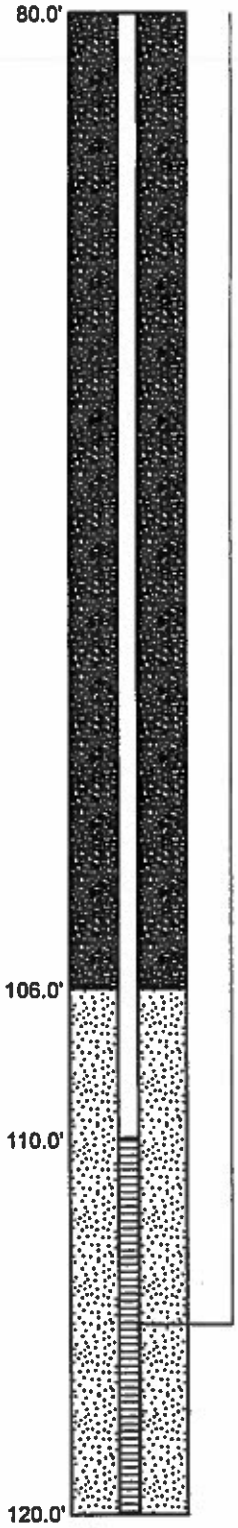
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

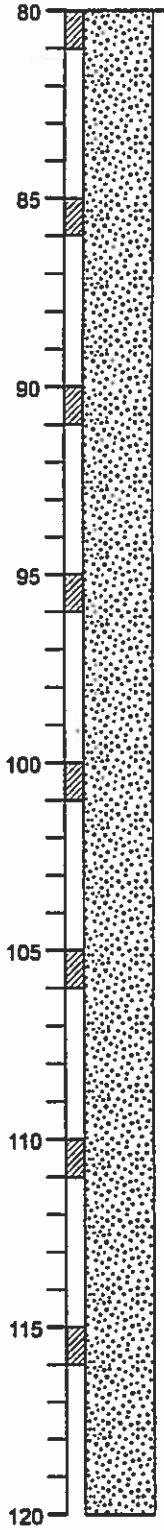
PLATE C49b

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
MW15.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 400.5 feet Date 2/1/95





With some fine gravel.

Log of Monitoring Well MW15 (80'-120')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

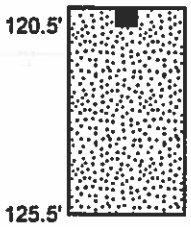
PLATE C49c

AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW15.cdr	15,512.275	JFL	21 Feb. 95	AOC	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 400.5 feet Date 2/1/95



Depth (feet) | Sample

120 — GRAY SILTY CLAY (CL) hard, moist.

125 — Boring terminated at 125.5 feet bgs.
Groundwater encountered at 25 feet bgs during drilling.

130

135

140

145

150

155

160

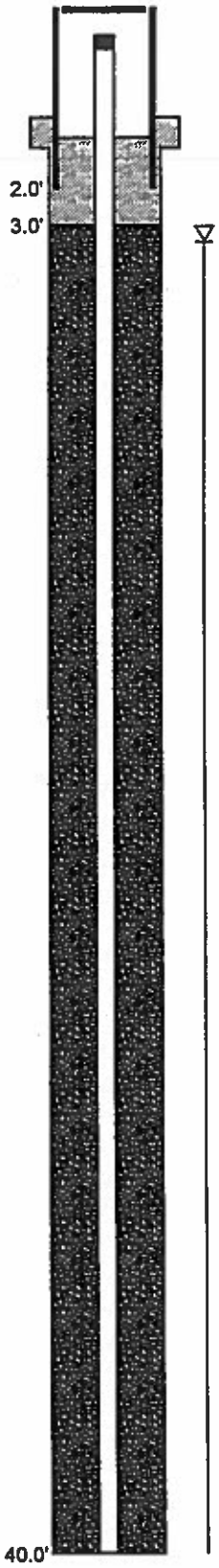
AGI TECHNOLOGIES

Log of Monitoring Well MW15 (120'-125.5')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C49d

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
MW15.cdr	15,512.275	JFL	21 Feb. 95	AD	DFF	11 May 95



Equipment AP 1000

Land Surface Elevation 382.1 feet Date 2/4/95

Depth (feet) Sample

0
5
10
15
20
25
30
35
40

BROWN SILTY SAND (SM) dense, moist; medium grained, with some fine to coarse gravel and a trace of cobbles.

BROWN SANDY GRAVEL (GP-GM) dense, moist; coarse grained, sand is fine to medium grained, with some silt.
Becomes saturated at 8 feet bgs.

GRAY SAND (SP) medium dense, saturated; fine to medium grained, with a trace of silt and fine gravel.

AGI TECHNOLOGIES

Log of Monitoring Well MW16 (0-40')

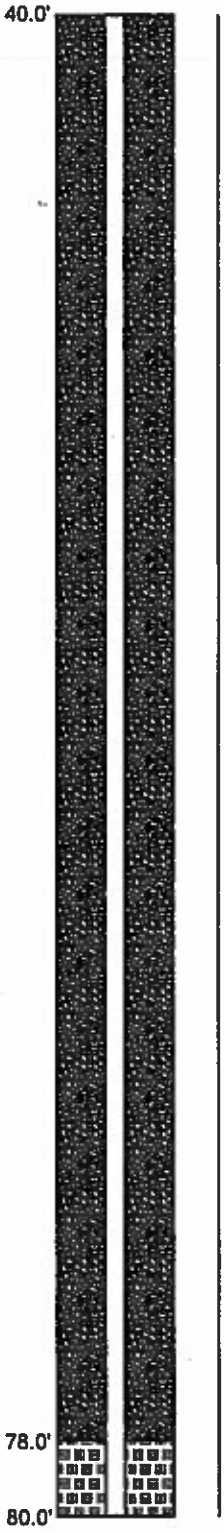
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

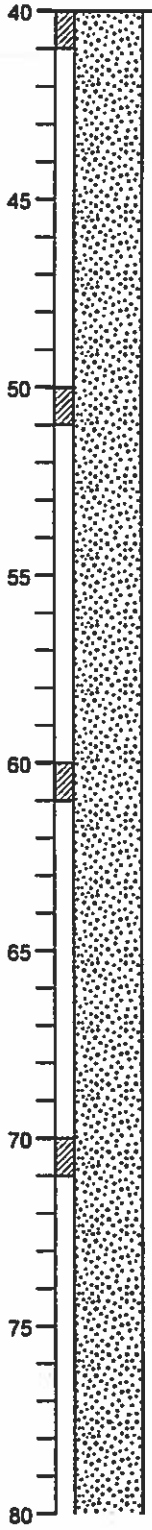
PLATE C50a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW16.cdr	15,512.275	JFL	21 Feb. 95	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 382.1 feet Date 2/4/95





GRAY SAND (SP) medium dense, saturated; fine to medium grained, with a trace of silt and fine gravel.

AGI TECHNOLOGIES

Log of Monitoring Well MW16 (40'-80')

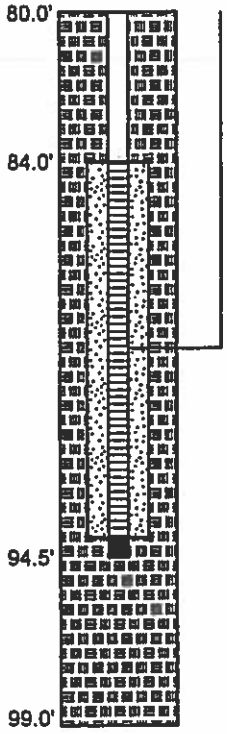
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

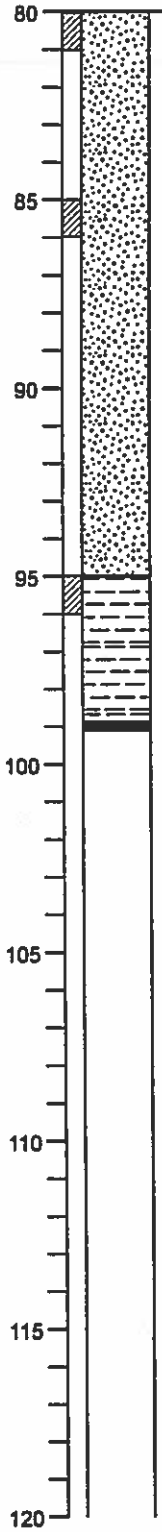
PLATE C50b

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW16.cdr	15,512.275	JFL	21 Feb. 95	AOC	DFF	11 May 95

Equipment AP 1000

Land Surface Elevation 382.1 feet Date 2/4/95





Note: Thin hard brown silt interlayers from 80 feet to 85 feet, with fine to coarse gravel.

GRAY SILT (ML) hard, moist.

Boring terminated at 99.0 feet bgs.
Groundwater encountered at 9 feet bgs during drilling.

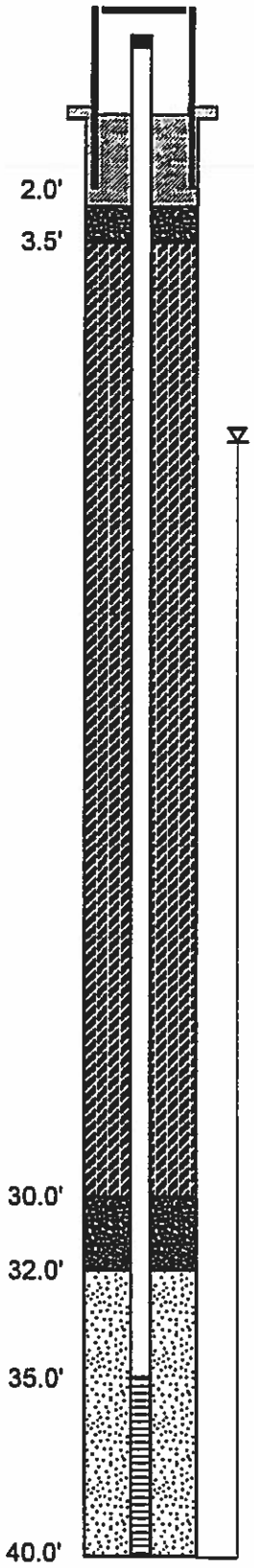
AGI TECHNOLOGIES

Log of Monitoring Well MW16 (80'-99')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C50c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
MW16.cdr	15,512.275	JFL	21 Feb. 95	ADC	DFF	11 May 95



Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 385.3 feet Date 7/11/95

Depth (feet) | Sample

0 — BROWN SANDY GRAVEL (GP-GM) very dense, moist; coarse grained, sand is medium grained, with some silt.

5 — BROWN SANDY GRAVEL (GP) very dense, wet; coarse grained, sand is medium to coarse grained, with a trace of silt.

10 — Becomes saturated.

15 — Becomes gray.

20

25 — GRAY SAND (SP) dense, saturated; fine to medium grained, with some medium to coarse gravel and a trace of silt

30

35 — With a trace of medium to coarse gravel.

40

Log of Monitoring Well MW17 (0-40')

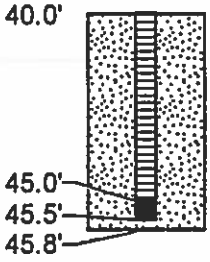
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

AGI TECHNOLOGIES

PLATE C51a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.275	BJA	11 Oct 95	ADC		

51227101.cdr



Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 385.3 feet Date 7/11/95

Depth (feet) | Sample

40
45
50
55
60
65
70
75
80

Boring terminated at 45.8 feet bgs.
Groundwater encountered at 9 feet bgs during drilling.

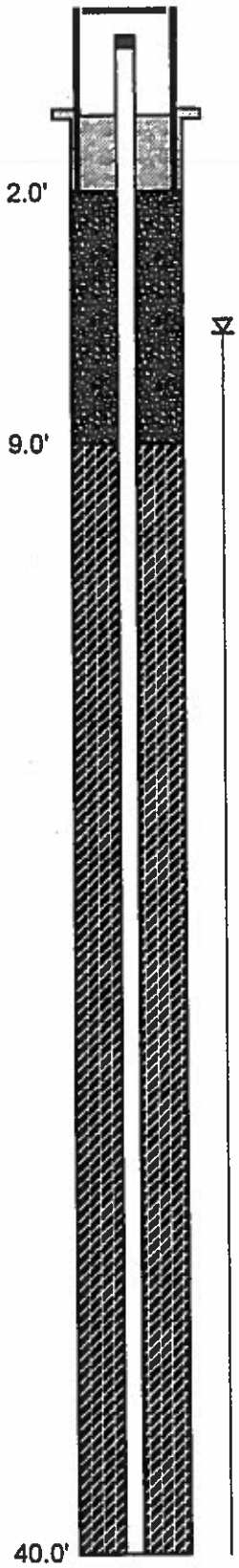
AGI TECHNOLOGIES

Log of Monitoring Well MW17 (40'-45.8')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C51b

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
51227101.cdr	15,512.275	BJA	11 Oct 95	ADC	



Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 382.5 feet Date 7/10/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP-GM) dense, moist; coarse grained, with some silt.
5		
10		GRAY SANDY GRAVEL (GP) very dense, wet, moist; sand is medium to coarse grained, with a trace of silt.
15		GRAY SAND (SP) dense, saturated; fine to medium grained, with a trace of silt.
20		Becomes medium to coarse grained.
25		
30		With some fine gravel.
35		
40		

AGI TECHNOLOGIES

Log of Monitoring Well MW18 (0-40')

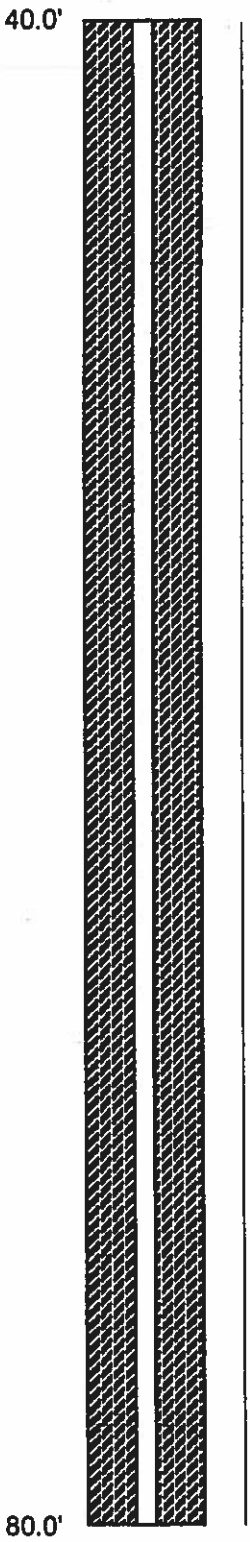
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

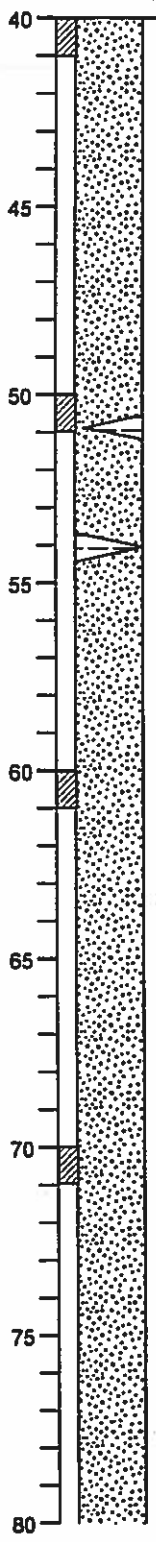
PLATE C52a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227102.cdr	15,512.275	BJA	11 Oct 95	AQ	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 382.5 feet Date 7/10/95





Becomes fine grained.

Note: Thin brown silt interbeds between 50-55 feet.

AGI TECHNOLOGIES

Log of Monitoring Well MW18 (40'-80')

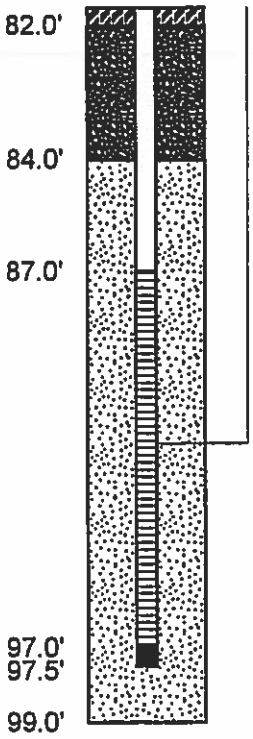
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

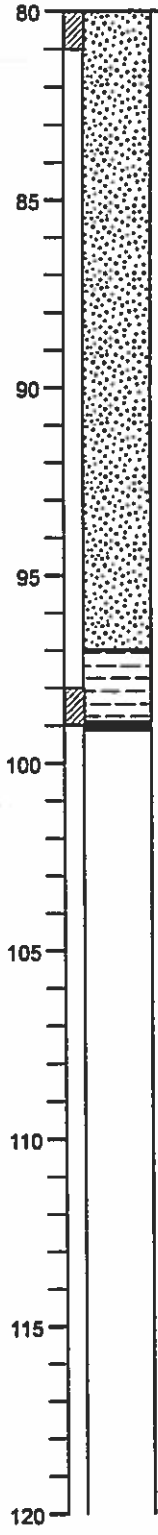
PLATE C52b

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227102.cdr	15,512.275	BJA	11 Oct 95	ADr	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 382.5 feet Date 7/10/95





GRAY SILT (ML) hard, moist.

Boring terminated at 99.0 feet bgs.
Groundwater encountered at 8 feet bgs during drilling.

AGI TECHNOLOGIES

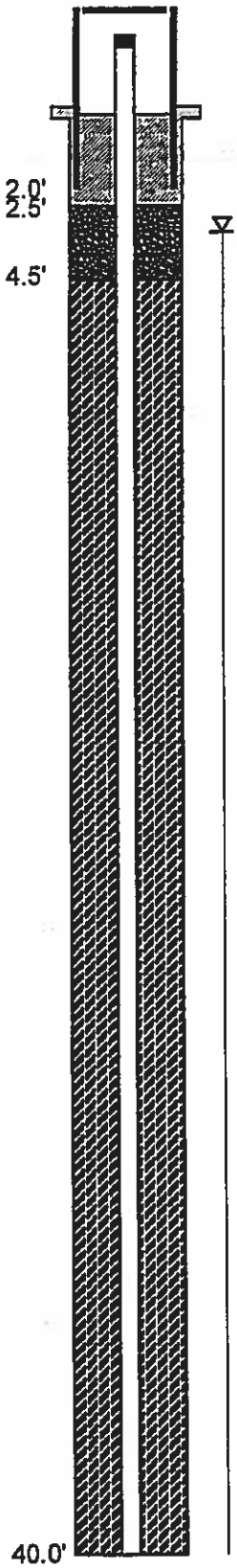
Log of Monitoring Well MW18 (80'-99')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C52c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227102.cdr	15,512.275	BJA	11 Oct 95	ADC	

Dedicator



Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 377.6 feet Date 7/18/95

Depth (feet) | Sample

0 — BROWN SANDY GRAVEL (GP-GM) very dense, moist; sand is fine to medium grained, with some silt.

Becomes wet at 3 feet below ground surface.

5

Becomes saturated.

10

15

20 — BROWN GRAY SAND (SP-SM) medium dense, saturated; with some silt and a trace of fine gravel..

25

30

35

40

AGI TECHNOLOGIES

Log of Monitoring Well MW19 (0-40')

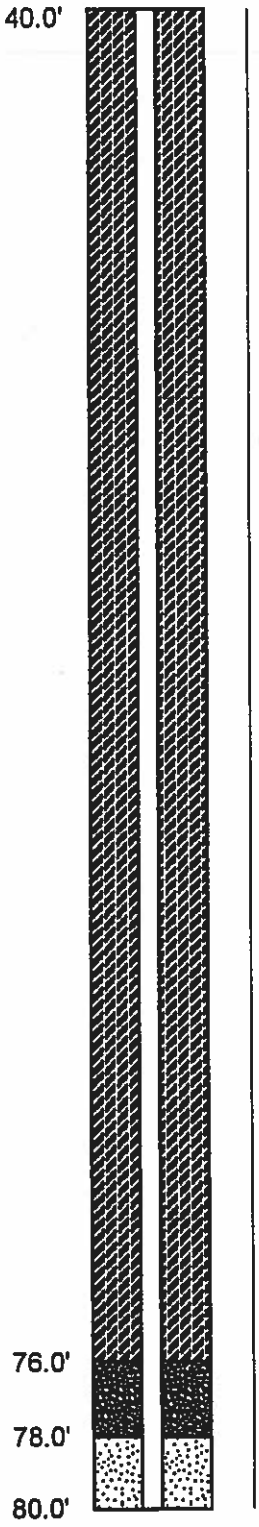
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

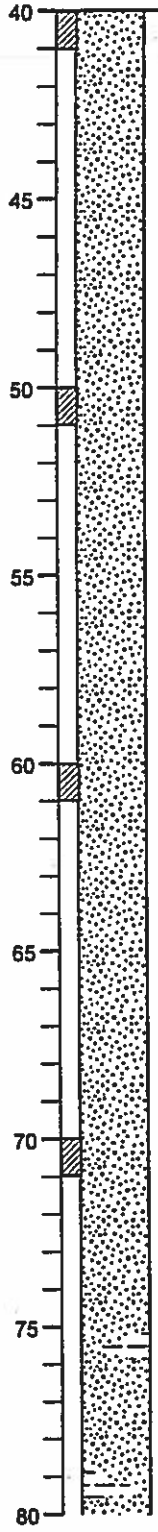
PLATE C53a

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227103.cdr	15,512.275	BJA	11 Oct 95	ADC	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 377.6 feet Date 7/18/95





With some medium to coarse gravel.

Note: Thin brown silt interbeds between 75-80 feet.

AGI TECHNOLOGIES

Log of Monitoring Well MW19 (40'-80')

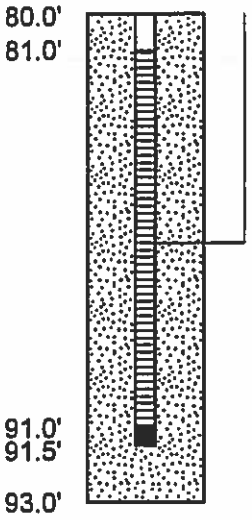
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

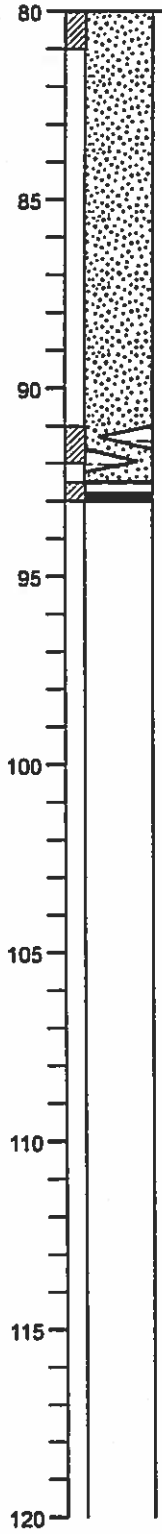
PLATE C53b

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
51227103.cdr	15,512.275	BJA	11 Oct 95	ADC	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 377.6 feet Date 7/18/95





Note: Thin brown silt interbeds between 91.5 - 92.5 feet.
GRAY SILT (ML) hard, moist.
Boring terminated at 93.0 feet bgs.
Groundwater encountered at 3 feet bgs during drilling.

AGI TECHNOLOGIES

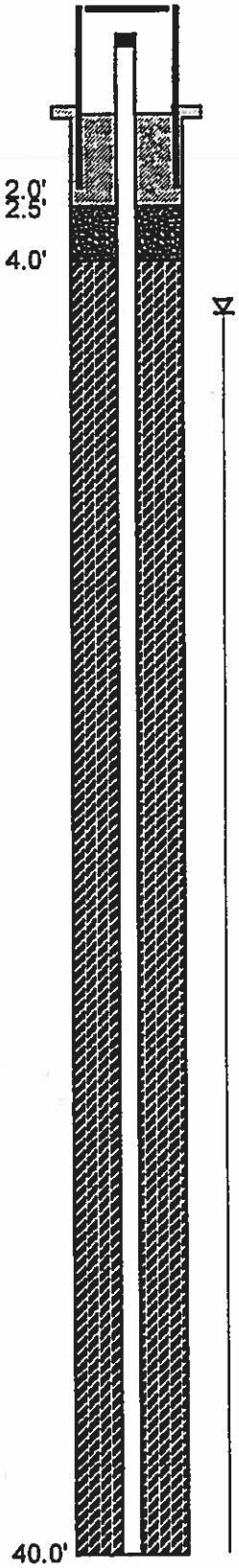
Log of Monitoring Well MW19 (80'-93')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C53c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227103.cdr	15,512.275	BJA	11 Oct 95		

Dedicator



Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 381.6 feet Date 7/14/95

Depth (feet)	Sample	
0		BROWN SANDY GRAVEL (GP-GM) very dense, moist; coarse grained, sand is fine to medium grained, with some silt.
5		Becomes wet.
10		Becomes saturated.
15		GRAY SANDY GRAVEL (GP) dense, saturated; fine to coarse grained, sand is medium to coarse grained, with a trace of silt.
20		
25		
30		BROWN GRAY SAND (SP) medium dense, saturated; fine to medium grained, with a trace of fine gravel and silt.
35		
40		

AGI TECHNOLOGIES

Log of Monitoring Well MW 20 (0-40')

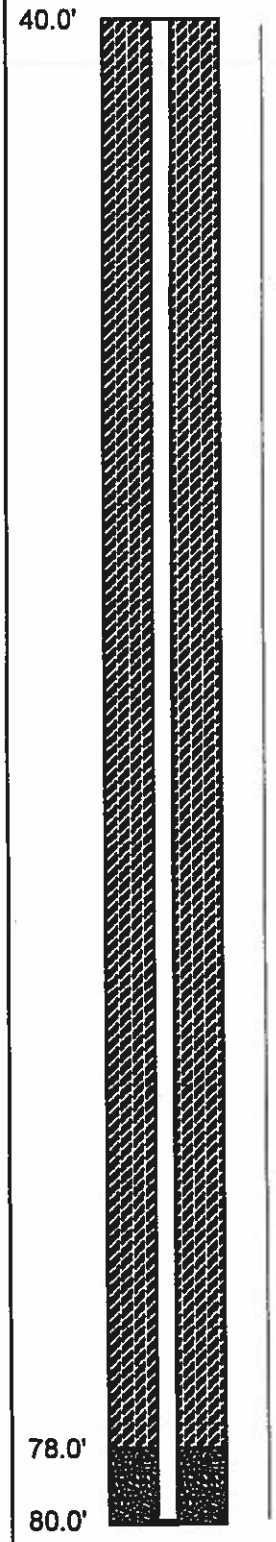
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

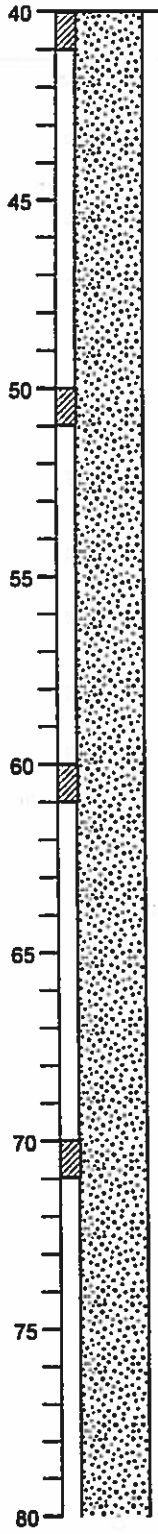
PLATE **C54a**

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227104.cdr	15,512.275	BJA	11 Oct 95	ADC	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 381.6 feet Date 7/14/95





Becomes gray.

Log of Monitoring Well MW 20 (40'-80')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

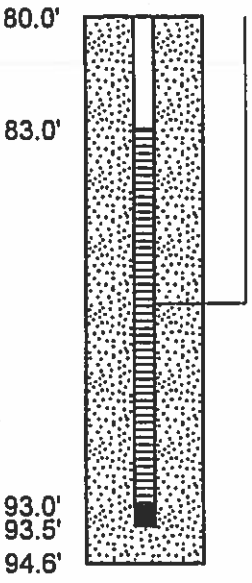
PLATE C54b

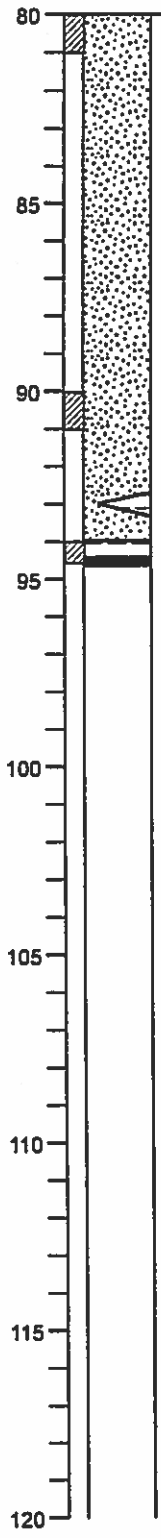
AGI TECHNOLOGIES

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227104.cdr	15,512.275	BJA	11 Oct 95	ADC	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 381.6 feet Date 7/14/95





Note: Thin brown silt interbeds between 92 - 94 feet.

GRAY SILT (ML) hard, moist.
Boring terminated at 94.6 feet bgs.
Groundwater encountered at 6 feet bgs during drilling.

AGI TECHNOLOGIES

Log of Monitoring Well MW 20 (80'-94.6')

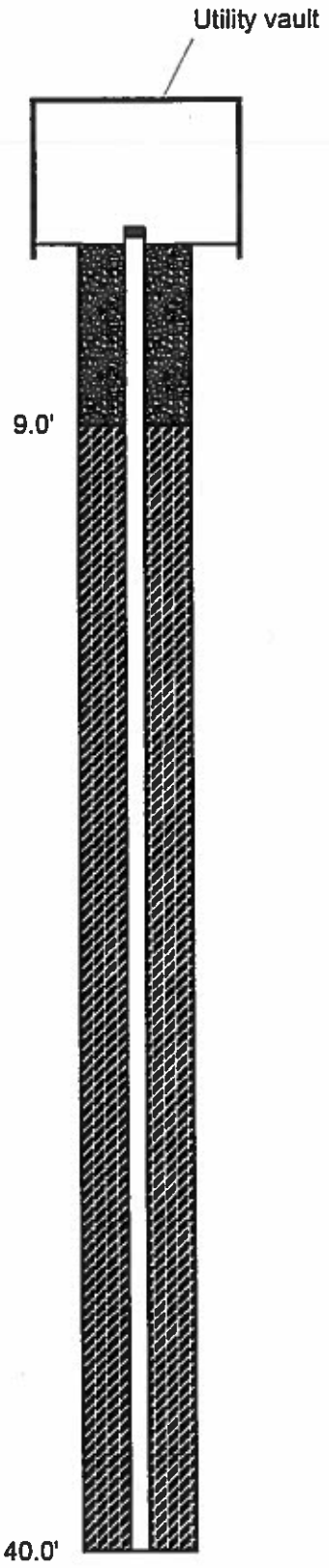
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

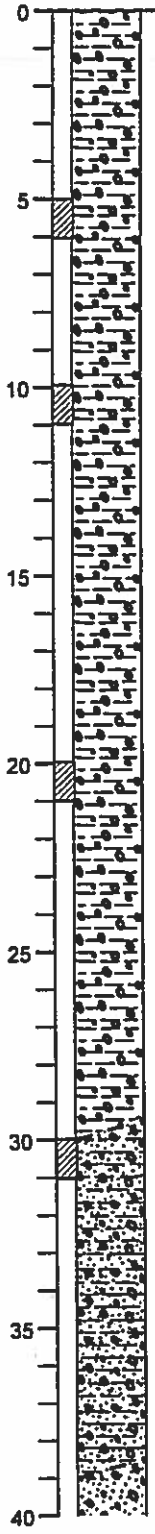
PLATE C54c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227104.cdr	15,512.275	BJA	11 Oct 95		

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 427 feet Date 7/25/95





BROWN SILTY GRAVEL (GM) very dense, moist; coarse grained, with a trace of fine to medium grained sand.

With some cobbles.

BROWN SANDY GRAVEL (GP-GM) very dense, moist; coarse grained, sand is medium to coarse grained with some silt.

AGI TECHNOLOGIES

Log of Monitoring Well MW21 (0-40')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

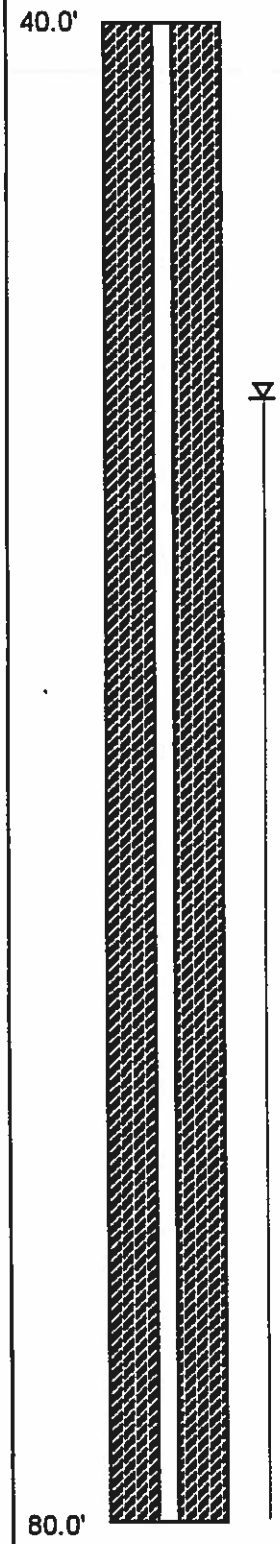
PLATE C55a

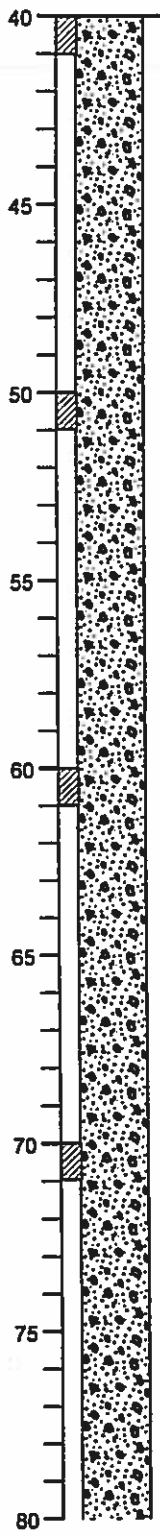
PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.275	BJA	11 Oct 95	ADC		

51227105.cdr

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 427 feet Date 7/25/95





GRAY SANDY GRAVEL (GP) medium dense, moist; coarse grained, sand is medium to coarse grained, with a trace of silt.

Becomes wet.

Becomes saturated.

With some cobbles.

AGI TECHNOLOGIES

Log of Monitoring Well MW 21 (40'-80')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

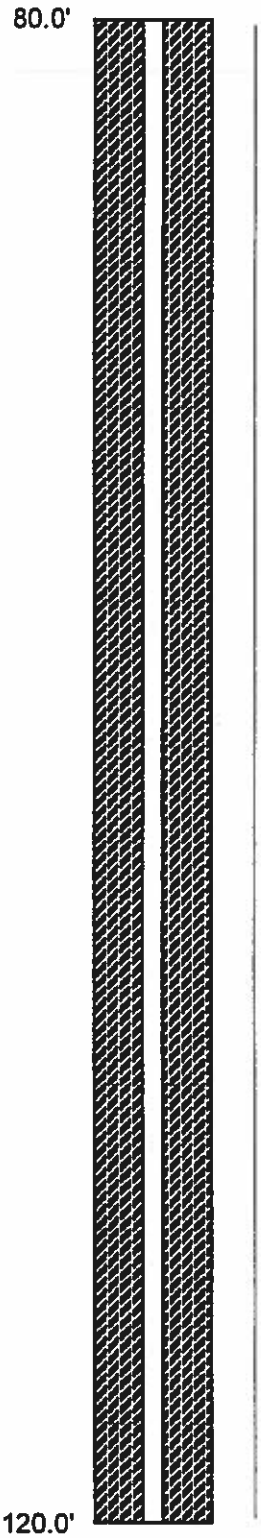
PLATE C55b

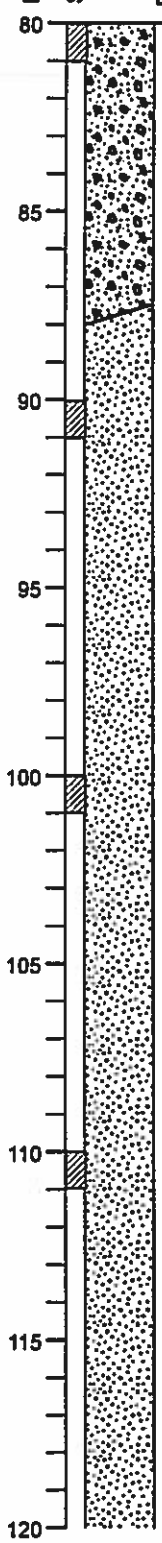
PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
15,512.275	BJA	11 Oct 95	ADC		

51227105.cdr

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 427 feet Date 7/25/95





GRAY SAND (SP) medium dense, saturated; fine to medium grained, with a trace of silt and fine gravel.

AGI TECHNOLOGIES

Log of Monitoring Well MW 21 (80'-120')

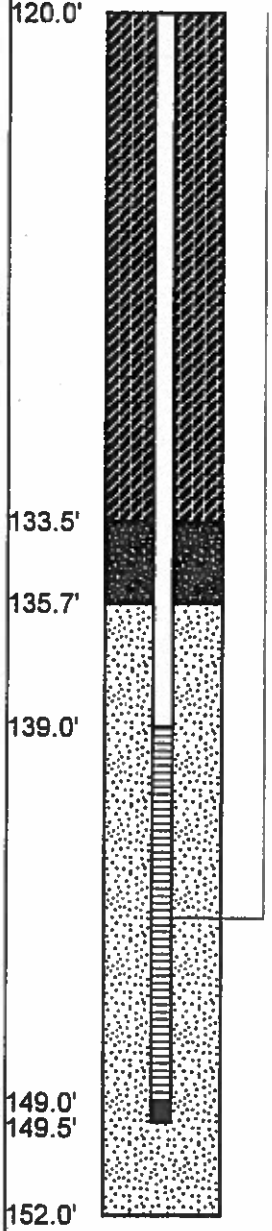
Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

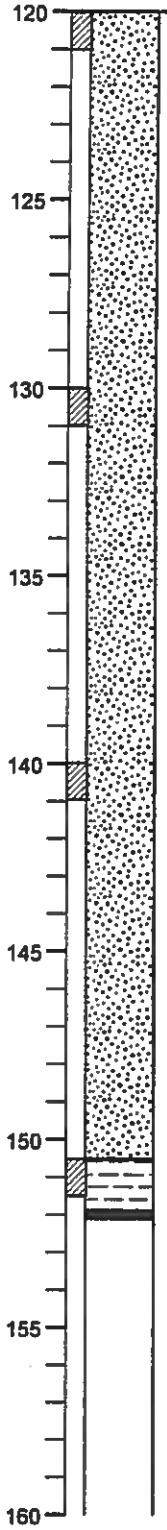
PLATE C55c

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227105.cdr	15,512.275	BJA	11 Oct 95	ADC	

Equipment Fairbanks Cable Tool Drill

Land Surface Elevation 427 feet Date 7/25/95





GRAY SILT (ML) hard, moist.
Boring terminated at 152 feet bgs.
Groundwater encountered at 50 feet bgs during drilling.

AGI TECHNOLOGIES

Log of Monitoring Well MW 21 (120' - 152')

Snohomish Co. Public Works Dept./McCollum Park and Former Emander Landfill RI
Snohomish County, Washington

PLATE C55d

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
51227105.cdr	15,512.275	BJA	11 Oct 95	ADC	

Attachment 4

Adjacent and Nearby Property Parcel Identification and Ownership

Table 1. Adjacent and Nearby Property Parcel Identification and Ownership

Parcel No.	Parcel ID	Property Address	Owner
P1	28053000300400	511 128TH ST SE	F & A ENTERPRISES II LLC
P2	28053000300100	UNKNOWN	UNKNOWN
P3	574100000106	823 128TH ST SE UNIT 2	SIMON A P
	574100000102	823 128TH ST SE	823 128TH STREET LLC
	574100000109	823 128TH ST SE UNIT 1	CORTEZ JOSE A GUZMAN
P4	574100000104	823 128TH ST SE UNIT 3	INGLE SHAWN C
	574100000101	823 128TH ST SE	823 128TH STREET LLC
P5	574100000107	823 128TH ST SE UNIT 4	SIMON JOSE LUIS
	574100000103	823 128TH ST SE	823 128TH STREET LLC
	574100000108	823 128TH ST SE UNIT 5	JONES MICHAEL L
P6	574100000200	823 128TH ST SE	823 128TH STREET LLC
	574100000201	823 128TH ST SE UNIT 6	CANO MERINO RICARDO
	574100000202	823 128TH ST SE UNIT 7	GARCIA JOSE ALBERTO PUZU
P7	574100000301	823 128TH ST SE UNIT 8	GARCIA NAJERA AMAPOLITA & BAUTISTA ERIC
	574100000300	823 128TH ST SE	823 128TH STREET LLC
	574100000302	823 128TH ST SE UNIT 9	VALDIVIA ZARAGOZA EDUARDO E
P8	574100000401	823 128TH ST SE	823 128TH STREET LLC
	574100000405	823 128TH ST SE SPC 10	CRUZ GUILLERMO REYES
P9	574100000402	907 128TH ST SE	BENNETT DAVID PATRICK
P10	574100000600	915 ELGIN WAY	HONG JONG K & HEE SOOK
P11	574100009300	UNKNOWN	ASPNES MARLYS A SURVIVOR'S TRUST
P12	574100009100	UNKNOWN	RIVERA JUAN CARLOS RIVERA
P13	574100008801	UNKNOWN	RUDEEN DEVELOPMENT LLC
P14	574100008401	UNKNOWN	ESSEX MONTERRA LLC
P15	28053100204400	13401 DUMAS RD	ESSEX MONTERRA LLC
P16	28053100203800	UNKNOWN	KELLY FAMILY PARTNERSHIP
P17	28053100203601	13510 NORTH CREEK DR	HEATHERWOOD I LLC
	28053100203600	13510 NORTH CREEK DR	HEATHERWOOD I LLC
P18	28053100203500	UNKNOWN	ADOPT A STREAM FOUNDATION

Please note that the parcels are identified in **Figure 3, Attachment 1**.