

VANDERBURGH COUNTY SURVEYOR'S OFFICE
Room 325 Civic Center Complex
One Northwest Martin Luther King, Jr. Boulevard
Evansville, Indiana 47708-1833
Phone: (812) 435-5210
FAX: (812) 435-5023

February 6, 2002

Vanderburgh County SWCD
12445 Highway 41 North
Evansville, IN 47725

Attn:
Norma Duckworth, Water Quality Specialist
Mike Wathen, Resource Conservation Specialist

RE: Fawn Creek Subdivision (previously Leo's Place and Ashley Place II)

On Tuesday, February 4, 2003, at or about 11:00 am, the county surveyor visited Fawn Creek Subdivision at the north end of Eichkoff Road. The purpose of the visit was to check existing conditions of the subdivision, and ascertain progress with grading, drainage facilities, and erosion control measures.

Erosion control throughout the project is either non-existent or ineffective as of February 4, 2003. The majority of the silt fence installed along the front lot lines adjacent to the curbs is either too high off the ground to intercept silt, or had blown or toppled over.

The silt fence at the base of the hill intended to intercept silt before it runs into the creek has toppled over and silt is running across the fence and directly into the creek.

Straw mulch, apparently loosely applied to the ground surface, has washed under the improperly installed silt fencing, and is either laying about in the street, or clogging drain inlets and drainage pipes. Unattended rock and sand bags have burst, and no longer effectively protect street inlets. The entire system of erosion control measures at Fawn Creek Subdivision is in shambles.

The parties responsible for installing the erosion and sediment control measures at Fawn Creek should be held to the same standards as all other developers in Vanderburgh County. Right now, valuable on-site and off-site natural resources are adversely affected by siltation due to improperly installed and negligently maintained control measures.

Respectfully submitted



Bill Jeffers

**Bill Jeffers, Vanderburgh County Surveyor
Doug McDonald, P.E., L.S., Chief Deputy Surveyor**

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February 13, 2002

Mr. Tom Keith
Easley Engineering
1133 W. Mill Road
Evansville, IN 47710

RE: LEO'S PLACE DRAINAGE PLAN

Dear Tom:

Due to time constraints we both operate under, it may benefit us both if I transmit review notes to you via fax as I complete them in groups.

I will try to keep each transmission grouped by issue. For example, the first group will be regarding the detention basin. The second will be regarding existing pipes and structures. Those that follow will relate to easements, proposed structures, and so on.

Since your initial submittal was so extensive, well organized, and complete for a "preliminary" plan, I will place a note next to each comment whether it be necessary to address the issue in the preliminary or the final plan. You then may decide whether you will include your response to each of my comments in your preliminary submittal or final submittal.

Our office appreciates the quality of your initial submittal, and looks forward to a plan that fully satisfies the requirements of our drainage ordinance, and addresses all safety concerns related to drainage facilities in densely populated residential projects.

Sincerely,



Bill Jeffers

LEO'S PLACE DRAINAGE PLAN for FEB. 25, 2002

1. PRELIMINARY: Assign ownership of "Lake Parcel" in such a way that tax notices, weed notices, maintenance and repair assignments, etc. may be sent to appropriate party. Final approval will depend upon clearly defined and feasible method of assigning maintenance, repair, and ownership of "Lake Lot."
2. PRELIMINARY: Depict Lake Maintenance Easement, per drainage ordinance, so that the easement encompasses entire detention basin, attendant earthworks, 10-foot wide maintenance pathway, inletting and outletting structures.
3. PRELIMINARY: Reconfigure lots adjacent to the basin so they are sized to account for the required 50-foot separation between dwellings and drainage basins per ordinance.
4. FINAL: Provide results of soil borings and soil investigations to prove stability of the lake's side slopes as designed. There is some serious concern that if the frangipane plane is not horizontal, the 2:1 slope may become unstable and undermine the roadway or adjacent yards.

If the soil investigation shows the need, we will request 4:1 slope extends to bottom of lake for safety and integrity reasons.

5. FINAL: Provide addition of guardrail or other standard roadway protection separation alongside lake.

We will accept any method in accordance with INDOT standards for roadways in close proximity to standing bodies of water relevant to this particular situation so long as county engineer approves it in street plans.

6. FINAL: Show details on the grading plan of the 10-foot wide, flat (10:1 or flatter) maintenance pathway totally around the basin in accordance with ordinance requirement.
 7. FINAL: Due to volumes, velocities, pipe and land grades, detail all erosion control methods in accordance with either ordinance requirements or in accordance with Indiana Handbook on Erosion Control for ALL PIPES AND CHANNELS entering the detention basin.
- Land grades and velocities at several locations indicate high potential for scour and severe erosion particularly where pipes and overland channels enter lake.
8. FINAL: Complete all details of controlled release structure shown in you plan. Several dimensions, particularly in the structure's foundation, appear omitted.
 9. FINAL: Reconcile contour grades shown on grading plan with more exact elevations given for pool, controlled release, and spillway elevations given in details.

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February 14, 2002

Mr. Tom Keith
Easley Engineering
1133 W. Mill Road
Evansville, IN 47710

RE: LEO'S PLACE DRAINAGE PLAN

Dear Tom:

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I will try to keep each transmission grouped by issue. For example, the first group will be regarding the detention basin. The second will be regarding existing pipes and structures. Those that follow will relate to easements, proposed structures, and so on.

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Sincerely,


Bill Jeffers

1B. PRELIM/FINAL: The existing primary outlet structures at the intersection of Eichoff Road and the entrance to Ashley Place require specific corrections, repair, and upgrading to handle present flow. That and additional details will be required to handle additional flow from 500 feet additional roadway and off-site drainage from western yards of Ashley Place.

2B. PRELIM/FINAL: Give locations and designate removal of all pipes existing within proposed Leo's Place; with replacement as required by standard pipe, channel, inlet, etc., installations as needed.

In particular: 8' Dia. boiler pipe to be moved outside project limits, and off-site lake spillway pipe to be intercepted at or east of project and inletted into standard structures with an adequate capacity for all anticipated overflow up to and including Q-100.

All other existing pipes should be analysed for need as per oil lease, gas pipeline, and cemetery access.

3B. PRELIMINARY: All combination drainage and public utility easements must be labeled as "Drainage and Underground Public Utility Easement" (D&UGPUE) accompanied by a plat notice detailing the prohibition of above ground utility installations in these easements.

This is standard procedure for all subdivisions and plats and the notice is found on all recent plats.

4B: PRELIMINARY: Correctly include and depict "Drainage Easements" wherever drainage pipes, basins, and other facilities exist outside of public right-of-way as required by ordinance. Examples of omissions include but are not limited to: P.U.E. north of basin, pipe # 02, and the 8' x 4' box on the west side of the road. There are other instances of this violation you may wish to discover and correct.

5B. FINAL: Give all specific details of swale and ditch construction in complete compliance with ordinance requirements regarding seeding, staked sod, rip rap, etc., all per grade of finished swale.

Assign specific erosion control measures and materials for constructed ditches and swales. The only variances to the requirements of the ordinance must otherwise conform to methods given in the Indiana Handbook on Erosion Control for Developing Areas.

Remind developer that all swales, ditches, basins, embankments, etc., must be in stable condition prior to releasing letter of credit and turning facilities over to the homeowners. Additionally there is a one-year guarantee period.

Public utility installation should be coordinated with swale and ditch construction and trench subsidence due to improper backfilling of utilities and drainage pipes will not be grounds for relaxation of drainage ordinance requirements regarding stable ditches free from erosion.



CIVIL ENGINEERS
LAND SURVEYORS

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RALPH A. EASLEY, JR. P. E.

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www.easleyengineering.com

February 15, 2002

Mr. Bill Jeffers
Vanderburgh County Surveyor's Office
Civic Center Complex
Martin Luther King Jr. Blvd.
Evansville, Indiana 477

RE: ~~_____~~ Place

Dear Bill

I have been reviewing and making modifications, clarification, or corrections concerning those issues which you have raised in your letter of February 14. Due to time constraints, I am forced to concentrate my attention on those items labeled "Preliminary". This letter is meant to detail what modifications we are making to the plans so that we don't come down to the last minute and find that there is a misunderstanding between our offices.

1. **OWNERSHIP OF LAKE PARCEL:** - This parcel has been labeled on the Primary Plat as follows: **THE LAKE PARCEL IS NOT A BUILDABLE LOT AND IS PROVIDED AS A STORM WATER DETENTION FACILITY TO BE OWNED BY SAID HOME OWNERS ASSOCIATION. MAINTENANCE FOR THE LAKE SHALL BE THE RESPONSIBILITY OF THE HOME OWNERS ASSOCIATION TO THE EXTENT OF THE LAKE MAINTENANCE EASEMENT.**" Those portions of the lots which extend into the lake area will be provided lake maintenance by the home owners association. The owners of these lots will be free to make improvements to the shore line so long as it is in keeping with the general maintenance and function of the lake.

2. Lake Maintenance Easement has been modified to encompass the entire detention facility, attendant earthworks, pathway with a minimum width of 10 feet, and the inletting and outletting structures.

3. **LOT RECONFIGURATION:** This office has sent you a fax on February 14th detailing the lot reconfiguration that we believe meets the intention of the drainage ordinance and are awaiting your comments.

1B. INTERSECTION OF EICHOFF AND ASHLEY PLACE ENTRANCE: No additional flow has been directed into any of the present drainage system of Ashley Place. Additional Street Drain Inlets, Storm Sewers and Outlet Structures have been sized and are shown on the plans.

2B. **EXISTING 8' BOILER PIPE:** The developer stated at the subdivision review meeting that it is his intention to relocate this culvert outside of the subdivision boundaries so that it can continue to serve as a field entrance to the benefit of Mr. Nurrenbern. Frankly, this pipe has me confused. It was my understanding that we both agreed that this pipe had sufficient capacity but that it fell far short of meeting any County standards; that it could remain in place if was agreed that

02/15/02 FRI 17:18 [TX/RX NO 6348] 001

neither the County or the Home Owners Association would be responsible for this culvert and that any required maintenance or replacement would be performed at the sole cost and responsibility of those deriving a benefit from its use.

All other culverts (those along the west side of the property) will be labeled to be removed. These culverts were in place solely for the gravel drive serving the oil well, which has been shut down. The gas pipeline indicated on the plans crosses many properties besides this one and does not have a service road running along side of it on these properties.

In regards to the cemetery, It is my understanding that there are only two graves on the site and they have not been attended or maintained by any decedents. It is our opinion that by providing a 5' pedestrian ingress/egress easement anyone with an interest in visiting or maintaining this site will be able to. (This opinion is based on the fact that my grandfather is buried in a small cemetery in the middle of a cow pasture in Kentucky. The family has ingress/egress rights only for visitation and maintenance. This has served our needs sufficiently.)

3B. COMBINATION EASEMENTS: All combination easements will be re-labeled as directed. - It is sometimes difficult to keep pace with every jurisdictions standards and practices.

4B. NOTATION OF DRAINAGE EASEMENTS: Every effort is made to assure that all drainage structures are located within designated drainage easements. It is understandable that occasionally some are missed and we appreciate your pointing those out to us.

If you have any questions or comments, please feel free to call.

Sincerely,



Thomas J. Keith
Staff Engineer
Andy Easley Engineering, Inc.

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**SUBDIVISION
STAFF FIELD REPORT
February 21, 2002**

*Fawn
Creek*

Docket Number: 4-S-2002
Name of Subdivision: LEO'S PLACE
Location: East of where Eickhoff Road ends, north of Hogue Road
Owners: Raymond and Virginia Nurrenbern; Doris, Richard and
Bernice Deutsch; Jack and Sandra Worthington; and
Developer: Leo Sons Development , LLC
Representative: Andy Easley
Size of development: 24.42 acres
Number of lots: 62 and 2 outlots for a landscape buffer and a lake

LAND USE

Existing zoning: Agricultural
Existing land use: Vacant
Proposed land use: 62-Lot Residential Subdivision
Comprehensive Plan: The Future Land Use - 2015 Map in the Comprehensive
Plan recommends this area for Residential uses.

GENERAL INFORMATION

BACKGROUND/HISTORY: A majority of the proposed Leo's Place subdivision is on the same site as the Ashley Place Phase 2 subdivision which was approved by the Area Planning Commission in March, 2000. However, since this subdivision was not recorded within the 18 month period provided in the Code, the primary approval has expired. The Subdivision Review Committee reviewed this plat on February 12 , 2002.

FLOOD ZONE: A portion of this site lies within the 100-year floodplain and the flood boundary contour is delineated on the plat. A creek is located on the site which runs from the northeast corner to the southwest corner of this property.

The Building Commission comments request that the floodplain area along the creek be identified on the plat since it lies within 150 ft. of the site. They also require that the minimum flood protection grade (FPG) elevation be shown on the plat for structures on all affected lots. The lowest finished floor elevation must be at least 2 ft. above the 100-year flood level.

UTILITIES:

Water City water is available by extension and a Letter of Credit is required.
Sewer City sewer is available by extension and a Letter of Credit is required.

Water and Sewer Utility Engineering Department comments are:
"Please contact Utility Engineering about availability of water and sewer."

TRAFFIC/STREET/ACCESS: The plat involves the extensions of Eickhoff Road and Alyssum Drive which will connect to the proposed internal roads on the site. These internal roads will be designed in a loop configuration. Alyssum Drive is a cul-de-sac street in the adjacent Ashley Place, Section D subdivision. The extension of this street will provide an interconnection between these adjacent developments. An existing oil well is shown in the right-of-way for the proposed loop road on the plat. The applicant

plans to cap this well. Due to the density of lots to be platted, installation of sidewalks is recommended by the Subdivision Review Committee. This recommendation includes a sidewalk along the east side of Eickhoff Road to connect with the Ashley Place subdivision.

County Engineer comments are as follows:

- 1) It appears that a guardrail may be needed along the retention pond and on the north side of Eickhoff Road where Eickhoff Road curves and turns into this subdivision.
- 2) Precast concrete manhole structures will be required instead of the field-fabricated structures that are currently shown on the street plan details.
- 3) Provide handicap ramps for sidewalks at all street intersections.

EUTS comments reiterate the recommendation of the Subdivision Review Committee that a sidewalk be installed on the east side of Eickhoff Road to tie in with Ashley Place.

DRAINAGE PLAN/APPROVAL:

Preliminary approval of the drainage plan by the Drainage Board is required prior to hearing by the Area Plan Commission.

COMMENTS/ADDITIONAL INFORMATION

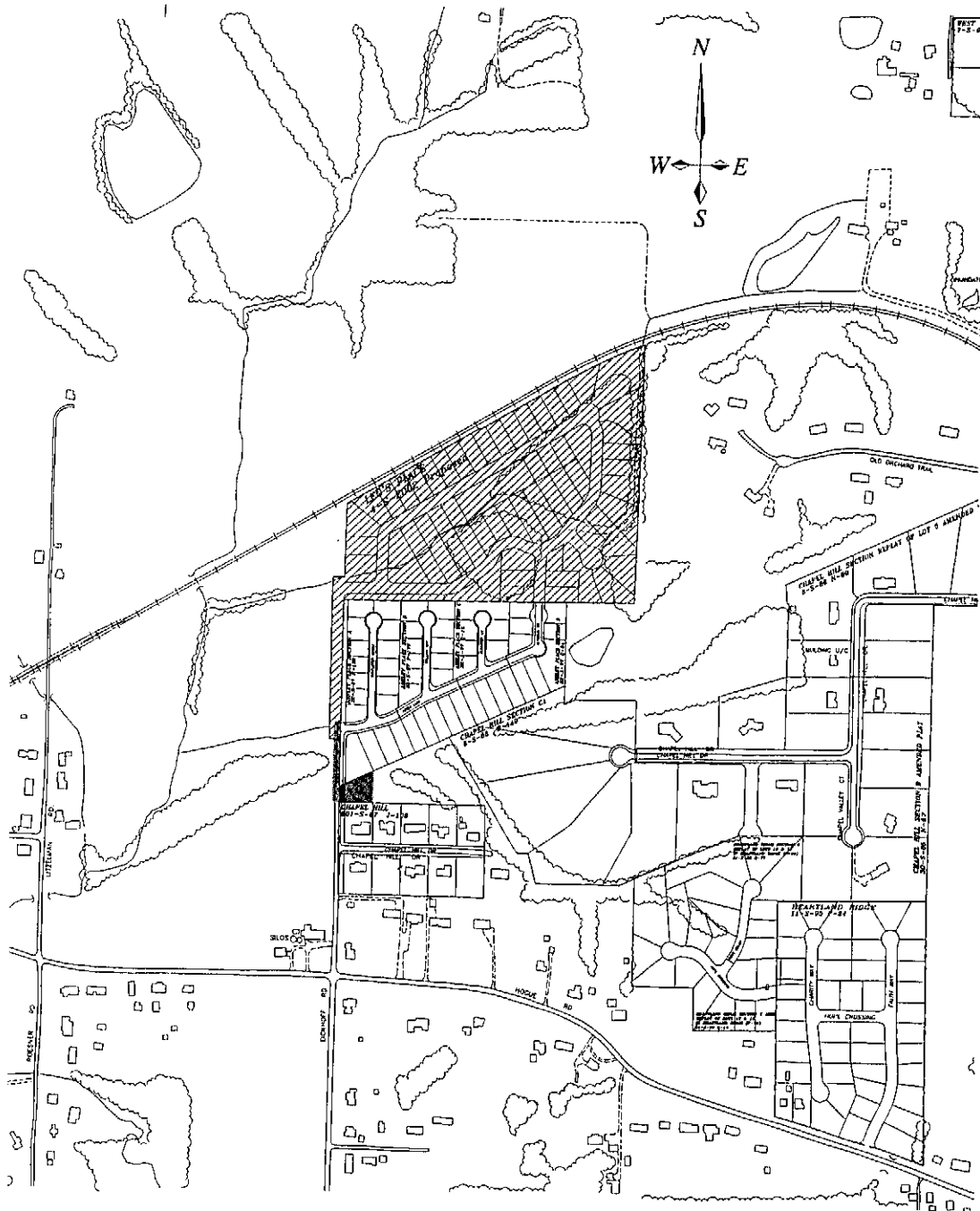
After the Subdivision Review Committee meeting, a revised plat was submitted which made several changes including the addition of notes addressing outlot / lake parcel ownership and maintenance concerns.

The comments from the County Engineer also included the following:

- 1) Provide copies of all documentation showing that the oil well has been plugged and capped in accordance with all applicable regulations.
- 2) Provide copies of the documents that extinguish the lease-holder interests in the oil well.
- 3) Provide an environmental audit of the property around the oil well to verify if any contamination exists around the well.
- 4) The owner of the pipeline on the east side of the subdivision needs to be identified on the plat. The developer should contact the owner of the pipeline to see if any plat restrictions are necessary for the pipeline easement.

Prior to recording, the plat should be revised as requested by the Subdivision Review Committee to identify the owner of the pipeline easement; and to reference the recording information for the easement agreement. The revised plat has added the following language requested by Subdivision Review concerning the pipeline easement, "NOTE: NO FENCES ARE ALLOWED TO EXTEND INTO OR CROSS THE 25' OIL PIPELINE EASEMENT AS PER THE COVENANTS AND RESTRICTIONS." This statement should be revised to also prohibit outbuildings in the pipeline easement. Does this note need to include or reference any additional plat restrictions to satisfy the pipeline owner?

The applicant should submit and obtain approval of an erosion control plan before commencing construction activities. The plan should focus particular attention to the Zainesville soils on the east side of the subdivision.



Map# CO-39

AREA PLAN COMMISSION

Leo's Place SUBDIVISION LOCATION MAP

Perry Township NE/4 of Section 19 T6S/R11W

SCALE Not to Scale DRAWN BY DATE 02/11/2002 CHECK'D BY

Evansville-Vanderburgh County

CAD NO. 4-S-2002

NO.	REVISION	DATE

LEO'S PLACE

RAILROAD

EICHOFF ROAD



**Bill Jeffers, Vanderburgh County Surveyor
Doug McDonald, P.E., L.S., Chief Deputy Surveyor**

*Tom
Creek*

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March 12, 2002

Mr. Tom Keith
Easley Engineering
1133 West Mill Road
Evansville, Indiana 47710

RE: LEO'S PLACE SUB. FINAL DRAINAGE PLAN

Dear Tom:

Attached please find comments regarding revisions, inclusions, and other information required to complete the review and recommendation of the Final Drainage Plan for Leo's Place Subdivision.

The Board meets next at about 7:00 pm, local time, Monday, March 25, 2002.

The county surveyor needs your plan to review by Monday, March 18, 2002.

Sincerely,


Bill Jeffers

FINAL DRAINAGE PLAN REQUIREMENTS FOR LEO'S SUB:

RE: HILLSIDE DEVELOPMENT:

Hillside development requires special consideration with regard to lot size and slope stability to protect downhill areas from landslides and erosion of unstable soil, particularly where building sites will be benched into the hillsides.

(Source: Subdivision Code; Section 16.12.070C)

Slope gradients can be grouped into three general ranges of soil erodibility:

- 0 – 6% low to moderate erosion hazard
- 6 – 12% moderate to high erosion hazard
- over 12% severe erosion hazard

Within these slope gradient ranges, the greater the slope length, the greater the erosion hazard. As a general rule, the erosion hazard becomes critical if the slope length exceeds the following values:

- 0 – 6% 200 feet
- 6 – 12 % 100 feet
- over 12 % 50 feet

(Source: Rule 5 Guidelines for Analyzing Topographic Data)

REQUIREMENTS FOR ADDRESSING HILLSIDE DEVELOPMENT:

1. Accurately depict all lot grading required to create building sites in accordance with all requirements relative to the developer's intent as to house sizes and locations; building lot dimensions; road and drainage facilities locations; building code requirements; and all other applicable considerations.

2. On the Drainage Plan, describe and depict the areas of the site that have potential for moderate, high, severe, or critical erosion problems using the guidelines given above.

3. On the Drainage Plan, describe and depict the type, material, purpose, specification, and installation each permanent stabilization practice to be installed to achieve stability; particularly where building sites are benched into the hillsides, and where earthwork increases the potential for critical erosion problems using the guidelines given above.

4. On the Drainage Plan, describe and depict the type, material, purpose, specification and installation of each channel stabilization practice, in addition to or exceeding normal requirements, to address potential effects liable to occur where drainage channels intercept sheet or concentrated flow from land with "critical" gradients (see guidelines above) regardless of the flow line gradient of the receiving channel.

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Pg 1

REQUIREMENTS FOR DRAINAGE CHANNELS:

5. On the Drainage Plan, for areas not considered to have "critical" gradients, describe and depict the type, material, purpose, specification and installation of each channel stabilization practice normally required by county drainage ordinance as follows:

- a) Channels with flow line profile gradients from 0.0% – 0.8% shall have approved concrete liners.
- b) Channels with flow line profile gradients from 0.81% – 2.0 % shall have mulch seeded earthen channels protected by erosion control blankets; or approved concrete liners.
- c) Channels with flow line profile gradients from 2.1% to 6.0% shall have staked sod earthen channels; or approved concrete liners.
- d) Channels with flow line profile gradients above 6.0% shall have riprap lined channels; or approved concrete liners.

NOTE: Riprap-lined channels (practice 3.32) are intercepting, open conveyance channels ONLY.

Rock chutes (practice 3.41) provide additional protection measures required for channels conveying discharge from the ends of concrete flumes or pipes, and other high velocity discharge sources.

Concrete block chutes (practice 3.42) provides protection at the outlet of culverts and other high velocity facilities such as detention basins.

- e) Channel bottoms with widths exceeding 15 feet shall have approved concrete liners.
- f) Any channel intended to convey continual flow, including low trickle flow, shall have approved concrete liners.
- g) Any concrete channel liner shall have under-baffles, anchoring lugs at specific intervals, and cut-off walls at each terminus, all poured monolithically with the liner.

Applicable practices detailed in the Indiana Handbook on Erosion Control in Developing Areas are recommended and given preference.

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REQUIREMENTS FOR RETENTION LAKE to be shown on the Drainage Plan:

6. Articles of Incorporation for the Homeowner's Association completed satisfactorily for approval by the County Commissioners with regard to perpetual ownership of the "lake parcel"; and ready to be recorded with the plat.
7. Certified Soils Report with soils borings proving the horizontal angle of the fragipane is sufficiently flat to prevent slumping of the lake embankment; or a continuous 4:1 side slope from top of bank to bottom of lake.
8. A ten (10) foot wide, flat, grassed or paved pathway separating the top of the bank of the lake from the right-of-way of the adjacent street.
9. A county standard guardrail, or other INDOT standard safety barrier, installed outside the maintenance path and along the street adjacent to the lake.
10. A county standard guardrail, or other INDOT standard safety barrier, installed at locations in Eickhoff Road right-of-way, and interior roads, where designated by county engineer, commissioners, county surveyor, or drainage board for protection from open channels or standing bodies of water.
11. A fifty (50) foot minimum separation between the top of bank of the lake and any dwelling.
12. The county surveyor suggests a shallow, subsurface safety ledge no greater than two (2) feet below pool elevation, and no narrower than six (6) feet horizontal to address safety issues raised by steep land grades, lot density and proximity of dwellings to the lake.
13. The county surveyor suggests the design consultant incorporate provisions addressing water quality in a lake intended for recreational use, and long-term maintenance by the homeowners.
14. A brief and concise report is required, prepared by the consulting engineer, describing the intended function of the detention facilities, and their proper, long-term maintenance requirements. The report is required for final approval, and must be attached to the covenants and restrictions.
15. Detail planned erosion control practices intended to address high velocities, steep slopes, high volumes, and drop distances of all storm water entering and leaving the lake, whether from pipes, channels, overland, or over-bank.

3/12/2002
pa 3

16. Complete all design details for all structures associated with the lake and reconcile any contour line and grading elevation discrepancies with various control structure invert elevations given.

OTHER REQUIREMENTS FOR FINAL APPROVAL:

17. All open waterway channel design features for main tributary entering and leaving project – new, improved cross sections; embankment protection/armor; and sufficiently sized easements alongside improved waterway for long-term maintenance and repair projects by the homeowner's association.

18. Final determination regarding removal and relocation of eight (8) foot diameter boiler pipe agricultural crossing, including repaired waterway after removal of the pipe.

19. Final determination regarding removal of all existing, substandard pipes or culverts within project limits.

20. Correctly labeled and depicted drainage easements including combination drainage/public utility easements. All easements should be sufficiently sized in accordance with standards of the drainage ordinance.

21. Final determination regarding intersection of Eickhoff Road with existing entrance to Ashley Place.

The county surveyor suggests all existing deficiencies, particularly those associated with periodically flooded streets, and erosion of the west embankment of Eickhoff Road, be addressed by improvements to existing conditions sufficient to prevent flooding of street during 25 year storm, and arrest erosion within county right-of-way.

While this list includes contents of previous transmissions, the design consultant should examine all previous transmissions (attached) for items possibly excluded from this list.

Butt Officer 3/12/2002

3/12/2002
pg 4

LEO'S PLACE DRAINAGE PLAN for FEB. 25, 2002

PREVIOUSLY SENT

Bill 3/12/2002

1. PRELIMINARY: Assign ownership of "Lake Parcel" in such a way that tax notices, weed notices, maintenance and repair assignments, etc. may be sent to appropriate party. Final approval will depend upon clearly defined and feasible method of assigning maintenance, repair, and ownership of "Lake Lot."
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Previously Sent
3/13/2002
Feb 14, 2002

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In particular: 8' Dia. boiler pipe to be moved outside project limits, and off-site lake spillway pipe to be intercepted at or east of project and inletted into standard structures with an adequate capacity for all anticipated overflow up to and including Q-100.

All other existing pipes should be analysed for need as per oil lease, gas pipeline, and cemetery access.

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**Bill Jeffers, Vanderburgh County Surveyor
Doug McDonald, P.E., L.S., Chief Deputy Surveyor**

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February 21, 2002

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Due to time constraints we both operate under, it may benefit us both if I transmit review notes to you via fax as I complete them in groups.

I will try to keep each transmission grouped by issue. For example, the first group will be regarding the detention basin. The second will be regarding existing pipes and structures. Those that follow will relate to easements, proposed structures, and so on.

Since your initial submittal was so extensive, well organized, and complete for a "preliminary" plan, I will place a note next to each comment whether it be necessary to address the issue in the preliminary or the final plan. You then may decide whether you will include your response to each of my comments in your preliminary submittal or final submittal.

Our office appreciates the quality of your initial submittal, and looks forward to a plan that fully satisfies the requirements of our drainage ordinance, and addresses all safety concerns related to drainage facilities in densely populated residential projects.

Sincerely,

Bill Jeffers

LEO'S PLACE DRAINAGE PLAN for FEB. 25, 2002

1. PRELIMINARY: Assign ownership of "Lake Parcel" in such a way that tax notices, weed notices, maintenance and repair assignments, etc. may be sent to appropriate party. Final approval will depend upon clearly defined and feasible method of assigning maintenance, repair, and ownership of "Lake Lot."

2. PRELIMINARY: Depict Lake Maintenance Easement, per drainage ordinance, so that the easement encompasses entire detention basin, attendant earthworks, 10-foot wide maintenance pathway, inletting and outletting structures.

3. PRELIMINARY: Reconfigure lots adjacent to the basin so they are sized to account for the required 50-foot separation between dwellings and drainage basins per ordinance.

4. FINAL: Provide results of soil borings and soil investigations to prove stability of the lake's side slopes as designed. There is some serious concern that if the frangipane plane is not horizontal, the 2:1 slope may become unstable and undermine the roadway or adjacent yards.

If the soil investigation shows the need, we will request 4:1 slope extends to bottom of lake for safety and integrity reasons.

5. FINAL: Provide addition of guardrail or other standard roadway protection separation alongside lake.

We will accept any method in accordance with INDOT standards for roadways in close proximity to standing bodies of water relevant to this particular situation so long as county engineer approves it in street plans.

6. FINAL: Show details on the grading plan of the 10-foot wide, flat (10:1 or flatter) maintenance pathway totally around the basin in accordance with ordinance requirement.

7. FINAL: Due to volumes, velocities, pipe and land grades, detail all erosion control methods in accordance with either ordinance requirements or in accordance with Indiana Handbook on Erosion Control for ALL PIPES AND CHANNELS entering the detention basin.

Land grades and velocities at several locations indicate high potential for scour and severe erosion particularly where pipes and overland channels enter lake.

8. FINAL: Complete all details of controlled release structure shown in you plan. Several dimensions, particularly in the structure's foundation, appear omitted.

9. FINAL: Reconcile contour grades shown on grading plan with more exact elevations given for pool, controlled release, and spillway elevations given in details.

LEO'S PLACE DRAINAGE PLAN for FEB. 25, 2002

1. PRELIMINARY: Assign ownership of "Lake Parcel" in such a way that tax notices, weed notices, maintenance and repair assignments, etc. may be sent to appropriate party. Final approval will depend upon clearly defined and feasible method of assigning maintenance, repair, and ownership of "Lake Lot."

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Land grades and velocities at several locations indicate high potential for scour and severe erosion particularly where pipes and overland channels enter lake.

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9. FINAL: Reconcile contour grades shown on grading plan with more exact elevations given for pool, controlled release, and spillway elevations given in details.

1B. PRELIM/FINAL: The existing primary outlet structures at the intersection of Eichoff Road and the entrance to Ashley Place require specific corrections, repair, and upgrading to handle present flow. That and additional details will be required to handle additional flow from 500 feet additional roadway and off-site drainage from western yards of Ashley Place.

2B. PRELIM/FINAL: Give locations and designate removal of all pipes existing within proposed Leo's Place; with replacement as required by standard pipe, channel, inlet, etc., installations as needed.

In particular: 8' Dia. boiler pipe to be moved outside project limits, and off-site lake spillway pipe to be intercepted at or east of project and inletted into standard structures with an adequate capacity for all anticipated overflow up to and including Q-100.

All other existing pipes should be analysed for need as per oil lease, gas pipeline, and cemetery access.

3B. PRELIMINARY: All combination drainage and public utility easements must be labeled as "Drainage and Underground Public Utility Easement" (D&UGPUE) accompanied by a plat notice detailing the prohibition of above ground utility installations in these easements.

This is standard procedure for all subdivisions and plats and the notice is found on all recent plats.

4B: PRELIMINARY: Correctly include and depict "Drainage Easements" wherever drainage pipes, basins, and other facilities exist outside of public right-of-way as required by ordinance. Examples of omissions include but are not limited to: P.U.E. north of basin, pipe # 02, and the 8' x 4' box on the west side of the road. There are other instances of this violation you may wish to discover and correct.

5B. FINAL: Give all specific details of swale and ditch construction in complete compliance with ordinance requirements regarding seeding, staked sod, rip rap, etc., all per grade of finished swale.

Assign specific erosion control measures and materials for constructed ditches and swales. The only variances to the requirements of the ordinance must otherwise conform to methods given in the Indiana Handbook on Erosion Control for Developing Areas.

Remind developer that all swales, ditches, basins, embankments, etc., must be in stable condition prior to releasing letter of credit and turning facilities over to the homeowners. Additionally there is a one-year guarantee period.

Public utility installation should be coordinated with swale and ditch construction and trench subsidence due to improper backfilling of utilities and drainage pipes will not be grounds for relaxation of drainage ordinance requirements regarding stable ditches free from erosion.

**Vanderburgh County
Drainage Board
March 25, 2002**

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**Vanderburgh County
Drainage Board
March 25, 2002**

The Vanderburgh County Drainage Board met in session this 25th day of March, 2002 at 7:10 p.m. in Room 307 of the Civic Center Complex with President David Mosby presiding.

Call to Order

President Mosby: Call to order Drainage Board of Vanderburgh County for March 25, 2002.

Approval of Minutes

President Mosby: Do I have a motion to approve the minutes?

Commissioner Mourdock: So moved.

Commissioner Fanello: Second.

President Mosby: I have a motion and a second. So ordered.

Open Ditch Bids for Regulated Drain Maintenance in Vanderburgh County
--

President Mosby: If the County Attorney was here, we could get him to open the bids.

Commissioner Mourdock: I'll move that we direct the County Attorney (Inaudible. Mike not on.) open bids (Inaudible).

Commissioner Fanello: Second.

President Mosby: And I will make a, and I will say so ordered. So we have a motion and a second to open bids upon arrival. Do what? Did I say that right?

Commissioner Fanello: Yeah.

President Mosby: Upon his arrival.

Commissioner Fanello: You did.

President Mosby: Okay.

Drainage Plans

President Mosby: Drainage plans. If you can follow along with us here.

Bill Jeffers: Okay.

President Mosby: I'm lost. No.

Bill Jeffers: Under drainage plans, the first one is Leo's Place Subdivision, final plan, which I understand may have a name change, but at this time it's still Leo's Place. The County Surveyor has scrutinized this particular final plan due to some explicit concerns voiced by Area Plan board members regarding storm water drainage and sensitive terrain. On February 21, 2002, and again on March 12, 2002, our office sent detailed lists of explicit requirements for a final drainage plan for this project. Those requirements met or exceeded all the requirements for a final plan, per County Drainage Ordinance, substantially the same as for any other final drainage plan, plus all requirements found in the subdivision code regarding drainage, including the requirement for special consideration to be given hillside development, where home sites are benched into natural hills. That particular requirement is not found in the Drainage Ordinance, but is found in the subdivision code, and is applicable to hillside development, in this case. Additionally, we ask the design engineer to utilize recommended design methods found in Rule Five to determine areas subject to critical erosion problems. Okay, we were dealing with some soils out there, basically, what we did, and what that shows is 62 tan rectangles represent the homes that will be built. The green areas are subject to moderate erosion based on Rule Five methods of determination. The yellow areas are subject to severe, wait, what does it say?

Commissioner Mourdock: High.

Bill Jeffers: High erosion, and the red to severe. So, that gives the home builder, whether the developer builds each of the 62 homes, or whether he sells off lots for individuals to build homes, that will be given to every home builder to accomplish erosion control as an aid to soil conservation service in our office. That's something that we've never asked for before. We also asked the design engineer to apply pertinent recommended erosion control methods directly from the Indiana Handbook on Erosion Control in those critical areas shown on that map. Then after considering lot density, and proximity of the various bodies of water, particularly the lake, to adjacent streets and dwellings, we also required additional safety measures, like guard rail, underwater safety ledges in the lake, and flatter side slopes along the lake to protect motorists, pedestrians and homeowners. On Tuesday, March 26th, the County Surveyor had a productive meeting with the developer and the design engineer where we resolved all the issues addressed except the following; number one, the developers attorney is drafting or has drafted articles of incorporation for the homeowners association and will have those ready for recording in the County Recorder's office at the same time as the final plat will be recorded. The issue there is the homeowners association for Leo's Place eventually becomes owner of record of the lake, or most of the lake. The County Surveyor wants this particular homeowners association established in a timely fashion so that property taxes are collected from that common parcel and it doesn't wind up on tax sale. That was a concern of the previous administrations, previous County Commissioners hesitated about common ownership of lake parcels, however, this same attorney that's drafting this article of incorporation also drafted very similar articles of incorporation for Keystone, which has common areas and common lakes. So, we have done it before, but I just want it ready to go with the plat, and that's going to be resolved in very short order. Number two, the developer has agreed to the safety barriers, visa vie, what we're now calling guard rail, but he wants to install something a little more aesthetic than guard rail between the streets and the lake, and we understand that. Since the roadway along side the lake will be constructed as a part of Phase II, we're okay with the safety barrier material being it's shown as a part of the street plans for Phase II, so long as the barrier

complies with all other acceptable safety standards. In other words, he may come up with something used in a national park or a more aesthetic setting that has the same acceptable safety standards, but is not that ugly guard rail right there along side the road. That will show up in the street plans for Phase II. Number three, certain details of street construction and street drainage are being resolved as a part of the street plans. Okay, the issue there is that John Stoll still has, he's out of town and he still has some minor details that he is working out with the design engineer about grades and the location of certain inlets. The plans are sitting on the table over here and available for viewing. Mr. Easley is here to answer any questions from an engineering point of view, and the developer is here as well. There were no remonstrators for the primary plan. There were no remonstrators in Area Plan Commission with regard to anything inside the subdivision. There was one fellow there about Eickhoff Road remote from this location. Seeing no remonstrators in the audience on Leo's Place Subdivision, the County Surveyor recommends approval of the final plan for Leo's Place Subdivision, acknowledging the three considerations given above.

Commissioner Fanello: I'll make a motion to approve.

Commissioner Mourdock: Just to verify, there are no, or is no one here to discuss the plan? Seeing none, I'll second.

President Mosby: I have a motion and a second. No remonstrators present. So ordered.

Bill Jeffers: I took a little extra time on that one because there will be similar developments in hillside terrain that will come under that kind of scrutiny. I want to really thank the developer for being cooperative and working very closely with his engineer to accomplish a wonderful set of plans, that I think will serve as a guide in the future. Item 3b, Eagle Plaza, Lot 22 Replat, Final Plan. The plan is on the table for viewing. Matt Wallace from Morley and Associates is here to answer any of your questions. There were no remonstrators to the preliminary plan. The County Surveyor recommends approval of Eagle Plaza, Lot 22 Replat, Final Plan.

President Mosby: Are there any remonstrators present for Eagle Plaza, Lot 22? Seeing none.

Commissioner Mourdock: Seeing none, I'll move approval.

Commissioner Fanello: Second.

President Mosby: Motion and a second. So ordered.

Bill Jeffers: Item 3c, Eric Dodd Minor Subdivision, modified plan, modified final plan. The reason this minor subdivision drainage plan comes to the board is because it's a commercial site with a plan that modifies a previous drainage plan for Lot 5 in St. Joe Industrial Park, which the board previously approved. The plan is on the table for viewing. Steve Hahn, the design engineer, is here to answer questions. If there are any remonstrators, they should comment now, otherwise the County Surveyor recommends approval of the modified final plan now known as Eric Dodd Minor Subdivision.

Subj: **Fawn Creek Estates A (formerly known as Leo's Place)**
Date: 4/5/2002 8:31:17 AM Central Standard Time
From: tom@easleyengineering.com
To: lif2000@aol.com
File: **FAWNCREEK-A2.EST.zip** (1251781 bytes) DL Time (45333 bps): < 8 minutes
Sent from the Internet ([Details](#))

re: Fawn Creek Estates A (formerly known as Leo's Place)

Attached is the final plat of Section A of Fawn Creek (formerly known as Leo's Place). I am also including a copy of the cost estimate for this Section for your review and approval. Please contact this office if you have any questions or comments.

Please note that I am waiting on final name selection on the streets from Tim Scheu. It appears that the cul-de-sac will be named Antler Court....if his wife approves. I still need a name for the long street in this section. His original choice of White Tail Pass has been denied.

Any suggestions?

Sincerely

Thomas Keith
Andy Easley Engineering, Inc.
1133 West Mill Road
Evansville, IN 47710
PH: 812-424-2481
FX: 812-425-3463
tom@easleyengineering.com

PHILIP H. HAYES

COPY

ATTORNEY AT LAW

Telephone (812) 425-1000
Fax (812) 421-0638
Email phaylaw@aol.com

THE HAYES LAW OFFICES
400 COURT STREET
P. O. BOX 3218
EVANSVILLE, INDIANA 47731-3218

LEGAL ASSISTANT
Margaret J. Weber

April 10, 2002

Robert E. Rheinlander, Esq.
Newman, Trockman, Flynn, Lloyd & Rheinlander
Attorneys at Law
P.O. Box 3047
Evansville, IN 47730

Lee's Place

In Re: Fawn Creek Estates/Association

Dear Bob:

Your correspondence of today has been received by fax and it substantially reflects our discussions.

The County Surveyor's intention in requesting my review of the developer's planned entities for establishing responsibility for the natural surface watercourse is to simply confirm that that part of the drainage plan submitted by your client is being effected. Apparently, some unfortunate past inattention to ownership issues has resulted in the County being required to assume responsibility when the drain, retention/impoundment or watercourse was "orphaned" by a developer. The County and its officials by no means sets specific requirements concerning a developer's plans to convey real estate which are not within the scope of powers granted by law.

Please specifically note that the County, the Surveyor and Drainage Board is being advised that I found the Articles, selected Restrictions and concept of common ownership to be consistent with the intent and purpose of the Drainage Code and the Surveyor's duties of drainage plan approvals.

Yours very truly,

Philip H. Hayes
Philip H. Hayes

Vanderburgh County Attorney

cc: Bill Jeffers, County Surveyor

**Area Plan Commission
Evansville-Vanderburgh County**

Civic Center Complex Room 312

1 NW Martin Luther King Jr. Blvd.

Evansville, IN 47708

Phone: 812/435-5226 Fax: 812/435-5237

**APC Notification
&
Response Form**

(For Subdivisions)

Date of Notice: Monday, June 10, 2002

Please return by: Thursday, June 20, 2002

Plat submitted for recording

Agency & Contact:

Bill Jeffers

County Surveyor

Civic Center Complex Room 325

1 NW Martin Luther King Jr. Blvd.

Evansville IN 47708

Phone: 812/435-5210 Fax:

Subject: Docket #4-S-2002 File Date: 01/15/2002

~~Fawn Creek Estates Section A~~

Engineer: Andy Easley

Andy Easley Engineering

1133 W Mill Road

Evansville IN 47710

Phone: 812/424-2481 Fax: 812/425-3463

Please review this notification and/or attached plat and indicate your response below. Give a detailed explanation when necessary. Date and sign this form and return to APC, also FORWARD A COPY TO THE ENGINEER OF RECORD. If you have any questions, please contact this office.

☐ This agency does not have a comment on this project.

☐ We want more information on this project, although no conflict is indicated.

☐ We desire a conference with the applicant for the reasons stated below.

☒ This agency endorses this project.

☐ This agency rejects this project for the reason stated below.

☐ Additional comments and/or information is attached.

☐ Drainage plans are not required for this project.

☐ Preliminary drainage plans were approved on: FEB 2002 as Leo's Place

☐ Final drainage plans were approved on: _____

Copied or Faxed to Engineer:

Date: _____

By: _____

Reviewed By: Bill Jeffers

Date: 6/17/02

URGENT

Ref: Fawn creek

The release structure has already been built.

ANDY Easley has a method to add additional retention. Please look it over ASAP & call me.

The Angles need to be installed before the lake fills up. IT is filling now, so we need to do this immediately. Please call me ASAP.

Rick Broerman 423-6800
cell 431-2900, home 491-9850

FOR RICK BROERMAN

DESCRIPTION ADDITIONAL

RETENTION FOR 11 LOTS
OFF SITE IN FAWN CREEK
RETENTION LAKE -



DATE AUGUST 5, 2002

BY R. A. EASLEY

CHECKED _____

JOB OR SURVEY NO. _____

SHT 1 OF 2

RELEASE STRUCTURE MODIFICATIONS

APPROVED WEIRS WILL PASS A COMPENSATORY RATE OF
 $Q_{25} = 96.71 \text{ cfs}$ FOR FAWN CREEK SUBDIVISION
 $Q_{25} = 96.71 \text{ cfs}$
LESS
RETENTION - 7.30 cfs FOR DEVELOPED RUNOFF RATE FOR 11 OFFSITE LOTS
 $89.41 \text{ cfs} = \text{REQUIRED DISCHARGE RATE MODIFIED WEIR}$

BROADCRESTED WEIR DISCHARGE $L = 9.33'$ $C = 2.68$
TRY $H = 1.15'$ TRY $H = 1.15'$

$$Q = C L H^{3/2} = 2.68 (9.33) (1.15)^{3/2}$$

$$Q = 25.00 \times 1.2332 = 30.83 \text{ cfs}$$

$$\text{REQUIRED } Q = \frac{89.41 \text{ cfs}}{3 \text{ WEIRS}}$$

$$Q_{\text{REQ}} = 29.80 \text{ cfs} / \text{WEIR}$$

TRY $H = 1.14'$

$$Q = 25.00 \times 1.2172 = 30.43 \text{ cfs}$$

TRY $H = 1.12'$

$$Q = 25.00 \times 1.1853 = 29.63 \text{ cfs}$$

TRY $H = 1.124'$

$$Q = 25.00 \times 1.1917 = 29.793 \text{ cfs} < 29.80 \text{ cfs} / \text{WEIR}$$

CONCLUSIONS

THE $H = 1.124'$ IS A 0.08' OR 1.0" REDUCTION IN THE HEIGHT OF THE WEIR. IF THE RELEASE STRUCTURE HAS BEEN CONSTRUCTED IT CAN MODIFIED BY INSTALLING AN ALUMINUM ANGLE PIECE AS SHOWN ON SHEET 2

DATE AUGUST 5, 2002

BY R. A. EASLEY

CHECKED _____

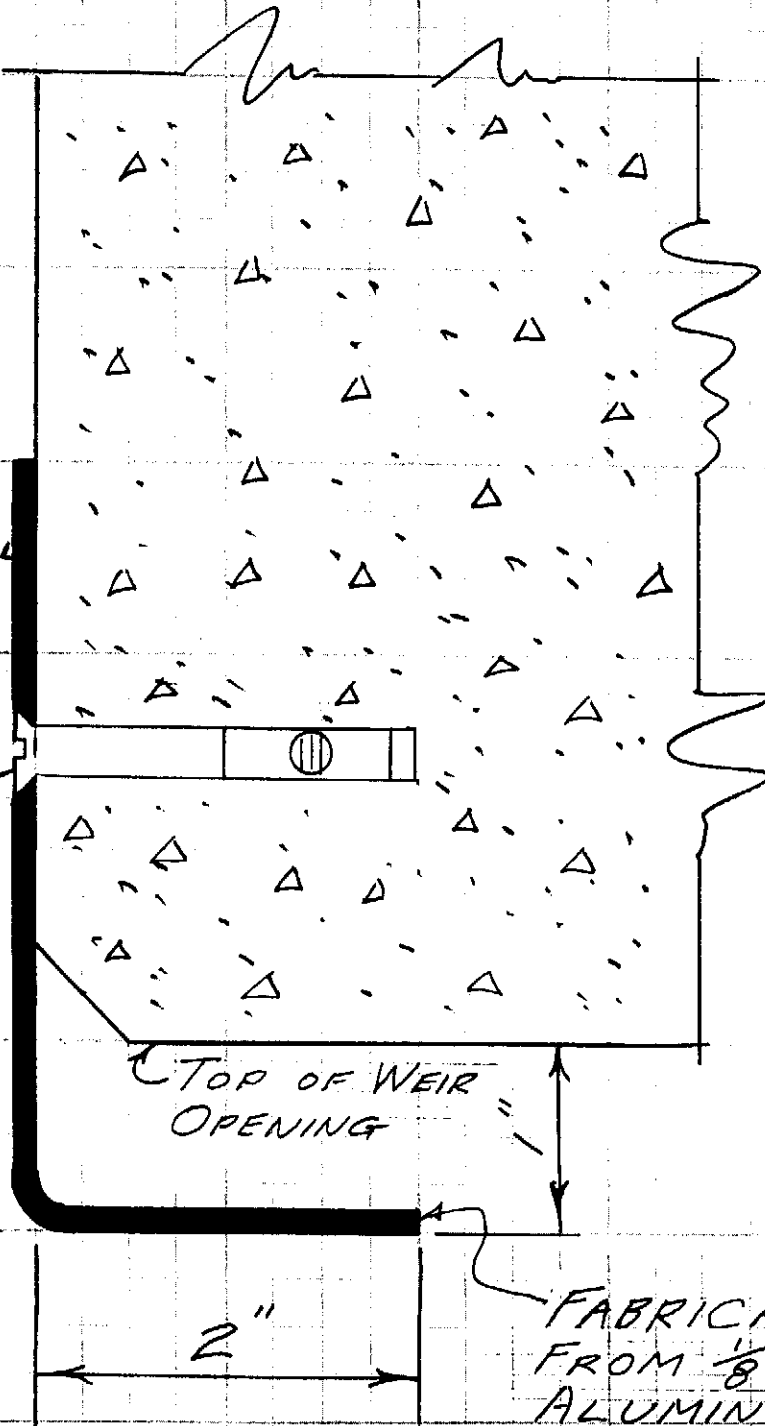
JOB OR SURVEY NO. _____

5HT 2 of 2



FOR RICK BROERMAN
DESCRIPTION ADDITIONAL
RETENTION FOR 11 LOTS
OFF SITE IN FAWN CREEK
RETENTION LAKE

INSTALL HILT 1 OR EQUAL
STAINLESS STEEL
SLV ANCH FS $\frac{1}{4} \times 2$
FLAT HEAD SLOTTED
ANCHORS "ON 18"
CENTERS



SEE FORM 800 - ATTACHED TO THIS REPORT

Developed runoff associated with the proposed sub-drainage areas are attached to this report along with worksheets indicating the procedure for the sizing and design of the individual Storm Sewer Systems.

STORM WATER DETENTION AND RELEASE DESIGN:

The proposed retention facility must be able to allow the discharge of the undeveloped Q for the 10 year event (121.05 CFS) and yet "demonstrate clearly that the post development peak rate of storm water runoff during a twenty-five (25) year return period storm is controlled sufficiently so that it will not exceed the peak runoff rate from the same Project site in its pre development condition during a ten (10) year return period storm."

It is the developers desire to install a retention lake as indicated on the plans. This lake will be fed by the major ditch which drains the watershed. A three weir outlet structure is proposed. Due to the existing ditch location, the proposed lot configuration and the lake design location, 24.34 CFS (at the 25 year rate of flow) will bypass the lake and discharge into the ditch at various locations downstream from the proposed lake location. Flow rates associated with these storm sewer reaches are as follows:

SYSTEM	Q 25 YEAR	Q 100
Storm System # 110 - # 108	Q = 3.64 CFS	Q = 4.51 CFS
Storm System # 125 - # 134	Q = 7.32 CFS	Q = 9.06 CFS
Watershed Below Lake	Q = 8.34 CFS	Q = 10.31 CFS
Storm System # 105 - # 106	Q = 5.04 CFS	Q = 6.13 CFS
TOTAL	Q = 24.34 CFS	Q = 30.01 CFS

Therefore, the allowable rate of release is equal to the rate of the 10 year undeveloped storm (121.05 CFS) minus the 25 year rate of those systems bypassing the detention facility (24.34 CFS) to provide a compensatory release rate equal to 96.71 CFS.

Detention will be provided by the creation of a new lake. This lake will be created by excavating along approximately 280 lineal feet of the existing ditch and installing an earthen dam at the west end as indicated on plans. The normal or low water elevation will be 452.80. The detention or high water elevation will be 454.00. This provides for 35,637.03 cubic feet of storage (35,508 required).

The outlet control for the proposed lake will be provided by a concrete weir box. This design has been used by this office successfully in Warrick County, Indiana at Copper Creek Subdivision on Bell Road, the conceptual design of which was reviewed and approved by Morley and Associates and Commonwealth Engineering. This structure allows for 3 separate weirs to function along the sides of a square structure located within the lake. An outlet pipe then carries the weir discharge to an existing ditch or creek.

The required weir to pass the 10 year event must be capable of passing 96.71 CFS, as stated above. The outlet control structure will then have 3 weirs with a combined length of 30 feet. Normal or low water elevation has been set at 452.80 and an allowable head of 1.2 feet to prevent water from backing up into the storm water systems that will be discharging into the lake and providing the required storage volume. Therefore, the highwater, or detention elevation will be $452.8 + 1.2 = 454.00$. A computer analysis of the proposed weir design is as follows:

WEIRS

Enter up to 10 weirs.

Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
32.24	9.3	2.630	1.20

Because the outlet control box will have three weirs, the total Q discharging through the box at that elevation (454.00) providing the required detention volume is equal to $3 * 32.24$ or 96.71 CFS.

To assure that there is reasonable safety due to the anticipated flow into the lake the following analysis indicates that, if the weirs are unobstructed, the developed 100 year Q for the watershed and the developed site would also be retained and would pass via the weirs provided.

SYSTEM	Q 25 YEAR	Q 100
Storm System # 119 - # 111	Q = 130.05 CFS	Q = 160.58 CFS
Storm System # 117 - # 124	Q = 7.82 CFS	Q = 9.55 CFS
Lake Watershed	Q = 9.94 CFS	Q = 12.23 CFS
TOTAL	Q = 147.81 CFS	182.36 CFS

WEIRS

Enter up to 10 weirs.

Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
60.79	9.3	2.630	1.83

Therefore, the water elevation at the 100 year event is equal to 454.63 feet. In an effort to provide even additional storage, the top of the Outlet Control Box has been set at 455.13

In the event that the weirs were to become completely obstructed, the orifice created by the top of the outlet control box would also act as a weir with a total inside length = $4 * 12 = 48$ feet minus the corner conflict lengths (equal to the head dimension) $8 * 1.39' = 42.44$

WEIRS

Enter up to 10 weirs.

Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
182.36	42.3	2.630	1.39

Therefore, the if the Outlet Control Box top is allowed to pass the 100 year event, the high water elevation would be $455.13 + 1.39 = 456.52$

The discharge pipe out of the Outlet Control Structure has been sized to pass the 100 year event based on the following:

SEWER PIPES

Enter up to 10 pipes.

Enter <Return> only for flowrate and diameter to end.

FLOWRATE (CFS)	DIAMETER (IN)	FRICTION (FT ^{1/6})	SLOPE (%)	VELOCITY (FPS)
182.36	48.00	0.0110	1.15	14.51

The elevation of the top of the dam has been set at 458.02 and an emergency spillway provided adjacent to the proposed outlet structure. The spillway will have a width of 52 feet and a head of 1.00 based on the following computer analysis:

WEIRS

Enter up to 10 weirs.

Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
182.36	51.4	3.550	1.00

From the above analysis, the emergency spillway elevation is set at 456.52 (the high water elevation if both the weirs and the top of the Outlet Control Box have become obstructed or if the outlet culvert from the Outlet Control box has become obstructed). The highwater elevation would then be 456.52 + 1 foot of head = 457.52. Providing 0.5 feet of freeboard, confirms the top of dam elevation of 458.02.

At the discharge end of the Outlet Control Culvert, Erosion Control Practice 3.41 (Rock Chute) shall be implemented to reduce discharge velocity and prevent erosion of stream. It is proposed to leave the remainder of the existing natural ditch in place with little or no disturbance to it between the lake and the new box culvert to minimize erosion that will occur should the stream be disturbed. This ditch has an average bottom width of at least 4 feet and side slopes that average 1 to 1. The bottom of the ditch slopes at about 1%. An analysis of this natural waterway is as follows:

NATURAL CHANNELS

VARIABLES LIST:

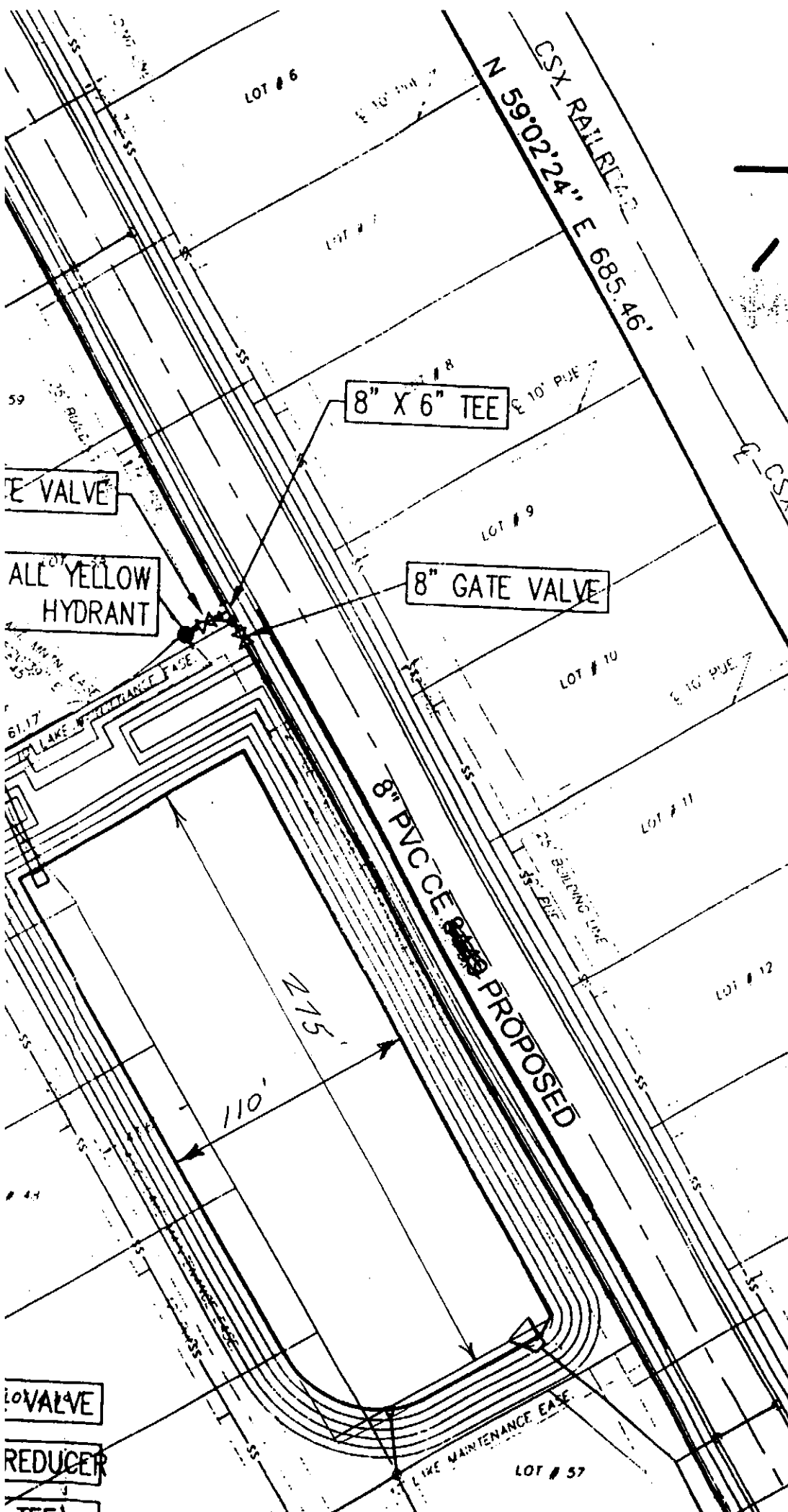
Y - FLOW DEPTH B - CHANNEL BOTTOM WIDTH S - CHANNEL SLOPE
Q - FLOWRATE M - CHANNEL SIDE SLOPE N - CHANNEL ROUGHNESS


VARIABLE TO BE SOLVED (Y, Q, B, M, S OR N) ? Y

Q (CFS) ? 212.37
B (FT) ? 4
M (FT/FT) ? 1

RESULTS

Y= 3.89 FT




 1" = 60'

MAY 8, 1981

ANDY EASLEY ENGINEERING
 205 MM Road Office Building
 1123 West MM Road
 Evansville, Indiana 47710

BASIN $275' \times 110' = 30,250 \text{ sq ft}$
 SURFACE AREA = $30,250 \text{ sq ft}$
 $30,250 \text{ sq ft} \times 0.2' = 6,050 \text{ cu ft}$
 $30,250 \text{ sq ft} \times 0.185' = 5,596 \text{ cu ft}$
 $0.185' \times 12' = 2.22'$
 DEPTH OF STORAGE = 2.22'

Project: QUICK REVIEW - 11 additional lot addition to Leo's Place

Designer: Easley Engineering

Detention Facility Design Return Period: 25 Year Developed Storm

Release Rate Return Period: 10 Year Undeveloped Storm

Watershed Area (Au): 2.5

Developed Area (Ad): 2.5

Time of Concentration: 15

Rainfall Intensity: (i10) = 4.49

Undeveloped Runoff Coefficient (Cu) = 0.2

Undeveloped Runoff Rate (Q=(Cu)(iu)(A,,) = 2.245

Developed Runoff Coefficient (CD)= 0.58

Storm Duration	Rainfall Intensity	Inflow Rate	Outflow Rate	Storage Rate	Required Storage
td (hrs)	Id (in./hr)	Cd*IdAD (cfs)	CuiuAu (cfs)	I(td)_O (cfs)	[(I(td)-O td)/12 (acre-ft)
0.08	7.208	10.4516	2.245	8.2066	0.05471067
0.17	5.925	8.59125	2.245	6.34625	0.08990521
0.25	5.033	7.29785	2.245	5.05285	0.10526771
0.50	3.646	5.2867	2.245	3.0417	0.1267375
1.0	2.078	3.0131	2.245	0.7681	0.06400833
		0	2.245	-2.245	0
		0	2.245	-2.245	0
		0	2.245	-2.245	0
		0	2.245	-2.245	0

Peak storage requirement = 0.1267375 acre-feet = 5,120.68 cubic feet of storage.

Handwritten signature: R. A. Easley

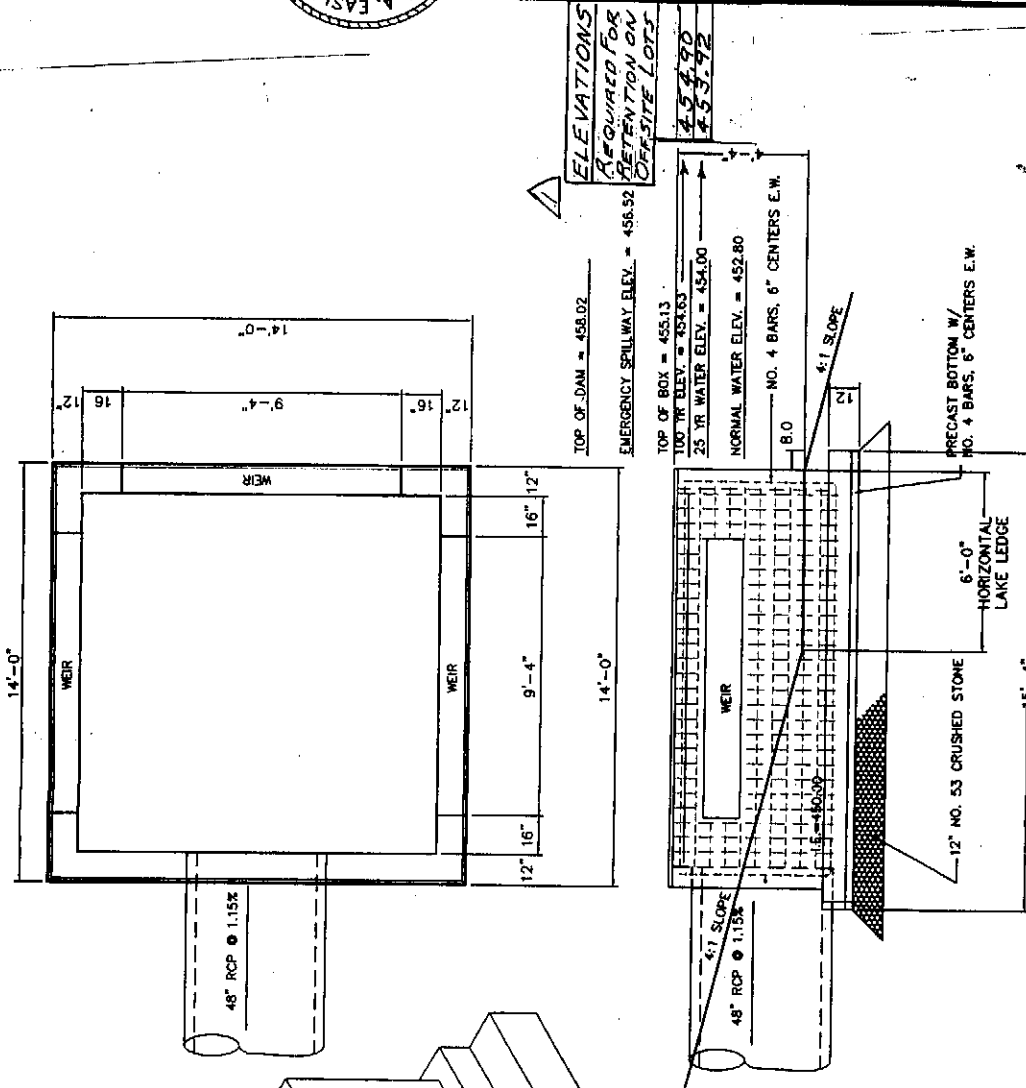
Professional Engineer
State of Indiana
No. 12892
RALPH A. EASLEY, JR.
REGISTERED

AE₂

ANDY EASLEY ENGINEERING

CIVIL ENGINEERING (812) 424-2481 LAND SURVEYING

1133 WEST MILL ROAD
EVANSVILLE, INDIANA 47710



Fawn Creek Estates Subdivision

ROAD PLAN AND PROFILE

LEO SONS DEVELOPMENT, LLC

SHEET NO.: 19 OF 25	DATE: JANUARY, 2002	DRAWN BY: T.J.K.
	PROJECT NO.: 7293	R.A.E.
	REVISIONS 1/1/2002	SCALE: AS NOTED

LAKE RELEASE STRUCTURE



VANDERBURGH COUNTY ENGINEERING DEPARTMENT

201 Northwest Fourth Street • Suite 307
Old Vanderburgh County Courthouse
Evansville, Indiana 47708-1358
Tel. (812) 435-5773
FAX (812) 435-5676

May 13, 2003

Mr. Tim Scheu
Leosons Development Company LLC
9603 Hogue Road
Evansville, IN 47712

RE: **Fawn Creek Subdivision Section A**

Dear Mr. Scheu:

An inspection has been completed in section A of Fawn Creek Subdivision, and the deficiencies that were found currently include the following items:

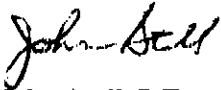
1. Provide permanent repairs for all failed areas of all streets. Please advise this office of your plans for the repairs prior to beginning these repairs.
2. Once the failed areas of the streets are repaired, the asphalt surface will need to be placed.
3. Complete all sidewalks.
4. Complete all lot grading in accordance with the approved plans. This will necessitate maintaining suitable erosion control measures until all lots and drainage facilities are in a stable vegetated condition.
5. Due to the manner in which the grading and excavation has taken place, erosion has been occurring outside the boundaries of section A of this subdivision. Although repairing this erosion is not covered by the current letter of credit for this subdivision, these areas will still need to be stabilized in order to prevent silt and sediment from leaving this site. They will also need to be stabilized so that any runoff from the streets does not contribute to further erosion at the ends of the streets.
6. Complete the retention basin in accordance with the approved plans. The current problems with the basin include the lack of an emergency spillway, some erosion has occurred on the basin banks, the outlet control structure has not been constructed in accordance with the approved plans, no end section was placed at the end of the pipe that discharges from the outlet control structure, and end section 124 could not be found in the southeast corner of the basin. In addition to these deficiencies, it was also found that tree limbs and other debris are blocking the channel downstream from the pipe that outlets from the control structure in the basin.
7. It was found that stone has been placed from the intersection of Eickhoff Road and Aster Lane to the west end of Buck Ridge Trail in section A of this subdivision. While this road will be part of a future phase of this subdivision, the plans for this portion of the road have not been approved by the County Commissioners as of yet. If it is planned that this existing stone will be used for subbase for a future section of the road, compaction tests will have to be provided that show that the soil beneath the stone was compacted to 95% standard proctor density. If this cannot be provided, the stone will have to be removed. Also, the stone that has washed or been tracked out into the curb in the Eickhoff-Aster intersection must be removed from the street.

Page 2
Mr. Tim Scheu
May 13, 2003

8. Provide copies of the documents that indicate that a homeowners' association has been formed to maintain the drainage facilities located outside of street rights of way.

Please contact me if you have any questions regarding this matter.

Sincerely,



John Stoll, P.E.
Vanderburgh County Engineer

cc: Bill Jeffers, Vanderburgh County Surveyor
Mike Wathen, SWCD