



HIGH PLAINS ENGINEERING & DESIGN, LLC

555 MAIN STREET, P.O. BOX 1077, HUDSON, CO 80642 • PHONE: 303-857-9280 • FAX: 303-857-9238

SUBSURFACE INVESTIGATION AND FOUNDATION RECOMMENDATIONS

Prepared For:

Platte River Investments, Inc.
8537 County Road 51
Keenesburg, CO 80643

Job Site Located At:

Future 1.65 Acre Parcel Currently Located within
Parcel No. 130319300014
Lot 3
A Part of the SW1/4 of Section 19
T2N, R63W of the 6th P.M.
Weld County, CO

January 22, 2020

JOB #19-9435

Todd M. Schroeder P.E. 33548



AGREEMENT OF PURPOSE AND DISCLAIMER:

The parties specifically agree and contract that the purpose of the provided subsurface investigation is to test, analyze, and provide geotechnical recommendations for the foundation recommendations. This report presents a description of subsurface conditions encountered at the site, design, and construction criteria influenced by the subsurface conditions. The opinions and recommendations presented in this report are based on the data generated during this field exploration, laboratory testing, and our experience. A foundation design sealed by a Professional Engineer is required to obtain a building permit but is not included in this report.

The parties specifically agree that High Plains Engineering & Design, LLC has not been retained nor will they render an opinion concerning environmental issues, hazardous waste or any other known and or unknown conditions that may be present on the job site, since this is not our area of expertise.

LOCATION AND SITE CONDITIONS:

This report represents the results of the data obtained during the subsoil investigation for the proposed steel building located at the Future 1.65 Acre Parcel currently located within Parcel No. 130319300014, Lot 3, A Part of the SW1/4 of Section 19, T2N, R63W of the 6th P.M., Weld County, CO.

The proposed building site is a vacant lot. The site is reasonably level with approximate slopes of 1.5% to the East-Southeast. The lot appears to be well drained with no erosion evident.

The depths of the excavation are anticipated to range from two (2) to four (4) feet below grades that existed at the time of this investigation. It is anticipated that final grades may be adjusted to accommodate drainage and construction depths. It is recommended that we review the final grading plan to determine if any revisions to the recommendations presented in this report are necessary.

SUBSOIL CONDITIONS:

Two, four-inch-diameter holes were drilled up to a depth of fifteen feet at the project site on January 7, 2020, as shown on the attached site map. Soil samples were analyzed in the field and laboratory to determine the characteristics of the soil (per Unified Soil Classification System) for identification and foundation design recommendations. In general, the soil profiles in test-holes #1 & #2 indicated Clay with Low Plasticity (CL) to a depth of 4 feet, underlain by Clay with Medium Plasticity (CL) to a final depth of 15 feet.

The Standard Penetration Test per ASTM D1586 showed 15 blows for a 12-inch penetration at a depth of 2 feet, 17 blows for a 12-inch penetration at a depth of 4 feet, and 21 blows for a 12-inch penetration at a depth of 7 feet. Please note that actual subsurface soil conditions may vary between samples and locations tested.

One-dimensional swell/consolidation tests were performed on selected samples to evaluate the expansive, compressive and collapsing nature of the soils and/or bedrock strata. These tests indicated an expansion potential of 1.9 % at a depth of 2 feet, an expansion potential of 3.1% at a depth of 4 feet and an expansion potential of 3.9% at a depth of 7 feet. The soils in this report were classified using the American Society of Testing Materials (ASTM) procedures.

The geotechnical practice in the State of Colorado utilizes a relative scale to evaluate swelling (expansion) potentials. When a sample is wetted under a surcharge pressure of 500 pounds per square foot (psf), the measured swell is classified as low, moderate, high, or very high. The following table represents the relative classification criteria. Please note that the measured swell is not the only criteria for slab-on-grade recommendations and additional factors are considered by the engineer when evaluating the risk for slab-on-grade construction.

TABLE 1	
SLAB PERFORMANCE RISK CATEGORY	REPRESENTATIVE PERCENT SWELL (500 PSF SURCHARGE)
LOW	0 TO <3
MODERATE	3 TO <5
HIGH	5 TO <8
VERY HIGH	≥8

Source: Colorado Association of Geotechnical Engineers, Guideline for Slab Performance Risk Evaluation and Residential Basement Floor System Recommendations (Denver Metropolitan Area), 1996

GROUNDWATER:

Groundwater levels were not recorded at the time of our field investigation; however, it may be possible for groundwater to exist at construction depths at a later date. The groundwater can be expected to fluctuate throughout the year depending on variations in precipitation, surface drainage and irrigation on the site. The possible presence of shallow bedrock/dense clays beneath the surface is favorable for the formation of "perched" groundwater. We recommend that the bottom of the basement or crawlspace excavations be maintained at least 4 feet above the free groundwater level.

The ground water levels recorded represent the free, static water levels after equalization of hydrostatic pressures in the test-hole borings. It is possible that the groundwater levels recorded in the test-hole borings may not be present at those levels in the foundation excavations. Flow rates, seepage paths, hydrostatic pressures, seasonal groundwater fluctuations, water quality and other factors were not determined in this investigation. A program, which may include special well construction, test procedures, long-term monitoring, and analysis, would be necessary to determine these factors.

FOUNDATION RECOMMENDATIONS:

The Clay with Low Plasticity (CL) and Clay with Medium Plasticity (CL) material has a bearing strength of 2000 pounds per square foot (psf) and an equivalent liquid pressure of 55 pcf. We recommend the use of a continuous spread footing, due to the low/moderate expansion-consolidation potential of the analyzed soils. **The foundation must be constructed at the location in which soils investigation was performed.**

All rebar must be fully contained within the footing/foundation and shall not have any contact with the native soils due to the known risks of soluble sulfates contained in area soils.

Unmonitored moisture content in foundation excavations over an extended period of time can create foundation stress and potential damage after backfilling operations are complete. Foundation excavations left open for a period greater than 7 days will require moisture monitoring and/or moisture augmentation. High Plains Engineering & Design, LLC cannot be held responsible for foundation damage as a result of the failure to monitor moisture content after a period of 7 days. If it's anticipated that the foundation excavation will be left open for an extended period of time, the general contractor/owner shall contact High Plains Engineering & Design, LLC for further recommendations.

All loose and disturbed soil shall be removed before placing of the concrete for the foundation. The bottom of the foundation shall be a minimum of 30" below final grade (or that required by local jurisdiction; whichever is greater) for frost protection.

Soil settlement resulting from the assumed structural loads is estimated to be one inch or less. Soil expansion at this site may be up to one inch in some areas. No foundation wall is to exceed twenty-five feet in length without utilizing buttresses or counterforts unless otherwise designed by the foundation engineer.

Engineered steel reinforcements shall be required in the footings and foundation walls. This will give walls or footing beams the strength to span or bridge over any loose or soft pockets of soil that may develop during construction.

Owners shall be made aware of all contents of this report, and the fact that water accumulation around foundation elements is the primary cause of distressed foundations.

To help prevent secondary damage that could be caused by slab movement, the following construction techniques are additional recommendations for the foundation construction.

SLAB ON GRADE CONSTRUCTION:

Steel Building/Shop and Exterior Slab-on-grade Concrete: The soil encountered at or below anticipated slab elevations has a low/moderate swell potential. If removal and replacement of soil below slabs is required, use a non-expansive granular soil with Plasticity Index less than 15 and Liquid Limit less than 30 and compacted to a minimum of 95% ASTM D698 (Standard Proctor Density), within 2% of the optimum moisture content.

The slabs should be constructed as "floating" slabs, which are free to move in the vertical direction. The slabs should not be attached to interior or exterior bearing members. The following design and construction details for slab-on-grade construction are recommended.

1. Floor slabs placed above potentially expansive soils will be expected to heave and crack to some degree. It is impossible to predict with certainty how much slab movement will actually occur. **When the owners cannot tolerate slab movement, we recommend to install a structural slab in place of the conventional slab on grade for floor construction.**
2. Where steel building/shop slabs and exterior slabs-on-grade are chosen, and the owners understand and accepts all the risks associated with slab movement, the following recommendations should be followed with the amount of over-excavation and replacement with imported fill determined by the owner/builder.
 - a. Positive separations and/or isolation joints should be provided between slabs and all foundation walls, bearing members (columns), plumbing and utility lines. Isolation may be achieved with ½ inch expansion material or by sleeving. Vertical movement of the slabs should not be restricted. A minimum void of 3 inches should be provided with all non-bearing partition walls to allow movement without damaging the structure. Provide a minimum ½ inch space at the bottom of all doorjambs. It is the owner's responsibility to maintain these void spaces. Mechanical equipment set on the slab will require an expandable/collapsible connection to ductwork, etc.
 - b. Eliminate plumbing under slabs where feasible. Where such plumbing is unavoidable, it should be thoroughly pressure tested during construction.
 - c. A vapor retarder is required per IRC R506.2.3 except use 15-mil minimum thickness, located per ACI guidelines and installed per ASTM specifications. Floor slabs and footings should not be constructed on frozen subgrade. Slabs should be reinforced with rebar or wire mesh to help control crack separation.

3. Provide frequent scoring of the slabs in square dimensions (non- rectangular) to provide joints for controlled cracking of the slab. Control joints should be placed at distances equal to 24 to 30 times the slab thickness and the depth of sawed control joints should be $\frac{1}{4}$ of the slab thickness. Joints should be sawed as soon as the concrete will withstand the energy of sawing without raveling the edges of the joint. For most concrete mixtures, sawing should be completed within 6 to 18 hours after pouring, but never more than 24 hours. Install a good quality sealant (pliable/non-hardening) in these joints to prevent surface discharges of liquid from penetrating slab sub-grades.
4. The soils that will support the concrete slabs should be kept moist during construction by occasional sprinkling of water. The soils should be moistened to +/- 2 % optimum moisture within 24 hours of pouring the slabs. This procedure will help maintain the moisture content of the underlying soil. **Heavy watering or pooling of any kind next to the foundation or within the backfilled area is not recommended.**

BACKFILL:

The foundation and retaining walls must be well cured and well braced prior to backfilling.

Any soil disturbed adjacent to bearing foundation components are to be **re-compacted to a minimum of 95% Standard Proctor Density (ASTM D698)**. Backfill that bears concrete slabs shall be compacted to 95% Standard Proctor Density (ASTM D698). Mechanical compaction methods shall be utilized, (water-flooding techniques are strictly prohibited). See Compaction Section for more information regarding compaction requirements and techniques.

Proper drainage away from the foundation walls shall be provided. The owners are advised to immediately fill any settled areas to eliminate water accumulation near the foundation. A minimum slope of 12 inches in the first 10 feet from the perimeter of the building is recommended. Roof downspouts and sill cocks should discharge into long concrete splash blocks (5 feet long min.) or into gutter extensions to deposit runoff water beyond the limits of the backfill soil near the foundation walls. Plastic membranes should not be used to cover the ground surface immediately surrounding the structure; geotextile fabric should be utilized for weed control. Any drainage water from uphill shall be diverted around the structure.

Sprinkling systems should not be installed or direct water to be within 10 feet of the foundation. The owner/builder is also advised that irrigation lines can leak and/or break, resulting in release of excessive amounts of water near the foundation. This can cause damage to slabs and foundation walls. **WATER ACCUMULATION AROUND FOUNDATION ELEMENTS IS THE MAIN CAUSE OF DISTRESSED FOUNDATIONS.**

COMPACTION:

Placing Fill: No brush, sod, frozen material, perishable material, unsuitable material, or stones of four inches or greater in maximum dimension shall be placed in the fill. The distribution of the material on the fill shall be such as to avoid the formation of layers of materials differing substantially in characteristics from the surrounding materials.

The materials are to be delivered to the backfill surface at a uniform rate, and in such quantity as to permit a satisfactory construction procedure. Unnecessary concentration of backfill machinery travel tending to cause ruts and other hollows more than six inches in depth, are to be re-graded and compacted. After dumping of fill material on the backfill surface, the material is to be spread by approved methods in approximately 6 inches compacted thickness.

Moisture Control: The material in each layer shall be compacted by rolling and shall contain the optimum moisture required for maximum compaction, as nearly practicable and as determined by the soils engineer. The moisture content shall be uniform throughout all layers. If in the opinion of the soils engineer it is not possible to obtain moisture content by adding water on the fill surface, the contractor may be required to add the necessary moisture to backfill material in the borrow area.

Compaction: When the moisture condition and content of each spread layer is satisfactory, it shall be compacted by a method approved by the soils engineer to **95% ASTM D698 (Standard Proctor Density) for slab areas, and 98% ASTM D698 for footing and/or pad areas.** A Standard Proctor test is to be performed for each typical fill material and frequent tests of the density of the fill must be taken.

In general, to compact cohesion-less free-draining materials, *the above guidelines also apply.*

When compacting cohesion-less free-draining materials such as gravel and sand, the materials shall be deposited in layers and compacted by treads of a crawler type tractor, surface of internal vibrators, pneumatic or smooth rollers, power or hand tampers, or by any other means approved by the soils engineer. The thickness of the horizontal layers after compaction is not to exceed 6 inches compacted thickness if compaction is performed by tractor treads, surface vibrators or similar equipment, or not more than penetrating length of the vibrator head if compaction is performed by internal vibrators. When the moisture content and condition of each spread layer is satisfactory, it shall be compacted by a method approved by the soils engineer to **91% ASTM D1557 (Modified Proctor Density) for slab areas, and 94% ASTM D1557 for footing and/or pad areas.**

CONSTRUCTION DETAILS – GENERAL COMMENTS:

In any soil investigation, it is necessary to assume that the subsurface soil conditions do not vary greatly from the conditions encountered in the field and laboratory testing. The accompanying design is presented using best professional judgment based on the limits of the extent of testing commissioned by the client. Our experience has been that at times, soil conditions do change and variations do occur. These may become first apparent at the time of excavation for the foundation system.

****If soils conditions are encountered which appear different from the test borings as presented in this report, it is required that this office be called to make an observation of the open excavation prior to placing the footings. The cost of this observation is not part of this report.****

This project should be constructed by a qualified contractor with experience in similar projects. The owner/builder is advised to observe and document the construction process to ensure the construction is performed in accordance with the design drawings and technical specifications. **The foundation and retaining walls must be well cured and well braced prior to backfilling.**

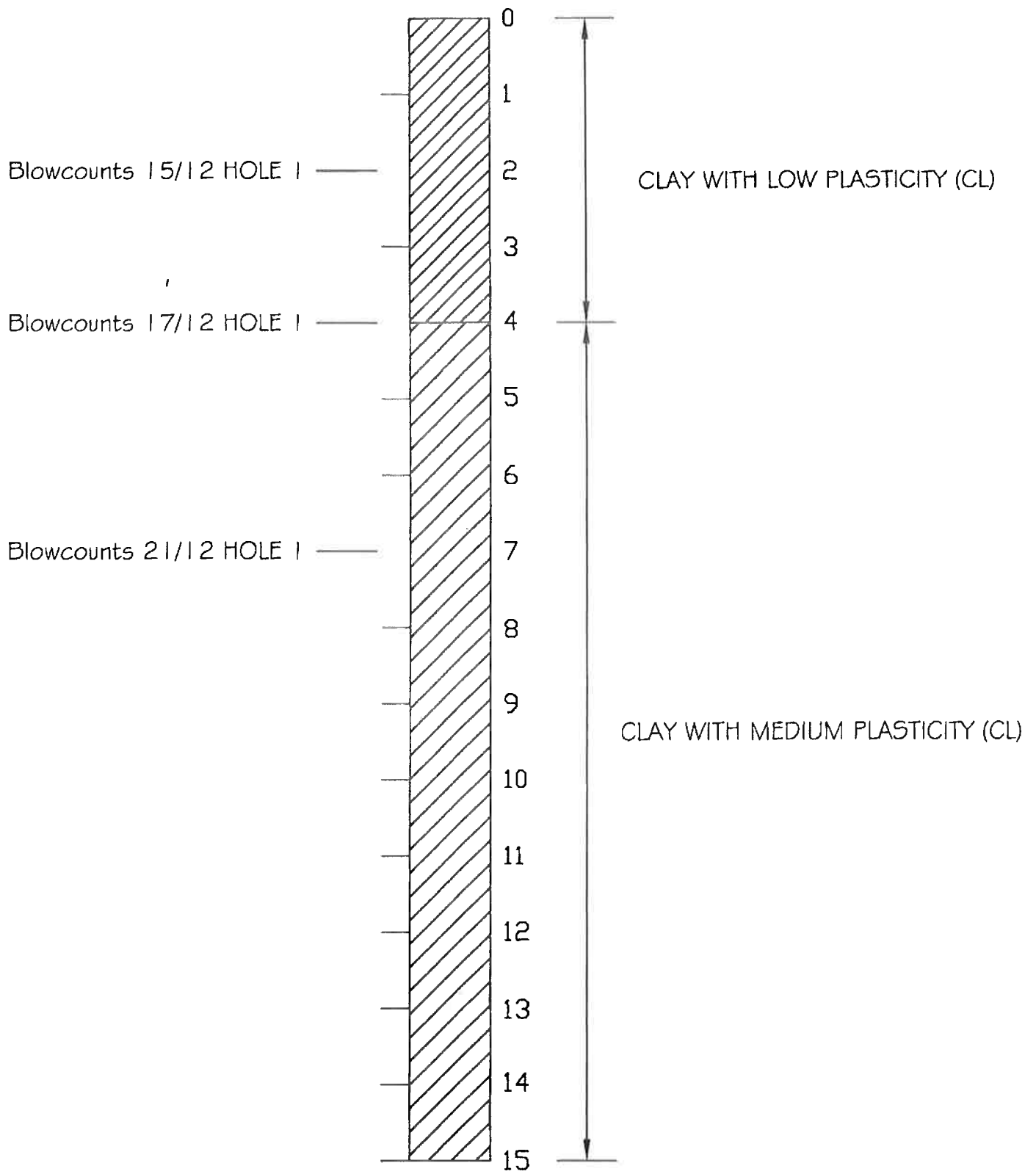
This report does not address general hillside stability, landslide potential, and/or other natural hazards. Several areas in the Colorado Front Range have known geologic hazards associated with them. We recommend that readers of this report educate themselves further as to the existence of geologic hazards on or around their specific property of interest. The Colorado Geologic Survey {www.geosurvey.state.co.us or 303-866-2611} is a good source for publications (maps, reports, etc.) dealing with specific geologic issues and/or issues related to specific geographic areas.

DISCLAIMER:

We do not guarantee the performance of the project in any respect, but only that our engineering work and judgments rendered meet the standard care of our profession. The presence of underground workings (e.g. coal mines) and subsidence potential from any workings was not part of this investigation. The owner should contact the State and County agencies to determine if mining has been conducted in the area and if any precautions are recommended.

THE PARTIES SPECIFICALLY AGREE THAT *HIGH PLAINS ENGINEERING & DESIGN, LLC*. HAS NOT BEEN RETAINED NOR WILL THEY RENDER AN OPINION CONCERNING ANY ENVIRONMENTAL ISSUES, HAZARDOUS WASTE OR ANY OTHER KNOWN OR UNKNOWN CONDITIONS THAT MAY BE PRESENT ON SITE.

DUE TO CHANGING TECHNOLOGY, BUILDING CODES AND CITY/COUNTY REQUIREMENTS, THIS SOIL REPORT MUST BE USED WITHIN ONE YEAR OF THE DATE ON THE FRONT OF THE REPORT OR MUST BE REVISED.

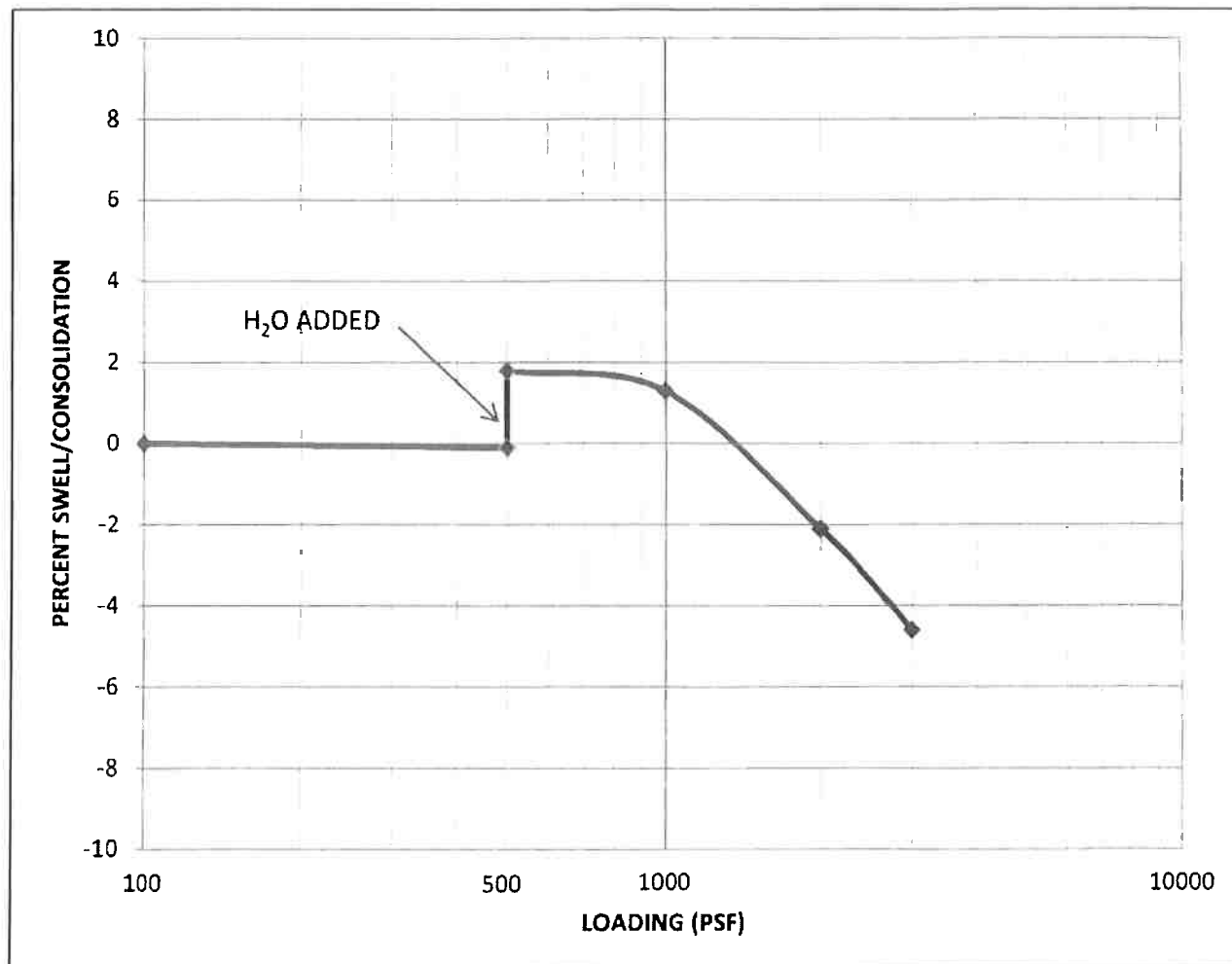


TEST HOLE(S) 1 # 2



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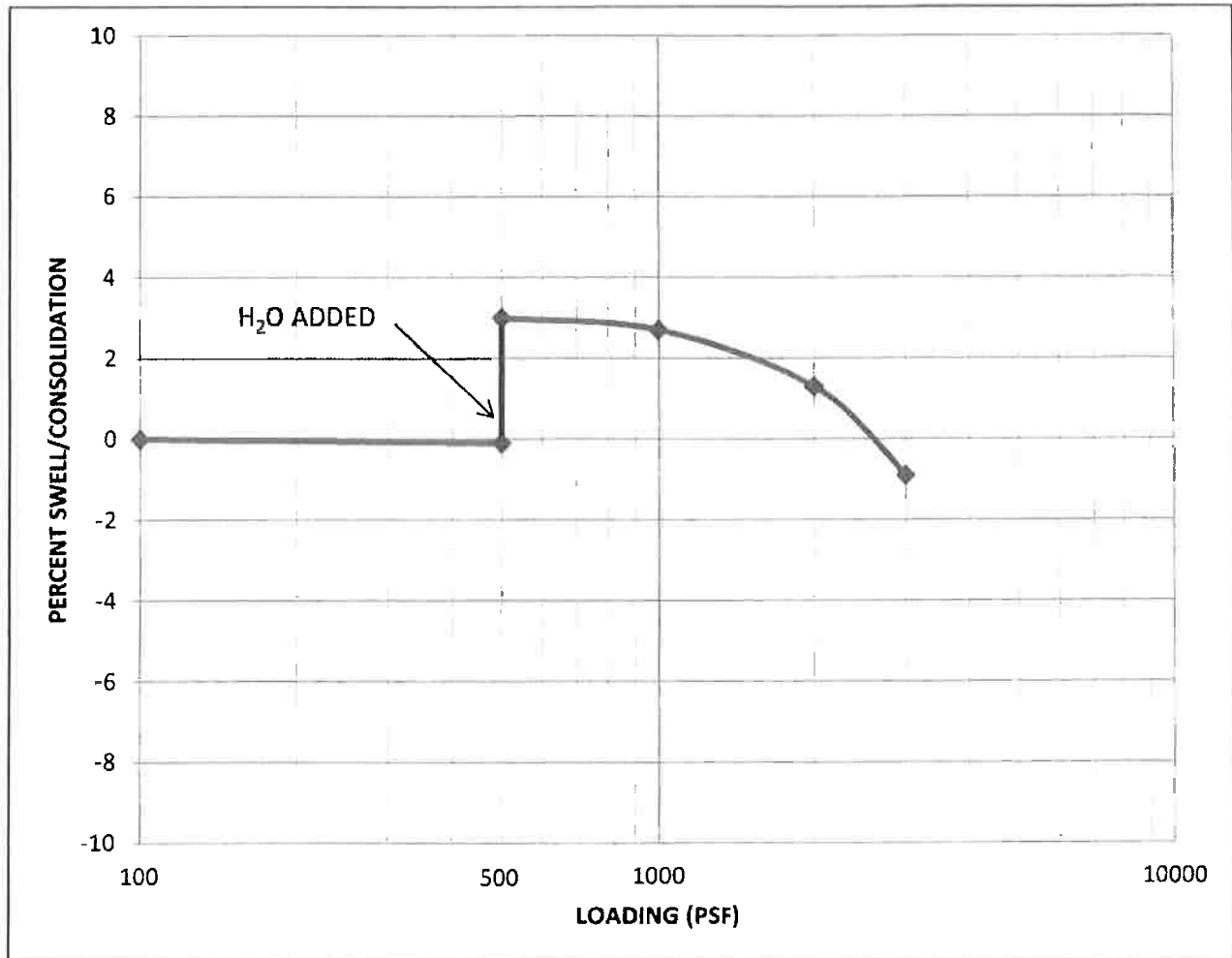
HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	2' BC	36.48	21.92	14.57	1.9		9.65

SOIL TYPE: CLAY WITH LOW PLASTICITY (CL)

JOB NO:	19-9435	JOB LOCATION:	
DATE:	1/22/20	FUTURE 1.65 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
DRAWN:	KELSEY	LOT 3, A PART OF THE SW1/4 OF SEC. 19, T2N, R63W OF THE 6TH P.M.	
CHECKED:	TMS	WELD COUNTY, CO	



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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	4' BC	38.66	21.34	17.32	3.1		9.46

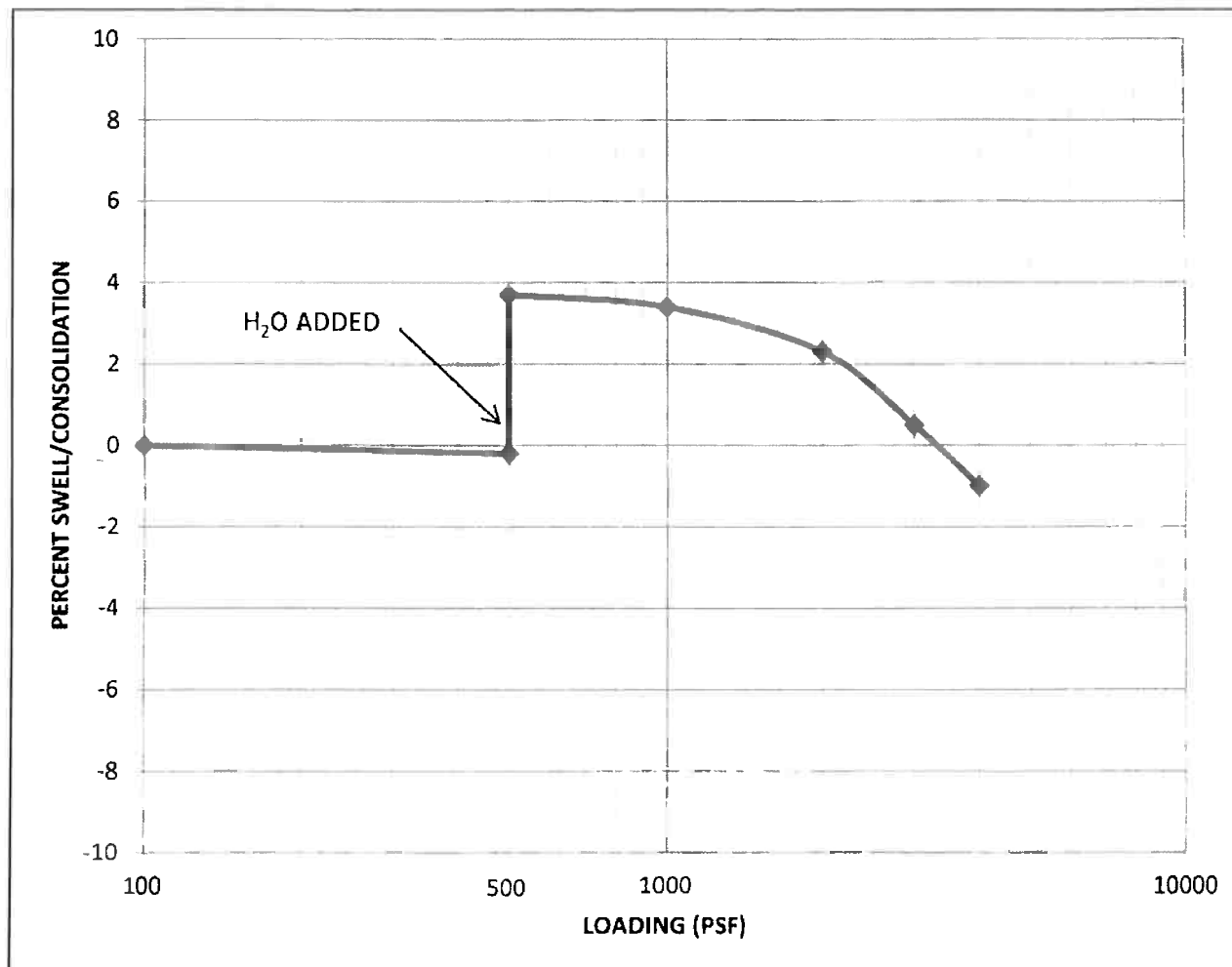
SOIL TYPE: CLAY WITH MEDIUM PLASTICITY (CL)

JOB NO:	19-9435	JOB LOCATION:	
DATE:	1/22/20	FUTURE 1.65 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	7' BC	39.82	22.22	17.60	3.9		11.41

SOIL TYPE: CLAY WITH MEDIUM PLASTICITY (CL)

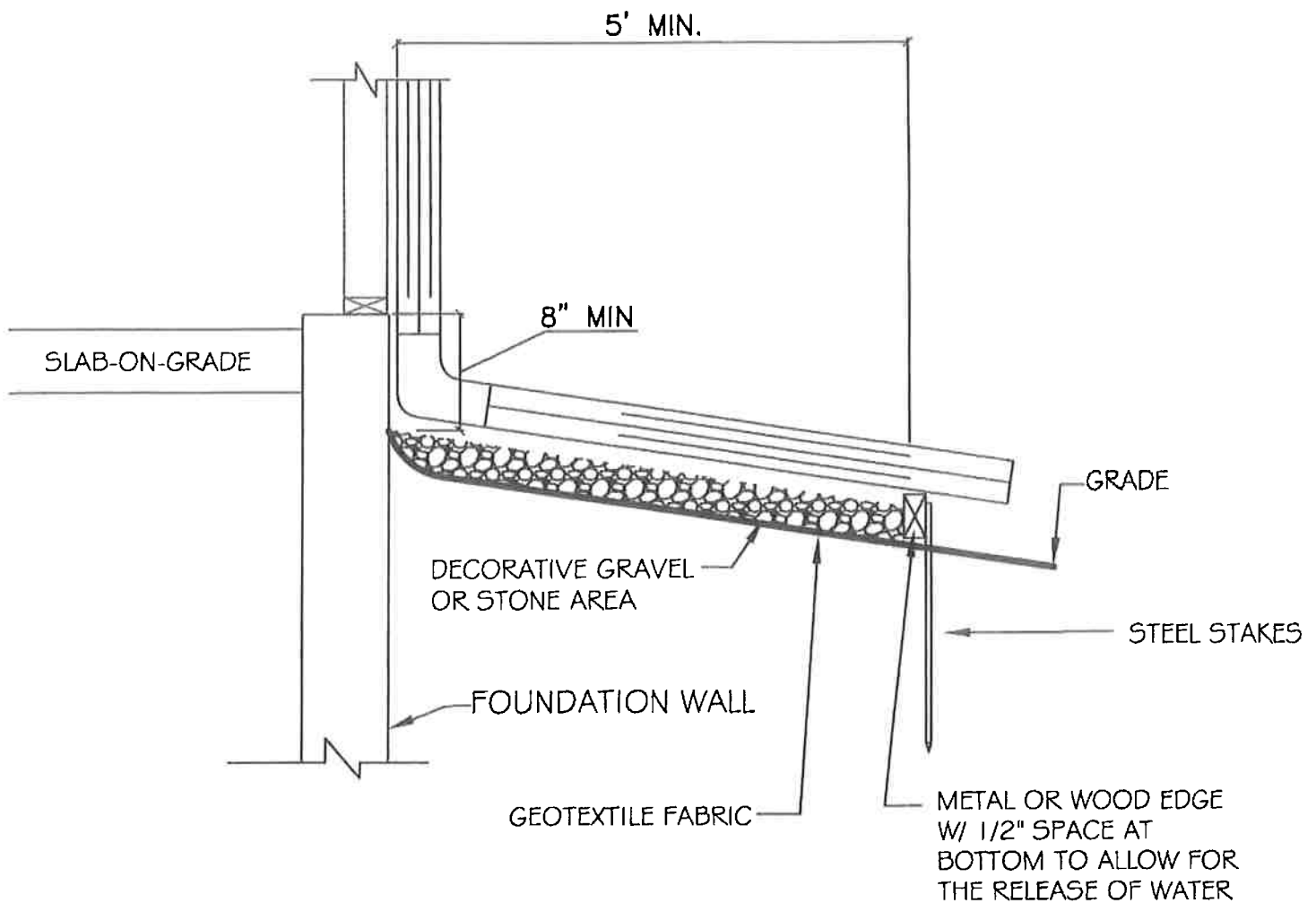
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FOUNDATION GRADING DETAIL



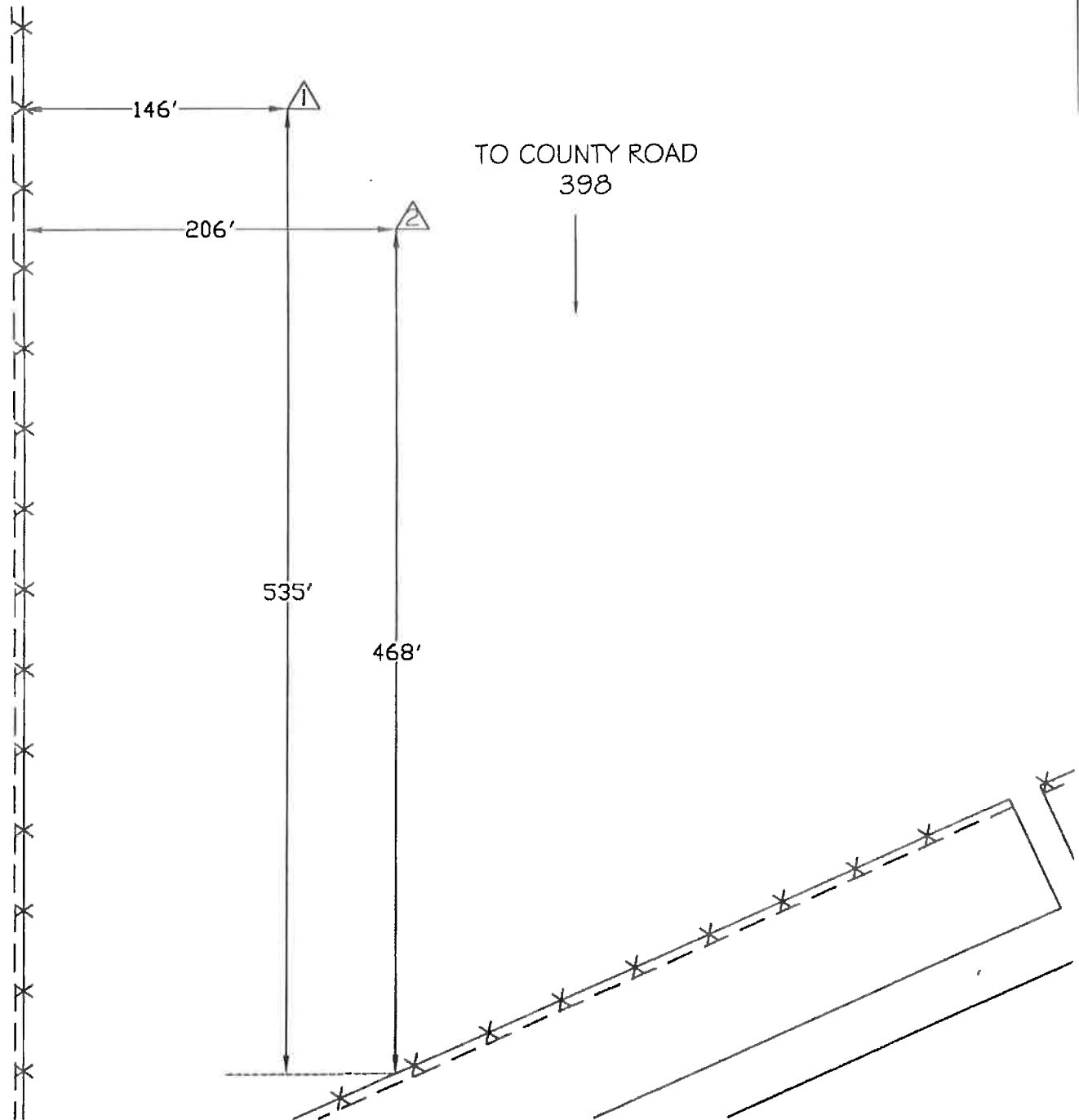
NOTE

1. PROVIDE A MINIMUM SLOPE OF 12" IN THE FIRST 10'-0" FROM FOUNDATION (10%)
2. DOWNSPOUTS AND EXTENSIONS SHOULD EXTEND BEYOND THE GRAVEL OR STONE AREA
3. HARDSCAPING NEXT TO FOUNDATION SHOULD SLOPE AWAY AT 2% SLOPE



SITE MAP

FUTURE 1.65 ACRE PARCEL CURRENTLY LOCATED WITHIN PARCEL 130319300014
LOT 3, A PART OF THE SW 1/4 OF SECTION 19, T2N, R63W OF THE 6TH P.M.
WELD COUNTY, CO



LEGEND

- O - Percolation Test Hole
- X - Percolation Profile Hole
- △ - Soil Profile Hole
- ** - Fence
- ☆ - Bench Mark
- - Soil Pit

All locations shown above are based on specific information furnished by others or estimates made in the field by High Plains Engineering & Design personnel. The locations, distances, directions, etc. are not the result of a property survey but are approximations and are not warranted to be exact. It is the owner/builder's responsibility to define property boundaries and ensure all onsite improvements are located within the platted site and out of inappropriate easements. All distances are to be verified prior to excavation.



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3. Provide frequent scoring of the slabs in square dimensions (non- rectangular) to provide joints for controlled cracking of the slab. Control joints should be placed at distances equal to 24 to 30 times the slab thickness and the depth of sawed control joints should be $\frac{1}{4}$ of the slab thickness. Joints should be sawed as soon as the concrete will withstand the energy of sawing without raveling the edges of the joint. For most concrete mixtures, sawing should be completed within 6 to 18 hours after pouring, but never more than 24 hours. Install a good quality sealant (pliable/non-hardening) in these joints to prevent surface discharges of liquid from penetrating slab sub-grades.
4. The soils that will support the concrete slabs should be kept moist during construction by occasional sprinkling of water. The soils should be moistened to +/- 2 % optimum moisture within 24 hours of pouring the slabs. This procedure will help maintain the moisture content of the underlying soil. **Heavy watering or pooling of any kind next to the foundation or within the backfilled area is not recommended.**

BACKFILL:

The foundation and retaining walls must be well cured and well braced prior to backfilling.

Any soil disturbed adjacent to bearing foundation components are to be **re-compacted to a minimum of 95% Standard Proctor Density (ASTM D698)**. Backfill that bears concrete slabs shall be compacted to 95% Standard Proctor Density (ASTM D698). Mechanical compaction methods shall be utilized, (water-flooding techniques are strictly prohibited). See Compaction Section for more information regarding compaction requirements and techniques.

Proper drainage away from the foundation walls shall be provided. The owners are advised to immediately fill any settled areas to eliminate water accumulation near the foundation. A minimum slope of 12 inches in the first 10 feet from the perimeter of the building is recommended. Roof downspouts and sill cocks should discharge into long concrete splash blocks (5 feet long min.) or into gutter extensions to deposit runoff water beyond the limits of the backfill soil near the foundation walls. Plastic membranes should not be used to cover the ground surface immediately surrounding the structure; geotextile fabric should be utilized for weed control. Any drainage water from uphill shall be diverted around the structure.

Sprinkling systems should not be installed or direct water to be within 10 feet of the foundation. The owner/builder is also advised that irrigation lines can leak and/or break, resulting in release of excessive amounts of water near the foundation. This can cause damage to slabs and foundation walls. **WATER ACCUMULATION AROUND FOUNDATION ELEMENTS IS THE MAIN CAUSE OF DISTRESSED FOUNDATIONS.**

COMPACTION:

Placing Fill: No brush, sod, frozen material, perishable material, unsuitable material, or stones of four inches or greater in maximum dimension shall be placed in the fill. The distribution of the material on the fill shall be such as to avoid the formation of layers of materials differing substantially in characteristics from the surrounding materials.

The materials are to be delivered to the backfill surface at a uniform rate, and in such quantity as to permit a satisfactory construction procedure. Unnecessary concentration of backfill machinery travel tending to cause ruts and other hollows more than six inches in depth, are to be re-graded and compacted. After dumping of fill material on the backfill surface, the material is to be spread by approved methods in approximately 6 inches compacted thickness.

Moisture Control: The material in each layer shall be compacted by rolling and shall contain the optimum moisture required for maximum compaction, as nearly practicable and as determined by the soils engineer. The moisture content shall be uniform throughout all layers. If in the opinion of the soils engineer it is not possible to obtain moisture content by adding water on the fill surface, the contractor may be required to add the necessary moisture to backfill material in the borrow area.

Compaction: When the moisture condition and content of each spread layer is satisfactory, it shall be compacted by a method approved by the soils engineer to **95% ASTM D698 (Standard Proctor Density) for slab areas, and 98% ASTM D698 for footing and/or pad areas.** A Standard Proctor test is to be performed for each typical fill material and frequent tests of the density of the fill must be taken.

In general, to compact cohesion-less free-draining materials, *the above guidelines also apply.*

When compacting cohesion-less free-draining materials such as gravel and sand, the materials shall be deposited in layers and compacted by treads of a crawler type tractor, surface of internal vibrators, pneumatic or smooth rollers, power or hand tampers, or by any other means approved by the soils engineer. The thickness of the horizontal layers after compaction is not to exceed 6 inches compacted thickness if compaction is performed by tractor treads, surface vibrators or similar equipment, or not more than penetrating length of the vibrator head if compaction is performed by internal vibrators. When the moisture content and condition of each spread layer is satisfactory, it shall be compacted by a method approved by the soils engineer to **91% ASTM D1557 (Modified Proctor Density) for slab areas, and 94% ASTM D1557 for footing and/or pad areas.**

CONSTRUCTION DETAILS – GENERAL COMMENTS:

In any soil investigation, it is necessary to assume that the subsurface soil conditions do not vary greatly from the conditions encountered in the field and laboratory testing. The accompanying design is presented using best professional judgment based on the limits of the extent of testing commissioned by the client. Our experience has been that at times, soil conditions do change and variations do occur. These may become first apparent at the time of excavation for the foundation system.

****If soils conditions are encountered which appear different from the test borings as presented in this report, it is required that this office be called to make an observation of the open excavation prior to placing the footings. The cost of this observation is not part of this report.****

This project should be constructed by a qualified contractor with experience in similar projects. The owner/builder is advised to observe and document the construction process to ensure the construction is performed in accordance with the design drawings and technical specifications. **The foundation and retaining walls must be well cured and well braced prior to backfilling.**

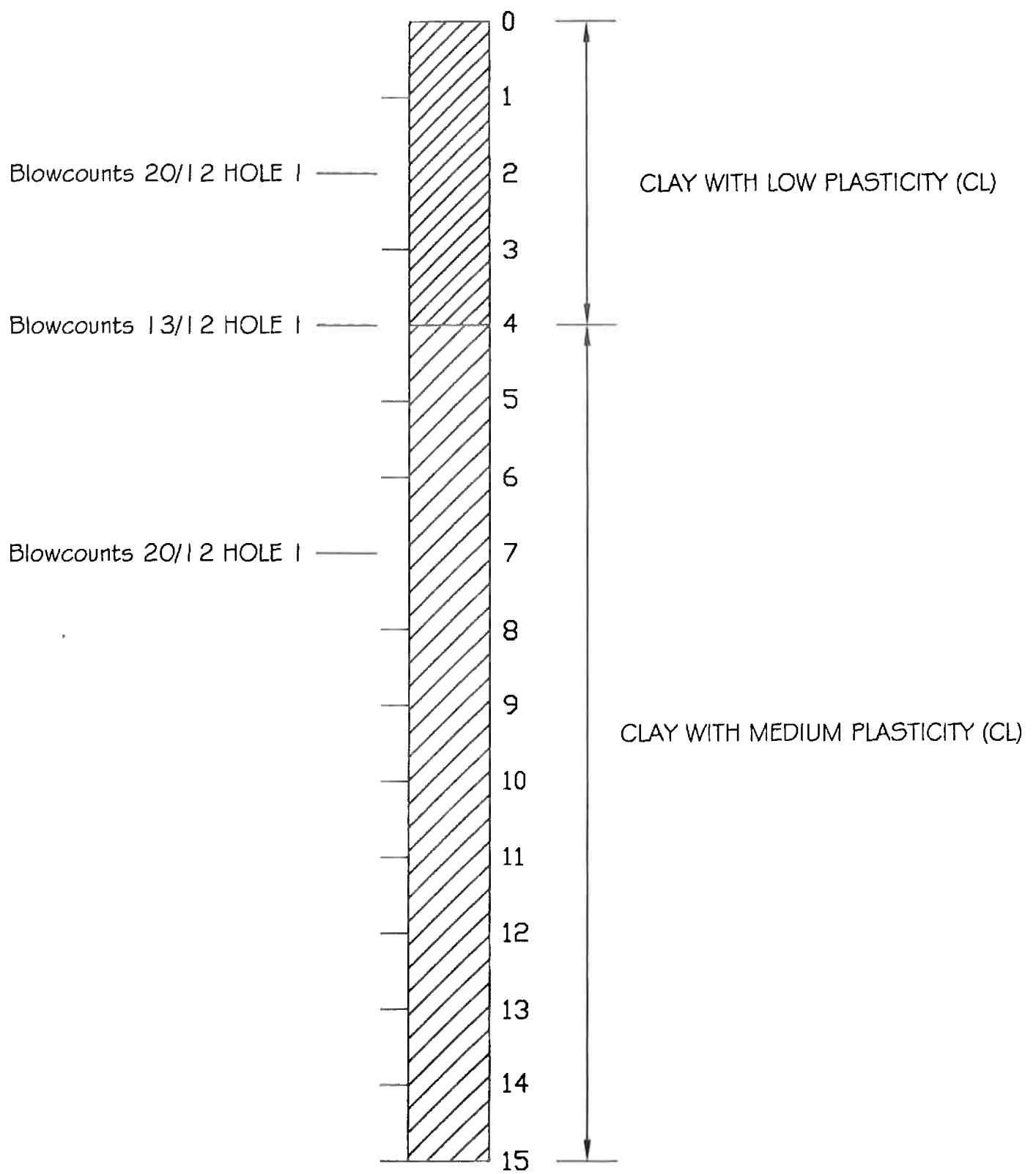
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We do not guarantee the performance of the project in any respect, but only that our engineering work and judgments rendered meet the standard care of our profession. The presence of underground workings (e.g. coal mines) and subsidence potential from any workings was not part of this investigation. The owner should contact the State and County agencies to determine if mining has been conducted in the area and if any precautions are recommended.

THE PARTIES SPECIFICALLY AGREE THAT *HIGH PLAINS ENGINEERING & DESIGN, LLC.* HAS NOT BEEN RETAINED NOR WILL THEY RENDER AN OPINION CONCERNING ANY ENVIRONMENTAL ISSUES, HAZARDOUS WASTE OR ANY OTHER KNOWN OR UNKNOWN CONDITIONS THAT MAY BE PRESENT ON SITE.

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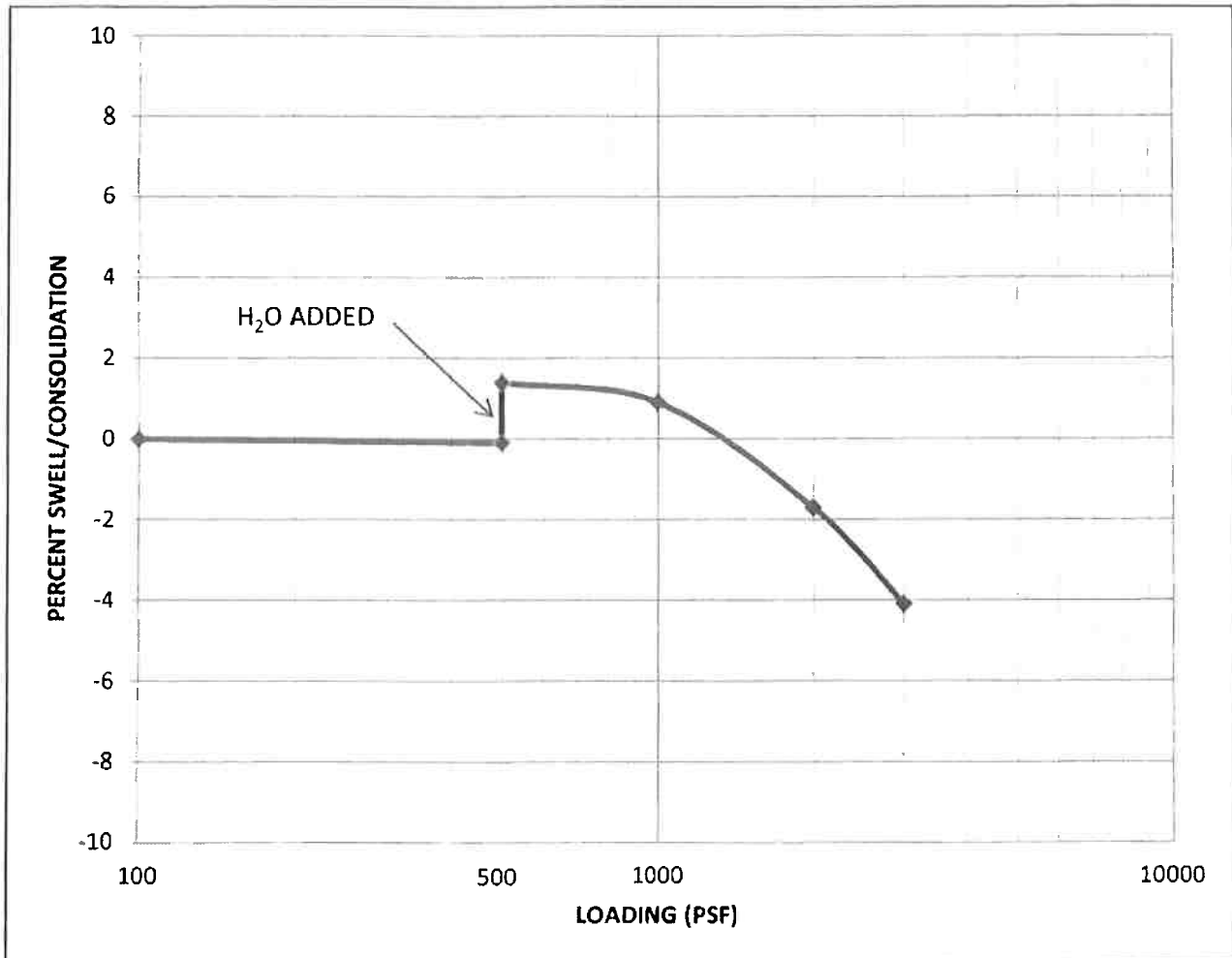


TEST HOLE(S) 1 & 2



HIGH PLAINS ENGINEERING & DESIGN, LLC

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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	2' BC	36.07	21.13	14.93	1.5		7.97

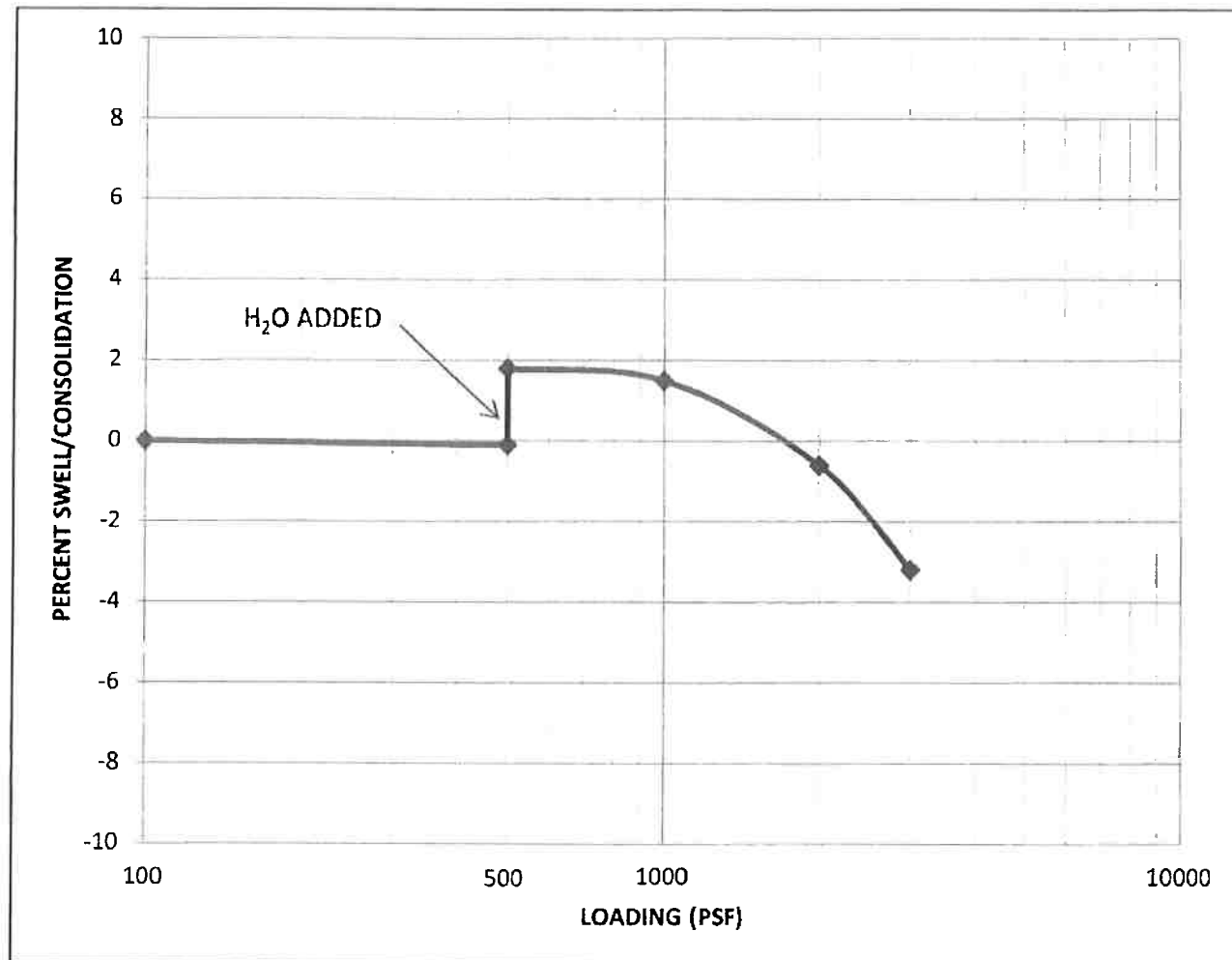
SOIL TYPE:	CLAY WITH LOW PLASTICITY (CL)
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JOB NO:	19-9436	JOB LOCATION:	
DATE:	1/22/20	FUTURE 2.00 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
DRAWN:	KELSEY	LOT 4, A PART OF THE SW1/4 OF SEC. 19, T2N, R63W OF THE 6TH P.M.	
CHECKED:	TMS	WELD COUNTY, CO	



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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	4' BC	38.82	22.11	16.71	1.9		9.53

SOIL TYPE: CLAY WITH MEDIUM PLASTICITY (CL)

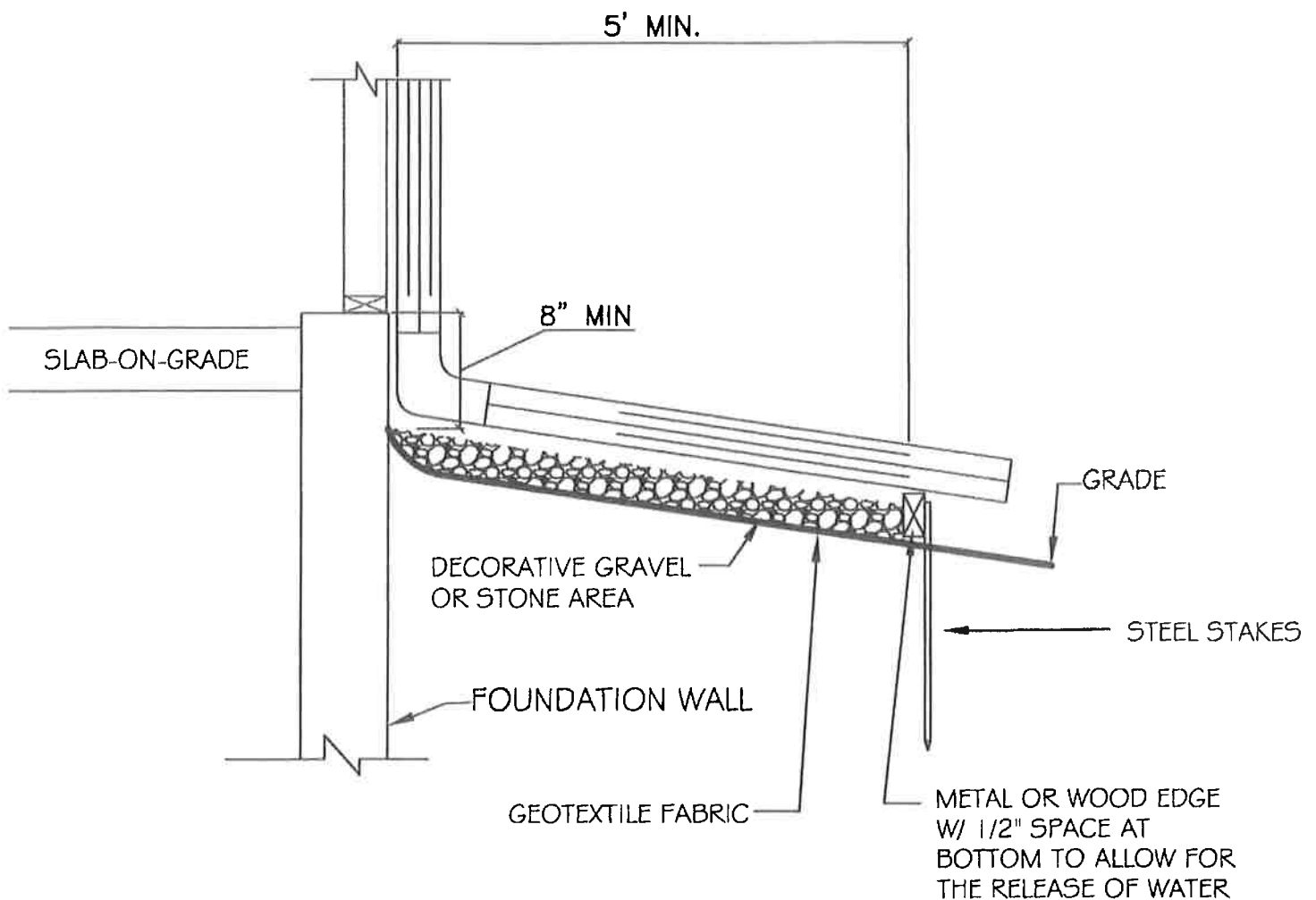
JOB NO:	19-9436	JOB LOCATION:	
DATE:	1/22/20	FUTURE 2.00 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
DRAWN:	KELSEY	LOT 4, A PART OF THE SW1/4 OF SEC. 19, T2N, R63W OF THE 6TH P.M.	
CHECKED:	TMS	WELD COUNTY, CO	



HIGH PLAINS ENGINEERING & DESIGN, LLC

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FOUNDATION GRADING DETAIL



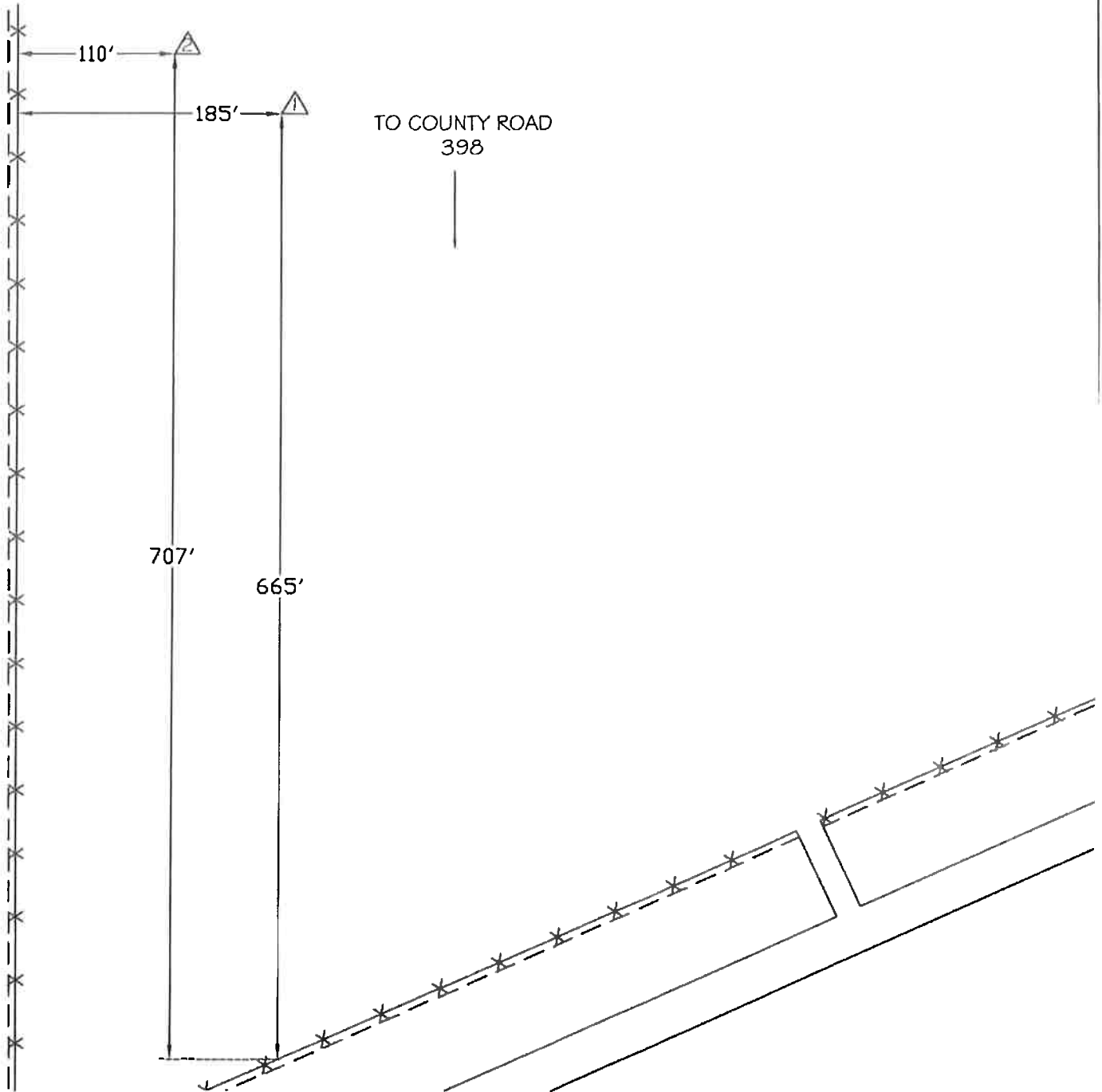
NOTE

1. PROVIDE A MINIMUM SLOPE OF 12" IN THE FIRST 10'-0" FROM FOUNDATION (10%)
2. DOWNSPOUTS AND EXTENSIONS SHOULD EXTEND BEYOND THE GRAVEL OR STONE AREA
3. HARDSCAPING NEXT TO FOUNDATION SHOULD SLOPE AWAY AT 2% SLOPE



SITE MAP

FUTURE 2.00 ACRE PARCEL CURRENTLY LOCATED WITHIN PARCEL 130319300014
LOT 4, A PART OF THE SW 1/4 OF SECTION 19, T2N, R63W OF THE 6TH P.M.
WELD COUNTY, CO



LEGEND

- - Percolation Test Hole
- X - Percolation Profile Hole
- △ - Soil Profile Hole
- XX - Fence
- ☆ - Bench Mark
- - Soil Pit

All locations shown above are based on specific information furnished by others or estimates made in the field by High Plains Engineering & Design personnel. The locations, distances, directions, etc. are not the result of a property survey but are approximations and are not warranted to be exact. It is the owner/builder's responsibility to define property boundaries and ensure all onsite improvements are located within the platted site and out of inappropriate easements. All distances are to be verified prior to excavation.



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SUBSURFACE INVESTIGATION AND FOUNDATION RECOMMENDATIONS

Prepared For:

Platte River Investments, Inc.
8537 County Road 51
Keenesburg, CO 80643

Job Site Located At:

Future 7.16 Acre Parcel Currently Located within
Parcel No. 130319300014
Lot 7
A Part of the SW1/4 of Section 19
T2N, R63W of the 6th P.M.
Weld County, CO

February 13, 2020

JOB #19-9437

Todd M. Schroeder P.E. 33548



AGREEMENT OF PURPOSE AND DISCLAIMER:

The parties specifically agree and contract that the purpose of the provided subsurface investigation is to test, analyze, and provide geotechnical recommendations for the foundation recommendations. This report presents a description of subsurface conditions encountered at the site, design, and construction criteria influenced by the subsurface conditions. The opinions and recommendations presented in this report are based on the data generated during this field exploration, laboratory testing, and our experience. A foundation design sealed by a Professional Engineer is required to obtain a building permit but is not included in this report.

The parties specifically agree that High Plains Engineering & Design, LLC has not been retained nor will they render an opinion concerning environmental issues, hazardous waste or any other known and or unknown conditions that may be present on the job site, since this is not our area of expertise.

LOCATION AND SITE CONDITIONS:

This report represents the results of the data obtained during the subsoil investigation for the proposed steel building located at the Future 7.16 Acre Parcel currently located within Parcel No. 130319300014, Lot 7, A Part of the SW1/4 of Section 19, T2N, R63W of the 6th P.M., Weld County, CO.

The proposed building site is a vacant lot. The site is reasonably level with approximate slopes of 1.0% to the East. The lot appears to be well drained with no erosion evident.

The depths of the excavation are anticipated to range from two (2) to four (4) feet below grades that existed at the time of this investigation. It is anticipated that final grades may be adjusted to accommodate drainage and construction depths. It is recommended that we review the final grading plan to determine if any revisions to the recommendations presented in this report are necessary.

SUBSOIL CONDITIONS:

Two, four-inch-diameter holes were drilled up to a depth of fifteen feet at the project site on January 7, 2020, as shown on the attached site map. Soil samples were analyzed in the field and laboratory to determine the characteristics of the soil (per Unified Soil Classification System) for identification and foundation design recommendations. In general, the soil profiles in test-holes #1 & #2 indicated Clay with Low Plasticity (CL) to a final depth of 15 feet.

The Standard Penetration Test per ASTM D1586 showed 17 blows for a 12-inch penetration at a depth of 2 feet, 17 blows for a 12-inch penetration at a depth of 4 feet, and 18 blows for a 12-inch penetration at a depth of 7 feet. Please note that actual subsurface soil conditions may vary between samples and locations tested.

One-dimensional swell/consolidation tests were performed on selected samples to evaluate the expansive, compressive and collapsing nature of the soils and/or bedrock strata. These tests indicated an expansion potential of 1.5% at a depth of 2 feet, an expansion potential of 2.1% at a depth of 4 feet and an expansion potential of 2.5% at a depth of 7 feet. The soils in this report were classified using the American Society of Testing Materials (ASTM) procedures.

The geotechnical practice in the State of Colorado utilizes a relative scale to evaluate swelling (expansion) potentials. When a sample is wetted under a surcharge pressure of 500 pounds per square foot (psf), the measured swell is classified as low, moderate, high, or very high. The following table represents the relative classification criteria. Please note that the measured swell is not the only criteria for slab-on-grade recommendations and additional factors are considered by the engineer when evaluating the risk for slab-on-grade construction.

TABLE 1	
SLAB PERFORMANCE RISK CATEGORY	REPRESENTATIVE PERCENT SWELL (500 PSF SURCHARGE)
LOW	0 TO <3
MODERATE	3 TO <5
HIGH	5 TO <8
VERY HIGH	≥8

Source: Colorado Association of Geotechnical Engineers, Guideline for Slab Performance Risk Evaluation and Residential Basement Floor System Recommendations (Denver Metropolitan Area), 1996

GROUNDWATER:

Groundwater levels were not recorded at the time of our field investigation; however, it may be possible for groundwater to exist at construction depths at a later date. The groundwater can be expected to fluctuate throughout the year depending on variations in precipitation, surface drainage and irrigation on the site. The possible presence of shallow bedrock/dense clays beneath the surface is favorable for the formation of "perched" groundwater. We recommend that the bottom of the basement or crawlspace excavations be maintained at least 4 feet above the free groundwater level.

The ground water levels recorded represent the free, static water levels after equalization of hydrostatic pressures in the test-hole borings. It is possible that the groundwater levels recorded in the test-hole borings may not be present at those levels in the foundation excavations. Flow rates, seepage paths, hydrostatic pressures, seasonal groundwater fluctuations, water quality and other factors were not determined in this investigation. A program, which may include special well construction, test procedures, long-term monitoring, and analysis, would be necessary to determine these factors.

FOUNDATION RECOMMENDATIONS:

The Clay with Low Plasticity (CL) material has a bearing strength of 2000 pounds per square foot (psf) and an equivalent liquid pressure of 55 pcf. We recommend the use of a continuous spread footing, due to the low/moderate expansion-consolidation potential of the analyzed soils. **The foundation must be constructed at the location in which soils investigation was performed.**

All rebar must be fully contained within the footing/foundation and shall not have any contact with the native soils due to the known risks of soluble sulfates contained in area soils.

Unmonitored moisture content in foundation excavations over an extended period of time can create foundation stress and potential damage after backfilling operations are complete. Foundation excavations left open for a period greater than 7 days will require moisture monitoring and/or moisture augmentation. High Plains Engineering & Design, LLC cannot be held responsible for foundation damage as a result of the failure to monitor moisture content after a period of 7 days. If it's anticipated that the foundation excavation will be left open for an extended period of time, the general contractor/owner shall contact High Plains Engineering & Design, LLC for further recommendations.

All loose and disturbed soil shall be removed before placing of the concrete for the foundation. The bottom of the foundation shall be a minimum of 30" below final grade (or that required by local jurisdiction; whichever is greater) for frost protection.

Soil settlement resulting from the assumed structural loads is estimated to be one inch or less. Soil expansion at this site may be up to one inch in some areas. No foundation wall is to exceed twenty-five feet in length without utilizing buttresses or counterforts unless otherwise designed by the foundation engineer.

Engineered steel reinforcements shall be required in the footings and foundation walls. This will give walls or footing beams the strength to span or bridge over any loose or soft pockets of soil that may develop during construction.

Owners shall be made aware of all contents of this report, and the fact that water accumulation around foundation elements is the primary cause of distressed foundations.

To help prevent secondary damage that could be caused by slab movement, the following construction techniques are additional recommendations for the foundation construction.

SLAB ON GRADE CONSTRUCTION:

Steel Building/Shop and Exterior Slab-on-grade Concrete: The soil encountered at or below anticipated slab elevations has a low swell potential. If removal and replacement of soil below slabs is required, use a non-expansive granular soil with Plasticity Index less than 15 and Liquid Limit less than 30 and compacted to a minimum of 95% ASTM D698 (Standard Proctor Density), within 2% of the optimum moisture content.

The slabs should be constructed as "floating" slabs, which are free to move in the vertical direction. The slabs should not be attached to interior or exterior bearing members. The following design and construction details for slab-on-grade construction are recommended.

1. Floor slabs placed above potentially expansive soils will be expected to heave and crack to some degree. It is impossible to predict with certainty how much slab movement will actually occur. **When the owners cannot tolerate slab movement, we recommend to install a structural slab in place of the conventional slab on grade for floor construction.**
2. Where steel building/shop slabs and exterior slabs-on-grade are chosen, and the owners understand and accept all the risks associated with slab movement, the following recommendations should be followed with the amount of over-excavation and replacement with imported fill determined by the owner/builder.
 - a. Positive separations and/or isolation joints should be provided between slabs and all foundation walls, bearing members (columns), plumbing and utility lines. Isolation may be achieved with ½ inch expansion material or by sleeving. Vertical movement of the slabs should not be restricted. A minimum void of 3 inches should be provided with all non-bearing partition walls to allow movement without damaging the structure. Provide a minimum ½ inch space at the bottom of all doorjamb. It is the owner's responsibility to maintain these void spaces. Mechanical equipment set on the slab will require an expandable/collapsible connection to ductwork, etc.
 - b. Eliminate plumbing under slabs where feasible. Where such plumbing is unavoidable, it should be thoroughly pressure tested during construction.
 - c. A vapor retarder is required per IRC R506.2.3 except use 15-mil minimum thickness, located per ACI guidelines and installed per ASTM specifications. Floor slabs and footings should not be constructed on frozen subgrade. Slabs should be reinforced with rebar or wire mesh to help control crack separation.

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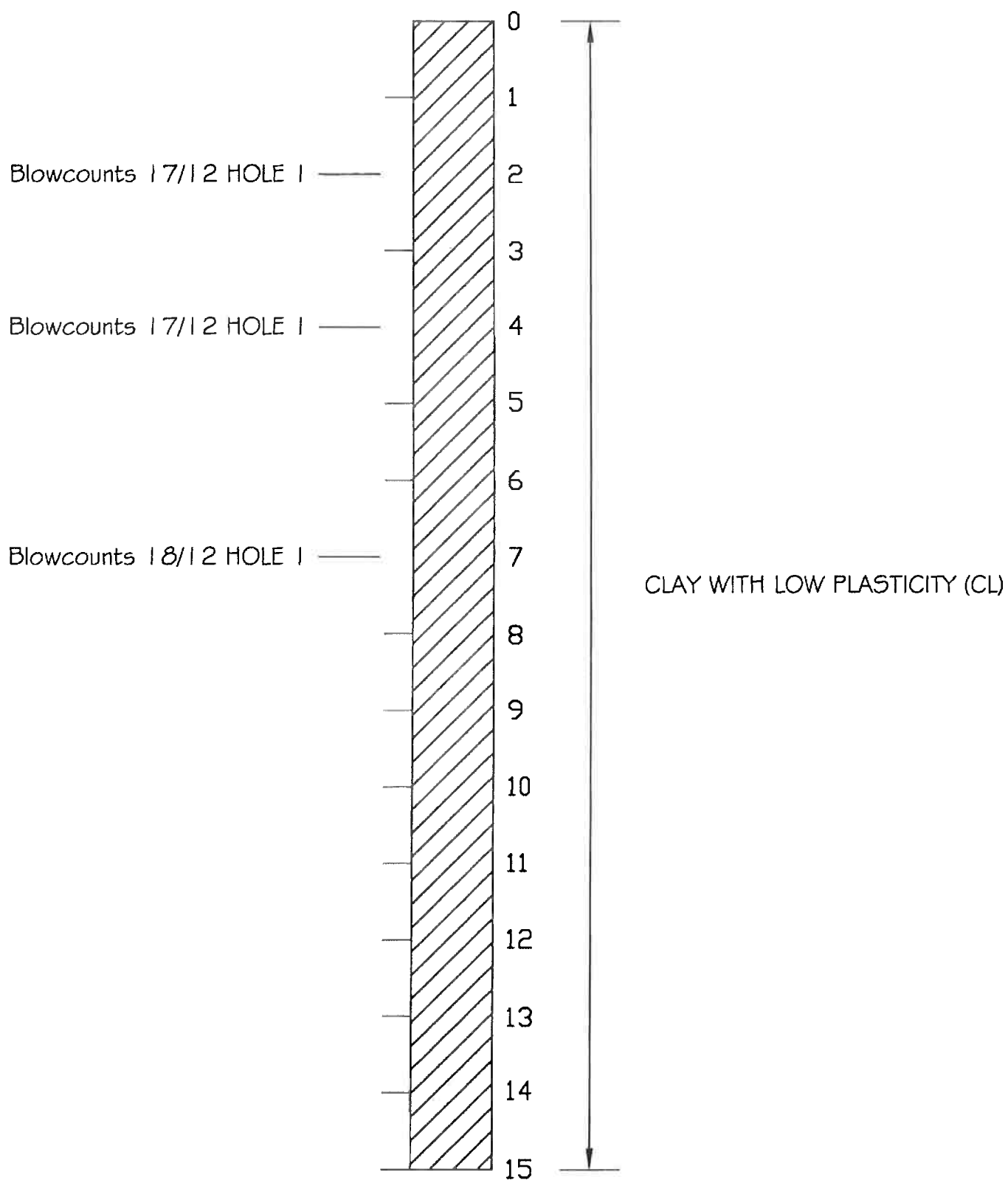
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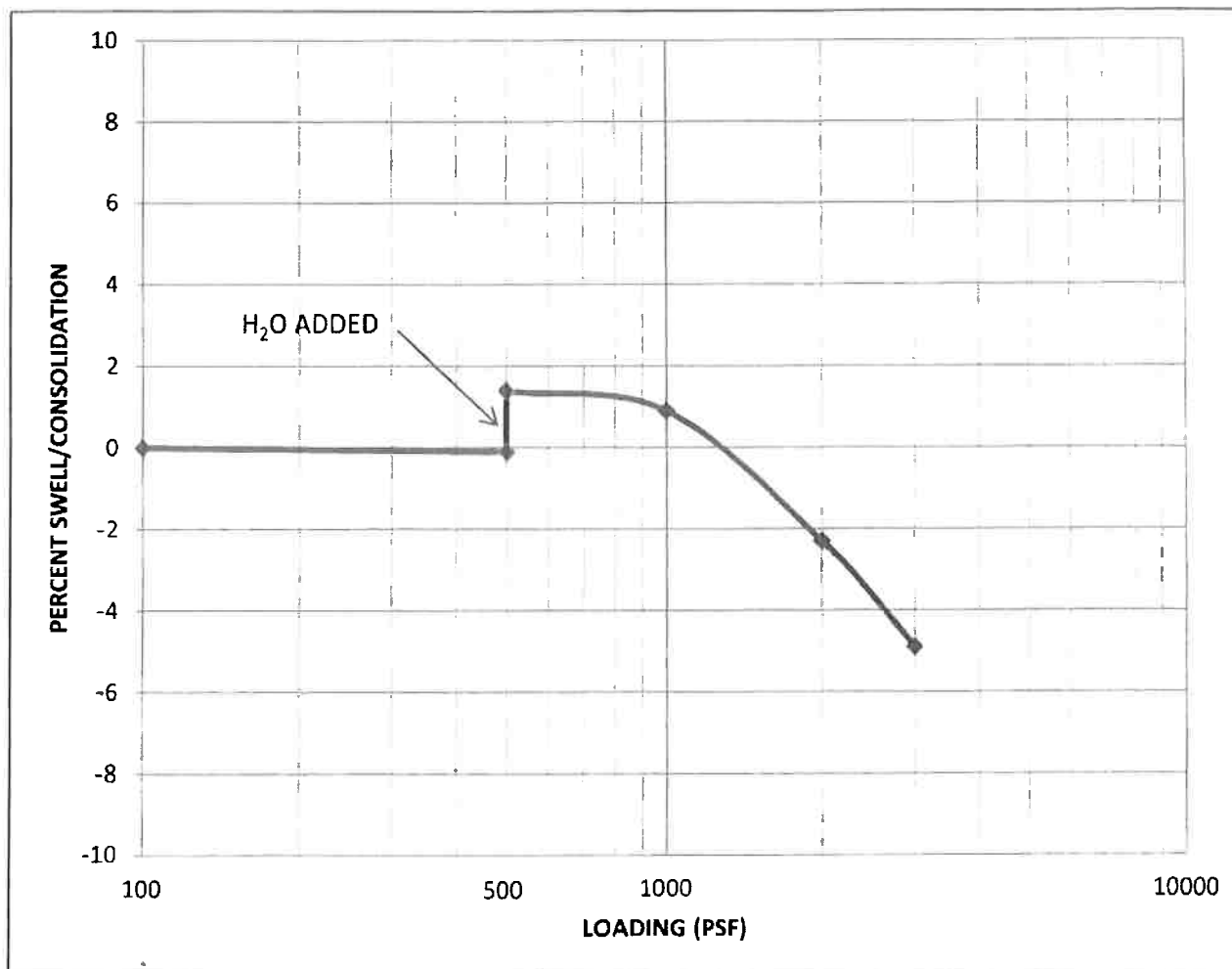


TEST HOLE(S) 1 & 2



HIGH PLAINS ENGINEERING & DESIGN, LLC

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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
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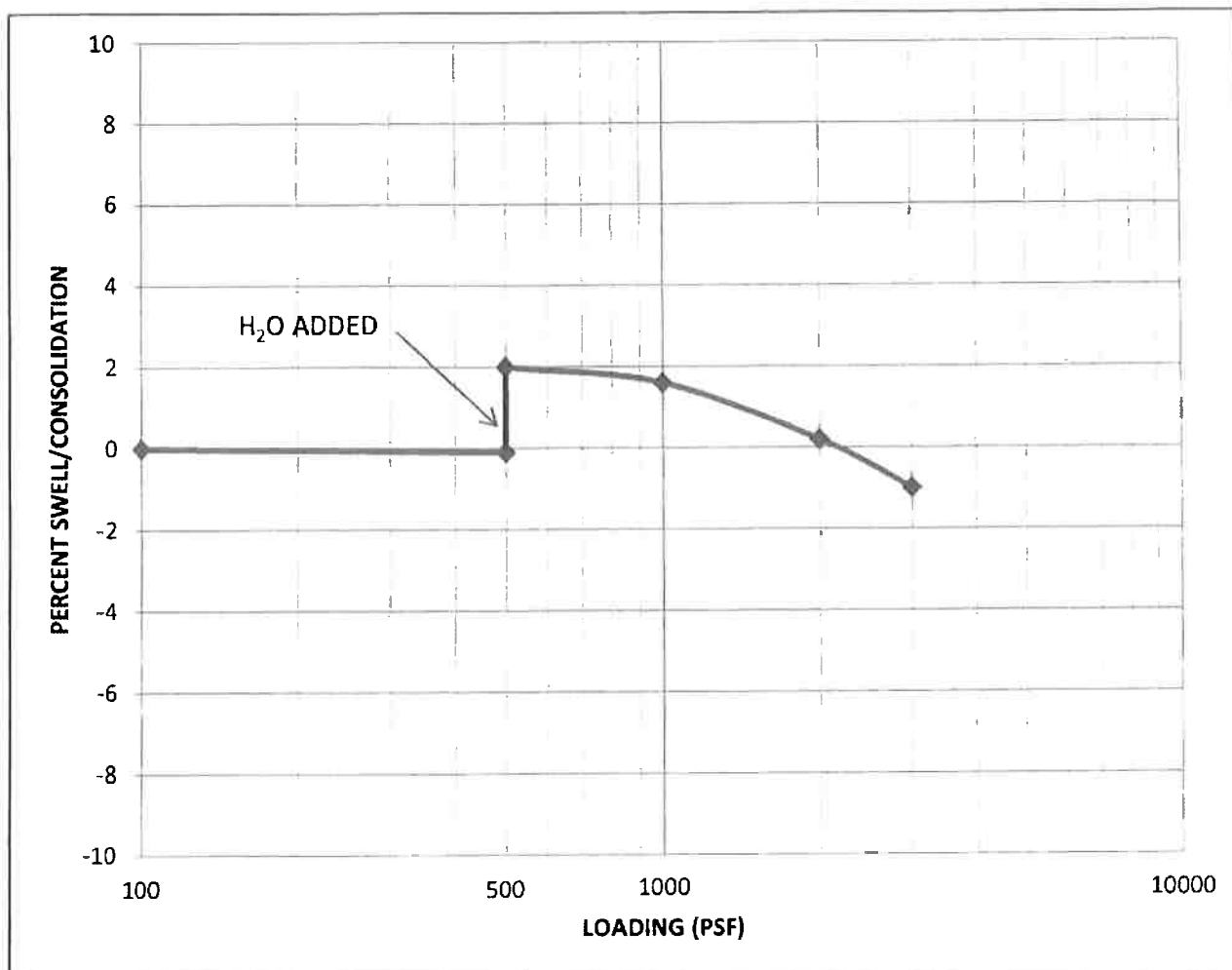
SOIL TYPE: CLAY WITH LOW PLASTICITY (CL)

JOB NO:	19-9437	JOB LOCATION:	
DATE:	1/29/20	FUTURE 7.16 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
DRAWN:	KELSEY	LOT 7, A PART OF THE SW1/4 OF SEC. 19, T2N, R63W OF THE 6TH P.M.	
CHECKED:	TMS	WELD COUNTY, CO	



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HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	4' BC	35.53	21.68	13.85	2.1		9.38

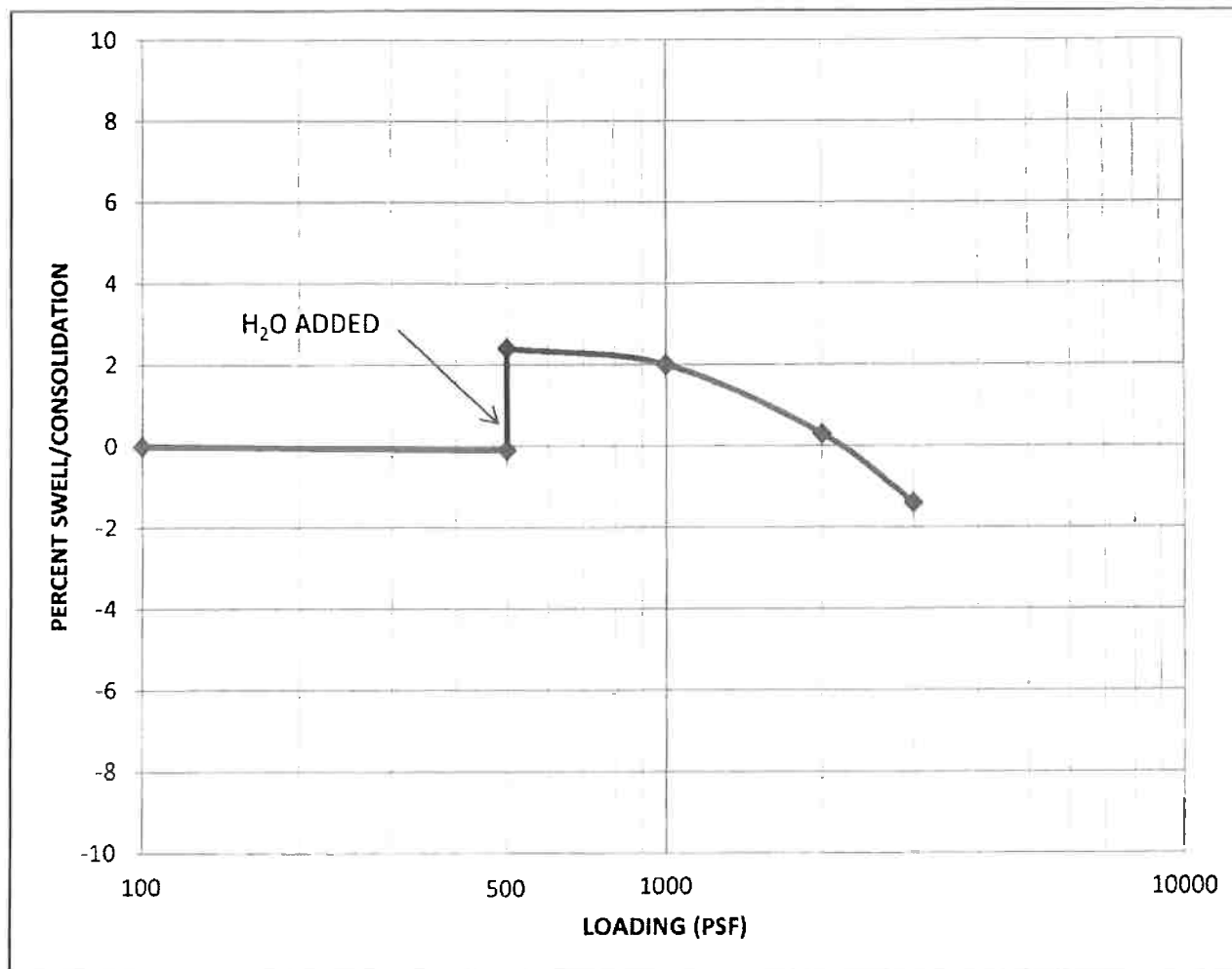
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HIGH PLAINS ENGINEERING & DESIGN, LLC

555 MAIN STREET, P.O. BOX 1077, HUDSON, CO 80642 • PHONE: 303-857-9280 • FAX: 303-857-9238



HOLE #	DEPTH	L.L.	P.L.	P.I.	% EXPANSION	% CONSOLIDATION	% MOISTURE
1	7' BC	36.07	21.74	14.33	2.5		10.31

SOIL TYPE: CLAY WITH MEDIUM PLASTICITY (CL)

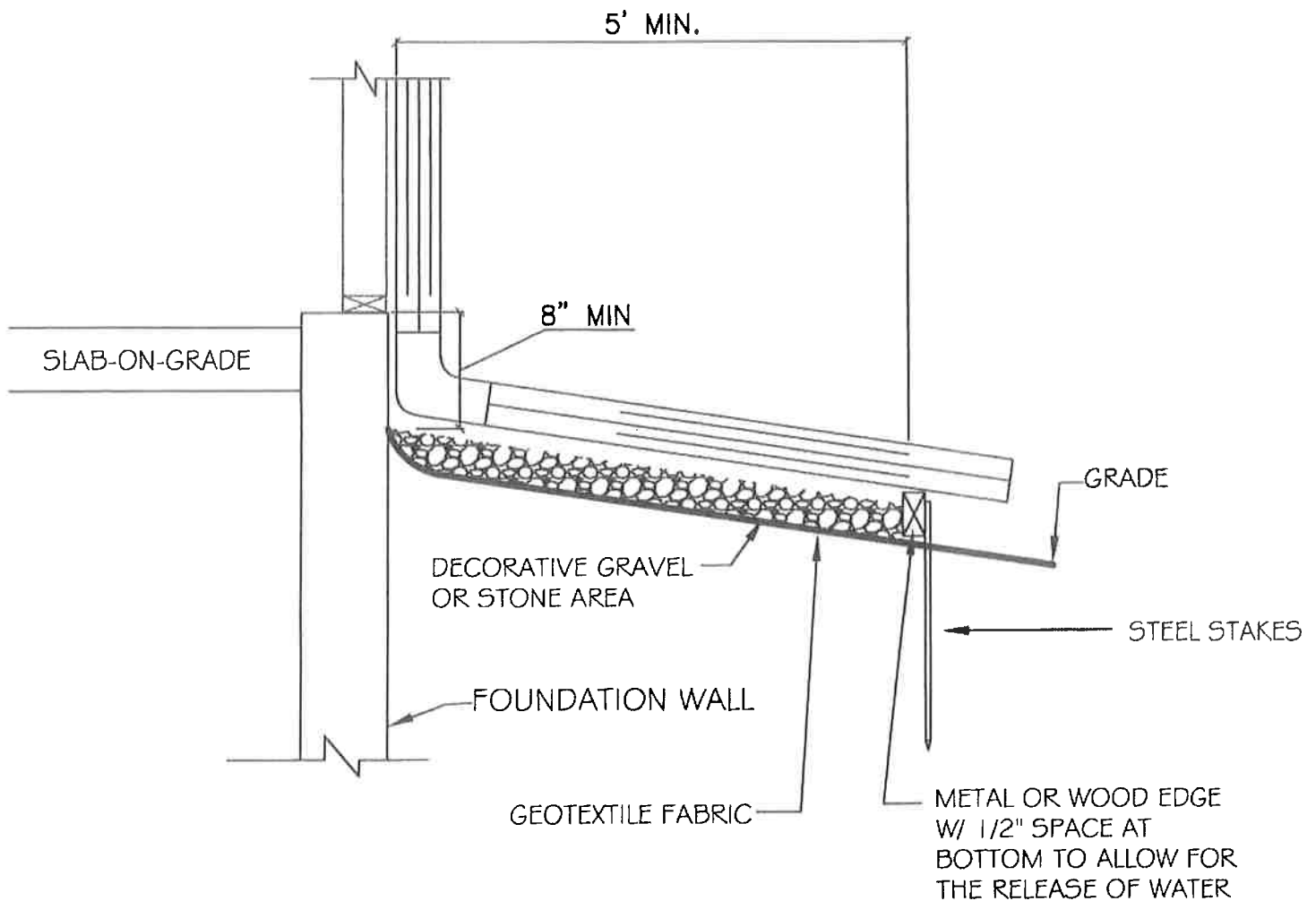
JOB NO:	19-9437	JOB LOCATION:	
DATE:	1/29/20	FUTURE 7.16 ACRE PARCEL LOCATED WITHIN PARCEL 130319300014	
DRAWN:	KELSEY	LOT 7, A PART OF THE SW1/4 OF SEC. 19, T2N, R63W OF THE 6TH P.M.	
CHECKED:	<i>THS</i>	WELD COUNTY, CO	



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FOUNDATION GRADING DETAIL



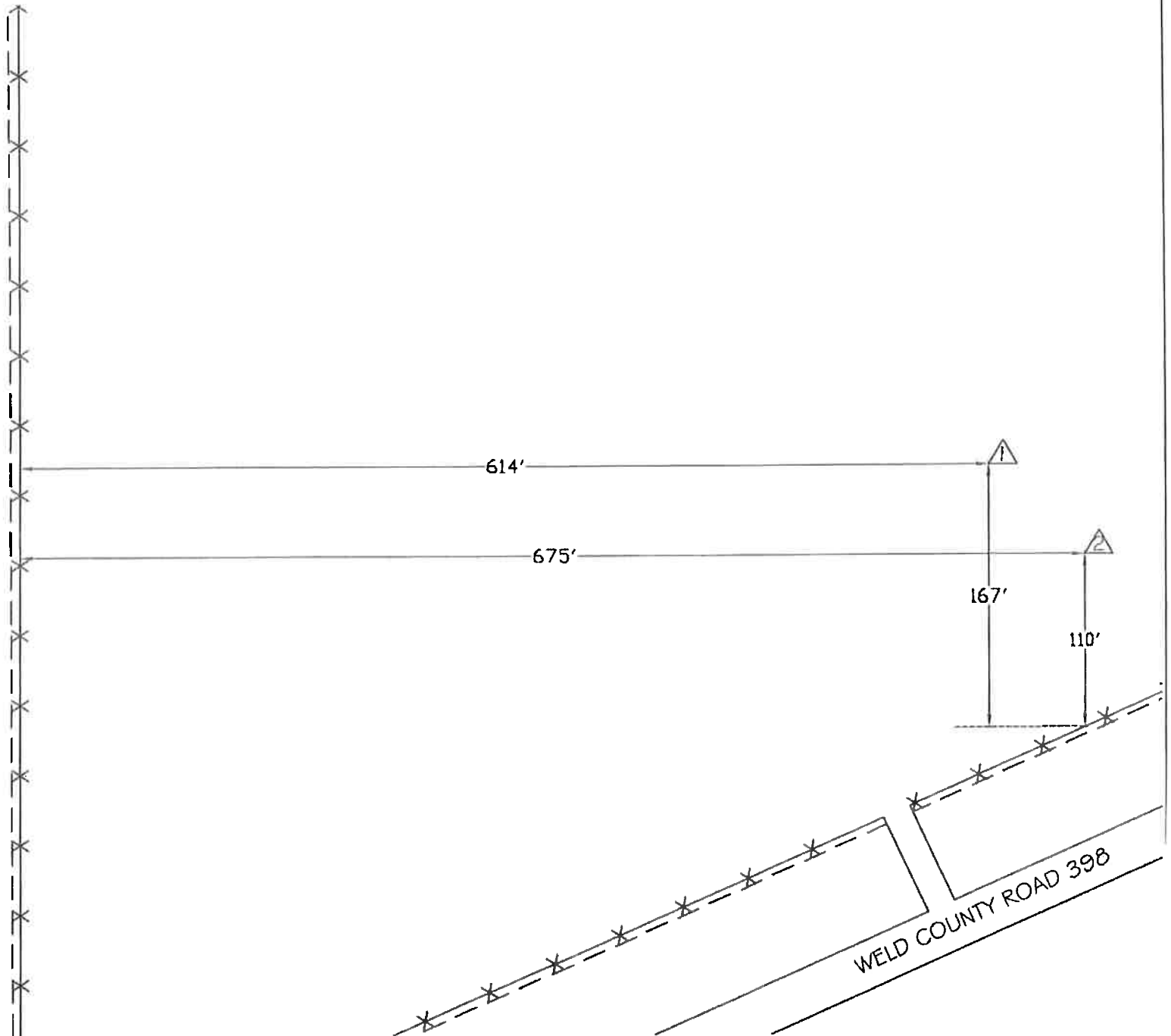
NOTE

1. PROVIDE A MINIMUM SLOPE OF 12" IN THE FIRST 10'-0" FROM FOUNDATION (10%)
2. DOWNSPOUTS AND EXTENSIONS SHOULD EXTEND BEYOND THE GRAVEL OR STONE AREA
3. HARDSCAPING NEXT TO FOUNDATION SHOULD SLOPE AWAY AT 2% SLOPE



SITE MAP

FUTURE 7.16 ACRE PARCEL CURRENTLY LOCATED WITHIN PARCEL 130319300014
LOT 7, A PART OF THE SW 1/4 OF SECTION 19, T2N, R63W OF THE 6TH P.M.
WELD COUNTY, CO



LEGEND

- O - Percolation Test Hole
- X - Percolation Profile Hole
- △ - Soil Profile Hole
- XX - Fence
- ☆ - Bench Mark
- - Soil Pit

All locations shown above are based on specific information furnished by others or estimates made in the field by High Plains Engineering & Design personnel. The locations, distances, directions, etc. are not the result of a property survey but are approximations and are not warranted to be exact. It is the owner/builder's responsibility to define property boundaries and ensure all onsite improvements are located within the platted site and out of inappropriate easements. All distances are to be verified prior to excavation.

APPENDIX B

Rational Method Runoff Calculations

HISTORIC RUNOFF TABLE (RK Annexation)							
BASIN	Impervious	C-YR	I	A	CIA(YR-historic)	Flow	DESIGN POINT
H							
C ₅ (UDFCD 2017)	2.00	0.01	1.96	15.06	0.29	cfs	HE1
C ₁₀₀	2.00	0.44	4.57	15.06	30.27	cfs	

RK ANNEX - HISTORIC RUNOFF CALCCS

for D soils - C₅ C₁₀ C₁₀₀ from Table RO-5
 **for T_i calculations - only C₅ is used

$T_i = (.395^{.5} (1.1 - C_{p1})^2 (L^{.5}) / (S)^{.333}$
 From UDFCD 2016, Equation 6-3
 1-Hour Point Rainfall

2017 UDFCD >>> T_c Check = (26-17i) + [L travel / (60*(14i + 9)(So)^{.5})]

H	100% NCS TYPE B	Imperviousness %	Length	Slope	C _{p1} = peak frequency/ft	T _i **	Velocity	T _i	I _c	check	Use I _c	I	A	CIA ₅ existing	0.29 cfs
5yr	Existing - 5, 10, 100 yr	100% NCS TYPE B	989	0.010	0.01	62.75	1.00	0.00	62.75	25.66	25.66	1.96	15.06	15.06	0.29 cfs
10yr	Overland flow only		989	0.010	0.07	62.75	1.00	0.00	62.75	25.66	25.66	2.44	15.06	15.06	2.57 cfs
100yr	Overland distance 1049 ft, limited to 500 ft per UDFCD RO 2.4.1 Remainder carried as travel		989	0.010	0.44	62.75	1.00	0.00	62.75	25.66	25.66	4.57	15.06	15.06	30.27 cfs

H	100% NCS TYPE B	Imperviousness %	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE	H-76	Use NCS Type C	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE	#DIV/0!
C5			2	90.00	100.00	90.00	40.00	2.00	I		2	90.00	100.00	90.00	40.00	0.40	#DIV/0!
C10			0.01	0.76	0.86	0.76	0.32	0.01	C5		0.07	0.83	0.92	0.83	0.40	0.50	#DIV/0!
C100			0.07	0.78	0.86	0.78	0.38	0.07	C10		0.22	0.87	0.94	0.87	0.50	0.50	#DIV/0!
AREA			0.44	0.84	0.89	0.84	0.61	0.44	C100		0.52	0.91	0.96	0.91	0.69	0.69	#DIV/0!
AREA	15.060		0.00	0.00	0.00	0.00	0.00	15.06	AREA		0.000	0.00	0.00	0.00	0.00	0.00	0.00

TABLE RO-2 (taken from UDFCD Manual - Vol. I)	
Type of Land Surface	Conveyance coefficient, C _v
Heavy Meadow	2.5
Trillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

EXISTING RUNOFF TABLE (RK Annexation)							
BASIN	Impervious	C-YR	I	A	CIA(YR-existing)	Flow	DESIGN POINT
E							
C5 (UDFCD 2017)	2.00	0.01	1.96	15.06	0.29	cfs	E1
C ₁₀₀	2.00	0.44	4.57	15.06	30.27	cfs	
OFF N							
C5 (UDFCD 2017)	3.66	0.02	0.83	19.74	0.39	cfs	O1
C ₁₀₀	3.66	0.45	1.94	19.74	17.17	cfs	
OFF W							
C5 (UDFCD 2017)	6.00	0.04	1.05	25.84	1.15	cfs	O2
C ₁₀₀	6.00	0.46	2.44	25.84	28.93	cfs	

15,060 acres						
OFF E	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE
100% NCS TYPE B						
Imperviousness %	2	90.00	100.00	90.00	40.00	2.00
C5	0.01	0.76	0.86	0.76	0.32	0.01
C10	0.07	0.78	0.86	0.78	0.38	0.07
C100	0.44	0.84	0.89	0.84	0.61	0.44
AREA	15,060	0.00	0.00	0.00	0.00	15.06

25,844 acres						
OFF W	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE
100% NCS TYPE B						
Imperviousness %	2	90.00	100.00	90.00	40.00	6.00
C5	0.01	0.76	0.86	0.76	0.32	0.04
C10	0.07	0.78	0.86	0.78	0.38	0.10
C100	0.44	0.84	0.89	0.84	0.61	0.46
AREA	23,123	0.00	0.00	0.00	2.72	25.84

25,844 acres						
OFF W	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE
100% NCS TYPE B						
Imperviousness %	2	90	100	90	40	6.00
C5	0.01	0.76	0.86	0.76	0.32	0.04
C10	0.07	0.78	0.86	0.78	0.38	0.10
C100	0.44	0.84	0.89	0.84	0.61	0.46
AREA	23,123	0	0	0	2.72	25.84

19,739 acres						
OFF N	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE
100% NCS TYPE B						
Imperviousness %	2	90.00	100.00	90.00	40.00	3.66
C5	0.01	0.76	0.86	0.76	0.32	0.02
C10	0.07	0.78	0.86	0.78	0.38	0.08
C100	0.44	0.84	0.89	0.84	0.61	0.45
AREA	19,122	0.18	0.00	0.00	0.43	19.74

0.275 acres						
ROW 398	Undeveloped	Building	Asphalt	Concrete	Gravel (packed)	EFFECTIVE
100% NCS TYPE B						
Imperviousness %	2	90.00	100.00	90.00	40.00	2.00
C5	0.01	0.76	0.86	0.76	0.32	0.01
C10	0.07	0.78	0.86	0.78	0.38	0.07
C100	0.44	0.84	0.89	0.84	0.61	0.44
AREA	0.275	0.00	0.00	0.00	0.00	0.28

TABLE RO-2 (taken from UDFCD Manual - Vol. I)		
Type of Land Surface	Conveyance coefficient, Cv	
Heavy Meadow	2.5	
Tillage/field	5	
Short pasture/Lawns	7	
Nearly Bare Ground	10.00	
Grassed Waterway	15.00	
Paved areas and shallow paved swales	20.00	

DEVELOPED (RK Annexation)							
BASIN	Impervious	C-YR	I	A	CIA(YR-DEVELOPED)	cfs	DESIGN POINT
LOT 1							
C ₅ (UDFCD 2017)	40.92	0.34	2.00	1.96	1.32	cfs	1
C ₁₀₀	40.92	0.62	4.68	1.96	5.65	cfs	1
LOT 2							
C ₅	42.16	0.35	3.87	1.70	2.28	cfs	2
C ₁₀₀	42.16	0.62	9.02	1.70	9.53	cfs	2
LOT 3							
C ₅	31.37	0.26	1.89	1.65	0.80	cfs	3
C ₁₀₀	31.37	0.57	4.40	1.65	4.16	cfs	3
LOT 4							
C ₅	41.34	0.34	2.21	2.00	1.50	cfs	4
C ₁₀₀	41.34	0.62	5.16	2.00	6.38	cfs	4
LOT 5							
C ₅	40.92	0.34	2.12	1.95	1.39	cfs	5
C ₁₀₀	40.92	0.62	4.95	1.95	5.95	cfs	5
LOT 6							
C ₅	42.16	0.35	2.15	2.32	1.73	cfs	6
C ₁₀₀	42.16	0.62	5.03	2.32	7.23	cfs	6
LOT 7							
C ₅	31.37	0.26	1.92	2.18	1.07	cfs	7
C ₁₀₀	31.37	0.57	4.48	2.18	5.60	cfs	7
ROW RK							
C ₅	41.34	0.34	2.30	0.73	0.57	cfs	8
C ₁₀₀	41.34	0.62	5.38	0.73	2.43	cfs	8

2017 UDFCD >>> Tc Check = (26-17i) + [Ltravel / (60*(14i + 9)(So)^.5)]

[illegible]

LOT 5	Developed -5, 10, 100 yr 100% NCS TYPE B														I 2.12	Δ CIA5 developed 1.95																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	5yr	Initial travel		C5 0.34	1.95 acres II 8.60		Velocity 1.89	II 3.06	Ic 11.66	check 22.16	Use Ic - see above 22.16	CIA10 developed 1.99 cfs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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LOT 1 100% NCS TYPE B	1.960 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.54	1.03	0.00	0.14	0.25
					1.960

LOT 3 100% NCS TYPE B	2.316 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	1.02	0.96	0.00	0.14	0.19
					2.316

LOT 5 119.5	1.950 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.12	1.26	0.00	0.14	0.43
					1.950

LOT 7 497.1597	2.180 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.35	1.68	0.00	0.14	0.00
					2.180

LOT 2 100% NCS TYPE B	1.700 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.40	0.96	0.00	0.14	0.19
					1.700

LOT 4 100% NCS TYPE B	2.001 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.55	1.03	0.00	0.12	0.29
					2.001

LOT 6 183.8	2.316 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.41	1.45	0.00	0.14	0.30
					2.316

ROW RK 2.315610652	0.730 acres				EFFECTIVE
	TOTAL AREA Landscaping	Gravel	Building	Concrete	Asphalt
I	2	40.00	90.00	90.00	100.00
C5	0.01	0.32	0.76	0.76	0.86
C10	0.07	0.38	0.78	0.78	0.86
C100	0.44	0.61	0.84	0.84	0.89
AREA	0.13	0.11	0.00	0.00	0.48
					0.730

TABLE RO-2 (taken from UDFCD Manual - Vol. I)

Type of Land Surface	Conveyance coefficient, Cv
Heavy Meadow	2.5
Tillage/field	5
Short pasture/Lawns	7
Nearly Bare Ground	10.00
Grassed Waterway	15.00
Paved areas and shallow paved swales	20.00

APPENDIX C

Empirical Detention Calculations, ACSDCM, CFSCM, & UDFCD Retention
Calculations, Design Pond Volumes, Channel Capacities, etc

OVERALL REQUIRED INFILTRATION (EMPIRICAL) per CFSCM & UDFCD

Per NOAA Atlas - 24 hr 100 yr rate of 5 inches (conservatively - value interpolated = 4.7)
 Per Colorado Floodplain & Stormwater Criteria Manual (CFSCM) - retention is Tributary area X rainfall depth
 Per UDFCD Volume II - Storage - 3.3.4 Retention Facilities - factor by 2.0

	Tributary Area (ac)	Tributary Area (ft)	Noaa Rainfall (in)	CFSCM		UDFCD Factored 2.0	
				Ret Volume (cft)	Ret Volume (cft)	Ret Volume (cft)	Ret Volume (ac-ft)
POND 1	1.83	79,776	5	33,240	66,480	1.53	
POND 2-3	3.32	144,441	5	60,184	120,367	2.76	
POND 4	2.00	87,167	5	36,320	72,639	1.67	
POND 5-7	7.16	311,819	5	129,925	259,849	5.97	

WATER QUALITY CALCULATIONS

from Figure EDB-2, 40 hr drain @ 1, WQCV= noted below

BASIN	A acres	WQ (in/watershed)	WQCV ac-ft	WQCV cubic feet	TOTAL w/ 10 yr acre ft	TOTAL w/ 100 yr acre ft	TOTAL w/ 10 yr cubic feet	TOTAL w/ 100 yr cubic feet**
LOT 1	1.96	0.19	0.04	1,647.4	0.12	0.20	5,135	7,700
LOT 2	1.70	0.19	0.03	1,428.8	0.10	0.17	4,454	6,679
LOT 3	1.65	0.17	0.03	1,196.1	0.08	0.13	3,452	5,098
LOT 4	2.00	0.19	0.04	1,681.9	0.12	0.20	5,243	7,862
LOT 5	1.95	0.19	0.04	1,638.9	0.12	0.19	5,109	7,661
LOT 6	2.32	0.19	0.04	1,949.9	0.14	0.23	6,070	9,099
LOT 7	2.18	0.17	0.04	1,578.6	0.10	0.17	4,556	6,729
ROW RK	0.73	0.19	0.01	613.6	0.04	0.07	1,913	2,868
TOTAL	14.49	1.49	0.27	11,735	0.82	1.37	35,930.55	53,695.95

** only includes 50% of WQCV

FOREBAY	A acres	WQCV cubic feet	Min Req'd Vol % of WQCV	Min Req'd Vol cubic feet	Max Depth (in)	Forebay Dimensions	Forebay Volume (ft³)	Release Rate 2% of Dev Q (cfs)	Weir (in)
POND 1	1.96	1,647.4	2%	32.9	12	8' * 8'	32	0.11	1.1"
POND 2/3 S	1.70	1,428.8	2%	28.6	12	8' * 8'	32	0.19	2"
POND 2/3 N	1.65	1,196.1	2%	23.9	12	7' * 7'	25	0.08	0.8"
POND 4	2.00	1,681.9	2%	33.6	12	9' * 9'	41	0.13	1.4"
POND 5/6/7 N	4.27	3,588.9	2%	71.8	12	13' * 13'	85	0.26	3.3"
POND 5/6/7 N	2.18	1,578.6	2%	31.6	12	9' * 9'	41	0.11	1.3"

POND 1 - LOT BUILDOUT Imp = 43.65%
100 YEAR INFILTRATION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

	WQCV:	1,647.4 ft³	4886.66 ELEVATION
REQUIRED 10 yr per MODIFIED FAA:		5,149.4 ft³	4888.26 ELEVATION
REQUIRED 100 yr per MODIFIED FAA:		34,063.7 ft³	4893.51 ELEVATION
Avail Vol @ Emer Overflow:		34,810.9 ft³	4893.60 ELEVATION

43560

	<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
	4,884.80	534.0				
			0.20	114.7	114.7	0.00
	4,885.00	613.5				
881.36			1.00	841.3	955.9	0.02
	4,886.00	1,091.8				
			1.00	1,386.6	2,342.6	0.05
	4,887.00	1,704.1				
2,338.57			1.00	2,066.1	4,408.6	0.10
	4,888.00	2,450.5				
			1.00	2,879.5	7,288.2	0.17
	4,889.00	3,331.0				
			1.00	3,827.1	11,115.3	0.26
	4,890.00	4,345.6				
			1.00	4,908.7	16,024.0	0.37
	4,891.00	5,494.3				
			1.00	6,124.4	22,148.4	0.51
	4,892.00	6,777.0				
			1.00	7,474.2	29,622.7	0.68
	4,893.00	8,193.9				
			0.60	5,188.2	34,810.9	0.80
	4,893.60	9,108.3				

Infiltration Rates:

Using 46 min per inch >>	4888.26 5 yr W/S ELEV	Using 46 min per inch >>	4893.51 100 yr W/S ELEV
	4,884.80 Bottom ELEV		4,884.80 Bottom ELEV
	3.46 Head (ft)		8.71 Head (ft)
46 min per inch =	0.109 ft/hour percolation	46 min per inch =	0.109 ft/hour percolation
	31.8 hrs to drain 5 yr W/S		80.2 hrs to drain 100 yr W/S

POND 2-3 - LOT BUILDOUT Imp = 32.23%
100 YEAR INFILTRATION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

	WQCV:	2,624.9 ft ³	4887.26 ELEVATION
REQUIRED 10 yr per MODIFIED FAA:		8,215.9 ft ³	4888.74 ELEVATION
REQUIRED 100 yr per MODIFIED FAA:		61,496.4 ft ³	4894.65 ELEVATION
Avail Vol @ Emer Overflow:		66,312.5 ft ³	4895.00 ELEVATION

43560

	<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
	4,886.00	990.0				
	4,887.00	2,704.4	1.00	1,776.9	1,776.9	0.04
3,303.43	4,888.00	3,774.1	1.00	3,224.4	5,001.3	0.11
	4,889.00	4,969.1	1.00	4,357.9	9,359.2	0.21
6,091.35	4,890.00	6,289.4	1.00	5,616.3	14,975.5	0.34
	4,891.00	7,735.0	1.00	6,999.7	21,975.3	0.50
	4,892.00	9,305.9	1.00	8,508.3	30,483.6	0.70
	4,893.00	11,002.1	1.00	10,142.1	40,625.8	0.93
	4,894.00	12,823.6	1.00	11,901.2	52,527.0	1.21
	4,895.00	14,770.4	1.00	13,785.5	66,312.5	1.52

Infiltration Rates:

Using 46 min per inch >>	4888.74 5 yr W/S ELEV	Using 46 min per inch >>	4894.65 100 yr W/S ELEV
	4,886.00 Bottom ELEV		4,886.00 Bottom ELEV
	2.74 Head (ft)		8.65 Head (ft)
46 min per inch =	0.109 ft/hour percolation	46 min per inch =	0.109 ft/hour percolation
	25.2 hrs to drain 5 yr W/S		79.6 hrs to drain 100 yr W/S

POND 4 - LOT BUILDOUT Imp = 41.34%
100 YEAR INFILTRATION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

	WQCV:	2,295.4 ft³	4888.87 ELEVATION
REQUIRED 10 yr per MODIFIED FAA:		7,563.4 ft³	4890.78 ELEVATION
REQUIRED 100 yr per MODIFIED FAA:		36,320.0 ft³	4894.98 ELEVATION
Avail Vol @ Emer Overflow:		36,542.5 ft³	4895.00 ELEVATION

43560

	<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
	4,887.00	653.1				
	4,888.00	1,221.7	1.00	922.7	922.7	0.02
1,634.75	4,889.00	1,959.3	1.00	1,576.0	2,498.8	0.06
	4,890.00	2,877.3	1.00	2,403.6	4,902.4	0.11
3,820.81	4,891.00	3,987.3	1.00	3,417.2	8,319.6	0.19
	4,892.00	5,289.3	1.00	4,623.0	12,942.6	0.30
	4,893.00	6,783.4	1.00	6,020.9	18,963.5	0.44
	4,894.00	8,603.2	1.00	7,675.3	26,638.8	0.61
	4,895.00	11,263.7	1.00	9,903.7	36,542.5	0.84

Infiltration Rates:

Using 46 min per inch >>	4890.78 5 yr W/S ELEV	Using 46 min per inch >>	4894.98 100 yr W/S ELEV
	4,887.00 Bottom ELEV		4,887.00 Bottom ELEV
	3.78 Head (ft)		7.98 Head (ft)

46 min per inch = 0.109 ft/hour percolation

46 min per inch = 0.109 ft/hour percolation

34.8 hrs to drain 5 yr W/S

73.4 hrs to drain 100 yr W/S

POND 5-7 - LOT BUILDOUT Imp = 34.01%
100 YEAR INFILTRATION VOLUME - WATER SURFACE
ESTIMATED POND (TYPICAL) VOLUME vs ELEVATION

	WQCV:	5,167.5 ft ³	4876.89 ELEVATION
REQUIRED 10 yr per MODIFIED FAA:		17,802.5 ft ³	4878.41 ELEVATION
REQUIRED 100 yr per MODIFIED FAA:		132,508.8 ft ³	4884.84 ELEVATION
REQUIRED 1.5x100 yr per MODIFIED FAA:		194,887.0 ft ³	4886.84 ELEVATION
Avail Vol @ Emer Overflow:		200,401.9 ft ³	4887.00 ELEVATION

43560

	<u>ELEV</u>	<u>AREA</u>	<u>t</u>	<u>VOL</u>	<u>ACCUM</u>	<u>ACUM (ac-ft)</u>
	4,876.00	5,161.4				
	4,877.00	6,874.6	1.00	5,997.5	5,997.5	0.14
7,937.03	4,878.00	8,771.8	1.00	7,804.0	13,801.5	0.32
	4,879.00	10,884.3	1.00	9,809.1	23,610.6	0.54
12,862.77	4,880.00	13,211.9	1.00	12,029.3	35,639.9	0.82
	4,881.00	15,754.7	1.00	14,464.7	50,104.6	1.15
	4,882.00	18,512.7	1.00	17,115.2	67,219.7	1.54
	4,883.00	21,485.8	1.00	19,980.8	87,200.5	2.00
	4,884.00	24,674.2	1.00	23,061.6	110,262.2	2.53
	4,885.00	28,077.6	1.00	26,357.6	136,619.7	3.14
	4,886.00	31,696.3	1.00	29,868.7	166,488.4	3.82
	4,887.00	36179.96	1.00	33,913.4	200,401.9	4.60

Infiltration Rates:

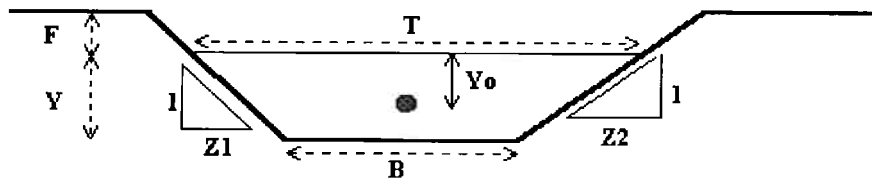
Using 46 min per inch >>	4878.41 5 yr W/S ELEV	Using 46 min per inch >>	4886.84 1.5x100 yr W/S ELEV
	4,876.00 Bottom ELEV		4,876.00 Bottom ELEV
	2.41 Head (ft)		10.84 Head (ft)

46 min per inch = 0.109 ft/hour percolation
22.2 hrs to drain 5 yr W/S

46 min per inch = 0.109 ft/hour percolation
99.7 hrs to drain 1.5x100 yr W/S

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **Lot 1 Spillway Wall**



Design Information (Input)

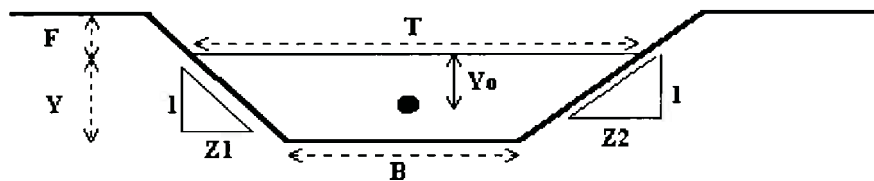
Channel Invert Slope	$S_o =$	0.0050 ft/ft
Manning's n	$n =$	0.030
Bottom Width	$B =$	15.00 ft
Left Side Slope	$Z1 =$	0.01 ft/ft
Right Side Slope	$Z2 =$	0.01 ft/ft
Freeboard Height	$F =$	0.00 ft
Design Water Depth	$Y =$	0.40 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$	11.05 cfs
Froude Number	$Fr =$	0.51
Flow Velocity	$V =$	1.84 fps
Flow Area	$A =$	6.00 sq ft
Top Width	$T =$	15.01 ft
Wetted Perimeter	$P =$	15.80 ft
Hydraulic Radius	$R =$	0.38 ft
Hydraulic Depth	$D =$	0.40 ft
Specific Energy	$E_s =$	0.45 ft
Centroid of Flow Area	$Y_o =$	0.20 ft
Specific Force	$F_s =$	0.11 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **Lot 2/3 Spillway Wall**



Design Information (Input)

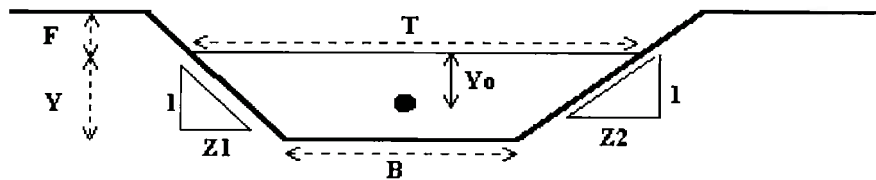
Channel Invert Slope	$S_o =$ 0.0050 ft/ft
Manning's n	$n =$ 0.030
Bottom Width	$B =$ 25.00 ft
Left Side Slope	$Z1 =$ 0.01 ft/ft
Right Side Slope	$Z2 =$ 0.01 ft/ft
Freeboard Height	$F =$ 0.00 ft
Design Water Depth	$Y =$ 0.51 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ 27.39 cfs
Froude Number	$Fr =$ 0.54
Flow Velocity	$V =$ 2.17 fps
Flow Area	$A =$ 12.63 sq ft
Top Width	$T =$ 25.01 ft
Wetted Perimeter	$P =$ 26.01 ft
Hydraulic Radius	$R =$ 0.49 ft
Hydraulic Depth	$D =$ 0.50 ft
Specific Energy	$E_s =$ 0.58 ft
Centroid of Flow Area	$Y_o =$ 0.25 ft
Specific Force	$F_s =$ 0.31 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **Lot 4 Spillway Wall**



Design Information (Input)

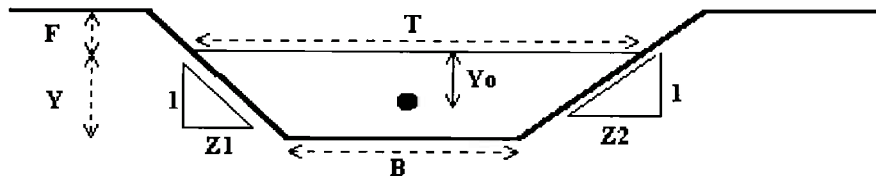
Channel Invert Slope	$S_o =$ 0.0050 ft/ft
Manning's n	$n =$ 0.030
Bottom Width	$B =$ 15.00 ft
Left Side Slope	$Z1 =$ 0.01 ft/ft
Right Side Slope	$Z2 =$ 0.01 ft/ft
Freeboard Height	$F =$ 0.00 ft
Design Water Depth	$Y =$ 0.45 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ 13.40 cfs
Froude Number	$Fr =$ 0.52
Flow Velocity	$V =$ 1.98 fps
Flow Area	$A =$ 6.75 sq ft
Top Width	$T =$ 15.01 ft
Wetted Perimeter	$P =$ 15.90 ft
Hydraulic Radius	$R =$ 0.42 ft
Hydraulic Depth	$D =$ 0.45 ft
Specific Energy	$E_s =$ 0.51 ft
Centroid of Flow Area	$Y_o =$ 0.22 ft
Specific Force	$F_s =$ 0.15 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **Lot 5/6/7 Spillway Wall**



Design Information (Input)

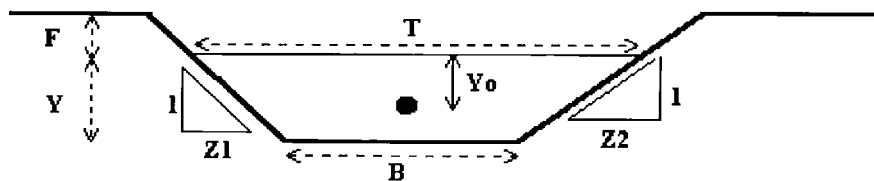
Channel Invert Slope	So = 0.0050 ft/ft
Manning's n	n = 0.030
Bottom Width	B = 40.00 ft
Left Side Slope	Z1 = 0.01 ft/ft
Right Side Slope	Z2 = 0.01 ft/ft
Freeboard Height	F = 0.00 ft
Design Water Depth	Y = 0.50 ft

Normal Flow Condition (Calculated)

Discharge	Q = 43.53 cfs
Froude Number	Fr = 0.54
Flow Velocity	V = 2.18 fps
Flow Area	A = 20.00 sq ft
Top Width	T = 40.01 ft
Wetted Perimeter	P = 41.00 ft
Hydraulic Radius	R = 0.49 ft
Hydraulic Depth	D = 0.50 ft
Specific Energy	Es = 0.57 ft
Centroid of Flow Area	Yo = 0.25 ft
Specific Force	Fs = 0.50 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **West Spillway Channel**



Design Information (Input)

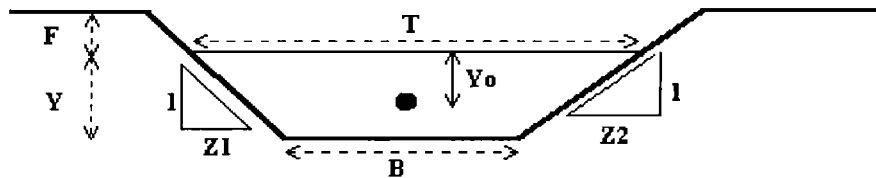
Channel Invert Slope	$S_o =$ 0.0050 ft/ft
Manning's n	$n =$ 0.029
Bottom Width	$B =$ 9.00 ft
Left Side Slope	$Z1 =$ 10.00 ft/ft
Right Side Slope	$Z2 =$ 10.00 ft/ft
Freeboard Height	$F =$ 0.00 ft
Design Water Depth	$Y =$ 1.00 ft

Normal Flow Condition (Calculated)

Discharge	$Q =$ 51.95 cfs
Froude Number	$Fr =$ 0.60
Flow Velocity	$V =$ 2.73 fps
Flow Area	$A =$ 19.00 sq ft
Top Width	$T =$ 29.00 ft
Wetted Perimeter	$P =$ 29.10 ft
Hydraulic Radius	$R =$ 0.65 ft
Hydraulic Depth	$D =$ 0.66 ft
Specific Energy	$E_s =$ 1.12 ft
Centroid of Flow Area	$Y_o =$ 0.41 ft
Specific Force	$F_s =$ 0.76 kip

Normal Flow Analysis - Trapezoidal Channel

Project: **RK Annexation**
 Channel ID: **East Spillway Channel**



Design Information (Input)

Channel Invert Slope	So = 0.0050 ft/ft
Manning's n	n = 0.030
Bottom Width	B = 10.00 ft
Left Side Slope	Z1 = 25.00 ft/ft
Right Side Slope	Z2 = 25.00 ft/ft
Freeboard Height	F = 0.00 ft
Design Water Depth	Y = 1.00 ft

Normal Flow Condition (Calculated)

Discharge	Q = 85.78 cfs
Froude Number	Fr = 0.57
Flow Velocity	V = 2.45 fps
Flow Area	A = 35.00 sq ft
Top Width	T = 60.00 ft
Wetted Perimeter	P = 60.04 ft
Hydraulic Radius	R = 0.58 ft
Hydraulic Depth	D = 0.58 ft
Specific Energy	Es = 1.09 ft
Centroid of Flow Area	Yo = 0.38 ft
Specific Force	Fs = 1.23 kip

APPENDIX D

WEC Drainage Sheets

17 OF 27

5 2.5 0 5 10

FULL SCALE: 1" = 5'

HALF SCALE: 1" = 10'

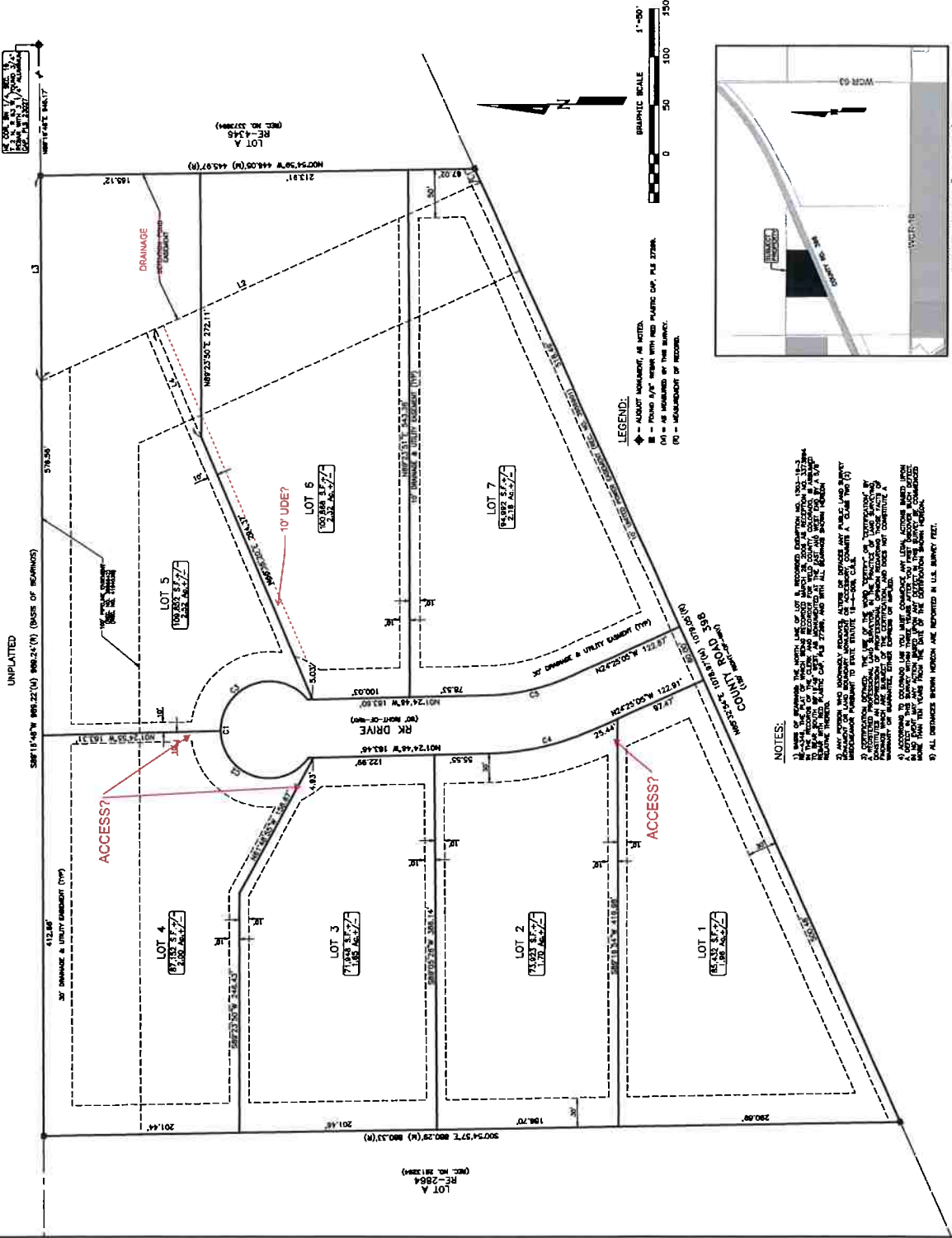
RK SUBDIVISION

Part of the Southwest 1/4 of Section 19,
Township 2 North, Range 63 West of the 6th P.M.,
County of Weld, State of Colorado

Sheet 1 of 1

LINE	BEARING	DISTANCE
1	S 89° 54' 57" E	100.00
2	S 89° 54' 57" E	100.00
3	S 89° 54' 57" E	100.00
4	S 89° 54' 57" E	100.00
5	S 89° 54' 57" E	100.00
6	S 89° 54' 57" E	100.00
7	S 89° 54' 57" E	100.00
8	S 89° 54' 57" E	100.00
9	S 89° 54' 57" E	100.00
10	S 89° 54' 57" E	100.00

LINE	BEARING	DISTANCE
1	S 89° 54' 57" E	100.00
2	S 89° 54' 57" E	100.00
3	S 89° 54' 57" E	100.00
4	S 89° 54' 57" E	100.00
5	S 89° 54' 57" E	100.00
6	S 89° 54' 57" E	100.00
7	S 89° 54' 57" E	100.00
8	S 89° 54' 57" E	100.00
9	S 89° 54' 57" E	100.00
10	S 89° 54' 57" E	100.00



- NOTES:
1. Survey was performed in accordance with the provisions of the Colorado Surveying Act, Chapter 124, C.R.S., and the rules and regulations of the Colorado Board of Surveying and Mapping.
 2. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.
 3. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.
 4. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.
 5. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.
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 9. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.
 10. The survey was performed by a Licensed Professional Surveyor, and the survey is subject to the rules and regulations of the Colorado Board of Surveying and Mapping.

OWNER'S CERTIFICATE AND DEDICATION:

I, the undersigned, being the owner of the above described land, do hereby certify that the same has been surveyed and divided into lots in accordance with the provisions of the Colorado Surveying Act, Chapter 124, C.R.S., and the rules and regulations of the Colorado Board of Surveying and Mapping. I do hereby dedicate the same to the public for the use of the same as a public road, and I do hereby certify that the same has been surveyed and divided into lots in accordance with the provisions of the Colorado Surveying Act, Chapter 124, C.R.S., and the rules and regulations of the Colorado Board of Surveying and Mapping.

REMARKS:

THE FOREGOING CERTIFICATION WAS ACKNOWLEDGED BEFORE ME BY: [Name] [Address] [City] [State] [County] [Zip] [Date] [Signature]

PLANNING COMMISSION APPROVAL:

THE PLANNING COMMISSION HAS REVIEWED THE MAP AND HAS APPROVED THE SAME FOR THE TOWN BOARD OF RECORDING. THE PLANNING COMMISSION HAS REVIEWED THE MAP AND HAS APPROVED THE SAME FOR THE TOWN BOARD OF RECORDING.

TOWN BOARD APPROVAL:

THE TOWN BOARD HAS REVIEWED THE MAP AND HAS APPROVED THE SAME FOR THE TOWN BOARD OF RECORDING. THE TOWN BOARD HAS REVIEWED THE MAP AND HAS APPROVED THE SAME FOR THE TOWN BOARD OF RECORDING.

SURVEYOR'S STATEMENT:

I, the undersigned, being a Licensed Professional Surveyor, do hereby certify that the above described land has been surveyed and divided into lots in accordance with the provisions of the Colorado Surveying Act, Chapter 124, C.R.S., and the rules and regulations of the Colorado Board of Surveying and Mapping. I do hereby certify that the same has been surveyed and divided into lots in accordance with the provisions of the Colorado Surveying Act, Chapter 124, C.R.S., and the rules and regulations of the Colorado Board of Surveying and Mapping.

American West
Land Surveying Co.
P.O. Box 100, Boulder, CO 80501 • Phone: 303.440.4070 • Fax: 303.440.4071
www.americanwestsurveying.com

KEENESBURG, CO 80643

RICK ROBERTSON **AARON KAISER**

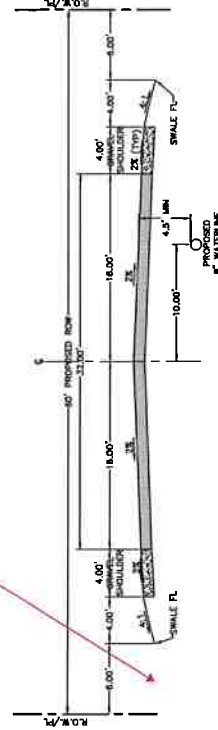
KEENESBURG, CO 80643 KEENESBURG, CO 80643

(303)961-0031
(303)994-7947

[illegible]

WESTERN ENGINEERING CONSULTANTS, Inc. LLC
CHADWIN F. COX, P.E.

MARCH 19, 2019
MAY 19, 2020



PK DRIVE DRIVE TYPICAL SECTION
SCALE 1" = 5' VIEW IS NORTH

WESTERN ENGINEERING CONSULTANTS, INC. LLC

127 SOUTH DENVER AVENUE, FT. LUPTON, CO 80621
720-685-9851 PH, 720-284-1330 FAX, email@western

PROJECT NO: 00-0187.002.00
INITIAL PLAN RELEASE: MARCH 19, 2019
TOTAL SHEETS: 32

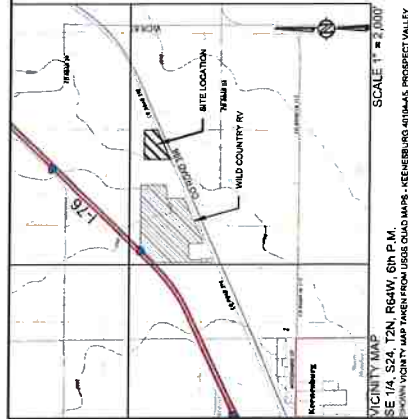
1 of 27

BASIS OF BEARING: THE NORTH LINE OF THE SOUTHWEST 1/4 OF SECTION 10, TOWNSHIP 2 NORTH, RANGE 43 WEST OF THE 8TH P.M., IN WELLS COUNTY, COLORADO IS ASSUMED TO BEAR NORTH 88°45'18" EAST, AS MONUMENTED HEREON AND WITH ALL BEARINGS SHOWN HEREON RELATIVE THERETO.

HORIZONTAL COORDINATES ARE BASED UPON THE COLORADO STATE PLANE COORDINATE SYSTEM, NORTH ZONE (0801), AND HAVE BEEN MODIFIED TO GROUND BY A FACTOR OF 1,000271714 / 0.999728306.

ELEVATIONS SHOWN HEREIN ARE BASED UPON STATIC GPS OBSERVATIONS POST PROCESSED THROUGH THE JAVAD DATA PROCESSING ONLINE SERVICE (DPOS) RESULTING IN CONTROL POINT NO. 1 HAVING AN ELEVATION OF 4893.43 FEET NAVD 83 (EPOCH 1982).

ALL CONTOURS SHOWN HEREON ARE AT ONE FOOT INTERVALS
WITH INDEX CONTOURS SHOWN AT FIVE FOOT INTERVALS



NOTE: SHEETS WITHOUT
COMMENTS ARE NOT
INCLUDED HEREIN.
DATE = 7/7/2020.

- | | |
|----|---------------------------------|
| 1 | COVER SHEET |
| 2 | GENERAL NOTES & SPECIFICATIONS |
| 3 | EXISTING CONDITIONS W/ AERIAL |
| 4 | EXISTING CONDITIONS & DEMO PLAN |
| 5 | SITE PLAN |
| 6 | UTILITY PLAN |
| 7 | HYDRAULIC PLAN & PROFILE |
| 8 | HYDRAULIC PLAN & PROFILE |
| 9 | SEWER GRADING PLAN |
| 10 | FINAL GRADING PLAN |
| 11 | PROPOSED EXISTING CONDITIONS |
| 12 | OVERFLOW & GEORGE DETAIL |
| 13 | WCD 338 DITCH CADLINE |
| 14 | PROPOSED EXISTING CONDITIONS |
| 15 | KNEESBURG WATER DETAIL |
| 16 | KNEESBURG WATER DETAIL |
| 17 | KNEESBURG WATER DETAIL |
| 18 | HISTORIC DRAINAGE |
| 19 | DEVELOPED DRAINAGE |
| 20 | POND STALLWAY DETAILS |
| 21 | INITIAL EROSION CONTROL PLAN |
| 22 | FINAL EROSION CONTROL PLAN |
| 23 | SWM/ EROSION CONTROL PLAN |
| 24 | SWM/ EROSION CONTROL DETAILS |
| 25 | SWM/ EROSION CONTROL DETAILS |
| 26 | SCREENCING/ LANDSCAPE PLAN |
| 27 | SCREENCING/ LANDSCAPE DETAILS |
| 28 | PHOTOMETRIC PLAN |
| 29 | PHOTOMETRIC DETAILS |

INITIAL RELEASE:
RESUBMITTAL PER 06/02/19 TOWN COMMENTS



UNCC
CALL BEFORE
YOU DIG

PREPARED BY:

1-800-922-1987

Utility Notification
Center of Colorado

Administrative Offices
13204 Tilden Boulevard Parkway
Golden, Colorado 80601
 (303) 751-2121 Fax: (303) 751-1112
 E-mail: info@adva.com

CALL 1-800-888-8888 HAVE IN ADVANCE
YOUR FILLING, SEAL, GRILL, OR DCAVATT

UTILITY
UNITED POWER
BRIGHTON HEADQUARTERS OFFICE
500 COOPERATIVE WAY
BRIGHTON, CO 80603
(303) 637-1300

**SOUTHEAST WELD FIRE
PROTECTION DISTRICT**
CONTACT: THOMAS BEACH
85 E. GANDY AVENUE
KEENESBURG, CO 80647
PHONE: (303) 732-4203

TOWN/CITY
TOWN OF KEENESBURG
CONTACT: TONY HODGES
140 S. MAIN STREET
KEENESBURG, CO 80643
PHONE: (303) 733-4281

**ROBERTSON KAISER
LAND HOLDINGS LLC**
CONTACT: RICK ROBERTSON
30531 E. 160th AVENUE
BENNETT, CO 80102
(303) 981-0031

NW COR. SW 1/4, SEC. 19,
T 2 N, R 63 W. FOUND 3/4"
REBAR WITH 3 1/4" ALUMINUM
CAP. PLS 23027.

Legal 7233 THAT PT N2/SE4 19 2 63 LYING N & W OF RR R/W
Acres (Calculated) 302.0659
N89°53'18"E 2756.96' (BASIS OF BEARINGS)

INTERSECTION SIGHT TRIANGLES SHOWN
PER AASHTO FIGURE 9-15. CASES B1 & B2.
DESIGN SPEED = 55 MPH (POSTED SPEED =
45 MPH), USING COMBINATION TRUCK.
LEFT TURN ISD = 930'. RIGHT TURN ISD = 850'.

NE COR. SW 1/4, SEC. 19,
T 2 N., R 63 W., FOUND 3/4"
REBAR WITH 3 1/4" ALUMINUM
CAP. PLS 23027.

Parcel 130319000011
Account R0144301
Account Type Residential
Property Address 30123 COUNTY ROAD 398 WELD
Owner DUPRE MELISSA M

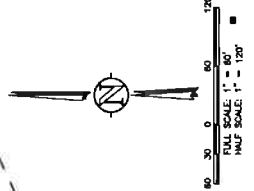
HOW WILL LOTS 1 AND 2 BE ACCESSED, WITH THE DESIGN OF SWALES AND PONDS ALONG THE ENTIRE FRONT OF THE LOTS?

LOT A
RE-2864

Parent Table		Parent Table	
Parcel	ACRES	Parcel	ACRES
BURBANK AREA	824.19372	BURBANK AREA	824.19372
	14.32		14.32
IRK ANNEX	858.013.2	IRK ANNEX	858.013.2
	15.08		15.08

LOT DATA TABLE			%
	AREA (SF)	AREA (AC)	%
LOT INCLUDING	588,118 SF	10.09 AC	100.00 %
LOT INCLUDING	1,808 SF	0.027 AC	4.45 %
LOT INCLUDING	0/4, 100 SF	18.37 AC	95.14 %
LOT INCLUDING	42,201 SF	0.61 AC	6.08 %
LOT INCLUDING	1,001 SF	0.015 AC	2.72 %
LOT INCLUDING	7,230 SF	0.105 AC	1.05 %
LOT INCLUDING	267,188 SF	0.41 AC	26.67 %
LOT INCLUDING	4,142 SF	0.014 AC	3.73 %
LOT INCLUDING	2,201 SF	0.032 AC	0.32 %
LOT INCLUDING	178,778 SF	2.61 AC	27.24 %

200 USE	MAINT
200 IN	200 IN



NOTE: _____

[illegible]

SYMBOL LEGEND

45 DEG BEND	RESTRAINED CROSS
22.5 DEG BEND	PIPE HYDRANT
RESTRAINED 90 DEG	RESTRAINED WATER VALVE
RESTRAINED TEE	PIPE CROSSOVER
WATER METER	PIPE MANHOLE
EXISTING ASPHALT PAVING	PROPOSED ASPHALT
PROPOSED CONCRETE PAVING	PROPOSED GRAVEL

UNETYPED LEGEND

[illegible]

SITE PLAN
ROBERTSON-KAISER ANNEX
PRELIMINARY PLAT

Big Safety.
CALL UNOC

127 S. BEVERLY AVENUE
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(720) 885-9951
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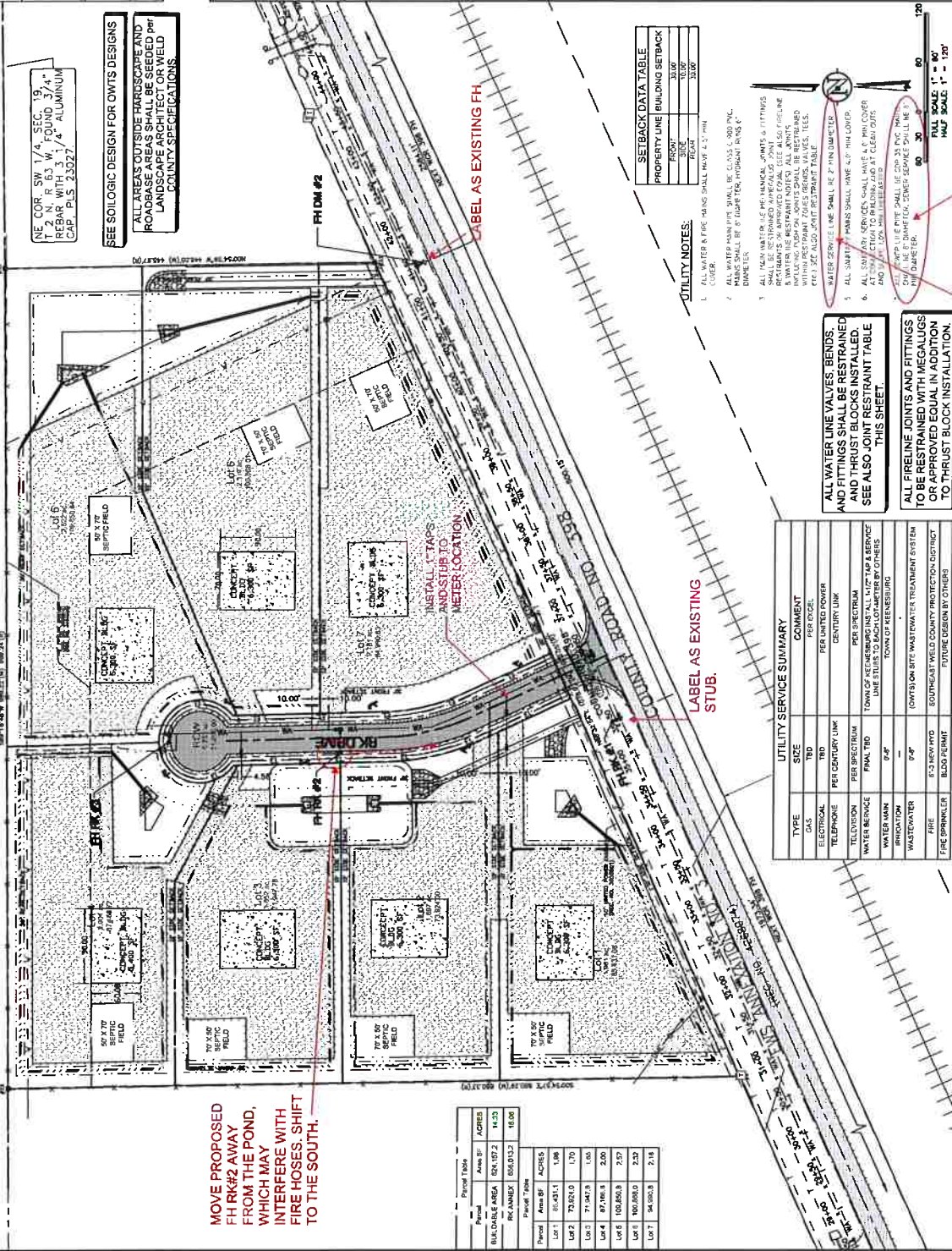
ROBERT KENT BERGLUND, REVOCABLE TRUST
ARNITA M. TUDOR
JANET B. WARD
Acres (Calculated) 302.0659
PT N2/SE4 19 2 63 LYING N & W OF
Legal 7233 THAT
N89°53'18"E 2755.96' (BASIS OF BEA)

LUMINAIRE SCHEDULE					
SYMBOL	QTY	LABEL	LUM. WATTS	LUM. LUMENS	CATALOG
	6	A	155.5	14352	LDRL-12-F06-E

E COR. SW 1/4, SEC. 19,
2 N., R 63 W., FOUND 3/4"
EBAR WITH 3 1/4" ALUMINUM
AP. PLS 23027.

SEE SOILLOGIC DESIGN FOR COWTS DESIGNS

MOVE PROPOSED
FH RK#2 AWAY
FROM THE POND,
WHICH MAY
INTERFERE WITH
FIRE HOSES. SHIFT
TO THE SOUTH —



Parcel Table		Parcel Table	
Parcel	Area SF	Parcel	Area SF
BUILDABLE AREA	824,197.2	14.33	
RIK-ANNEX	834,013.2	16.06	

Parcel Table		Parcel Table	
Parcel	Area SF	Parcel	Area SF
Lot 1	65,431.1	1.98	
Lot 2	73,824.0	1.70	
Lot 3	71,947.8	1.65	
Lot 4	87,166.8	2.50	
Lot 5	100,850.8	2.97	
Lot 6	100,890.0	2.93	
Lot 7	94,990.8	2.81	

UTILITY SERVICE SUMMARY			
TYPE	SIZE	DATE	COMMENT
GAS	1/2"	1982	PER PCL
ELECTRICAL	100	1982	PER LATER POWER
TELEPHONE	PER CENTURY LINK		CENTURY LINK
TELEVISION	PER SPECTRUM		PER SPECTRUM
WATER BENEATH	FINAL TID		TOWN OF NETHERLANDS L1/2" LAP & SERVICE LINE STUDY TO DOWNGRADE TO OTHERS
WATER MAIN	24"		DO NOT DOWNGRADE
IRRIGATION	—		—
WASTEWATER	24"		(OW)TS OR BITE WAS FINEST TREATMENT SYSTEM
FIRE	5/2" NEW HYD		SOUTHEAST WELD COUNTY PROTECTION DISTRICT
FIRE SPRINKLER	BLOOD PERMIT		FUTURE DESIGN BY OTHERS

GO WITH 1" WATER TAPS AND STUB TO FUTURE METER LOCATION. METER SIZE WILL BE DETERMINED AT TIME OF BUILDING PERMIT.

THIS SEEMS VERY LARGE FOR 6300 sf BUILDINGS. DEFER SEWER SERVICE SIZING UNTIL THE INDIVIDUAL SITE PLAN STAGE.

LABEL AS EXISTING
STUB.

UTILITY NOTES:

SETBACK DATA TABLE	
PROPERTY LINE	BUILDING SETBACK
FRONT	30.00'
SIDE	10.00'
REAR	30.00'

DATE	TIME	BY

UTILITY NOTES:

1. ALL WATER & FIRE MAINS SHALL HAVE 6" MIN

ALL WATER LINE VALVES, BENDS, AND FITTINGS SHALL BE RESTRAINED AND THRUST BLOCKS INSTALLED. SEE ALSO JOINT RESTRAINT TABLE THIS SHEET.

ALL FIRELINE JOINTS AND FITTINGS TO BE RESTRAINED WITH MEGALUGS OR APPROVED EQUAL IN ADDITION TO THRUST BLOCK INSTALLATION.

WATER SERVICE LINE SHALL BE 2" MIN DIAMETER

5. ALL SANITARY MAINS SHALL HAVE 4" MIN COVER.

6. ALL SANITARY SERVICES SHALL HAVE 4" MIN COVER AT CONNECTION TO MAINLINE, AND AT CLEAN OUTS, AND SHALL BE 1.0% MIN SLOPED.

PIPE DIAMETER.

SYMBOL LEGEND

[illegible]

LINE TYPE LEGEND

[illegible]

127 S. DENAYER AVENUE
FT. WYOMING, CO 80621
www.westerneng.com
(720) 885-0951
FAX (720) 284-1350
Western Engineering Consultants, Inc. LLC



NOTES

THIS PLAN IS INTENDED AS THE UTILITY PLAN FOR RK SUBDIVISION

ALL IMPROVEMENTS ARE EXISTING.

IT IS THE OWNER AND/OR THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL APPROPRIATE PERMITS AND REVIEW APPROVALS FROM THE STATE OF COLORADO AND TOWN OF KEELESBURG RESPECTIVELY.

SEE "ROBERTSON-LEWTON ANNEXATION" COMPLETED BY AMERICAN WEST LAND SURVEY - DATED NOVEMBER 04, 2013.

ANY REFERENCE TO EASEMENTS, SURVEY POINTS, OR EXISTING UTILITIES AND FEATURES ARE BASED SOLELY FROM SURVEY INFORMATION PROVIDED BY DUNHER ENGINEERING CONSULTING, INC.

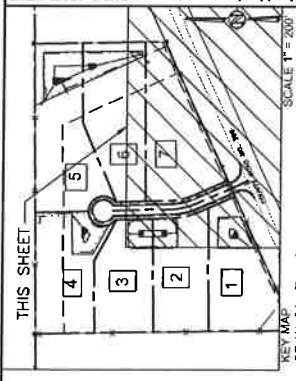
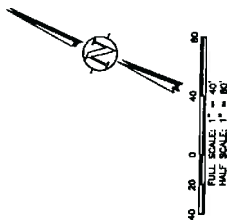
NOT ALL UNCC UTILITY LOCATES HAVE BEEN PERFORMED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UTILITIES ARE LOCATED AND SURVEY PROVIDED TO THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION DRAWING RELEASE.

UTILITY PLAN
SON-KAISER ANN
ELIMINARY PLAT
KENNESBURG, WELD COUNTY, COLORADO

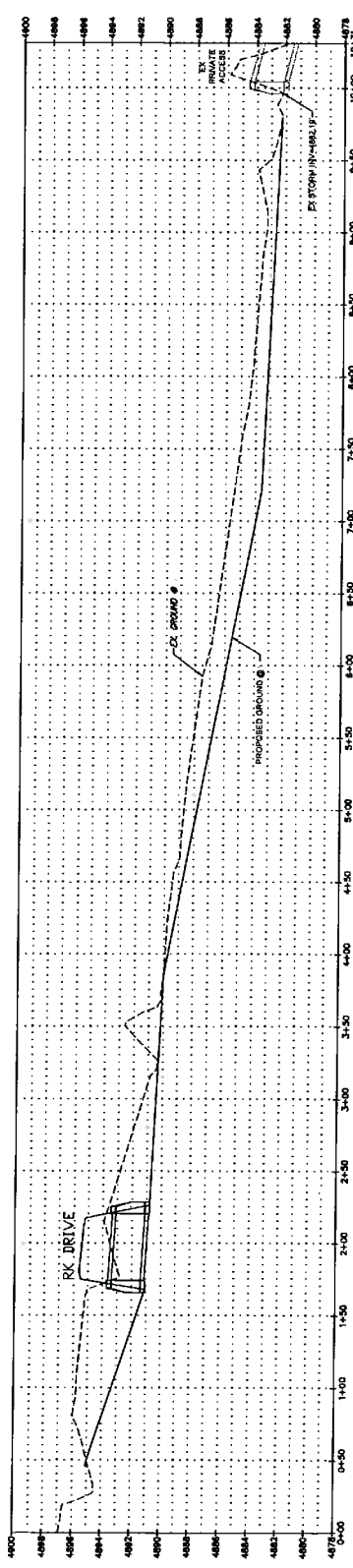
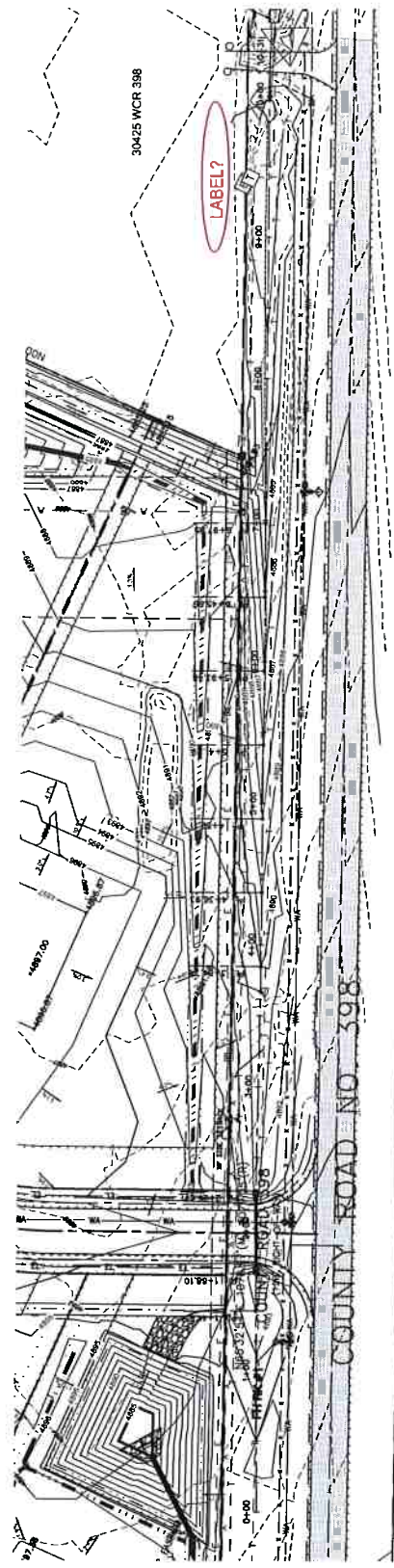
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SERVING YOU 24
1-800-922-1987
UNCC-UNIVERSITY NATIONAL
CONFEDERATION OF COLLEGE
FOR REVIEW

INITIAL PLAN
 RELEASED 03/19/18
 DESIGNED BY: CFC
 DRAWN BY: CFC
 CHECKED BY: CFC
 PROJECT NO.
 01-0107.002.00
 DCL CON #
 DCL-MET
 SHEET
 3 OF 27

SHOW A TYPICAL DITCH CROSS SECTION.

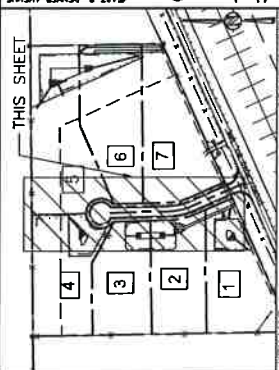


Western Engineering Consultants, Inc. LLC
177 S. BOYER AVENUE
FT. LITTON, CO 80421
www.westerneng.com
TEL: (720) 944-1330
FAX: (720) 944-9451



WCR 398 DITCH GRADING PLAN
PRELIMINARY PLAT
ROBERTSON-KAISER ANNEX
TOWN OF KENNEDY, WELD COUNTY, COLORADO
CONTACT: ROCK ROBERTSON
50531 E 160th AVENUE
BENNETT, CO 80102
201012
3/28/2012
3/28/2012

FOR REVIEW
DATE: 3/28/2012
BY: ROCK ROBERTSON
CHECKED BY: ROCK ROBERTSON
DATE: 3/28/2012
SCALE: 1" = 40'
SHEET NO. 1 OF 1
PROJECT NO. 100-000000-01-0187-001-00



KEY MAP
SE 1/4, S24, T2N, R64W, 6th P.M.
SHOWN KEY TAKEN FROM USGS QUAD MAPS - KEENESBURG 40104-AS, INDIAN
VALLEY 40104-AS, KLUON RANCH 40104-B5 & TAMPA 40104-B4
SCALE 1" = 200'

NOTES

THIS PLAN IS INTENDED AS THE BE ROAD PLAN & PEOPLE FOR BE SUBMITTING
ALL IMPROVEMENTS ARE EXISTING.

IT IS THE OWNER AND/OR THE CONTRACTOR'S RESPONSIBILITY TO ATTEM ALL
NECESSARY PERMITS AND SECURE ALL NECESSARY APPROVALS FROM THE STATE OF COLORADO
AND TOWNSHIP OF TELLER COUNTY.

SET CONCRETE PIPING AND MANHOLES COMPACTED BY AMERICAN WEST LAND
SAVANT - DATED OCTOBER 10, 2013.

SET COVER SLIPS FOR RUNDS OF RAILROAD.

ALL EXISTING UNDERGROUND UTILITIES OR EXISTING UTILITIES AND
FEATURES ARE ALSO SHOWN ON THE PLAN AND THE PLAN IS TO BE CONSIDERED
THE FINAL FOR CONSTRUCTION AND CONSTRUCTION OF THE PROJECT AND THE CONTRACTOR
SHOWN PROPOSED LAYOUT PROPOSED BY OWNER ENGINEERING CONSULTING,
THE DATED DECEMBER 10, 2013, AND ALL SUBSEQUENT REVISIONS MADE BY THE
OWNER ENGINEERING CONSULTING, THE DATED DECEMBER 10, 2013, AND ALL SUBSEQUENT
REVISIONS ENGINEERED AND DATED ON PERSONAL SHEETS IN THIS PLAN SET
ARE THE FINAL FOR CONSTRUCTION AND CONSTRUCTION OF THE PROJECT AND THE CONTRACTOR
SHOWN PROPOSED LAYOUT PROPOSED BY OWNER ENGINEERING CONSULTING.

NOT ALL UNDER GROUND UTILITIES HAVE BEEN LOCATED. IT IS THE CONTRACTOR'S
RESPONSIBILITY TO LOCATE ALL UNDER GROUND UTILITIES AND LOCATED AND LOCATED
SHOWN PROPOSED LAYOUT PROPOSED BY OWNER ENGINEERING CONSULTING,
THE DATED DECEMBER 10, 2013, AND ALL SUBSEQUENT REVISIONS MADE BY THE
OWNER ENGINEERING CONSULTING, THE DATED DECEMBER 10, 2013, AND ALL SUBSEQUENT
REVISIONS ENGINEERED AND DATED ON PERSONAL SHEETS IN THIS PLAN SET
ARE THE FINAL FOR CONSTRUCTION AND CONSTRUCTION OF THE PROJECT AND THE CONTRACTOR
SHOWN PROPOSED LAYOUT PROPOSED BY OWNER ENGINEERING CONSULTING.

SYMBOL LEGEND

- | | | |
|------------------------|---------------------------|--------------------------|
| RESTRAINED CROES | RESTRAINED ASPHALT PAVING | PROPOSED ASPHALT PAVING |
| PIPE HYDRAULIC | PROPOSED CONCRETE PAVING | PROPOSED CONCRETE PAVING |
| RESTRAINED WATER VALVE | PROPOSED GRAVEL | PROPOSED GRAVEL |
| PIPE CROSSOVER | MANHOLE | MANHOLE |
| WATER METER | EXISTING ASPHALT PAVING | EXISTING ASPHALT PAVING |
| | | |
| 25 DGS BOND | | |
| 40 DGS BOND | | |
| 60 DGS BOND | | |
| RESTRAINED TIE | | |
| RESTRAINED TIE | | |
| WATER METER | | |

INETYPE | EGENID

- [illegible]

[illegible]

THRUST BLOCK SHEARHEAD (SBS) FOR INTERNAL STATIC PRESSURE
OF 100 PSI AND SOIL BEARING CAPACITY OF 300 PSI

ITEM NO.	QTY	UNIT	DESCRIPTION	REMARKS
1	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
2	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
3	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
4	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
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75	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
76	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
77	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
78	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
79	1	PC	THRUST BLOCK SHEARHEAD (SBS)	
80	1	PC	THRUST BLOCK	

[illegible]

RESOLUTION NO. PC2020-08

A RESOLUTION RECOMMENDING APPROVAL OF A PRELIMINARY AND FINAL PLAT FOR THE RK SUBDIVISION

WHEREAS, there has been submitted to the Planning and Zoning Commission of the Town of Keenesburg a request for approval of a preliminary and final plat for the RK Subdivision; and

WHEREAS, all materials related to the application have been reviewed by Town Staff and found with conditions to be in compliance with Town of Keenesburg subdivision and zoning ordinances and related Town ordinances, regulations, and policies; and

WHEREAS, after a duly-noticed public hearing, at which evidence and testimony were entered into the record, the Planning and Zoning Commission finds the application to be in compliance with Town of Keenesburg subdivision and zoning ordinances and related Town ordinances, regulations, and policies and should therefore be approved, subject to those conditions set forth herein.

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE TOWN OF KEENESBURG, COLORADO:

Section 1. The Planning and Zoning Commission hereby recommends approval of the proposed preliminary and final plat for the RK Subdivision, subject to the conditions set forth on Exhibit A, attached hereto and incorporated herein by reference, all of which conditions shall be met prior to recording.

PASSED AND ADOPTED this 6th day of August, 2020.

John Howell, Chairperson

ATTEST:

Teri Smith, Secretary

EXHIBIT A
RK Subdivision
Conditions of Approval

1. Execute a Subdivision Agreement in a form to be approved by the Board of Trustees.
2. Submit adequate evidence of gas service to the site.
3. Revise the plat and other application materials to address the redlines and comments provided by the Town Engineer.
4. Make a cash-in-lieu payment for 1.8 acres of open space land dedication, as required by Section 7 of the annexation agreement.
5. Add the following note to the plat:

Landscaping and irrigation will be a requirement for future owners of each lot as part of the development or use of each lot. Prior to development or use of any lot a pre-application meeting will be required to determine the appropriate land use process for the proposed uses.
6. Provide an updated Property Information Binder or title commitment issued within 30 days prior to submitting the final plat for recording.
7. Revise the Certificate of Ownership and Dedication to read as follows, following the legal description:

Have laid out, subdivided and platted said land as per drawing hereon contained under the name and style of RK Subdivision , a subdivision of a part of the Town of Keenesburg, County of Weld, State of Colorado, and by these presents do hereby dedicate to the Town of Keenesburg the streets, avenues and other public places as shown on the accompanying plat for the public use thereof forever and does further dedicate to the use of the Town of Keenesburg and all serving public utilities those portions of said real property which are so designated as easements as shown.

It is expressly understood and agreed by the undersigned that all expenses and costs involved in constructing and installing sanitary sewer works and lines, water system works and lines, gas service lines, electrical service works and lines, landscaping, curbs, gutters, street pavement, sidewalks, and other such utilities and services shall be guaranteed and paid for by the subdivider or arrangements made by the subdivider thereof which are approved by the Town of Keenesburg, Colorado, and such sums shall not

be paid by the Town of Keenesburg, and that any item so constructed or installed when accepted by the Town of Keenesburg shall become the sole property of said Town of Keenesburg, Colorado, except private roadway curbs, gutter and pavement and items owned by municipality franchised utilities, other serving public entities, and/or CenturyLink, which when constructed or installed shall remain and/or become the property of such municipality franchised utilities, other serving public entities, and/or CenturyLink. and shall not become the property of the Town of Keenesburg, Colorado.

8. Revise the Town Board approval block to read as follows:

This is to certify that the plat of RK Subdivision was approved by the Board of Trustees of the Town of Keenesburg by Resolution No. _____, this _____ day of _____, 20____, and that the Mayor of the Town of Keenesburg, on behalf of the Town of Keenesburg, hereby acknowledges said plat upon which this certification is endorsed for all purposes indicated hereon.

9. A pdf of the revised final plat shall be sent to staff for review and approval prior to submitting the signed mylar.

ORDINANCE NO. 2020-07

AN ORDINANCE AMENDING CHAPTERS 16 AND 17 OF THE KEENESBURG MUNICIPAL CODE TO INTEGRATE THE TOWN OF KEENESBURG DESIGN STANDARDS AND AMENDING CHAPTER 8 REGARDING PARKING ON IMPROVED SURFACES

WHEREAS, on the direction of the Board of Trustees of the Town of Keenesburg (the “Board”), the Town Engineer developed the “Town of Keenesburg Design Standards,” applicable to new development within the Town of Keenesburg (the “Design Standards”), in consultation with Town staff, the Town Attorney’s office, and the Planning Commission of the Town of Keenesburg (“Planning Commission”); and

WHEREAS, the Board desires to amend Chapters 16 and 17 of the Keenesburg Municipal Code to set forth the applicability of the Design Standards; and

WHEREAS, a draft of this Ordinance has been reviewed by the Planning Commission and the Planning Commission has forwarded to the Board its recommendation that such Ordinance be adopted; and

WHEREAS, Sections 4 and 11 have been added to the Ordinance to add additional requirements to Chapters 8 and 16 regarding parking on improved surfaces and improved surface lot coverage; and

WHEREAS, the Board has held a duly-noticed public hearing on this Ordinance, at which hearing evidence and testimony were entered into the record, and following such hearing, finds the Ordinance should be adopted and Chapters 8, 16, and 17 amended accordingly.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF KEENESBURG, COLORADO:

Section 1. Section 16-1-70 of the Keenesburg Municipal Code is amended to include the following definitions to be inserted in alphabetical order, and the entire section renumbered accordingly:

Carport means a shelter for a vehicle consisting of a roof supported on posts, attached to the roof plane of the primary structure.

Landscape plan means a plan or map, created by a landscape architect or engineer duly licensed by the State of Colorado, showing landscaping, irrigation, and erosion control measures associated with a development in conformance with the Town of Keenesburg Design Standards.

Shed means an accessory building for use as a storage space, a shelter for

animals, or a workshop.

Town of Keenesburg Design Standards means those certain design standards adopted by resolution of the Keenesburg Board of Trustees, as may be amended by resolution of the Board of Trustees from time to time.

Section 2. Subsection (d)(1) of Section 16-2-100 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

(d) Additional requirements.

(1) All multifamily developments must be landscaped according to an approved landscape plan, which landscape plan shall conform to applicable Town of Keenesburg Design Standards.

Section 3. Section 16-2-40 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

Sec. 16-2-40. - Accessory buildings and uses.

(a) Accessory buildings and uses are naturally and normally incidental to a use by right and comply with all the following conditions:

(1) Is clearly subordinate, incidental and customary to and commonly associated with the operation of the use by right.

(2) Is operated and maintained under the same ownership as the use by right on the same zone lot.

(3) Includes only those structures or structural features consistent with the use by right.

(4) Does not exceed maximum lot coverage. Lot coverage is the area of all structures and impervious surfaces on the lot, including the main building and all accessory buildings.

(5) May include home occupations, as defined in this Chapter and/or by residential zone districts.

(6) In all residential zones, an accessory structure shall be constructed of materials that are compatible with the use by right structure and shall not be constructed from corrugated sheet metal, canvas or similar nondurable materials. Accessory buildings shall use exterior colors that are used on the primary structure.

(7) All permitted accessory buildings must be located at a distance from the front lot line which is greater than the front setback for the principal building.

(8) Under no circumstances may an accessory building be constructed or located in the right-of-way.

(9) No more than one (1) single shed shall be allowed on any single lot. All new sheds shall be constructed in accordance with the Town of Keenesburg Design Standards. Under no circumstances may a shed be used for human habitation.

(10) No more than one (1) single carport shall be allowed on any single lot. Double carports are not allowed unless approved through the Town's special review process. All new carports shall be constructed in accordance with the Town of Keenesburg Design Standards.

(b) Accessory buildings and uses must meet setback and other design standard requirements in each zone district, including but not limited to the requirements set forth in the Town of Keenesburg Design Standards. Construction of accessory uses may or may not require a building permit. If a permit is required, a plot plan showing the location of the accessory use on the zone lot will be required.

Section 4. Article II of Chapter 16 of the Keenesburg Municipal Code is amended to add a new Section 16-2-175, to read as follows:

Sec. 16-2-175. – Front yard improved surface coverage restriction.

In addition to the minimum and maximum lot coverages set forth in Section 16-2-170, improved surfaces shall cover not more than the lesser of (i) 380 square feet or (ii) 40% of the front yard of any lot zoned R-1, R-2, or R-3. For purposes of this Section, improved surface means a surface comprised of asphalt, recycled asphalt, concrete, brick, cement pavers, compacted or crushed stone or gravel, or similar materials installed and maintained according to industry standards. Nothing in this section shall relieve new development from complying with standards applicable to driveways and parking areas set forth in the Town of Keenesburg Design Standards.

Section 5. Subsection (e)(13) of Section 16-2-180 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

(13) Use by special review and landscape plan maps. Plans shall show existing and proposed buildings, parking, landscape elements, lighting, drainage elements, utilities, public rights-of-way and any other information deemed necessary by Town staff. Use by special review plans and associated landscape

plans shall comply with applicable provisions of the Town of Keenesburg Design Standards. Plans shall include a vicinity map at an appropriate scale to show surrounding area. The use by special review plan map shall be considered a site plan and shall fulfill the requirement for a site plan submittal as required by Section 16-2-190 unless during the required pre-application meeting it is determined that a separate site plan submittal is required for uses by right associated with the special review permit.

Section 6. Subsection (g)(8) of Section 16-2-190 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

(8) Traffic study. Requirements to be determined in the preapplication meeting or at the request of CDOT. All required traffic studies are to be prepared by a certified engineer, and approved by the Town Engineer. Developers may be required to modify site plans to mitigate traffic impacts associated with the development as determined by the traffic study.

Section 7. Subsection (g)(12) of Section 16-2-190 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

(12) Site plan and landscape plan maps. Plans shall show existing and proposed buildings, parking, landscape elements, lighting, drainage elements, utilities, public rights-of-way and any other information deemed necessary by Town staff. Site plans and landscape plans shall comply with applicable provisions of the Town of Keenesburg Design Standards. The site plan shall include a vicinity map at an appropriate scale to show surrounding area.

Section 8. Subsection (h)(3) of Section 16-2-190 of the Keenesburg Municipal Code is amended to read as follows (words added are underlined):

(3) Conformance with all applicable parking and open space requirements, and any adopted architectural design standards, including but not limited to the Town of Keenesburg Design Standards.

Section 9. Article I of Chapter 17 of the Keenesburg Municipal Code is hereby amended by the addition of a new Section 17-1-70, to read as follows:

Sec. 17-1-70. – Design criteria.

In addition to all other criteria established in this Chapter, the Comprehensive Plan and this Code, all new subdivisions, except minor subdivisions, shall be designed in accordance with applicable provisions of the Town of Keenesburg Design Standards.

Section 10. Section 17-10-70 of the Keenesburg Municipal Code is hereby amended to read as follows (words added are underlined; words deleted are ~~stricken through~~):

Sec. 17-10-70. - Homeowners associations.

A. Homeowners associations (HOAS) or similar legal entities are responsible for the maintenance and control of common areas, including recreational facilities and open space; HOAS shall be established in such a manner that:

(1) Provision for the establishment of the association or similar entity according to state law is to be made before final subdivision approval is made or any lot in the development is sold; legal documents are to be forwarded to the Town prior to final approval.

(2) The association or similar legal entity has clear legal authority to maintain and exercise control over such common areas and facilities.

(3) The association or similar legal entity has the power to compel contributions from residents of the development to cover their proportionate shares of the costs associated with the maintenance and upkeep of such common areas and facilities.

(4) The Town retains the legal authority to compel HOAS to maintain their properties in proper condition, through requirement of a maintenance agreement executed with the Town or by any other legal means.

B. HOAS shall maintain all common areas under their control and rights-of-way within and adjacent to the development in good condition. Without limiting the generality of the foregoing, HOAS shall:

(1) Ensure that all landscaped areas are maintained in accordance with approved landscape, irrigation, and erosion control plans, including but not limited to replacement of dead, dying, or diseased plantings and trees;

(2) Ensure areas covered with irrigated turf are mowed and irrigated in accordance with approved landscape and irrigation plans;

(3) Ensure brush and weeds are maintained so as to inhibit the spread of noxious weeds, and to mitigate public, health, safety and wellness hazards, such as the spread of wildfires, slope failures, soil erosion, and increased flooding; and

(4) Ensure that all areas, including but not limited to rights-of-way and alleys, are kept free of dead vegetation, refuse, trash, and debris.

Section 11. Article II of Chapter 8 of the Keenesburg Municipal Code is amended to add a new Section 8-2-90, to read as follows:

Sec. 8-2-90.- Parking on improved surface required.

No person shall park a vehicle, utility trailer, or trailer on private property except on an improved surface. For purposes of this Section, improved surface means a surface comprised of asphalt, recycled asphalt, concrete, brick, cement pavers, compacted or crushed stone or gravel, or similar materials installed and maintained according to industry standards. The term improved surface does not include dirt, landscape mulch, or other similar materials. Parking on lawns, whether public or private, is expressly prohibited within the Town.

Section 12. If any section, paragraph, sentence, clause, or phrase of this ordinance is held to be unconstitutional or invalid for any reason, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The Board of Trustees hereby declares that it would have passed this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.

Section 13. All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

INTRODUCED, READ, ADOPTED, APPROVED, AND ORDERED PUBLISHED IN FULL this ____ day of _____, 2020.

TOWN OF KEENESBURG, COLORADO

Ken Gfeller, Mayor

ATTEST:

Christina Fernandez, Town Clerk

TOWN OF KEENESBURG DESIGN STANDARDS



Glossary:

- I. General.
- II. Definitions.
- III. Open Space and Landscape Standards.
- IV. Parking Lot Landscape Requirements.
- V. Parking and Drive Aisle Standards.
- VI. Lighting Standards.
- VII. Lots and Blocks.
- VIII. Street Standards.

I. General.

A. Title. These standards shall be known as the Town of Keenesburg Design Standards.

B. Applicability. These standards shall apply to all new development within the Town of Keenesburg.

C. Relationship to Keenesburg Municipal Code. These standards are intended to apply when referenced in the Keenesburg Municipal Code or when referenced in any ordinance or resolution adopted by the Board of Trustees pursuant to the Keenesburg Municipal Code.

D. Administrative Interpretations.

1. The Town Manager shall have final authority to interpret terms, words and phrases, or determine the applicability of, the provisions of these standards in each of the following cases:

- a. Where any provision is ambiguous or open to multiple interpretations;
- b. Where two or more conflicting provisions purport to apply to a specific case; and
- c. Where terms, words, and phrases are (i) ambiguous or open to multiple interpretations and (ii) are not otherwise defined in these standards or the Keenesburg Municipal Code.

2. The Town Manager interpretation shall be consistent with the intent of the Keenesburg Municipal Code, including but not limited to the provisions applicable to the subject zone district.

II. Definitions.

Definitions.

The words and phrases used in these design standards shall have the meanings defined below unless otherwise specifically provided or unless clearly required by the context. Questions of definition or wording usage shall be interpreted by the Town Administrator based on the context of their usage and the intention of the section of the design standards in which they occur.

All words and phrases not defined below shall be construed and understood according to the common and approved usage of the language, unless such term or phrase is defined in the Keenesburg Municipal Code, in which case the Code definition shall apply. Where the below definitions conflict with the definitions of the Keenesburg Municipal Code, the definition set forth in the Keenesburg Municipal Code shall apply. Technical words and/or phrases not defined below or in the Keenesburg Municipal Code may have acquired a peculiar and appropriate meaning in the law shall be construed and understood according to such peculiar and appropriate meaning.

Accessory Buildings and uses means a detached subordinate building, the use of which is incidental to that of the main building or to the main use of the land and which is located on the same lot with the main building or use. Accessory buildings and uses that are naturally and normally incidental to a use by right and comply with all the following conditions:

- a. Is clearly subordinate, incidental and customary to and commonly associated with the operation of the use by right
- b. Is operated and maintained under the same ownership as the use by right on the same zone lot
- c. Includes only those structure or structural features consistent with the use by right
- d. Does not exceed maximum lot coverage. Lot coverage is the area of all structures and impervious surfaces on the lot, including the main building and all accessory buildings.
- e. May include home occupations, as defined in this Chapter and/or by residential zone districts
- f. In all residential zones, an accessory structure shall be constructed of materials that are compatible with the use by right structure and shall not be constructed from corrugated sheet metal, canvas or similar nondurable materials. Accessory buildings shall use exterior colors that are used on the primary structure.
- g. All permitted accessory buildings must be located at a distance from the front lot line which is greater than the front setback for the principal building
- h. Accessory buildings and uses must meet setback and other design standard requirements in each zone district. Construction of accessory uses may or may not require a building permit. If a permit is required, a plot plan showing the location of the accessory use on the zone lot will be required.

Affordable housing development or project means a development or project in which:

1. At least ten percent of said dwelling units or spaces (the “affordable housing units”)

are to be available for rent or purchase on the terms defined by the United States department of Housing and Urban Development.

2. The units will be required by binding legal instrument acceptable to the Town and duly recorded with that County's Clerk and Recorder, to be occupied by and affordable to low-income households for at least twenty years.
3. Affordable housing unit for rent means a dwelling unit which is available for rent on terms that would be affordable to households earning eighty percent or less of the median income of that County's residents, as adjusted for family size, and paying less than thirty percent of their gross income for housing, including rent and utilities.
4. The unit must be occupied by and be affordable to such low-income household(s) for a period of at least twenty years.

Affordable housing unit for sale means a dwelling unit which is available for purchase on terms that would be affordable to households earning eighty percent or less of the median income of Weld County residents, as adjusted for family size and paying less than thirty-eight percent of their gross income for housing, including principal, interest, taxes, insurance, utilities and homeowners' association fees. The unit must be occupied by and affordable to such low-income household(s) for a period of no less than twenty years.

Agricultural activity means farming, including plowing, tillage, cropping, seeding, cultivating or harvesting for the production of food and fiber products; horticulture, the grazing or raising of livestock (except in feedlots); aquaculture; sod production; orchards; Christmas tree plantations; nurseries; and the cultivation of products as part of a recognized commercial enterprise.

1. Agricultural activity shall not include the cultivation of marijuana.

Agricultural land means land that is being used primarily for agricultural activities.

Alley means a public right-of-way within a block upon which the rear of building lots generally abuts. Its use is for secondary access to the lot and/or service purposes. An alley shall not be considered to be a street.

Applicant means any individual, partnership, corporation, association, company or public body, including the federal government, or any political subdivision, agency, corporation or instrumentality of the State applying for a development permit pursuant to section 16-2-40 of the Town of Keenesburg municipal code.

Appurtenances mean the visible, functional, or ornamental objects accessory to and part of a building.

Awning means a fixed or movable shelter supported entirely from the exterior wall of a building that can be retracted, folded or collapsed against the face of the supporting

building.

Berm or Berms means an earthen barrier of compacted soils preventing the passage of liquid materials or providing screening from adjacent uses.

Bike lane: Shared portion of the roadway that provide separation between motor vehicles and bicyclists, such as paved shoulders.

Bed and Breakfast means a residential building in which rooms are rented on a daily basis to short-term guests. The building typically is similar in character to the surrounding neighborhood and meets all the requirements of the zoning district in which the facility is to be located.

Blank wall means an exterior building wall with no openings and a single material and uniform texture on a single wall plane.

Block means a group of lots existing within well-defined and fixed boundaries within a subdivision and usually being an area surrounded by street or other feature such as parks, rights-of-way or municipal boundary lines.

Board means the governing body of the Town of Keenesburg, also known as the Town of Keenesburg Board of Trustees.

Boarding and Rooming house means a building or portion thereof which is used to provide lodging and may include meals for five (5) or more boarders for compensation, not including members of the occupant's immediate family who might be occupying such building. The word *compensation* can mean money, services or other things of value.

Bollard(s) means a pole used to protect a building from impact or to close a road or path to vehicles above a certain width.

Buffer Zone means a strip of land established to separate and protect one (1) type of land use from another, to screen from objectionable noise, odor, smoke or visual impact, or to provide for future public improvements or additional open space.

Building means a structure designed, built or occupied as a shelter or roofed enclosure for persons, animals or property, and where separated by a fire wall, each such separated portion of such structure shall be deemed a separate building.

Building code(s) means the set of Town adopted standards that must be followed in the construction and remodeling of buildings and structures.

Building frontage or Building Face means the horizontal, linear dimension of that side of a building, which abuts a street, a parking area, a mall, or other circulation area open to the public and has either a main window display or a public entrance to the building.

Building Façade is the front exterior or main entrance of a building

Building height means the vertical distance from the average building grade to the uppermost point of the roof structure.

Bulb means the source of electric light - to be distinguished from the whole assembly (See Luminaire).

BUG The acronym, "BUG" (Backlight, Uplight, and Glare) was developed by the Illuminating Engineering Society (IES) and the International Dark Sky Association in order to calculate the light escaping in unwanted directions from an outdoor light fixture...Forward light (Glare), Backlight, and Up-light.

Business means any lawful commercial endeavor to engage in the manufacturing, purchase, sale, lease or exchange of goods and/or the provision of services.

Code or Town Code means the Town of Keenesburg Municipal Code.

Commercial Vehicle means any motor vehicle, trailer, or semi-trailer that:

- a. Is designed or used to carry freight, other vehicles, equipment, passengers for a fee, or merchandise in the furtherance of any business enterprise; and
- b. Has a gross weight of more than 25,000 pounds;
- c. Any step van or truck that is designed for commercial moving or parcel delivery services;
- d. Any truck that is used for mobile retail sales (e.g., ice cream, lunches);
- e. Any vehicle with more than four wheels that is used for business purposes;
- f. Any trailer that is used to haul machinery, supplies, or equipment for business purposes (horse trailers, boat trailers, motorcycle trailers, RV trailers, and car trailers put to personal use are not included in the definition);
- g. Any trailer that is used for commercial hauling (e.g., waste, junk, or lawn clippings), or commercial moving services;

Community Facilities means capital improvements provided by the Town of Keenesburg or another governmental entity including, but not limited to facilities for providing:

1. water service, wastewater service, fire protection, emergency rescue services, public schools, parks, stormwater management, power, and transportation, that are required by this title to be

adequate and available as a condition of development approval.

Compact Vehicle means any vehicle that does not exceed 15 feet in length (measured from bumper to bumper) and five feet, nine inches in width

Development means any of the following:

1. Use of Land. The use of any building, structure, land, or water. This includes new uses or accessory uses, expansions of existing uses or accessory uses, and material changes to the operational characteristics of existing uses or accessory uses.
2. Construction, Demolition, or Changes to Buildings or Structures. The demolition, construction, or modification of buildings or structures, except interior changes that do not:
3. Increase floor area,
4. Increase residential density; or
5. Require a traffic study pursuant to the Town of Keenesburg code
6. Clearing, Grading, Re-Grading, Cutting, Filling of Land, and Other Disturbance or Alteration. Land clearing in anticipation of construction of infrastructure, structures, or buildings for non-agricultural purposes and re-construction or regrading of a previously approved site improvement, and any other disturbance of land, soil, vegetation, floodplains, or waterways, but not including agriculture, irrigation ditch or reservoir improvements or maintenance, gardening, or routine maintenance of landscape areas.
7. Division, Subdivision, or Plat. Any division, subdivision, or platting of land for construction of infrastructure, structures, or buildings, for sale, or for lease, whether by metes and bounds, platting, or other technique.

Diameter at Breast Height (DBH) means the tree diameter measured 4.5feet above ground

Dumpster means a large metal commercial trash disposal container designed for commercial type waste.

Easement means any platted or designated easement dedicated to the Town by plat or otherwise, whether or not it has been used as such, which the public, the Town and / or the public utilities are entitled to use without interference for a specified purpose. Where an easement is granted to the public for a specified purpose, the grant of said easement shall vest in the Town and / or the public utilities rights including but not limited to, the right to conduct certain operations and to perform all necessary maintenance thereon; and “without interference” shall mean that persons are prohibited from constructing fences or structures of any kind, or installing landscaping or anything else that interferes with the Town’s ability to access, operate, install, and maintain any Town facility within said easement. Easements for specified purposes include, but are not limited to access easements, drainage easements, landscape easements, postal easements, and utility easements.

General Office means buildings from which professional, administrative, financial, clerical, brokering, real estate, and limited technical services are provided. The phrase includes, but is not limited to, the following types of businesses:

1. Accounting, auditing and bookkeeping;
2. Advertising and graphic design (but not mailing services, which are classified as “business services”);
3. Architectural, engineering, and surveying services;
4. Attorneys and court reporters;
5. Banks, savings and loans, credit agencies, and investment companies;
6. Brokering of motor vehicles, commodities, and other items where the thing brokered is not stored on-site for any length of time;
7. Business incubators (unless the businesses being incubated are classified as another type of use, such as light industry);
8. Computer programming and data recovery services;
9. Corporate headquarters;
10. Data processing and word processing services;
11. Detective agencies;
12. Government offices;
13. Insurance;
14. Interior design;
15. Real estate sales and off-site rental offices;
16. Research and development (not including on-site manufacturing or fabrication, and not including marijuana uses);
17. Retail catalog, internet, and telephone order processing, but not warehousing; and
18. Virtual office services.

Glare: Lighting entering the eye directly from luminaires or indirectly from reflective surfaces that causes visual discomfort or reduced visibility.

Environmentally Sensitive Area means an area with one or more of the following characteristics:

1. Slopes in excess of 20 percent;
2. Floodplain or Floodway;
3. Soils classified as having a high-water table;
4. Soils classified as highly erodible, subject to erosion, or highly acidic;
5. Land incapable of meeting percolation requirements;
6. Land formerly used for landfill operations or hazardous industrial use;
7. Fault areas;

8. Stream corridors;
9. Estuaries;
10. Mature stands of native vegetation;
11. Aquifer recharge and discharge areas;
12. Significant or critical habitat for wildlife; or
13. Any other area possessing environmental characteristics similar to those listed above
14. Environmentally sensitive area as determined by the Army Corps of Engineers, Weld County or U.S. Government

Farm or Ranch means apiaries, crop production, silviculture, raising livestock, raising and milking dairy cows or goats, horticulture, floriculture, aquaculture, or viticulture; which may include facilities for the sale of honey, produce, flowers, or dairy products produced or grown on-site. The phrase “farm or ranch” includes composting and produce stands as accessory uses. The phrase “farm or ranch” does not include the phrases “[intensive agriculture](#)” or “[community garden](#).”

Farmers Market means an occasional or periodic open-air market where items such as fresh produce, seasonal fruits, and fresh flowers are offered for sale directly to the consumer. A farmer’s market may also include accessory sales of value-added food products such as jams, jellies, pickles, sauces, or baked goods, arts and craft items, and prepared food and beverages. The phrase “farmers market” does not include the sale of second-hand goods or commercially produced or packaged goods.

Foot-candle: The unit of measure expressing the quantity of light received on a surface. One foot-candle is the illuminance produced by a candle on a surface one square foot from a distance of one foot.

Fully shielded luminaire: A luminaire constructed and installed in such a matter that all light emitted by the luminaire, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal plane through the luminaire's lowest light-emitting part

Grading means any stripping, cutting, filling, or stockpiling of earth or land, including the land in its cut or filled condition, to create new grades. The term “grading” does not include agricultural operations, routine maintenance (*e.g.*, clean-out) of stormwater systems, or maintenance (either routine or periodic major maintenance) of irrigation ditches or reservoirs.

Ground Cover means landscaping that remains near the surface of the ground. Ground cover does not include the foliage crown of trees, weeds, or non-living materials.

Heavy Motor Vehicle Sales or Rental means the sale or rental of commercial vehicles, recreational vehicles, boats, manufactured homes, or construction vehicles at the location where inventory is stored. The phrase "heavy motor vehicle sales or rental" includes outdoor storage of such vehicles for brokers. Not included in the definition are:

1. Brokering of commercial or construction vehicles that are stored off-site and delivered directly to customers (a general office use)

Passenger Motor Vehicle Sales means the sale or rental of passenger type vehicles in a commercial type lot. Passenger type vehicles are not to be used for commercial usage including construction and/or shipment of commercial goods. Passenger motor vehicle sales applies to car dealers and / or places of business orientated towards the sale of passenger type vehicles. The phrase "passenger motor vehicle sales" includes outdoor storage of such vehicles for brokers and/or car dealers. Not included in the definition:

1. Brokering of passenger type vehicles that are stored off-site and delivered directly to customers

Indoor storage of motorcycles, scooters, snowmobiles, and ATVs for brokers who are located off-site means an indoor storage facility for the later commercial sales of motorcycles, scooters, snowmobiles, and ATVs by the broker who is located offsite. This definition applies to the indoor storage of motorcycles, scooters, snowmobiles and ATVs for the offsite sale of motorcycles, scooters, snowmobiles and ATVs between the broker and buyer.

Hospital means an institution that is licensed, certified, or approved as a "hospital" by the Colorado Department of Public Health and Environment, where sick or injured persons are given medical care and, in the course of same, are housed overnight, fed, and provided nursing and related services. The term "hospital" also includes related facilities such as laboratories, out-patient facilities, training facilities, central service facilities, and staff offices.

Indoor Amusement, Recreation or Entertainment means uses that provide amusement and recreational activities indoors (except sexually oriented businesses, and bars, taverns, or nightclubs), including, but not limited to:

1. Bowling alleys;
2. Escape rooms;
3. Game arcades (e.g., video games, skee ball, and comparable amusement machines);
4. Indoor playgrounds (may include conventional playground equipment, inflatables, trampolines, rock climbing walls, zip lines, and comparable equipment);
5. Indoor skating rinks (ice or roller);
6. Laser tag;
7. Local area network ("LAN") gaming centers;
8. Pool / billiard rooms;
9. Shooting arcades (but not indoor firing or gun ranges);

10. Indoor archery ranges; and

11. Recreation Centers

12. Indoor Firing or Gun Range means the use of a building for the discharging of firearms for the purposes of target practice. Excluded from this use type are amusements that simulate shooting but do not involve potentially lethal projectiles (e.g., laser tag, foam darts, etc.) which are classified as “indoor amusement, recreation, or entertainment.”

Irrigation Canals and Ditches means man-made waterways that are used for the conveyance of water rights, generally for irrigation purposes, and their associated rights-of-way.

Jurisdictional (“USACE”) or Non-Jurisdictional Wetlands means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophyte vegetation.

Landscape means to cover, adorn, or improve property with living plants (such as trees, shrubs, vines, grass or flowers), loose natural materials (such as rock, wood chips, or shavings), decorative man-made materials (such as patterned paving materials, fences, walls, fountains, or pools), or land contouring. “Landscape” does not include improving property with artificial trees, shrubs, turf, or other artificial plants.

Level of Service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a community facility based upon and related to the operational characteristics of the community facility or the capacity per unit of demand for the community facility.

Lodging, (Commercial, Business or Tourist) means a building or group of buildings in which six or more guest rooms are used to provide accommodations for transient guests for compensation. The use may also include services such as small-scale meeting rooms, business centers (personal computers, fax machines, and printers for guest use), food service for guests, and recreational facilities such as swimming pools and fitness centers.

Mature Stands of Vegetation means established stands of native trees, shrubs, and other vegetation at a mature stage of development, in a continuous corridor along a drainage, in clusters grouped together, or scattered (as in a floodplain or hogback setting).

Medical Office (professional) means office space used for the examination or treatment of patients on an outpatient basis (with no overnight stays by patients), generally by appointment, by such professionals as:

1. Chiropractors, licensed massage therapists, and acupuncturists;
2. Dentists;
3. Medical doctors (physicians, pediatricians, obstetricians, gynecologists,

- radiologists, geriatricians, general and specialist surgeons, podiatrists, ophthalmologists, anesthesiologists, etc.);
4. Midwives;
 5. Nutritionists and homeopaths;
 6. Optometrists;
 7. Occupational therapists, physical therapists, or speech therapists;
 8. Psychiatrists, clinical psychologists, clinical social workers, and marriage and family therapists;
 9. Physiatrists, physiotherapists, orthotics, prosthetics, recreational therapists, audiologists, respiratory therapists, rehabilitation counselors, prosthetic technicians, and personal care assistants; and
 10. Other comparable health care professionals.

The phrase "Medical Office" includes medical laboratories to the extent necessary to carry out diagnostic services for the medical office's patients.

Motorcycle, Scooter, or ATV or Rental means the sale or rental of motorcycles, scooters, snowmobiles, or ATVs at the location where inventory is stored. The phrase "motorcycle, scooter, or ATV sales or rental" includes outdoor storage of motorcycles, scooters, snowmobiles, or ATVs for off-site brokers. The phrase does not include:

1. Brokering of motorcycles, scooters, snowmobiles, or ATVs that are stored off-site and delivered directly to customers (a general office use); or
2. Indoor storage of motorcycles, scooters, snowmobiles, and ATVs for brokers who are located off-site (a light industrial or heavy logistics use, depending upon the volume of sales).

Motor Vehicle Service and Maintenance means:

1. Repairs to passenger vehicles, such as body repair, paint, upholstery, engine replacement or reconditioning, air conditioning replacement, tire recapping, and custom body work, but not including installation of audio, video, and navigation systems and services that may be provided at fueling, charging, or service stations (unless such services are provided in addition to services that are categorized as heavy motor vehicle service); and
2. Any type of repairs to commercial vehicles, recreational vehicles, boats, or construction vehicles

Nonconforming Lighting means lighting that it either temporarily or permanently installed and does not meet the requirements set forth in the Lighting Design Standards, such lighting may be installed with approval by the Town with a detailed description of the lighting, use of the lighting, intensity of the lighting and length of the time such lighting will be used.

Nursery or Greenhouse Wholesale means the use of land, buildings, or structures for the propagation and cultivation of trees, shrubs, ornamental plants, flowers, herbs, fruiting plants, and vegetable plants for sale to landscaping contractors or retailers, or for use by a specific entity for its own landscaping purposes. The phrase "nursery or greenhouse, wholesale" may include, as an accessory use:

1. The provision of landscaping services in addition to the propagation and cultivation activities; or
2. The sale and delivery of garden tools and equipment, planting pots, mulch, rock, soil, sand, pavers, garden ornaments, and related products to landscaping contractors.

Outdoor Assembly Area means an improved facility, not within a building, that is designed to accommodate and provide a place for natural persons to congregate and is capable of being reasonably occupied by 50 or more natural persons at any one time. The phrase "outdoor assembly area" does not include the front, side, or rear yards of residential lots.

Outdoor Commercial Recreation or Amusement means an outdoor entertainment facility that includes such facilities as batting cages, mini-golf, bumper cars, bumper boats, go-cart racing, water slides, or the use of land as for mock war games that involve paintball equipment or similar equipment that generally involves the use of safety gear such as goggles or vests. Outdoor commercial amusement may also include indoor or outdoor areas with games, food service, and incidental retail uses (e.g., souvenir shops) that are subordinate to the principal outdoor amusement uses. The phrase "outdoor commercial amusement" includes outdoor archery range but does not include "outdoor firing or gun range."

Outdoor Storage means storage of materials, merchandise, stock, supplies, machines, operable vehicles, equipment, manufacturing materials, or chattels of any nature that outside of a building, regardless of how long such materials are kept on the premises. The phrase "outdoor storage" does not include:

1. Outdoor displays of items for sale to the general public, such as new and used cars, recreational vehicles, boats, or landscape and building materials, where such sales are permitted in the zone in which the subject property is located; or
2. The storage of wrecked or inoperable vehicles (see "salvage yard"); or
3. Parking of operable passenger motor vehicles.

Parks (Active) means uses that provide active recreation opportunities outdoors for the public (open to the community) or residents of a subdivision or development, which are generally not commercial in nature. The phrase "parks (active)" includes areas for active recreational activities including, but not limited to:

1. Sports fields, tennis courts, and outdoor racquetball or squash courts;

2. Outdoor swimming pools and splash parks; and
3. Other active recreation-oriented parks, including pickleball.

Parks (Passive) means uses that provide passive recreation opportunities outdoors for the public (open to the community) or residents of a subdivision or development, which are generally not commercial in nature. The phrase “parks (passive)” includes areas for passive recreational activities including, but not limited to:

1. Jogging, cycling, tot-lots, fitness trails, playgrounds;
2. Arboretums, wildlife sanctuaries, forests, and other natural areas which may be used for walking or hiking; or
3. Other passive recreation-oriented parks, including picnic areas.

Park Trail: These are multipurpose trails located within greenways, parks or natural resource areas. The focus is on recreational value and harmony with the natural environment.

1. **Connector Trail** : These are multipurpose trails that emphasize safe travel for pedestrians to and from parks and around the community. The focus is as much on transportation as it is on recreation
2. **Equestrian trail** : Trails developed for horseback riding which are usually a loop trail located in larger parks and natural areas. Sometimes developed as multipurpose with hiking and all-terrain biking where conflicts can be controlled.

Passenger Motor Vehicle Sales or Rental means the sale or rental of passenger vehicles at the location where inventory is stored. The phrase "passenger motor vehicle sales or rental" includes outdoor storage of passenger vehicles for brokers. Not included in the definition are:

1. Brokering of passenger vehicles which are stored off-site and delivered directly to customers (a general office use);
2. Indoor storage of passenger vehicles for brokers who are located off-site (a light industrial or heavy logistics use, depending upon the volume of sales);
3. Passenger motor vehicle rental locations that have not more than five rental vehicles stored on-site at any one time (a retail sales and services use).
4. Pawnbroker means a business that is regulated by C.R.S. § 12-56-101, et seq., that:
 - a. Regularly contracts to advance money to customers on the delivery of tangible personal property by the customer on the condition that the customer, for a fixed price and within a fixed period of time, has the option to cancel the contract; or
 - b. Purchases tangible personal property that has not previously been sold at retail in the course of its business of reselling tangible personal property.

Place of Assembly means a building in which people assemble for civic, educational, religious, or cultural purposes. This use includes facilities used for worship; meeting halls;

event centers; fraternal organizations; and private clubs.

Property shall mean and include the owner's lot or tract of land, whether improved or vacant, plus the area to the center of any alley abutting the lot or tract of land, easements or record, and the sidewalk, curb, gutter, and parking areas of any street abutting such lot or tract of land.

Redevelopment means renovation, modification, or reconstruction of a subject property in which:

1. An existing conditions study has found four (4) or more factors of blight as determined by state statute
2. The Town Board of Keenesburg has found such blighted area in need of public and private reinvestment
3. The Town Board of Keenesburg has identified an area to be blighted and in need of reinvestment

Restaurant means any establishment in which the principal business is the sale of food and beverages to customers in a ready-to-consume state, and where the design or principal method of operation includes one or both of the following characteristics:

1. Customers are served their food and/or beverages by a restaurant employee at the same table or counter at which the items are consumed; or
2. Customers are served their food and/or beverages by means of a cafeteria-type operation where the food or beverages are consumed within the restaurant building.
3. A restaurant may include outdoor eating areas. Fermented malt beverages, and/or malt, special malt, or vinous and spirituous liquors may be produced on the premises as an accessory use pursuant to applicable alcohol beverage licenses.

Restaurant, Fast Food means an establishment engaged in the sale of pre-prepared or rapidly prepared food or beverages to customers in a ready-to-consume state, for consumption either within the restaurant building, outside but on the premises, or off the premises, and which may include a drive-in or drive-through facility. The design or principal method of operation involves two or more of the following characteristics:

1. The elimination, in whole or in part, of table service, thus requiring customers to place orders at the counter where the orders are filled;
2. Service of food in edible containers or in paper, plastic, foil or other disposable containers; or
3. Insufficient facilities for on premises consumption of the total volume of food sold by the establishment.

Retail Sales and Services means a use involving the sale, lease, or rental of consumer, home, and business goods to consumers. Such uses include but are not limited to department stores, furniture stores, clothing stores, second-hand stores, thrift shops, consignment

stores, and establishments providing the following products or services: antiques, appliances, art, art supplies, beauty supplies, bicycles, books, building supplies, magazines and newspapers, craft supplies, copies, costumes, dry goods, electronics, fabric, framing, games, garden supplies, gifts, groceries, hardware, head shops, home improvement goods, household products, jewelry, lumber, music, musical instruments, office supplies, party supplies, pet supplies, pharmaceuticals, phones, photography equipment, produce, sporting goods, stationary, temporary signs, toys, and videos; and new automotive parts and accessories. The phrase also includes services such as charitable donation collection centers, coin laundries, installation of electronics (*e.g.*, audio systems and navigation systems) into motor vehicles, passenger motor vehicle rentals provided that not more than five rental vehicles are stored on-site at any time, picture framing, real estate offices that are open for walk-in traffic; repairs of products sold by the establishment (*e.g.*, a computer store may also repair computers), repairs of consumer electronics, tattoo parlors, and comparable services.

1. The phrase “Retail Sales and Services” does not include uses that are classified or defined more specifically in the Keenesburg Municipal Code, including but not limited to Restaurants (all types); Sexually-Oriented Businesses; [Retail Marijuana Uses](#); Pawnbrokers, Convenience Lending, and Liquor Store. Retail sales and services uses are generally conducted indoors.

Right-of-Way means a strip of land dedicated to the public, the Town and / or public utilities which have been constructed or will be constructed, for public transportation, drainage, or utility improvements including but not limited to street paving, curb and gutter, sidewalks, bicycle lanes, and buried or overhead utilities

School, Elementary or Middle means a school that provides general full-time educational curriculum for two or more grades from Kindergarten through eight.

School, High means a school that provides general full-time educational curriculum for grades nine through twelve.

School, Vocation or Trade means an educational facility that primarily teaches skills that directly prepare students for jobs in a trade or profession. Examples include, but are not limited to, art schools, business colleges, trade schools, beauty schools, and secretarial colleges

Sidewalk means that portion of a street between the curb line and the adjacent property line intended for the use of pedestrians.

Street means a public thoroughfare forty (40) feet or more in width and not less than twenty-four (24) feet between curbs.

Street Frontage means a property line that abuts a public right-of-way that provides public

access to or visibility to the premises.

Structure means anything constructed or made, the use of which requires permanent location on the ground, or attached to something having more or less permanent location on the ground. The word *structure* shall include the word *building*

Surface Parking means an area of land that is designated for the parking of passenger motor vehicles in parking spaces, the related parking aisles, the landscaped areas that are surrounded by parking spaces and parking aisles, and the landscaped areas at the corners of the paved areas insofar as their inclusion in the surface parking area gives it a regular shape. Surface parking uses may include level 3 DC fast-charging stations as an accessory use. The phrase “surface parking” does not include driveways on individual residential lots, nor does it include individual garages or carports. Surface parking that is a principal use of property is not related to a specific land use on the same parcel

Town means the Town of Keenesburg, Colorado.

Town Administrator means the Town duly appointed Town Administrator or his or her designee.

Town Engineer means the Town Engineer within the Public Works Department, or his or her designee.

Tree Habit means general mature growth, form, general shape and branching structure of the tree.

Tree Lawn means a vegetated strip of planted land between the sidewalk and curb.

University or College means an educational institution that is authorized by the State of Colorado or other nationally recognized accrediting entity to award associates' or higher degrees.

Unightly Area(s) means any one or more of the following:

1. Outside areas where machinery or vehicles are repaired, stored and/or serviced (but not including surface parking lots);
2. Outside trash receptacles;
3. Loading docks;
4. Outside storage areas; and
5. Utility cabinets or boxes.

Veterinarian (Large Animal) means an animal hospital or clinic that provides medical care services for large animals, livestock, or wild animals, including but not limited to: horses, cows, bison, elk, deer, llamas, alpacas, sheep, goats, chickens, turkeys, ducks, and pigs.

Veterinarian (Small Animal) means a use in which medical care is provided for household pets. The phrase "veterinarian (small animal)" does not include medical care for wild animals or livestock.

Wetland means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wildlife Habitat Areas and/or Corridors means areas and corridors containing natural vegetation and providing food, nesting, resting, and cover habitat for wildlife. Wildlife habitat areas and corridors are often associated with major drainages, such as the Big Thompson River and other tributaries throughout Keenesburg and their related uplands. Important habitat also includes lakes, ponds, some reservoirs, and other water bodies; foothills, hogbacks, ridgelines, bluffs, and other unique topographic or geologic features; mature stands of vegetation; sites identified by the Colorado Natural Heritage Program as having high biodiversity significance (rare and imperiled plants and animals, and significant natural communities) and mapped as "Potential Conservation Areas" (PCAs); and areas identified by Colorado Parks and Wildlife as important wildlife habitat.

III. Open Space and Landscape Standards

Intent. The intent of these Landscape Standards is to ensure attractive and sustainable landscaping within the Town, and to promote the development of safe, convenient, and attractive open space, parks and trail for the enjoyment of all community members of Keenesburg.

1. Purpose:

2. The purposes of these Landscape Standards are to preserve, protect, and enhance the character of the Town of Keenesburg by:
 - a. Ensuring that development in the Town has a balance of buildings, paved areas, and landscaping and open space that is consistent with the intended character of the zone in which the development is located
 - b. Buffering land uses that tend to be less compatible in the community
 - c. Creating well-landscaped, high-quality views within the Town
 - d. Creating areas of connection between residents and the natural environment
 - e. Anchoring buildings to the landscape
 - f. Enhancing and preserve biodiversity
3. Encourage alternative modes of travel by:
 - a. Creating deciduous tree-lined streets that offer species habitat
 - b. Enhancing the user experience
 - c. Creating safe accessible routes from one segment of town to another
 - d. Separating differing modes of transit
4. Preserve, protect, and enhance the environmental quality of the Town by:
 - a. Using landscape materials to clean the air, slow runoff, and prevent soil erosion by wind and water
 - b. Reducing the "Urban Heat Island" effect that is created by large areas of exposed impermeable surfaces
 - c. Promoting landscape designs that conserve energy and water resources
 - d. Preserving or replacing native grasses, valuable mature trees, mature stands of vegetation, and other desirable vegetative cover.
5. Protect and enhance property values and land use compatibility by:
 - a. Buffering street frontages and zone boundaries
 - b. Buffering certain land uses from each other
 - c. Landscaping parking lots and open space areas

6. **Open Space Requirements of the Code:** The following types of improvements may be provided to meet the "minimum landscaped open space" requirements of the Keenesburg Municipal Code. The Town may approve other improvement types at the discretion of the Keenesburg Board of Trustees. The "minimum landscaped open space" requirements of the Keenesburg Municipal Code are separate from and in addition to the public land dedication requirements set forth in Chapter 17, Article X of the Keenesburg Municipal Code.

- a. **Pocket Park.** Should a developer choose to provide and maintain a pocket park per Town standards, that park shall be open to the general public and credited as part of the development's open space requirements. Pocket parks are typically 1-2 acres in size and are intended to serve the needs of the immediate residents or

customers of the adjacent businesses. Pocket parks maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the pocket park in place with the Town prior to construction of the park. Where appropriate community gardens and community garden partnerships are encouraged as part of pocket parks.

- i. Community gardens shall be maintained by partner programs, such as a non-profit, or formalized neighborhood group(s). The Town shall not be responsible for the maintenance and upkeep of a community garden.
- b. **Linear Park.** Linear parks are typically located alongside a ditch right of way and/or trail designed to connect one activity generator to another. They are intended to be a minimum of one hundred (100) feet in width or fifty (50) feet from the center line of the ditch with landscaping and 8-foot bike lane along ditch rights-of-way. Linear parks are intended to provide easy access to smaller parks by serving the needs of residents or regional trail users. Linear parks are designed to be well maintained, inviting and functional. Unless otherwise approved by the Town, Linear parks are to be maintained by developer, metro district or Homeowner's association, as long as the park serves the public and is open at non-differential hours and access to the public. Linear parks maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the linear park in place with the Town prior to construction of the park.
- c. **Neighborhood park.** Neighborhood parks serve the residents of several neighborhoods. Neighborhood parks are to be located on or near arterial streets, and within easy access to residential development, parking is required as part of the park development. The developer shall dedicate land and build the park including all improvements. Unless otherwise approved by the Town, Neighborhood parks are to be maintained by the developer, metro district, homeowners association or similar entity as long as the park serves the public and is open at non-differential hours and access to the public. Neighborhood parks maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the neighborhood park in place with the Town prior to construction of the park. All neighborhood parks shall:
 - i. Be at least 10-12 acres in size
 - ii. Be centrally located
 - iii. Function to provide variety of passive and active recreation opportunities
 - iv. Provide ADA accessible route whenever possible
 - v. Unless otherwise approved by the Town, its service areas should be uninterrupted by physical barriers such as non-residential roadways
 - vi. Be accessible by sidewalks, trails, bike lane or other means of public transit
 - vii. Meet all parking requirements set forth by the Town of Keenesburg
 - viii. Provide a variety of recreational amenities for residents
 1. Incorporate active and passive areas of recreation
 2. Incorporate recreation amenities for a variety of age and ability groups

3. Where possible neighborhood parks are encouraged to be located next to an elementary school
 - ix. Meet all irrigation requirements of the Town of Keenesburg
 - x. Provide safe and efficient lighting in areas of public gathering, parking and transit
 1. Light pollution shall be mitigated when lit facilities are located adjacent to residential property(ies).
 - xi. Within ½ mile of residential development
 1. Recreational programming is encouraged to minimize impact on existing and proposed residential development
 - xii. Where appropriate community gardens and community garden partnerships are encouraged as part of Neighborhood parks.
 1. Community gardens shall be maintained by partner programs, such as a non-profit, or formalized neighborhood group. Such group or non-profit shall submit a formalized maintenance agreement to the Town. The Town shall not be responsible for the maintenance and upkeep of a community garden.
- d. **Community Park.** Community parks serve a broader purpose than the other park types listed above. Community parks focus on meeting community and regional recreation needs as well as preserving unique landscapes and open space. They should maintain a balance between programmed sports activities and other community activity areas such as community gardens, historic features, performance areas, gathering spaces, etc. Community parks are intended to be dedicated to and maintained by the Town. Unless otherwise approved by the Town, community parks may be maintained by developer, metro district or Homeowner's association, as long as the park serves the public and is open at non-differential hours and access to the public. Community parks maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the community park in place with the Town prior to construction of the park. Community parks shall:
- i. Be at least 35-50 acres in size
 - ii. Provide passive and active recreation opportunities, with a focus on active recreation
 - iii. Meet all parking requirements set forth by the Town of Keenesburg
 - iv. Meet all irrigation requirements set forth by the Town of Keenesburg
 - v. Include active and passive recreation space for a variety of users
 1. Provide ADA accessible route whenever possible
 2. Incorporate a variety of amenities differing age and ability ranges
 - vi. Be accessible by sidewalks, trails, bike lane or other means of public transit
 - vii. Provide safe and efficient lighting in areas of public gathering and transit
 1. Light pollution shall be mitigated when lit facilities are located adjacent to residential property(ies).
 - viii. Provide appropriate signage as deemed appropriate by the Town for the proposed uses

- e. **Miniparks.** The purpose of the minipark is to provide adequate active recreational facilities to serve the residents of the immediately surrounding neighborhood within the development. Unless otherwise approved by the Town, miniparks may be maintained by developer, metro district or Homeowner's association, as long as the park serves the public and is open at non-differential hours and access to the public. Miniparks maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the community park in place with the Town prior to construction of the park. The following are illustrative of the types of facilities that shall be deemed to serve active recreational needs and therefore to count toward satisfaction of the minipark requirements for the Town of Keenesburg: Tennis courts, racquetball courts, ball diamonds, swimming pools, sauna and exercise rooms, meeting or activity rooms within the clubhouse, basketball courts, swings, slides, play apparatus and open areas for volleyball, badminton and other games.
 - i. Each development may satisfy up to one-half (1/2) of its public land contribution requirement by installing the types of active recreational facilities that are most likely to be suited to and used by the age bracket of person likely to reside in that development.
 - ii. Miniparks shall be attractively landscaped and shall be provided with sufficient natural or man-made screening or buffer areas to minimize any negative impacts upon adjacent residences.
 - iii. Each minipark shall be centrally located and easily accessible so that it can be conveniently and safely reached and used by those persons in the surrounding neighborhood it is designed to serve
 - iv. Each minipark shall be constructed on land that is relatively flat, dry and capable of serving the purposes intended by this Article.
- f. **Trails.** Trail systems are to link neighborhoods, parks, schools, open spaces, employment centers, community facilities and neighboring communities. Trail systems shall provide safe and efficient alternative means of travel between neighborhoods, zoning districts, open spaces, parks and community attractions. Unless otherwise approved by the Town, trails are to be maintained by the developer, metro district or Homeowner's association, as long as the trail serves the public and is open at non-differential hours and access to the public. Trails maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the trails in place with the Town prior to construction of the trail. Trails shall:
 - i. Be open to the public and remain open at non-differential hours
 - ii. Be no less than 10' wide
 - iii. Be covered in either crusher fines or non-permeable hard weather surface, such as concrete or asphalt, or other Town approved material
 - iv. Be ADA accessible
 - v. Promote the connectivity of parks and open space between zoning designations
 - vi. Provide safe and energy efficient lighting promoting the safe travel of pedestrians and/or bicyclists

g. **Walkways** are intended to be utilized as sidewalks within a park setting or promoting connections through any subdivision that allow easier access between areas. Walkways within the site shall be located and aligned to directly and continuously connect areas or points of pedestrian origin and destination. Walkways shall be at least six (6) feet in width, unobstructed by vertical curbs, stairs, raised landscape islands, utility appurtenances or other elements that restrict access and shall link street sidewalks with building entries through parking lots. Walkways intended to connect points of pedestrian origin to a building destination point shall be enhanced with texture concrete, colored concrete and/or approved hard surface material so as to separate the pedestrian walkway from other traffic.

- i. Within a park setting a walkway shall be at least six feet in width.
- ii. When cutting through a subdivision a walkway shall be at least six feet in width and located within dedicated open space of not less than 20 feet in width and shall be flanked with appropriate landscaping.
- iii. Walkways along buildings and within parking lots shall be raised and curbed where suitable. A direct pedestrian connection to building entries, public space and parking areas shall be provided from public sidewalks.
- iv. Walkways shall be constructed of the same materials as sidewalks; except that walkways internal to asphalt surfaced parking lots may be of asphalt construction.
- v. Walkways crossing driveways in parking lots shall be clearly delineated by a change in pavement color, texture, or paint striping.
- vi. Walkways along crosswalks shall be of differing weather resistant hard surface material and or texture than roadway
- vii. Drive aisles leading to main entrances shall have separated walkways on both sides of the drive aisle.
- viii. Walkways within R-1 and R-2 district are permitted to be no less than five (5) feet in width. Pedestrian and Bicycle Trails connecting through the R-1 and R-2 district shall be no less than eight (8) feet wide.
- ix. Residential walkway: Tree lawns are encouraged as a means to separate pedestrian traffic from vehicles and bikes. Trees lawns are to be no less than four (4) feet in width from the outside curb to the nearest edge of the associated sidewalk. Tree lawns are to generally consist of irrigated grass, Town approved mulch or a Town approved street tree located in the center of the tree lawn. Alternative ground covers that promote water conversation, are resilient to harsh climatic conditions, and are disease resistant may be allowed in the tree lawn area with Town approval. All trees and plantings shall be outside of the sight distance triangle and clearly shown as such on submittal sheets to the Town of Keenesburg. All plantings shall meet the Landscape Standards set forth by the Town of Keenesburg.
- x. Responsibilities: The landowner, metro district and/or homeowners' association shall be responsible for maintenance, upkeep and responsibility to keep in good condition all those locations indicated on the approved landscape plan of all vegetation, irrigation system(s), screening devices, and

other landscape components so as to present and maintain a healthy, safe and orderly site.

- h. **Regional open space.** Regional open space includes drainage ways, floodplains, natural areas, natural area buffer zones, Jurisdictional (“USACE”) or Non-Jurisdictional Wetlands, agriculture lands and agricultural activity, lands of archeological or historic significance, public conservation easements and undeveloped open space. Public access to these areas will generally be limited to trails, educational programming and outdoor recreation activities of a similar public nature. Unless otherwise approved by the Town, regional open space shall be maintained by developer, metro district or Homeowner’s association; except that, if the Town requires such regional open space to be dedicated to the Town in accordance with the Keenesburg Municipal Code, the Town shall maintain the regional open space. Regional open space shall be open to the public, management obligations and ownership notwithstanding. Regional open space maintained by entities other than the Town of Keenesburg shall have a long-term maintenance agreement of the regional open space in place with the Town prior to conservation, preservation or construction of amenities within the regional open space.
 - i. Regional open space may be permitted to preserve viewsheds and/or view corridors to preserve significant views of natural features, historic features, wildlife corridors or areas of significance as determined by the Town Administrator or Town Board.
 - ii. At the Town’s discretion, a natural resource management plan may be required for open space.

Land areas that shall not be acceptable in determining the fulfillment of the requirements for the provision of land areas for public purpose facility sites shall include the following:

- i. Natural drainageways, streams, gullies and rivers, including all lands within the one-hundred-year floodplain (Note: Unless the Board of Trustees specifically accepts a certain portion for reasonable use)
 - ii. Rights-of-way and/or easements for irrigation ditches and aqueducts
 - iii. Steep, rugged and hazardous geological land areas, and such other areas as are not conducive for use as public purpose sites
- i. **Storm drainage facilities.** Storm drainage facilities, including stormwater detention, may function as open space for active recreation, trail corridors, or habitat enhancement areas if they are designed and constructed to support those recreational uses. Drainage, grading and design of storm drainage facilities must be approved by the Town Engineer for safe and adequate recreational usage before they may be credited towards the open space requirement. Storm drainage facilities utilized for open space requirements shall meet the Town adopted standards for storm drainage facilities and shall:
 - 1. Contain high visibility signage warning of quick flooding
 - 2. Have less than a 2% overall slope if the facility is one (1) acre or larger; and

3. The grade of the side slopes shall be less than 3:1

The intent of allowing for storm drainage facilities as public open space or parks is to allow for detention ponds to be utilized as public park space when they are not filled with water or actively draining water.

7. **Public access.** Public access shall be provided to all pocket parks, linear parks, neighborhood parks, community parks, regional open space, natural and developed, directly from the public street, trail or park trail system. Pocket parks and plazas shall be integrated into the neighborhood design and be accessible to pedestrians and bicyclists. Vehicular and bike parking shall be provided for all parks with the exception of pocket parks; bicycle parking shall be provided for all pocket parks. All parks and open space shall meet all requirements set forth by the American Disability Act and meet all requirements set forth by the Town of Keenesburg. All parks, trails, and open space shall be open to the public at non-differential hours, regardless of whether such lands are owned and maintained by the Town, the developer, metro district or Homeowner's association.
- a. Interconnected walkways. Public access to parks and public open space shall be provided by a sidewalk network that interconnects all dwelling units with other dwelling units, non-residential uses, and common open spaces throughout each development. The pedestrian circulation system shall include gathering/sitting areas and provide benches, landscaping and other street furniture where appropriate.
- b. Sidewalks and/or walkways shall be separate and distinct from motor vehicle circulation routes.
8. **Buffering.** Appropriate buffering, per Table 5A - Buffering Requirements, and setbacks shall be used between environmental resources and proposed and/or existing developments, areas of historic designation and areas of environmental hazard to ensure that the proposed development does not impact the pre-existing conditions of the adjacent site(s). Developers shall provide an open space buffer zone around all-natural areas, areas of hazard and areas of historic designation unless otherwise authorized by the Town. Areas required to have buffer between zones will be required to provide additional landscaping consisting of 1 Tree per 100', 5 shrubs per 50'. All proposed plant species shall meet the requirements set forth by the Town of Keenesburg. Buffer areas are required to be maintained by the developer per an ownership and maintenance agreement to be executed with the Town of Keenesburg. Areas designated for buffering shall meet the requirements below:

Table 5A – Buffering Requirements			
Zoning Designation	Residential (R1,	Commercial (CBD,	Industrial (LI, HI)
Environmental	Per CDPHE &	Per CDPHE &	Per CDPHE &
Historic	8 ft. minimum	12 ft minimum	15 ft minimum
Zone Transitions	10 ft.	15 ft. minimum	20 ft minimum
Other Applications	As approved by	As approved by	As approved by

9. **Ownership and maintenance.** Generally, unless otherwise approved by the Town, the Homeowners Association, Metro District, or developer shall own and maintain pocket parks, mini parks, linear parks, community parks, neighborhood parks, regional open space, buffer yards, and trails constructed in connection with the respective development. The following provisions apply to all areas listed in Section 6 (a–i) of these standards:

- a. Environmentally sensitive area(s), archaeological, regional open space and historic resources may be dedicated to and maintained by the Town at Town's discretion.
 - i. Environmentally sensitive area(s), archaeological, regional open space and historic resources may go towards open space requirements at the Town's discretion. The intent of Environmentally sensitive, archaeological, regional open space and historic resources space is for the preservation of sensitive resources, unique resources, visual reprieve, protection of environmentally sensitive habitats, protection of environmentally sensitive species, and to provide unique recreational opportunities.
 - ii. Environmentally sensitive area(s), archaeological, regional open space and historic resources may go towards public land dedication requirements of Chapter 17, Art. X of the Town code at the Town's discretion. The intent of Environmentally sensitive, archaeological, regional open space and historic resources space is for the preservation of sensitive resources, unique resources, visual reprieve, protection of environmentally sensitive habitats, protection of environmentally sensitive species, and to provide unique recreational opportunities.
- b. Stormwater detention and retention areas that function as open space shall be owned and maintained privately, unless otherwise approved by the Town.
- c. Areas designated as open space shall be maintained according the designated function of the area. Applicants shall develop and submit a management plan which addresses irrigation, revegetation, erosion control, and weed management. If the area is to remain in private ownership, the entity responsible for maintaining the area shall enter into a long-term maintenance agreement with the Town of Keenesburg prior to construction of the development.
 - i. At its discretion the Town of Keenesburg may require a natural resource management plan for open space areas, environmentally sensitive areas, and wetlands.

10. **Applicability:** The following landscape standards apply within the corporate limits of the Town of Keenesburg and shall be demonstrated by the applicant in a landscape plan whenever such plan is required pursuant to the Keenesburg Municipal Code in connection with a development.

- a. **Landscape Plan:** All Landscape plans required to be submitted to the Town of Keenesburg pursuant to the Keenesburg Municipal Code shall be created by a licensed Landscape Architect, Engineer, or Architect in the State of Colorado

incompliance with CRS 12-130-105; exceptions may be granted at the Town of Keenesburg's sole discretion. Landscape plans shall contain a full plant list and clear symbols illustrating proposed plants, plant groupings and hydro-zones where applicable. Landscape plans shall be submitted to the Town at the same time as the proposed development. Landscape Plans shall include:

- i. Building foundation plantings
- ii. Parking lot landscape plantings
- iii. Parks, Open space, and Community Attraction plantings
- iv. Trail plantings
- v. Landscape Architect stamp, unless otherwise granted by the Town.

b. **Plant materials.** The minimum planting sizes on all required landscaping shall be two-inch caliper deciduous trees, one and one-half inch caliper ornamental trees, six foot tall evergreen trees and five gallon shrubs.

- i. Plants shall be healthy, well-branched vigorous stock with a growth habit normal to the species and variety and free of diseases, insects and injuries. A variety of plant species should be installed to prevent the spread of disease and promote a health vegetative cover.
- ii. All plants shall conform to standards for measurements, grading, branching, quality, ball and bur lapping as stated in the current edition of the American Standard for Nursery Stock, American Association of Nurserymen, Inc., (AAN-ASNS) and the Colorado Nursery Act of 1965 (CNA).
- iii. All plants shall be no more than 24 inches in height when located in a sight distance triangle.
- iv. Weed Control shall be the continual responsibility of the owner during all phases of land clearing, construction and operation.
 1. Every effort shall be made to prevent the spread of noxious and invasive plants.

c. **Plant Replacement.** Generally, dead or unhealthy plants shall be immediately replaced with the size and type of plants required on the site development plan and by these standards, at no cost to the Town. However, replacement of plants may be delayed up to 1 year whenever the Town determines that:

- i. Extenuating circumstances, beyond the owner's control, prevent the immediate replacement of the dead or unhealthy plants. Circumstances shall be deemed extenuating by the Town of Keenesburg at the Town's discretion.

d. **Invasive Species, Disease, and Pests.**

- i. **Invasive Species.** All invasive species shall be removed from property proposed for development, substantial improvement, or redevelopment. All developed property shall be kept free of invasive species.
 1. Invasive species are defined as species identified on the State of Colorado Noxious and invasive weed list(s).
- ii. **Disease and Pests.** Any tree that poses a threat to other trees or plants in the community because of epidemic disease (such as Dutch Elm disease,

Emerald Ash borer, Pine Beetle, etc...) shall be treated as quickly as possible to control the spread of the issue to the rest of the community.

- a. Diseased species undergoing treatment shall be monitored on a regular basis so as to prevent the further spread of disease. Active Disease monitoring is highly encouraged in areas of high visual significance and or visual character for the Town.
 2. Species identified as diseased with communicable diseases or infestations, such as the emerald ash borer, shall be reported to the Town of Keenesburg and County Pest Management upon confirmation.
- e. **Required Warranty.** The owner shall guarantee all plant material installed to be in healthy condition (free of dead or dying branch tips; bearing foliage of normal density, size, and color; and closely matching adjacent specimens of the same species) for a term of two years. The warranty term commences on the date of acceptance of installed plant materials. Where work is accepted in phases, the warranty terms will be contingent upon each phase.
 - i. During the required warranty term, the owner shall replace, without cost to the Town, all plants determined by the Town to be dead or in a condition that does not meet these standards. Replacements shall be made within a specified planting period, as soon as weather conditions allow. Replacements shall meet the minimum specifications of the materials replaced.
 - ii. Unless otherwise specified by the Town, the Homeowners Association, Metro District, or responsible party per maintenance agreement shall be responsible for replacing dead and/or diseased plants in perpetuity.
- f. **Extension of Warranty Term.** Replacement plants shall be guaranteed for a new warranty term of two years. In the event that a replacement plant dies or is not in a healthy condition during or at the end of said new warranty term, the Town may require that a different genus, species, or type of plant material be installed.
 - i. In the event a specified tree in the landscape is deemed as posing a disease, health or safety risk for the surrounding community, the Town may require the tree's removal at no cost to the Town.
- g. **Landscape Structures.** All fences, walls and similar structures shall be maintained in good condition by the developer. Chipped paint, missing fence pieces, leaning or fallen portions of a fence, or other signs of deterioration shall be immediately repaired, refinished, or replaced as appropriate per maintenance plan submitted to Town of Keenesburg.
 - i. All installed landscape structures shall meet construction specifications, and safety codes to protect the health, safety and welfare of the Town.
 - ii. All installed landscape structures in public space shall be inspected by the Town prior to dedication to the Town or release of development bonds.

- h. **Irrigation.** Areas designed to meet the “minimum landscaped open space” requirements of the Keenesburg Municipal Code shall require irrigation in accordance with Town of Keenesburg irrigation requirements of this code. Irrigation plans submitted to Town shall be created by a licensed Landscape Architect, Engineer or certified Irrigation Specialist; exceptions may be granted at the discretion of the Town Board or Administrator.
1. An irrigation plan is required to be submitted with the Development plan
 2. All planted areas with live plants (except areas that are left undisturbed) shall be equipped with an irrigation system that will provide sufficient water to maintain the plants in a good and healthy state.
 3. Where the Town has approved phased installation of landscapes, the installation of irrigation systems may also be phased accordingly.
 4. Where irrigation is installed in phases, final acceptance on behalf of the Town will be tied to each phase.
- ii. **Plans.** Site development plans with plants grouped by their water needs shall show the type of irrigation in each landscape area or irrigation zone (*e.g.*, pop-up or drip) and the point of connection to the water supply (including tap size).
1. For irrigation plans showing plants grouped by water requirements, a table must be included with the submittal showing the water requirements for each planted area.
 2. All other site development plans shall include notes regarding irrigation in compliance with Town of Keenesburg Municipal Code.
- iii. **Irrigation System Requirements.** Whenever there are 2,000 sf. or more of planting areas on a subject property, whether or not the planting areas are contiguous, the subject property shall have an underground, permanent irrigation system capable of meeting the typical watering requirements of all the plant materials on the subject property.
1. Whenever there are less than 2,000 sf. of planting areas on a subject property, there shall be at least one reliable water source available during the growing season. The hose bib or other water source shall be within not more than 50 feet from the border of the planting areas.
 - a. Perpetual maintenance plan or formal agreement must be submitted to the Town of Keenesburg at time of plan submittal.
 2. Temporary irrigation is permitted to establish plantings in areas generally of low pedestrian volume, visual significance or areas of native grasses. A mowing or long-term maintenance plan of the area must be submitted with the request for temporary irrigation.

- a. A final inspection of the site shall be completed by the Town to determine the healthy establishment of plantings before temporary irrigation may be discontinued by the developer.
- i. **Irrigation System Design.**
 - i. Whenever possible irrigation systems shall be designed to avoid overspray onto non-living and impervious surfaces.
 - ii. Sprinkler systems shall be designed to minimize misting and overspray by all means possible.
 - iii. Unless otherwise granted by the Town of Keenesburg, subsurface and/or drip irrigation systems are mandatory in shrub bed areas.
 - 1. Where subsurface and/or drip irrigations systems are used shrub density may be less and at a density of 1 shrub per 15 feet. Except in the CH and CBD zones, unless otherwise specified by the town. Plantings in the CH and CBD zone shall be 1 shrub per 10 feet.
- j. **Irrigation System Maintenance.** All irrigation systems shall be maintained, per an approved maintenance plan, in good working order.
 - i. Soil amendments: the landscape installer must certify that soil amendments have been installed in accordance with the requirements of this Section and in accordance with submitted plans.
 - 1. 5% or greater of organic material must be worked into the top 6 inches of disturbed soil in all planting bed areas.
 - ii. Soil amendments that are appropriate for the intended plant materials, design of the site, and soil conditions shall be selected and installed.
 - iii. The following schedule specifies the minimum soil amendment requirements per 1,000 square feet of landscape area:
 - 1. Bluegrass and High-Water Plantings: 3 cubic yards
 - 2. Shrubs, Perennials and Moderate to Low-Water Plantings: 2 cubic yards
 - 3. Xeric and Very Low-Water Plantings: 1 cubic yard or comparable treatment
 - 4. Dryland and native grassland re-establishment areas: no required treatment. Plants must be irrigated until fully established.
 - a. Temporary irrigation may be permitted in dryland and native grassland areas at the Town's discretion.

Approved and Prohibited Plant Lists

- 11. **Generally.** All proposed plants must be on the approved plant list as maintained by the Town of Keenesburg. Prohibited plants shall not be approved or installed, and the Town may require their removal at no cost to the Town.
 - a. Applicants may request for consideration of plants which are not listed be included on the approved, and the Town may approve them and add the approved

planting list at its discretion. Plants outside of the approved planting list must show they are non-invasive, adaptable to site requirements, disease resistant, appropriate for the site and of low water usage.

12. Approved Plant List.

- a. The Town shall maintain a list of approved plants in the following categories:
 - i. Street Trees (deciduous trees with a mature height that is generally more than 35 feet, planted between the street side curb and the sidewalk, typically in the public right-of-way)
 - ii. Large Trees (deciduous trees with a mature height that is generally more than 35 feet)
 - iii. Small Trees (deciduous trees with a mature height that is generally 35 feet or less)
 - iv. Evergreen Trees (conifers or other evergreens with a mature height of more than 20 feet)
 - v. Shrubs (perennials or evergreens with a mature height of at least three feet)
- b. The Town may further classify the approved plant list according to:
 - i. Locations where approved plants are appropriate or not appropriate
 - ii. Level of water usage
 - iii. Growth Habit
 - iv. Branching Structure
- c. Plants may be added to the approved planting list if the Town of Keenesburg finds that they are appropriate for planting in consideration of:
 - i. Climate zone, including microclimate
 - ii. Growth habit
 - iii. Invasiveness
 - iv. Lifespan
 - v. Habitat; and its capability of providing habitat to wildlife
 - vi. Hardiness (resistance to disease and harmful insects)
 - vii. Leaf litter
 - viii. Structural & Branching strength
 - ix. Watering needs & drought tolerance
 - x. Promote the health, safety and welfare of the Town

13. Prohibited Plant List. The following plants are not allowed in the Town, and shall be removed, at the developer's cost, during development or redevelopment if they are present on the subject property:

- a. Plants that are identified as noxious, invasive, or prohibited in Keenesburg by the United States, the State of Colorado or the Town of Keenesburg;
- b. Plants that are identified on the State of Colorado's list of noxious weeds and species identified by the State of Colorado as invasive

14. Substitution of Plant Types

- a. The Town may allow substitution of plants if:

- i. The substituted species will be more suitable for the environment of the site. Suitability of a substitute planting shall be demonstrated to the Town of Keenesburg prior to approval and planting.
- ii. The substitution will not compromise the growth, survival rate, root growth area or disease resistance of any of the adjacent species
- iii. Strict adherence to the requirements set forth herein is not practical for the proposed site due to unique circumstances

15. Environmental considerations. Landscapes shall use the following xeriscape design principles to promote water conservation:

- a. Well-planned planting schemes
- b. Appropriate turf selection to minimize the use of bluegrass
- c. Use of mulch to maintain soil moisture and reduce evaporation
- d. Placement of plant materials according to capitalize on their microclimatic needs and water requirements
- e. Efficient irrigation systems that reduce spray over
- f. Proper maintenance and irrigation schedules
- g. Group plantings of similar water requirements together
- h. All landscapes shall strive to maximize the use of native species. Where native material is not appropriate for the intended use or appearance, plant species that are regionally adapted and noninvasive may be used.

16. Biodiversity. Landscapes shall consist of a variety of species that enhance biodiversity and wildlife habitat. Plant diversity is required to be prevent disease spread and mass loss of plants as a byproduct of monocultures and aggressive disease.

- a. Buildings and parking areas shall be located to preserve and promote the health of existing trees, environmental resources and natural drainage ways. If a healthy tree is removed with cause, it must be replaced with a comparable tree or trees per a tree mitigation plan provided at time of development submittal. The intent of this replacement plan is to retain and conserve the visual appeal, biodiversity and wildlife habitat in that area. This requirement is not intended to prevent the removal of unhealthy trees in conjunction with site development.
- b. A combination of plantings, berm(s), walls and fences shall be used as appropriate to buffer sensitive habitat
 - i. Landscape plans involving sensitive habitat must submit a habitat mitigation plan completed by a licensed Landscape Architect, Natural Resource Manager, or Wildlife Specialist to the Town of Keenesburg; exceptions may be granted at the Town of Keenesburg's discretion. This plan must be approved prior to the approval of development agreement.
- c. Areas proposing a high percentage of native species shall submit a weed control plan to the Town
- d. Areas disturbed by construction shall be reseeded to prevent erosion. Vegetation shall be planted where practical.
- e. No more than 30% of one genus is permitted in any landscape plan
- f. Street trees located in the CBD and CH area are required to have at least three species of trees planted along the street

- g. No more than 30% of one species is permitted in an individual cluster of trees

17. Plant materials. Plants shall be healthy, well-branched vigorous stock with a growth habit normal to the species and variety and free of diseases, insects and injuries. A variety of plant species should be installed to prevent the spread of disease, promote biodiversity and prevent the creation of a monoculture.

- a. All plants shall conform to standards for measurements, grading, branching, quality, ball and bur lapping as stated in the current edition of the American Standard for Nursery Stock, American Association of Nurserymen, Inc., (AAN-ASNS) and the Colorado Nursery Act of 1965 (CNA).
- b. Seventy-five percent of all landscape areas shall be covered with living ground cover. The recommended ground cover should be attained within three years of the date of planting.
 - i. In the case that coverage is not acquired within three years of the date of planting the Town may require removal of the planting and the replacement of such planting with a different species.
- c. Plant materials shall be true to name and type, and first-class representatives of their species or varieties.
- d. Trees shall be balled, and bur lapped, with the burlap wrapped in a metal wire basket. Container and bare root tree plantings are not permitted.

18. Plant Selection and Grouping Requirements.

- a. Plants shall be selected based on their suitability for the site and climate. Where possible, native species shall be installed, protected, or preserved.
- b. No more than 50 percent of the trees and shrubs that are installed shall be classified as high-water use as specified in Table 5G – Water Usage Requirements.

19. Mulch. Mulch, such as bark, stone, or other materials, left loose, or other water-saving treatments applied to the soil surface at a depth of four inches for bark, or two to four inches for stone, shall be used for all planting areas (except turf areas) in order to help maintain soil moisture and inhibit weeds. Landscape fabric is required below non-organic materials.

- a. Alternative mulch materials may be used with approval by the Town of Keenesburg.

20. Site Distance Triangle. Plants shall be no more than 24 inches in height when located in a sight distance triangle. Site distance triangles are specified in the Town of Keenesburg street standards.

21. Guarantee of installation. Required landscape improvements shall be installed in accordance with the approved improvements agreement for the project. In cases where an improvements agreement is not required by the Town, landscape improvements shall be installed per the approved schedule established through the project review.

- a. Maintenance, removal, and replacement. Unless otherwise approved by the Town, developer, Homeowners association, metro district or alternate outside entity shall

be responsible for maintenance, removal and replacement of trees and landscaping within the public portions of the development. The developer, Homeowners association, metro district or alternate outside entity of mixed use, commercial or industrial property with an approved Final Development Plan or Site Plan are responsible for the maintenance and replacement of landscaping as shown on the approved plan. Exceptions to this provision may be granted by the Town for smaller developments.

22. Tree Preservation Credits. Existing trees that are preserved on a subject property, excluding existing, individual residential lots, count towards the planting requirements of this section, provided they are:

- a. In good health
- b. Established for at least five years and not on the prohibited plant list
- c. They are not diseased, in poor health, poor form, over-mature, too close to building foundations and/or damaging sidewalks, driveways or utilities

23. Credit for Preservation of Trees. Healthy, mature trees, and/or mature stands of vegetation that are preserved on-site may count as more than one tree for the purposes of the landscaping requirements, as set out in Table 5C-Tree Preservation Credit Table below.

Table 5C Tree Preservation Credit Table			
Minimum Diameter	Up to but not	Tree Credit	Area where credit may be applied
None	10 inches	1	Location of preserved tree
10 inches	15 inches	2	Location of preserved tree
15 inches	20 inches	3	Location of preserved tree or street tree
20 inches	No limit	4	Location of preserved tree or street tree

24. Tree-lined streets. Tree lined streets are typically utilized to increase user experience of Sidewalks, Trails, and Bike lane. Any development proposing tree lined streets shall meet the requirement of this section.

- a. Tree lawns shall be wide enough to ensure adequate room for root growth. Tree lawns shall vary in width for Local, Collector and Arterial streets and shall be as depicted as required by the Town's adopted street standards and specifications.
 - i. Trees located in the CBD and CH zones shall be placed in minimum 4 ft. tree grates.
- b. Trees shall be aligned in straight rows, located in the middle of the tree lawn, and planted 40 feet on center. Such street trees shall be placed at least five feet away from the edges of driveways and alleys, and 40 feet away from any streetlight and to the extent reasonably feasible, be positioned at evenly spaced intervals.
 - i. Trees located within the tree lawn shall be irrigated and maintained by the property owner
- c. Trees installed along streets shall include a mix of species, be generally aligned along the street frontage and may be placed outside of the public right-of-way.

- d. No tree shall be planted where eventual tree habit or root growth cannot be reasonably maintained to avert interference or obstruction to traffic and street signs, site distance triangles, street lights, utilities, fire hydrant, or any public infrastructure.
- e. No more than six (6) of the same tree genus may be planted consecutively in a row-type planting.
- f. Root barriers are required for all tree plantings along concrete, curbs and driveways

25. Rural Street Tree Plantings. Street trees planted along rural streets where there is no sidewalk may be planted in organically shaped clusters to reinforce the design and character of the project and frame views.

26. Minimum Tree species diversity. To prevent insect or disease susceptibility of monocultures and eventual uniform senescence on a development site or in the adjacent area or the district, species diversity is required, and extensive monocultures are prohibited. The following minimum requirements shall apply to any development plan. At the time of proposal, a planting plan illustrating the development meeting the species diversity requirements shall be submitted. Requirements of this section are shown in Table 5D – Tree Species Diversity

Table 5D – Tree Species Diversity	
Number of Trees	Maximum Percentage of any one species
10-19	30%
20-39	33%
40-59	20% species, 30% genus, 40% family
60 or more	15% species, 20% genus, 30% family

27. Tree species and minimum sizes. The Applicant shall provide a recommended list of trees, to be reviewed by the Town which shall be acceptable to satisfy the requirements for landscape plans, including approved canopy shade trees that may be used as street trees. The following minimum sizes shall be required by Table 5E- Tree Caliper Sizes. The tree caliper shall be determined by diameter at breast height (DBH).

Table 5E – Tree Caliper Sizes	
Canopy Tree	2” caliper balled and bur lapped
Evergreen Tree	6.0’ in Height, balled and bur lapped
Ornamental Tree	1 ½” caliper balled and bur lapped
Shrubs	5 gallon bucket

28. Preferred Street Trees and Trees permitted within Rights-of-Way. The following list identifies tree species allowed within community recreation areas, as street trees or within the public right-of-way in the Town of Keenesburg.

- a. **Oak (Quercus):** Genus: Bur*, Chinkapin*, Chestnut*, English*, Shumard*, Texas Red*, Heritage*, Bur-gambel Hybrid*, Fastigate English*, Crimson Spire*.
- b. **Legume (Fabaceae) Family:** Shademaster Honeylocust*, Skyline Honeylocust, Imperial Honeylocust, Kentucky Coffeetree*, Kentucky Coffeetree Espresso*.
- c. **Chokecherry (Prunus Virginiana) Genus:** Canada Red*, Sucker Punch*. (Height usually 20 to 25 feet)
- d. **Maple (Acer) Genus:** Bigtooth (single stem)*, State Street*, Caddo Sugar*, Columnare, Fairview, Red.
- e. **Buckeye (Aesculus) Genus:** Ohio Buckeye*, Yellow Buckeye, Texas Buckeye*, Prairie Torch Hybrid Buckeye, Common Horsechestnut*.
- f. Other trees allowed along right-of-way (by common name): Hackberry, Western Catalpa, Ginkgo (male only), or any other tree species approved by the Town in its discretion.

29. Preferred deciduous trees – Not permitted as street trees or permitted within Rights-of-Way.

- a. Toba Hawthorn, Washington Hawthorn, Downy Hawthorn, Dolga Crabapple, Amur Chokecherry, Thornless Hawthorn, Japanese Tree Lilac, Coralburst Crabapple, Spring Snow Crabapple, Thunderchild Crabapple, Radiant Crabapple, Indian Magic crabapple, Red Jewel Crabapple, Gamble Oak, Autumn Blaze Pear, Royal Star Magnolia, Serviceberry, Red Buckeye, Newport Plum, Autumn Blaze Pear, Cleveland Select Pear, Wavyleaf, Red Buckeye, Box Elder Sensation.
- b. Planting plans with fruit bearing species or species with high amounts of seeds, flowers, etc., shall submit a management plan to the Town to maintain cleanliness.

30. Preferred Coniferous Trees – This list may change at the discretion of the Town

- i. Colorado Spruce, Colorado Blue Spruce, Bristlecone Pine, Easter Red Cedar, Rocky Mountain Juniper, Pinyon Pine, Austrian Pine, Spartan Juniper, One Seed Juniper, Cologreen Juniper, Skyrocket Juniper, Wichita Blue Juniper, Fastigate Norway Spruce, Black Hills Spruce, Bosnian Pine, Ponderosa Pine, Scots Pine, European Larch

31. Prohibited Trees. The follows species of trees are prohibited by the Town of Keenesburg. This list may change at the discretion of the Town.

- a. Any of the ash species (*Fraxinus* spp.), including but not limited to Green, White, Purple, Blue, and Cinnamon.
- b. Any of the poplar species (*Populus* spp.), including but not limited to Cottonwood, Aspen, Silver Poplar, Lombardy Poplar.
- c. Any of the Willow species (*Salix* spp.).
- d. Any species of Elm (*Ulmus* spp.).
- e. Any weeping or pendulous type tree (i.e. Weeping Birch).

- f. Any shrub or hedge which by its habit of growth would obstruct, restrict, or conflict with necessary and safe use of the public rights-of-way.
- g. Conifers or evergreens which would eventually grow over the sidewalks or streets.
- h. Thorned Honeylocust or Hawthorn species or other trees that bear seed pods.
- i. Purple Locust, Black Locust, Mulberry, Bradford Pear, Black Walnut, Russian Olive, Tree of Heaven, Tamarisk, Silver Maple.

32. Water-Efficient Landscaping Requirement. The requirements of this Section are applied to all landscaped areas within a proposed development.

- a. Plant Selection, preservation and grouping Requirements.
 - i. Plants are to be chosen based on their suitability for the site. Whenever possible, native species in good condition shall be installed, protected, and/or preserved.
 - ii. Not more than 50 percent of the plants installed shall be classified as high-water use. Per Table 5G-Water Usage Requirements.
- b. Low water use plants (including grasses) are required:
 - i. On slopes that are steeper than 25 percent
 - 1. Slopes steeper than 25 percent require a mix of shrubs and rock.
 - ii. In areas that the Town determines are not appropriate for permanent irrigation.
- c. Mulch. Bark or stone mulch shall be applied to all planting bed areas in order to decrease water loss and increase water conservation of planting bed areas. Wood mulch shall be placed at a depth of 4 inches, two inches for rock or stone.
- d. Landscape material is required in all planting bed areas

33. Plan and Hydrozone Standards. Landscape and irrigation plans must meet requirements set forth in this Section.

- a. Landscape plans shall clearly demonstrate low water usage, identification of hydro zones, specification of plant lists with low Evapo-Transpiration (“ET”) or Kc-values and indication of plant spacing.
- b. Planting areas must be organized into distinct groupings based on their water requirements. Plants of similar water requirements are to be grouped into separate zones based on their water requirements.
- c. A hydro zone table showing plant grouping and their respective water requirements is required for all landscape plan submittals
- d. An irrigation plan completed by a Professional Engineer, licensed Landscape Architect, or a certified Irrigation Specialist shall be submitted with each landscape plan; exceptions may be granted at the Town of Keenesburg’s discretion.
 - i. The irrigation plan must show hydrozones and their respective water requirements
 - ii. Irrigation systems shall be provided with automatic rainfall shut-offs to limit the unnecessary application of irrigation water

- iii. Whenever possible irrigation system controllers may be utilized to ensure that irrigation water is provided efficiently based on moisture needs of plantings.
- e. Unless otherwise specified by the town, shrub water usage shall be as follows:

Table 5G- Water Usage Requirements		
Hydrozone	Maximum Gallons of	Acre-feet of water due
High water needs	20	3
Moderate water needs	12	1.8
Low water needs	3.6	0.6
Very low water needs	0	0

- 34. **Location of Plantings in Relation to Walls and Fences.** Walls and fences shall not be located less than 10 feet from the property line in CBD or CH zones.
- 35. **Walls or Fences that are Installed along Other Interior Property Lines.** Along property lines in residential zones, walls and fences may be installed at the property line, provided that:
 - a. The decorative sides of walls or fences face out
 - b. Such wall or fence does not conflict with existing utilities or utility easements
 - c. The wall serves in conjunction with proposed plantings to separate land usages
 - d. Temporary walls utilized while living walls are establishing their growth.
Temporary walls are to be used for approximately 10-15 years, or until the Town deems the plants have reached maturity to serve as a wall.
 - e. Walls 6' or higher are required to have additional lighting to deter crime.
- 36. **Noise Barriers.** When appropriate, walls may be utilized in conjunction with appropriate plantings to buffer noise pollution from one land use to another and increase compatibility
 - a. Proposed plantings must be planted with adequate density to act as noise barriers at 75% of max growth.
 - b. Planted noise barriers must have a variety of growth habits and heights; there shall be proposed small, medium and large shrubs.
 - c. There shall be a mix of deciduous and coniferous trees in noise barriers. Tree plantings may be denser than 1 tree per 35 feet so as there is sufficient room for the tree to reach full maturity.
- 37. **Use of Equivalent Plant Materials in Living Walls.** The number of large trees, small trees, evergreens, and shrubs may be used to create a living wall.
 - a. Living walls are required to have a density of 1 Deciduous tree positioned 35ft on center, 1 Coniferous tree positioned 20ft on center, variety of large, medium and small shrubs planted at 5 shrubs per 25ft-35ft.
 - b. Living walls are to be established within 15 years from time of planting
 - c. Temporary wall shall be installed until living wall plantings reach maturity and/or the Town deems the plants have reached maturity to serve as a wall.

- d. All proposed living walls shall submit an elevation and or section illustrating the intended visual screen
- e. Unless otherwise agreed upon by the Town, living walls shall be maintained by the developer, Homeowners association, metro-district or other related entity.
- f. Living walls may be utilized to create of visual screen of unsightly areas

38. Building Foundation Planting requirements:

- a. **Commercial and Multifamily buildings.** Foundation plantings for commercial building shall cover no less than 75% of the building foundation at maturity. This provision does not apply to the LI and HI zoning designations.
 - i. Shrubs and/or deciduous grasses shall be planted at 1 shrub per five (5) feet, unless otherwise specified by the Town of Keenesburg
 - 1. Multifamily buildings within the R2 and R3 zoning designations shall have a foundation planting bed no less than five (5) feet wide
 - a. Planting beds in R2, R3, CH, CBD shall incorporate a variety of plant species, seasonal color, texture and form
 - b. 30% of the shrub bed is required to be coniferous and/or evergreen
 - 2. Commercial buildings with the LI and HI zoning designations shall have no less than 60% of the building foundation planted unless otherwise specified by the Town.
 - 3. Unless otherwise approved by the Town, low water usage planting and plant groupings are required.

Parking Lot Landscape Requirements:

- 1. **Parking Lots.** Areas within parking lots shall be landscaped to mitigate urban heat island effect, impermeable surfaced areas, to slow stormwater runoff, and to improve parking lot appearance.
 - a. This section applies to any surface parking lot that contains more than 20 parking spaces

2. Planting Area Requirements.

- a. At least one large tree and five shrubs shall be planted in the interior of the parking lot for every 15 parking spaces.
- b. The first two feet of the parking island, on either end, shall be free of plantings and covered solely by mulch and landscape material
- c. Parking lot islands shall be the same length of the parking stall
- d. Parking lot island curbs shall be concrete and at least six inches above the parking lot surface
 - i. Curb cuts are permitted in parking lot island curbs in parking lots designed for stormwater capture
- e. No less than 75 percent of landscaped areas within a parking lot shall be covered with living materials within three years of installation

3. Parking Lot Island Arrangement.

- a. Parking lot islands will be installed on the ends of parking rows and entry drives to separate parking from drive aisles
- b. Parking lot islands are required every 15 stalls; in large parking lots, parking lot islands are required in the center as a means to mitigate urban heat island effect
- c. Drive aisles shall be separated from parking stalls by landscape islands, strips or planted separators.
- d. **Additional Planting Requirements Based on Parking Spaces.** For parking lots containing greater than 20 spaces, an additional large tree shall be provided for every 10 parking spaces in excess of 20 spaces. Additional Trees may be distributed within the interior or perimeter landscaping area. This requirement shall be in addition to the planting area requirements set forth in section 2 of these Parking Lot Landscape Requirements.

4. Parking Lot Perimeter Landscaping.

Parking Lot perimeter landscaping shall be installed along the boundaries of all surface parking lots of 3 stalls or larger that are visible from the street or adjoining property. Plant materials and walls or fences shall be consistent with the Town of Keenesburg planting list.

- a. Parking lot landscaping is intended to enhance the entrance, pedestrian walkways and pedestrian connectivity to buildings.
- b. Parking lot perimeter landscaping shall provide at least 75% vegetative cover around the parking lot perimeter within 3 years of planting

5. Residential Perimeter Landscaping. Parking buffer yards along property boundaries that adjoin single-family detached, duplex, multiplex, or townhome uses shall be buffered as follows:

- a. Perimeter landscape area shall not be less than three feet in width. If vehicle overhangs are planned in the parking stalls, the perimeter landscape area shall not be less than 4 feet.
- b. Parking buffer yards shall include a fence or wall that is at least five feet in height, and two large trees per 100 linear feet of buffer yard.

6. Perimeter Landscape Standards for all zones.

- a. Parking perimeter landscape area shall be not less than five feet in width, including any vehicular overhang areas.
- b. Along streets, landscaping shall be installed between the parking lot and the sidewalk.
- c. Parking buffer yards shall include shrubs and any combination of berms, walls, fences, evergreens, planters, or other approved visual obstructions, provided the perimeter includes a mix of coniferous plantings.
- d. Shrubs shall be installed along not less than 75 percent of the width of the planting area
 - i. 30% of the shrubs are required to be coniferous
 - ii. Coniferous shrubs must be equally spaced along planting perimeter area

- iii. Irrigated turf is discouraged in areas less than 10 feet wide. Ornamental grasses are encouraged in areas where grass is desired.
- e. Parking perimeter landscape area shall provide a visual obstruction up to a height of:
 - i. Five feet above the surface of the parking lot at installation if the parking lot is adjacent to the R1, R2, or MH zones
 - 1. Three feet above the surface of the parking lot in R3 area
 - ii. Plantings shall be established within three years after installation
 - 1. If all plantings are not established within three years of installation, the Town of Keenesburg may require either the replanting of materials or replanting of similar materials to be established within three years.
- iii. A mechanism of long-term maintenance of landscaping must be provided.

7. Large Surface Parking Lots. Large surface parking lot is a stand-alone surface parking lot that contains more than 200 parking spaces.

Large surface parking lots shall be divided into smaller segments by using pedestrian and landscape breakers that comply with the following standards:

- a. Each landscape separator shall be placed so that each parking segment contains a maximum 100 parking spaces.
- b. Landscape separators shall be parallel to the parking rows.
- c. The first landscape separator in a large surface parking lot shall contain a pedestrian walkway. The walkway shall be in front of an entrance into the building thereby providing a safe route of pedestrian travel.
- d. One landscape separator shall be required per every 50 parking stalls along a pedestrian walkway
- e. The pedestrian walkway(s) shall connect to the perimeter sidewalks or trails in a clear and efficient manner. Where the pedestrian walkway crosses a drive-aisle, the pedestrian crossing shall be emphasized and separated from flowing traffic as best as possible.
 - i. The material and layout of the pedestrian crossing shall be continuous as it crosses the drive-aisle
 - ii. Pedestrian crossing shall be separated through the use of raised or striped crosswalks or special pavement treatments such as scored concrete, colored concrete, pavers, brick or other hardscape materials approved by the Town
- f. Landscape separators with a pedestrian walkway shall be a minimum of 20 feet in width.
 - i. Landscape separators without a pedestrian walkway shall be a minimum of 10 feet in width.
 - ii. Where no pedestrian walkway is provided, additional landscaping shall be required as follows:
 - 1. 1 shrub per 10 feet, and 1 Tree per 35 feet on center
 - 2. Ornamental trees are encouraged to emphasize pedestrian walkways and building entrances
- g. Pedestrian walkways within a landscape separator shall be a minimum of 6 feet wide.

- h. Irrigation must be provided for all landscape separators and breakers; irrigation plans must be submitted to Town of Keenesburg at time of Development submittal.
 - i. Irrigated turf is highly discouraged in landscape separators and breakers. The Town encourages the use of low water use ground covers that do not require spray irrigation.
 - ii. The use of open rock mulch may be approved in place of groundcover by the Town of Keenesburg.
 - iii. Plantings with a mature height of six inches or more shall not be planted within two feet from the back of the curb to avoid conflicts with vehicle overhang.
 - iv. Planting with a mature height of 2 feet or more are not permitted within 1 feet of the pedestrian walkway.
- i. Plantings within landscape separators shall be resilient to harsh climatic conditions.
- j. The Town may authorize the phasing of landscape installation if phasing will provide a logical, sequential installation of improvements on a subject property.

IV. Parking Lot Landscape Requirements:

8. **Parking Lots.** Areas within parking lots shall be landscaped to mitigate urban heat island effect, impermeable surfaced areas, to slow stormwater runoff, and to improve parking lot appearance.

- a. This section applies to any surface parking lot that contains more than 20 parking spaces

9. **Planting Area Requirements.**

- a. At least one large tree and five shrubs shall be planted in the interior of the parking lot for every 15 parking spaces.
- b. The first two feet of the parking island, on either end, shall be free of plantings and covered solely by mulch and landscape material
- c. Parking lot islands shall be the same length of the parking stall
- d. Parking lot island curbs shall be concrete and at least six inches above the parking lot surface
 - i. Curb cuts are permitted in parking lot island curbs in parking lots designed for stormwater capture
- e. No less than 75 percent of landscaped areas within a parking lot shall be covered with living materials within three years of installation

10. **Parking Lot Island Arrangement.**

- a. Parking lot islands will be installed on the ends of parking rows and entry drives to separate parking from drive aisles
- b. Parking lot islands are required every 15 stalls; in large parking lots, parking lot islands are required in the center as a means to mitigate urban heat island effect
- c. Drive aisles shall be separated from parking stalls by landscape islands, strips or planted separators.
- d. **Additional Planting Requirements Based on Parking Spaces.** For parking lots containing greater than 20 spaces, an additional large tree shall be provided for every 10 parking spaces in excess of 20 spaces. Additional Trees may be distributed within the interior or perimeter landscaping area. This requirement shall be in addition to the planting area requirements set forth in section 2 of these Parking Lot Landscape Requirements.

11. **Parking Lot Perimeter Landscaping.**

Parking Lot perimeter landscaping shall be installed along the boundaries of all surface parking lots of 3 stalls or larger that are visible from the street or adjoining property. Plant materials and walls or fences shall be consistent with the Town of Keenesburg planting list.

- a. Parking lot landscaping is intended to enhance the entrance, pedestrian walkways and pedestrian connectivity to buildings.
- b. Parking lot perimeter landscaping shall provide at least 75% vegetative cover around the parking lot perimeter within 3 years of planting

12. Residential Perimeter Landscaping. Parking buffer yards along property boundaries that adjoin single-family detached, duplex, multiplex, or townhome uses shall be buffered as follows:

- a. Perimeter landscape area shall not be less than three feet in width. If vehicle overhangs are planned in the parking stalls, the perimeter landscape area shall not be less than 4 feet.
- b. Parking buffer yards shall include a fence or wall that is at least five feet in height, and two large trees per 100 linear feet of buffer yard.

13. Perimeter Landscape Standards for all zones.

- a. Parking perimeter landscape area shall be not less than five feet in width, including any vehicular overhang areas.
- b. Along streets, landscaping shall be installed between the parking lot and the sidewalk.
- c. Parking buffer yards shall include shrubs and any combination of berms, walls, fences, evergreens, planters, or other approved visual obstructions, provided the perimeter includes a mix of coniferous plantings.
- d. Shrubs shall be installed along not less than 75 percent of the width of the planting area
 - i. 30% of the shrubs are required to be coniferous
 - ii. Coniferous shrubs must be equally spaced along planting perimeter area
 - iii. Irrigated turf is discouraged in areas less than 10 feet wide. Ornamental grasses are encouraged in areas where grass is desired.
- e. Parking perimeter landscape area shall provide a visual obstruction up to a height of:
 - i. Five feet above the surface of the parking lot at installation if the parking lot is adjacent to the R1, R2, or MH zones
 - 1. Three feet above the surface of the parking lot in R3 area
 - ii. Plantings shall be established within three years after installation
 - 1. If plantings are not established within three years of installation, the Town of Keenesburg may require either the replanting of materials or replanting of similar materials to be established within three years.
 - iii. A mechanism of long-term maintenance of landscaping must be provided.

14. Large Surface Parking Lots. Large surface parking lot is a stand-alone surface parking lot that contains more than 200 parking spaces.

Large surface parking lots shall be divided into smaller segments by using pedestrian and landscape breakers that comply with the following standards:

- a. Each landscape separator shall be placed so that each parking segment contains a maximum 100 parking spaces.
- b. Landscape separators shall be parallel to the parking rows.
- c. The first landscape separator in a large surface parking lot shall contain a pedestrian walkway. The walkway shall be in front of an entrance into the building thereby providing a safe route of pedestrian travel.

- d. One landscape separator shall be required per every 50 parking stalls along a pedestrian walkway
- e. The pedestrian walkway(s) shall connect to the perimeter sidewalks or trails in a clear and efficient manner. Where the pedestrian walkway crosses a drive-aisle, the pedestrian crossing shall be emphasized and separated from flowing traffic as best as possible.
 - i. The material and layout of the pedestrian crossing shall be continuous as it crosses the drive-aisle
 - ii. Pedestrian crossing shall be separated through the use of raised or striped crosswalks or special pavement treatments such as scored concrete, colored concrete, pavers, brick or other hardscape materials approved by the Town
- f. Landscape separators with a pedestrian walkway shall be a minimum of 20 feet in width.
 - i. Landscape separators without a pedestrian walkway shall be a minimum of 10 feet in width.
 - ii. Where no pedestrian walkway is provided, additional landscaping shall be required as follows:
 - 1. 1 shrub per 10 feet, and 1 Tree per 35 feet on center
 - 2. Ornamental trees are encouraged to emphasize pedestrian walkways and building entrances
- g. Pedestrian walkways within a landscape separator shall be a minimum of 6 feet wide.
- h. Irrigation must be provided for all landscape separators and breakers; irrigation plans must be submitted to Town of Keenesburg at time of Development submittal.
 - i. Irrigated turf is highly discouraged in landscape separators and breakers. The Town encourages the use of low water use ground covers that do not require spray irrigation.
 - ii. The use of open rock mulch may be approved in place of groundcover by the Town of Keenesburg.
 - iii. Plantings with a mature height of six inches or more shall not be planted within two feet from the back of the curb to avoid conflicts with vehicle overhang.
 - iv. Planting with a mature height of 2 feet or more are not permitted within 1 feet of the pedestrian walkway.
- i. Plantings within landscape separators shall be resilient to harsh climatic conditions.
- j. The Town may authorize the phasing of landscape installation if phasing will provide a logical, sequential installation of improvements on a subject property.

V. Parking and Drive Aisle Standards.

1. **Purpose:** The standards set forth in this Article V are intended to ensure that the parking and circulation aspects of all developments are well designed regarding safety, efficiency and convenience for vehicles, bicycles, pedestrians and transit, both within the development and to and from surrounding areas. This section sets forth parking requirements in terms of dimensions of parking stalls, landscaping, shared parking, drive-in facilities and loading zones. This section addresses parking requirements for:
 - a. Multi-modal transportation
 - b. Commercial and Retail
 - c. Drive-up and Drive Thru facilities
 - d. On street parking
 - i. Commercial
 - ii. Multifamily
 - iii. Shared parking
 - e. Parking needs of all zoning designations and land usages
2. **General Standard:** The parking and circulation systems within each development shall accommodate the movement of vehicles, bicycles, pedestrians and transit, throughout the proposed development and to and from surrounding areas, safely and conveniently, and shall contribute to the attractiveness of the development. The on-site pedestrian system must provide adequate directness, continuity, street crossings, visible interest and security as defined in this section.
3. **Access and Parking Lot Requirements:** All vehicular use areas in any proposed development shall be designed to be safe, efficient, convenient and attractive, and unless otherwise approved by the Town, accommodating to all modes of transportation that will use the site. Designated traffic flow and connection to existing streets shall be approved by the Town Engineer; exceptions may be considered for projects of a small nature.
4. **Access:** Unobstructed vehicular access to and from a public street shall be provided for all off-street parking spaces. Vehicular access shall be provided in such as manner as to protect the safety of persons using such access or traveling in the public street from which such access is obtained.
5. **Safety Considerations:** To the maximum extent feasible, pedestrians shall be separated from vehicular and bicycle traffic. In the event complete separation of pedestrians, vehicles and bicycles is not possible, potential hazards shall be minimized using techniques such as special paving, raised surfaces, pavement marking, signs or striping, bollards, median refuge, traffic calming features, landscaping, lighting or other means to clearly and safely delineate pedestrian areas for both day and night use.

- a. Shared pedestrian and bicyclist walkways: The pedestrian/bicycle system shall be designed to be wide enough to easily accommodate the amount of pedestrian and bicycle traffic volumes that are anticipated. A minimum width of eight (8) feet shall be required and shall meet American Association of State Highway and Transportation Officials (AASHTO) guidelines, Guide for Development of Bicycle Facilities, or any successor publication. Additional width up to four (4) feet may be required to accommodate higher volumes of bicycle and pedestrian traffic within and leading to areas of Community Interest & Attraction, Regional bikeways and/or Trailways, Schools, Parks and Open Space.
 - i. Shared pedestrian and bicyclist walkways may be dually utilized for emergency vehicular access with approval from the Southeast Weld Fire Protection District and Town of Keenesburg. All pedestrian and bicyclist walkways utilized for emergency access shall be paved with hard surface weather resistant materials approved by the Southeast Weld Fire Protection District and Town of Keenesburg.

6. **Curb Cuts and Ramps**: Curb cuts and ramps shall be located at convenient, safe locations for the physically disabled, for bicyclists and for people pushing strollers and/or carts. The location and design of curb cuts and ramps shall meet the requirements of the International Building Code and the American with Disabilities Act (ADA) ramp standards and shall avoid crossing or funneling traffic through loading areas, drive-in lanes and outdoor trash storage/collection areas.

- a. Where possible curb cuts are encouraged in low impact designs. Curb cuts may be used for bioretention, rain gardens, and small-scale water detention areas that are conducive to water conservation and infiltration. All designs must be approved by the Town Engineer prior to construction.

7. **Walkways**: Walkways within the site shall be located and aligned to directly and continuously connect areas or points of pedestrian origin and destination. Walkways shall be at least six (6) feet in width, unobstructed by vertical curbs, stairs, raised landscape islands, utility appurtenances or other elements that restrict access and shall link street sidewalks with building entries through parking lots. Walkways intended to connect points of pedestrian origin to a building destination point shall be enhanced with textured concrete, colored concrete and/or approved hard surface material so as to separate the pedestrian walkway from other traffic.

- a. Walkways along crosswalks shall be of differing weather resistant hard surface material and or texture than roadway
- b. Drive aisles leading to main entrances shall have separated walkways on both sides of the drive aisle.
- c. Walkways within R-1 and R-2 district are permitted to be no less than five (5) feet in width. Pedestrian and Bicycle Trails connecting through the R-1 and R-2 district shall be no less than eight (8) feet wide.
- d. Residential walkway: Tree lawns are encouraged as a means to separate pedestrian

traffic from vehicles and bikes. Tree lawns are to be no less than four (4) feet in width from the outside curb to the nearest edge of the associated sidewalk. Tree lawns are to generally consist of irrigated grass, Town approved mulch or a Town approved street tree located in the center of the tree lawn. Alternative ground covers that promote water conversation, are resilient to harsh climatic conditions, and are disease resistant may be allowed in the tree lawn area with Town approval. All trees and plantings shall be outside of the sight distance triangle and clearly shown as such on submittal sheets to the Town of Keenesburg. All plantings shall meet the Landscape Standards set forth by the Town of Keenesburg.

e. **Public Safety and Visibility:**

- i. Visibility for police surveillance and crime prevention shall not be significantly hampered by landscaping;
- ii. Corner visibility for traffic movement and protection of pedestrians shall comply with all parts of these Parking and Drive Aisle Standards
- iii. Landscaping shall not prohibit access to utilities or hinder public safety to needed resources such as fire lanes and hydrants.

8. **Pedestrian/Vehicle Separation:** To the maximum extent feasible, pedestrian and vehicles shall be highly visible through the provision of a sidewalk, trail or walkway. Pedestrian routes that provide direct and convenient access through the site must be identified through the use of bollards, special paving, lighting, landscaping or other approved means to minimize conflicts between vehicles, bicycles and pedestrians.

- a. Pedestrian improvements must be designed to channel and collect pedestrians safely through the lot, minimizing to best extent possible, conflicts between pedestrians and vehicles.
 - iv. Where pedestrian routes cross the driving aisle, appropriate consideration must be given to providing pedestrian refuge areas.
- b. Pedestrian drop-off areas must be provided where needed and shall not be in public road rights-of-way.
- c. Unless otherwise approved by the Town, bike lanes must be separated from vehicular traffic by means of bike lane separator, bollards, and or landscaping.

9. **Street Crossing:** In the event it is necessary for the primary pedestrian access to cross drive aisles or internal roadways, the pedestrian crossing shall emphasize and place priority on pedestrian access and safety. The material and layout of the pedestrian access shall be continuous as it crosses the driveway, with a break in continuity of the driveway paving and not in the pedestrian access way. The pedestrian crossings shall be well-marked using pavement treatments, signs, striping, signals, lighting, traffic calming techniques, median refuge areas and landscaping and meet all requirements set forth by the Town of Keenesburg. All street crossings shall be approved by the Town Engineer prior to construction.

10. **Bicycle Facilities:** Bicycle parking is required in all zones except, R-1 and R-2; however,

bike parking shall be provided for community amenities such as a park and/or garden provided within all zoning districts. A minimum number of bicycle parking spaces must be provided, equal in number to five percent of the total number of automobile parking spaces provided, but not less than one space.

- a. Bicycle parking facilities must allow the bicycle frame and both wheels to be securely locked to the parking structure.
- b. Bicycle parking structure must be permanently constructed, made of weather resistant material and securely attached to the pavement.
- c. Bicycle parking is not required in single family detached unit developments.
 - i. Bicycle parking is required in all multi-family, commercial, retail and park developments.
- d. Safe pedestrian access shall be provided from the bicycle parking location to the area, building or residence of interest.
 - i. Safe and adequate lighting shall be provided for all bicycle parking facilities and pedestrian connections thereof.

11. Drive-In & Drive-Thru Facilities: Drive-in facilities are to have minimal interference with access and circulation onto public roadways.

- a. Drive-in facilities must be clearly signed and conspicuously marked to provide efficient flow of traffic through the facility.
- b. Drive-in facilities must be located to minimize conflicts with the movement of other vehicles, bicycles, and pedestrians. A clear traffic plan showing where traffic is proposed to enter and exit facility is required to be submitted to the Town for all Drive-in and Drive-Thru proposal.
- c. Traffic generated from a drive-in or drive-thru facility is not permitted to exit directly onto I-76, I-76 frontage road, Weld County Road 59, Highway 52 All drive-in and drive-thru facilities proposed along Weld County Road 59 or Highway 52 may be approved with a clear traffic plan submitted to and approved by the Town Engineer.
- d. Drive-ins and drive-thrus shall not be positioned such that vehicle headlights face a residential use or residentially zoned lot.
- e. Landscape buffer shall be provided in situations where the positioning of a drive-in or drive-thru causes traffic headlights to directly face the roadway. The applicant must demonstrate to the Town of Keenesburg that the buffer adequately screens headlights from interfering with the roadway.

12. Loading Zones: Loading zones and service areas must be designed to minimize interference with access and circulation on public roadways and within the parking lot. Unless otherwise approved by the Town, loading zones and service areas must be located on separate routes away from primary circulation routes for vehicles, bicycles and pedestrians.

- a. Loading zones within parking lots must be designed to minimize conflicts with the

movements of other vehicles, bicycles and pedestrians.

- b. Loading zones are required for non-residential uses that require goods, merchandise or equipment to be routinely delivered or shipped from the subject property.
- c. Unless the Town determines additional space is necessary to meet the requirement of the use, loading spaces for non-residential uses shall be provided as follows:
 - i. One off-street space for buildings between 5,000-20,000 SF; plus
 - ii. One additional off-street loading space for each 20,000 SF or fraction thereof of additional gross floor area in excess of 20,000 SF
 - iii. Over the curb loading is not permitted by the Town unless alternative means have been determined as unsafe in such case.
 - 1. Over the curb parking will be reviewed and approved by the Town as deemed appropriate.
- d. Loading areas shall be screened from principal building entrances and other highly visible areas of the subject property. All loading zone screening shall meet requirements set forth by the Town of Keenesburg. If a loading area is located within 150 feet of a residential zone, a street, a public park, or a designated public open space, then the following standards apply:
 - i. The loading area shall be enclosed with a roof and a screen wall that is at least 60 percent opaque. Plantings may be approved as a screen at the Town of Keenesburg's discretion.
 - 1. A temporary screen wall may be required until plantings reach a growth point that achieves required screening.
 - ii. Plantings and/or walls may be required to mitigate sound and visual disturbances created by the loading zone.
 - 1. Plantings and/or walls may be required to mitigate adjacent land use impacts
 - 2. All plantings are required to meet standards of Town of Keenesburg Landscape Standards
- e. Loading areas shall be of sufficient size to accommodate vehicles that will serve the proposed use, such that all backing and maneuvering to and from loading areas is done on the subject property, and egress of vehicles from the subject property is in a forward direction. A loading area traffic flow plan must be submitted and approved by the Town Engineer prior to construction.
- f. The location of the loading area shall not block or obstruct any public street, alley, driveway, or sidewalk. Exiting traffic from the loading area shall not impede the flow of traffic, pedestrian, or bicycles.
- g. Loading zones shall have a weather resistant permanently mounted sign of standard dimension posted in a conspicuous location clearly showing the loading zone designation. Loading zones shall also be painted with a weather resistant paint clearly communicating the loading zone designation.
 - i. Safety lighting shall be required in all loading zones. Unless otherwise

approved by the Town, lighting pollution is to be kept at a minimum by focusing lighting to reduce glare, light trespass and skyglow. Light cutoffs are required for all streetlights and lights of similar nature. All lighting is required to meet the standards set forth in the Town Code and Town of Keenesburg Lighting Standards.

- ii. Loading zone lighting shall meet the standards set forth in the Town of Keenesburg Lighting Standards.

13. Surface: All open off-street parking and vehicular use areas shall be surfaced with asphalt, concrete or other hard surface material of a similar nature and functionality, with no greater environmental impact.

- a. Low impact designs materials such as permeable pavement, pavers and soft-surface overflow parking or similar materials that encourage groundwater recharge, may be approved at the discretion of the Town Engineer.
- b. All materials shall be weather resistant and permanent in nature.

14. Area Drainage Requirements: Parking lots must be designed to provide positive drainage and carry stormwater quickly and effectively away from the site. Parking surfaces are not permitted to serve as detention facilities. All points of drainage require water quality and erosion control measures that must be approved by the Town Engineer and Town prior to commencement of construction.

- a. Low impact parking area drainage design may be permitted by the Town Engineer

15. Accessible Parking Spaces. All accessible parking spaces shall comply with applicable standards of the 2010 ADA Standards for Accessible Design, as may be amended or retitled from time to time (“ADAAG”).

16. Parking Lot Layout: Parking bays may be perpendicular or diagonal to the land use they serve, whichever is less conflicting with general traffic flow.

- a. Standard parking spaces must conform to the dimensions shown on Figure 1B, and show application of Table 1C.
- b. Where more than ten parking spaces are proposed or required.

17. Parking Lot Location: All Parking lots must be separated from road rights-of-way and from side and rear lot lines in accordance with the following:

- a. 25’ distance from major highways or as specified by jurisdictional authority of said highway
- b. 15’ distance from an arterial road
- c. 10’ distance from a non-arterial road
- d. 8’ along a side or rear lot line

Figure 1B

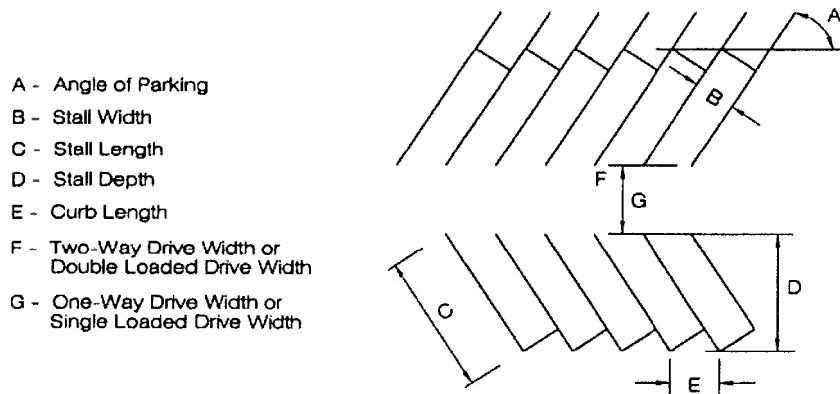


Table 1C. Parking space and aisle dimensioning.

Typical Vehicle						
A	B	C	D	E	F	G
0 Degrees	8	23	8	23	20	12
30 Degrees	8	23	8	23	20	15
45 Degrees	8.5	20	17.4	17	20	15
60 Degrees	9	19	21	10.4	24	20
90 Degrees	9	19	19	9	24	20
Compact Vehicle						
A	B	C	D	E	F	G
0 Degrees	7.5	19	7.5	19	20	12
30 Degrees	7.5	16.5	14.8	15	20	15
45 Degrees	7.5	16.5	17	10.6	20	15
60 Degrees	8	16	17.9	9.2	24	20
90 Degrees	8	15	15	8	24	20

18. Parking Space and Aisle Standards

Generally, Parking spaces and access aisles shall be designed according to the standards of this Section.

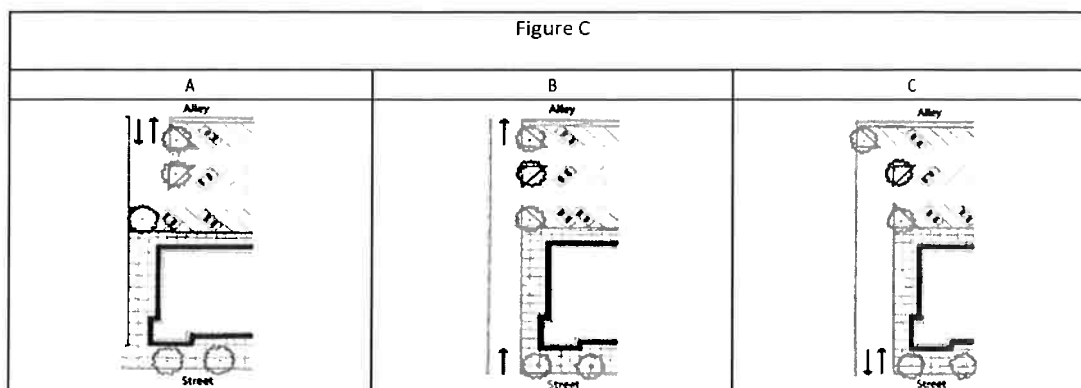
- All parking spaces located across from each other, on the opposite side of a

drive lane, shall be located at the same angle to the drive lane, except that parallel parking may be provided on one side of the drive lane in order to enhance disabled access.

- i. Upon those streets which have been signed or marked by the Town Engineer for angle parking, it shall be unlawful for any person to stand or park a vehicle other than at the angle to the curb or edge of the roadway indicated by such signs or markings
- b. Angle parking located on a drive lane with a dead-end is not allowed unless:
 - i. The angle of the parking space is 90 degrees to the direction of travel; or
 - ii. The geometry of the subject property requires such a configuration for an efficient parking layout and the Town Engineer determines that the design provides for safe circulation.
- c. Parking shall be screened from public rights of way, not including alleys, and residential zones. All parking lot screening shall meet the requirements set forth in the Town of Keenesburg Landscape Standards.
- d. Parking shall be consistent with safe traffic movement, new curb cuts shall be placed so as to not require the removal of existing street trees.
- e. For lots where parking is the principal use, the parking lot shall be set back 10 feet from lot lines that adjoin streets and five feet from all other lot lines.
- f. Access Aisle Widths. Access aisle width shall not exceed the minimum required width unless an increase in width is necessary to serve a demonstrated public safety interest.
- g. Vehicular access to parking lots (surface or structured) shall be from the primary connecting roadway that is most adjacent to the main building entrance, unless the Town determines that such access is infeasible or would create a public safety hazard. In such cases, access shall be provided:
 - i. With ingress from a public street and egress into the alley, or if such an arrangement is infeasible or would create a public safety hazard;
 - ii. With ingress and egress from the street as shown in Figure C, Urban Parking Access, options A, B, or C.
 - iii. In cases where it is unfeasible or impractical for parking to be accessed by the primary connecting roadway, an exception may be granted and parking, may be provided in the rear of the building. Such exceptions must be approved by the Town Engineer or Planner and shall meet the following criteria:
 1. Adequate parking lot lighting shall be provided at the same safety and level of service as a front lot parking lot. A photometric plan illustrating the proposed parking light lighting on the site shall be submitted and approved by the Town
 2. Parking lot lights shall meet all requirements outlined in Town of Keenesburg Lighting Standards and Town Code
 - a. Lighting pollution is to be kept at a minimum by focusing

lighting to reduce glare, light trespass and skyglow. Light cutoffs are required for all streetlights and lights of similar nature. All lighting shall comply with Town of Keenesburg Lighting and the Town Code.

- b. Adequate lighting shall also be provided for all bicycle parking facilities
- iv. Clear pedestrian connection shall be provided between the parking lot and building entrance. Such connection shall meet criteria outlined in sections 6, 8, 9 and 10 of these regulations.
- v. Dumpsters shall be fully enclosed with a trash enclosure gate capable of opening, closing and locking in place
 - 1. Dumpster screening shall meet all requirements outlined in the Town of Keenesburg Landscape Standards
 - 2. By all feasible means pedestrian pathways shall be located away from dumpster enclosures with a clear safe pedestrian travel route of travel connecting the parking lot to the entrance of the building
 - 3. Whenever possible dumpsters shall be located at or near the rear of the building
- vi. Landscaping in rear parking lots shall meet all provisions of the Town of Keenesburg Landscape Standards
 - 1. In rear parking lots landscaping shall be placed to avoid places of hiding, heavy shadowing and/or visibility issues. Massing of medium growth plants is prohibited in these locations.
- vii. Rear building architecture and pedestrian connection shall be of visual interest, character and inviting to constituents of the facility and serving to compliment the building as a whole.
 - 1. Where applicable the sides of the building shall be of visual interest and character complementing the building as a whole
 - 2. Rear and side accesses to buildings shall provide clear visuals of pedestrian pathways to entrance of buildings, such access way shall be free of medium growth plants and areas of hiding and or concealment.



19. **Overhangs.** If approved by the Town Engineer, the length of standard parking spaces may be reduced by up to two feet where the adjacent sidewalk or landscape area is protected by a curb and not less than seven feet in width, allowing for vehicle overhang and an unobstructed walkway or landscape area of at least five feet in width. The use of wheel barriers in such locations is prohibited.

20. Parking and Loading Design

- a. Single-Family Residential, Two-Family Residential, Multi-Family Residential district. Unless otherwise specified in the Town Code, **Single-family Residential, Two-Family Residential and Multi-Family Residential** parking may be designed in a manner that permits vehicles to back directly onto one public local street.
- b. Backing and turning movements associated with parking shall not extend into a street, and shall not obstruct or conflict with traffic, either on-site or off-site.
 - i. Rear angle back in parking may be allowed with approval by the Town Engineer in the Town Engineer's discretion.
- c. The closest driving distance from the flowline of the street at a point of ingress, to the first parking space or drive aisle intersection that is accessible from that point of ingress, are intended for routine delivery and use for delivery vehicles. Loading areas are not designed or designated to be parking areas in any fashion.
- d. Blocking of access and loading zones is prohibited in all zoning designations and land usages.
- e. Parking lots with more than three parking spaces shall:
 - i. Be designed and traffic controlled therein so that access to and from a public street requires vehicular traffic to be traveling in a forward direction when entering and exiting from the parking lot.
 - ii. Include curbs, wheel stops, or other barriers to prevent vehicles from extending beyond the perimeter of the parking lot, and to prevent vehicles from contacting an unprotected wall, fence, or sidewalk.

- iii. Be clearly and permanently marked on the parking surface (e.g., stalls shall be located, and traffic channelized with painted stripes);
 - iv. Be designed using the angles, layout, and dimensions in Figure 1B.
- f. All parking lots shall be designed in accordance with these Parking and Drive Aisle standards.
- g. All parking lots shall meet all requirements set forth in the Town of Keenesburg Landscape Standards.
- h. Parking is not allowed in a required front setback except on a single-family detached, duplex, townhome, or multiplex residential driveway or parking pad that extends through a front setback.
- i. Parking aisles are intended to promote the flow of traffic and shall be designed to collect and channel traffic from parking compounds towards points of ingress and egress. Access to and from a street shall be provided for all off street parking spaces.
- j. Obstruction of a driveway or emergency entrance or exist approach or across public sidewalks is prohibited in all zoning districts.
- k. Parking Spaces and Parking Aisles. Storing materials, boats, campers, recreational vehicles, or inoperable vehicles, or overnight parking of trucks or trailers is prohibited in parking areas of multifamily, residential, and mixed-use developments, unless:
 - i. The outdoor storage use is permitted in the applicable zone and approved for the subject property

21. **Off-Street Parking:** Off-street parking shall be available for operable passenger automobiles of the residents, customers, patrons, and employees of the facility for which they desire parking. Required off-street parking spaces shall be located on the same lot or premises as the building or use for which they are required unless:

- a. Such spaces are provided collectively by two (2) or more buildings or uses on abutting lots in a single parking area located within the boundaries or those abutting lots, and the total number of parking spaces supplied collectively is equal to the number of spaces required by this subdivision for each use considered separately.
- b. Off-Street parking shall be located either immediately in front of the facility of which it serves, or within 300' of such facility.
- c. Parking spaces provided through the provision of off-street parking will count towards the overall parking requirements required by the Town of Keenesburg.
- d. Alternative parking space location(s) and number must be approved by the Town of Keenesburg in order to count towards this requirement.
 - i. Alternative parking space location(s) and number(s) shall be approved by the Town of Keenesburg.
- e. In the case off-street parking is provided by a different property owner than the owner of the site and/or facility generating parking demand, a written parking

agreement must be signed by both parties and approved by the Town.

- f. In no instance shall any parking space be located closer than ten (10) feet from any fire hydrant or as specified by the Southeast Weld Fire Protection agency.

22. **Guest Parking:** Off-street guest parking spaces in multi-family developments and community amenity areas shall be distributed proportionally to the dwelling unit locations that they are intended to serve. Such parking shall not be located more than two hundred (200) feet from any dwelling unit that is intended to be served.

- a. Alternative guest parking locations shall be approved by the Town of Keenesburg prior to construction

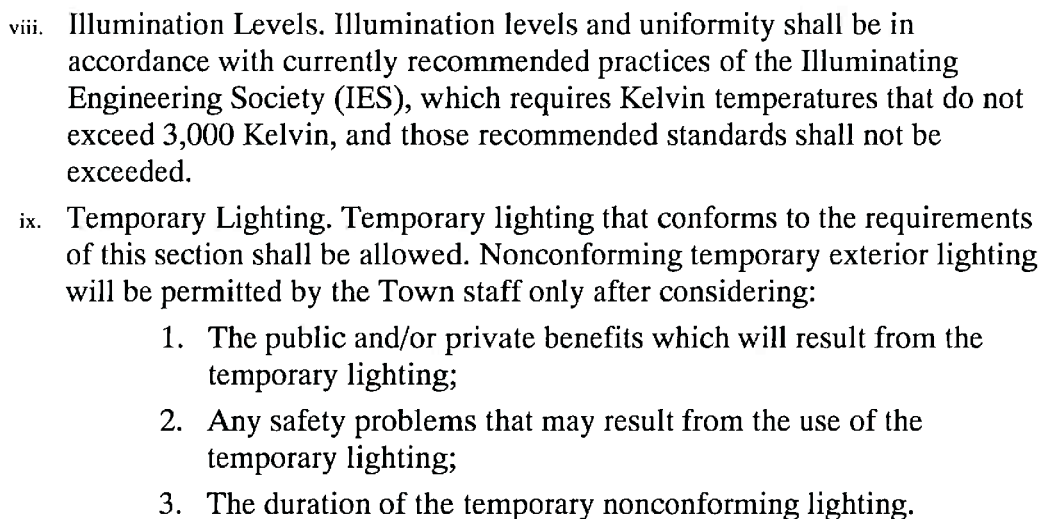
23. **Alternative Compliance.** Upon written request by the applicant, the Town, at its discretion, may relax design standards for required parking.

- a. Requests shall be prepared and submitted in accordance with the submittal requirements for plans as set forth in this Section. Each such plan shall clearly identify and discuss the modifications and alternatives proposed and the ways in which the plan will better accomplish the purpose of this Section than would a plan which complies with the standards of this Section.
- b. Review Criteria. To approve an alternative plan, the Town must first find that the proposed alternative plan accomplishes the purposes of this Section equally well or better than would a plan which complies with the standards of this Section. In reviewing the parking reduction request, in order to determine whether the proposal accomplishes the purposes of this Section, as required above, the Town shall take into account the number of employees occupying the building or land use, the number of expected customers or clients, the availability of nearby on-street parking, the provision of purchased or leased parking spaces in a municipal or private parking lots, and any other factors that may be unique to the applicant's development request. The town shall not approve the alternative plan unless it:
 - i. Does not detract from continuity, connectivity and convenient proximity for pedestrians between or among existing or future uses in the vicinity
 - ii. Minimizes the visual and aesthetic impact on the surround neighborhood
 - iii. Creates no physical impact on any facilities serving alternative modes of transportation
 - iv. Creates no detrimental impact on natural area or features
 - v. Maintains handicap parking needs

VI. Lighting Standards:

- a. Light fixtures provided for any off-street parking area adjacent to a residential use or residentially zoned lot shall shield the source of light from sight and spillover of direct light onto the residential use, while still providing security to motorist, pedestrians and bicyclists. All commercial lighting shall be shown to reduce glare, light trespass and skyglow.
- b. All lights utilized for signage purposes shall meet the sign standards set forth in the Town of Keenesburg Municipal Code ("Town Code").
- c. All lights shall comply with all applicable sections of the Town Code, including but not limited to: Sec. 7-1-115, General Property Standards; Sec. 5-2-210, Installation and Maintenance of United Power Facilities; Sec. 16-4-40, Design and Construction.
- d. Streets, driveways, parking lots, walks and service areas shall be adequately illuminated as evenly as possible and shall have a maximum BUG rating of B2-U0-G1 according to the guidelines set forth by the Illuminating Engineering Society (IES) TM15-11. Examples of these luminaires can be found in Diagrams 30-1. Site lighting shall be demonstrated in a photometric or site lighting plan submitted and approved by the Town.
- e. Light Spillover. Luminaries shall be shielded, shaded, or directed to prevent light spillover from being cast on to adjacent property.
 - ii. Residential: All outdoor lighting systems shall be designed and operated so that the area ten feet beyond the property line of the premises receives no more than one-quarter of a foot-candle of light from the premises lighting system.
 - iii. Commercial: All outdoor lighting systems shall be designed and operated so that the area ten feet beyond the property line of the premises receives no more than one foot-candle in commercially zoned areas, and one quarter of a foot-candle for properties adjoining residential districts.
 - iv. Towers: All radio, communication, and navigation towers that require lights shall have dual lighting capabilities. For daytime, the white strobe light shall be used, and for nighttime, only the red lights shall be used.
- f. All exterior lighting fixtures shall be placed or directed so as to minimize interfere with the operation of vehicles and general flow of traffic on adjacent roadways.
- g. All exterior lights utilized in a manner to advertise, draw attention, or display shall be subject to the sign standards set forth in the Town Code
 - v. Unless otherwise approved by the Town of Keenesburg, no non-residential building shall have any exterior light that is blinking, flashing, or fluttering, or other illuminating device which has a changing light intensity or brightness of color.
 - vi. Seasonal lights shall be maintained and removed within a reasonable time period by the private property owner, homeowner's association or metro district
- h. Hours of lighting operation. All parking lot lighting fixtures and exterior building

- vii. All area lights, including street lights and parking area lighting, shall have a maximum BUG rating of B2-U0-G1 according to the guidelines set forth by the Illuminating Engineering Society (IES) TM15-11. Examples of these luminaires can be found in Diagram 30-1.



i. Pole mounted luminaries shall be full cut-off with shields, reflectors, or refractor panels to direct and cut-off emitted light at 90 degrees or less. Pole mounted luminaries shall meet fully shielded luminaire fixtures such as those illustrated in diagram 30-1.

- j. Building mounted luminaries shall be full cut-off using shields, reflectors, or refractor panels to direct and cut-off the emitted light at a 45 degrees or less except for low intensity decorative lighting not exceeding 45 watts per bulb (incandescent equivalent).
- k. Lighting Poles in multiple-family and commercial developments, whether mounted upon a building or independently upon a light standard, shall not exceed 20 feet in height. Exemptions to this may be granted by the Town if the lighting pole height is shown to improve and protect the public, health, safety and welfare for the residents of the Town of Keenesburg.
- l. Lighting fixtures within industrial developments shall not exceed 25 feet in height, except in those instances where the subject property adjoins any residentially zoned property, in which case, poles may not extend above the roof line of the industrial principal building. Exemptions to this may be granted by the Town if the lighting pole height is shown to improve and protect the public, health, safety and welfare for the residents of the Town of Keenesburg.
- m. Street lighting fixtures in new developments shall be LED or otherwise approved high energy efficiency design by the Town of Keenesburg or United Power.
- n. Unless otherwise specified by the Town, Fairgrounds Zone District FZ is exempt from these standards and shall stay in compliance with Sec. 16-2-167 of the Town Code.
- o. Exemptions:
 - x. Outdoor Recreational Uses: Due to their limited hours of operation and their unique nighttime requirements for visibility, both private and public outdoor recreational uses, such as baseball diamonds, football fields, etc., shall be exempt from the general provisions these Lighting Standards.
 - xi. Specialized lighting necessary for safety, such as temporary lighting associated with emergency operations, road hazard warning, and operations of a similar nature
 - xii. Traffic control signals and devices
 - xiii. Sensor activated luminaries provided that:
 - 1. Lighting is located in such a manner as to prevent glare and lighting onto properties of others or in the public right-of-way
 - 2. The luminaire is set to only go on when activated by motion, and to go off within five minutes after activation
 - 3. Floodlights with external shielding can be deflected up to 25 degrees from a vertical plan as measured through the central axis of the light beam from the luminaire, only if the luminaire does not cause glare or light to shine on adjacent property or public rights-of-way
 - 4. Federally funded and state funded roadway construction projects are exempted from the requirements of these Lighting Standards only to the extent it is necessary to comply with federal and state requirements.

5. Exterior residential fixtures which consist of lamp types with an output of 800 lumens or less (approximate to a 60-watt incandescent bulb or nine-watt LED) are exempt from these regulations, provided the fixture types are compliant with those allowed in this section.

VII. Lots and blocks

- 1. Intent.** These block and lot standards are intended to continue the Town's existing block pattern in a manner that is compatible with site- specific environmental conditions and characteristic of the Town's historic pattern of growth, and to implement strategies for residential development and promote high quality housing diversity.
- 2. Applicability.** These standards are applicable to all new residential subdivisions in the R-1, R-2 and R-3 zoning districts. All residential development (including PUDs and development on individual lots or parcels) shall include a mixture of different lot sizes, dimensions, and housing models, as provided and described in these standards, unless expressly exempt by this Town. Requirements set forth in this Section shall not apply to:
 - a. Subdivisions comprised of five (5) or fewer residential buildings
 - b. Rebuilding of structures damaged by fire, flood or natural disaster
 - c. Multi-family buildings consisting of fewer than three (3) buildings
 - d. Redevelopment and infill development consisting of five (5) or less acres

3. General Provisions.

- a. Blocks shall be arranged in a grid-like pattern, or pattern similar, to promote connectivity and alternate travel routes within the complete neighborhood; cul-de-sacs shall be limited to locations where they are demonstrated to be necessary due to site constraints, or where their use improves non-vehicular connectivity.
- b. All new lots shall comply with the provisions of this document related to their access, dimensions, and area.
- c. Blocks. Streets shall be designed to create blocks that consider interconnectedness, topography, solar orientation, views, energy efficiency, natural design features and other relevant design features. Block size shall be designed to create blocks that are generally a rectilinear or modified rectilinear shape. Amorphously shaped blocks are discouraged except where extra-ordinary conditions necessitate that type of configuration.
- d. When practical, lot lines shall be at right angles to the street line or at right angles to the tangent of the curve of the street line.
- e. Lot dimension and configuration. Blocks shall be set within a street layout that includes a maximum average length of 400 feet from street centerline to street centerline.
- f. Lot size, width, depth, shape, and orientation and building setback lines or build-to lines shall conform to Town of Keenesburg standards and shall facilitate the placement of buildings with sufficient access, outdoor space, privacy and view.
- g. Depth and width of properties shall be adequate to provide for off-street parking, landscaping, and loading areas required by the type of use and development contemplated.
- h. Developments proposing the use of alleys shall:

- i. Provide clear drive lane no less than fifteen (15) feet;
- ii. Provide clear access and exist points for the ally and shall be approved by the Town Engineer;
- iii. Orientate and design structures facing the alley to be of architectural interest and integrity.
- iv. Provide an ongoing maintenance plan of the alleyways as either the private property owner, homeowner's association, metro district or Town of Keenesburg.
 - i. Street frontage shall typically not be less than 25 percent of the lot depth.
 - j. The Town may authorize modifications from block requirements if it is demonstrated that the modified blocks offer comparable connectivity within the neighborhood, and between the neighborhood and nearby transit, parks, outdoor recreation facilities, schools, and places of community interest. The town may require pedestrian and bicycle access mid-block for block lengths greater than 850 ft.
 - k. Corner lots for residential use shall have extra width to accommodate the required building setback and utility easements on both street frontages. For a corner lot, the front of the lot is defined as the side where the property is addressed. In the case of a reverse corner lot, both sides abutting a street shall maintain a front yard setback.
 - l. Double frontage- Residential lots that front on two streets (double frontage) shall not be permitted unless otherwise approved by the Town.
 - m. Unless otherwise permitted by the Town, no lot shall have rear access
 - n. Side lot lines shall be substantially at right angles or radial to road right-of-way lines or centerlines.
 - o. Residential lot access must be provided to adjacent or nearest Public Street.
 - p. All lots shall have access to the public street system.
 - i. The town may approve lot access onto a common sidewalk, or plaza if adequate access to the public street system can be demonstrated.
 - q. Driveway access to a local or Collector Street from a single-family detached residential lot shall be limited to one driveway curb-cut or driveway access. A circular drive in which each access to the local or collector street is less than ten feet in width, separated by at least 30 feet and which is constructed as an integral part of the overall design of the single-family residence may be considered as a single driveway access at the Town of Keenesburg's discretion.
 - r. Unless otherwise permitted residential driveways shall be of the following dimensions at their nearest access point from the nearest road onto the lot:
 - i. Single Car Driveway: 9-12 ft. wide
 - ii. Double Car Driveway: 20-24 ft. wide
 - iii. Parking Stall: 10 ft. by 20 ft.
 - iv. Single Car Turn Around: 10 ft. by 20 ft. wide
 - v. Double Car Turn Around: 20 ft. by 20 ft.
 - s. Unless otherwise permitted residential driveways shall be of the following dimensions at their nearest adjacency to the building to which they serve:

- i. Single Car Driveway: 9-12 ft. wide; with one additional parking stall, total width 18 ft.
- ii. Double Car Driveway: 20-24 ft. wide; with one addition parking stall, total width 36
- t. Driveway access to a local street from a single-family detached residential lot shall be greater than 30 feet from the intersection of the local street and a collector street or 50 feet from the intersection of the local street and an arterial street as measured from the intersecting right-of-way lines.
- u. Driveway access to a collector street from a single-family detached residential lot shall be greater than 50 feet from the intersection of the collector street and a local street, another collector street, or an arterial street as measured from the intersecting right-of-way lines.
- v. Lots within manufactured home parks or manufactured home subdivisions may take access from private streets. Mobile home park and manufactured home developments shall submit a transportation plan showing the general layout and flow of traffic connections to existing streets. The transportation plan shall be approved by the Town of Keenesburg prior to construction.
- w. If a housing development is designed as a cluster divided into individual lots for each dwelling unit, the access requirement applies to the cluster not the individual lot.

4. Commercial, business and industrial lot access to adjacent street.

- a. Driveway access to a local or collector street from a multi-family residential, commercial, business or industrial lot shall be greater than 125 feet from any street intersection as measured from the intersecting right-of-way lines
- b. Driveway access to an arterial street from a commercial, business or industrial lot shall be not less than 100 feet from any intersection on the arterial street, or from another commercial, business or industrial lot's access as measured from the intersecting right-of-way lines, or driveways
- c. Driveway access to a local street, collector street, or arterial street from a multi-family residential, commercial, business or industrial lot may be allowed by the Town at its sole discretion.
- d. Unless otherwise granted by the Town, no rear access shall be permitted
- e. Rear yard access onto arterials, collectors, major collectors and/or state highways is not permitted.

5. Blocks.

- a. All contiguous lots bounded by right-of-way, boundaries of the subject property, or designated or dedicated open space shall be grouped and labeled as distinct blocks. The Town may require one or more easements through a block for the purpose of access.

6. Residential Blocks with Arterial or State Highway Frontage.

- a. Along all arterial streets, development design shall allow for homes to face arterial streets, and vehicular access being taken from either an alley or local street. The town permits the use of col-du-sacs with access onto arterial streets. This arrangement is

intended to provide a high degree of visible permeability to residential development and allow for safe and efficient pedestrian and bicycle access, while at the same time limiting auto access along the arterial or state highway.

- b. All developments must provide a traffic study completed by a certified traffic engineer and approved by the Town.
- c. Rear yard access onto arterials, collectors, major collectors and/or state highways is not permitted.

7. Neighborhood Layout. The layout of the proposed neighborhood shall be shown on a sketch plat or sketch site plan. The sketch plat or sketch site plan shall include areas designated for each housing type (or areas designated for particular mixes of housing types), areas of nonresidential uses other than parks, outdoor recreation, schools, or places of assembly will be included in the neighborhood, and to include areas designated as neighborhood activity centers or areas of community interest.

8. Required Compliance. Compliance with this Section, as determined by the Town, shall be required as a condition of the issuance of a building permit for any single or multi-family residential dwelling. A decision by the Town may be appealed by the Applicant to the Planning Commission or Town Board on appeal, acting as the Board of Adjustment. Architectural elevations shall be submitted with all site plans. Block Diversity plans and corresponding tables shall also be submitted as required herein, during the building permit process.

9. Lot diversity

- 1. **Mix of Housing.** A mix of permitted housing types and residential use types shall be included in any individual development plan, to the maximum extent reasonably feasible. In order to promote such variety, the following minimum standards shall be met:
 - a. **Single Family Housing, R1:**
 - a. A minimum of two (2) lot diversity types, shall be required on any project development plan containing ten (10) acres or more, including such plans that are part of a phased overall development; a minimum of three (3) lot diversity types, shall be required on any project development plan containing thirty (30) acres or more; and a minimum of five (5) lot diversity types, shall be required on any project development plan containing (50) acres or more.
 - b. One-family or two-family dwellings on adjacent lots fronting on the same street shall contain different housing models of varying style, elevations, architectural features, and exterior color.
 - 1. No two (2) lots immediately adjacent to each other shall contain the same floor plan, housing model, building elevation or color.
 - 2. Where applicable in smaller developer that at ten (10) acres or less, two (2) lots immediately adjacent to each other may contain the same floor but shall be of a different orientation and elevation

- c. Adjacent lots shall include abutting lots, or those lots separated by a street, alley, auto court, loop lane, or other common private drive.
- d. To the maximum extent feasible, housing types, block dimensions, garage placement, lot sizes and lot dimensions shall be significantly and substantially varied to avoid repetitive rows of housing and monotonous streetscapes. For example, providing single-family detached dwellings or two-family dwellings on larger lots and on corners and providing small lot single-family dwellings or multi-family type dwellings lots abutting common open spaces fronting on streets are methods that accomplish the lot diversity requirements set forth in these lot and block standards.
- e. In addition to having unique model types, each model shall have a minimum of four (4) unique architectural features. Each architectural elevation shall be distinguishable from one another and shall have at least four (4) of the listed building elements that clearly and obviously distinguish it from other elevations of the same model:
 - 1. Unique porches and front entries that include different architectural styles, building materials, sizing, or placement;
 - 2. Exterior materials (e.g. stucco, natural wood, cement fiberboard, rock, brick, etc.);
 - 3. Garage orientation and point of access. Unique garage styles will also be considered (e.g. carriage doors, raised panel, contemporary, etc.);
 - 4. Roof types (e.g. gable, hip, lean-to, dormer, etc.);
 - 5. Creative design alternatives, not stated above, approved by the Town of Keenesburg;
 - 6. Any two elevations that are distinctly different architectural styles (e.g. colonial, cottage, craftsman, farmhouse, French country, modern, ranch, traditional, Tudor, Victorian, etc.) shall be exempt from these requirements;
 - 7. Where lots face a main street and/or thoroughfare the front building façade shall face the main street and or thoroughfare;
 - a. In the case where the side or rear of the building faces the main street or thoroughfare, the façade facing the main thoroughfare or street shall be of the same architectural integrity and visual distinction as the front façade.
 - b. In the case where two or more façades of the building face a main street or thoroughfare, all façades facing the main street or thoroughfare shall be of the same architectural integrity and visual distinction as the front façade.
- b. Two-Family housing units and Multifamily Structures in the R2 and R3 Zone Districts. Applicants seeking to build Two-Family housing units and/or Multi-

family units in the R2 or R3 zone districts shall demonstrate a balance between repetition and variety in the architecture of these buildings. Each multi-family dwelling containing more than three (3) dwelling units shall feature a variety of massing proportions, wall plan proportions, roof proportions or other characteristics of architectural distinction. The following specific standards shall apply to multifamily stacked units, including condominiums and apartments:

- a. A minimum of two (2) lot diversity types, shall be required on any project development plan containing thirty (30) acres or more, including such plans that are part of a phased overall development; a minimum of three (3) lot diversity types, shall be required on any project development plan containing fifty (50) acres or more; and a minimum of five (5) lot diversity types, shall be required on any project development plan containing eighty (80) acres or more.
- b. For any development containing five (5) or fewer buildings (excluding clubhouses/leasing offices), there shall be at least two (2) distinctly different building designs. For any such development containing more than five (5) buildings (excluding clubhouses/leasing offices), there shall be at least three (3) distinctly different building designs. For developments containing fifty (50) or more buildings there shall be at least five (5) distinctly different building design and floor plans.
- c. Individual building identity. For all developments consisting of three (3) or more multi-family dwelling units, a floor plan may be repeated; however, identical building façades must not be replicated more than twice within the development. Building elevations showing façade changes, variance of form, roof pitch, wall plan proportions and/or other features of architectural significance shall be submitted to the Town.
 1. Development must demonstrate a variety of building types and form.
- d. Each multi-family dwelling or condominium shall be articulated with projections, recesses, covered doorways, balconies, box or bay windows and/or other similar features, dividing large façades and walls into human-scaled proportions. Each multi-family building shall feature walls that are articulated by a least three of any of the following elements within every 40-foot length of the façade:
 1. Recesses, projections or significant offsets in the wall plane;
 2. Distinct individualized entrances;
 3. Chimneys that project from the wall plane;
 4. Balconies and/or other outdoor living space; or e. Bay or box windows;
 5. Height differentiation between buildings;
- e. Where buildings face a main street and/or thoroughfare, the front building façade shall face the main street and or thoroughfare;
 - a. In the case where the side or rear of the building faces the main

street or thoroughfare, the façade facing the main thoroughfare or street shall be of the same architectural integrity and visual distinction as the front façade.

b. In the case where two or more façades of the building face a main street or thoroughfare, all façades facing the main street or thoroughfare shall be of the same architectural integrity and visual distinction as the front façade.

f. Roofs. Each multi-family building shall feature a combination of primary and secondary roofs. Primary pitched roofs shall be articulated by at least one of the following elements:

1. Changes in plane and elevations;
2. Dormers, gables or clerestories;
3. Transitions to secondary roofs over entrances, garages, porches, or bay windows.

g. Color. For new developments, there shall be no more than two (2) similarly colored structures placed next to each other along a street or major walkway.

c. All Residential Zoning districts:

i. The following list of housing types and no other building shall be used to satisfy the diversity requirements set forth in these Lot and Block Standards:

- a. Single-family detached dwellings with rear loaded garages;
- b. Single-family detached dwellings with front or side loaded garages;
- c. Small lots (i.e. lots containing less than 9,000 square feet in R-1, and less than 6,000 square feet for R-2 and R-3) may be used to satisfy the lot diversity requirements if:
 - i. There is a difference of at least 2,000 square feet between the average lot size for small lot single-family detached dwellings.
 - ii. There is a visual distinction in size between small lots and other lots used throughout the development

d. Two-family dwellings;

e. Single-family attached dwellings;

f. Two-family attached dwellings, the placement of which shall be limited to no more than two (2) such dwellings per two (2) consecutive individual lots;

g. Dwelling units in mixed-use buildings;

h. Multi-family dwellings containing three (3) or fewer units per building;

i. Multi-family dwellings containing more than three (3) to four (4) units per building;

j. Multi-family dwellings containing five (5) to seven (7) units per building;

- k. Multi-family dwellings containing more than seven (7) units per building;
 - l. Modular homes, where allowed under applicable zoning;
 - m. All other housing types not otherwise specified in this section, where allowed under applicable zoning;
- ii. All dwellings and structures shall provide quality architectural design that takes into consideration building massing and style, roof lines, window and door placement, exterior materials, colors and other architectural features. All accessory buildings shall match the architectural style, color and material of the primary structure.
 - a. Under no circumstances shall an accessory building be larger than the first floor and overall building height of the primary structure.
- iii. Dwellings on corner, and end lots shall include architectural features, such as windows and doors, porches and entry features, building materials, and other features that complement the front of the dwelling, along the sides and/or back of dwellings that face streets, drives, or open space areas.
- iv. New or replacement dwellings, dwelling additions, and accessory buildings shall be designed to be architecturally compatible with the surrounding neighborhood, as applicable, in terms of building materials and colors, roof forms, building massing and style and other architectural features, subject to the diversity requirements set forth herein.
- v. Utility Services:
 - 1. Utility services shall be located underground when practical.
 - Exceptions to the requirements of underground utilities are:
 - a. Major electric transmission lines responsible for transporting power through the area rather than to the area; or
 - b. The Town Engineer or Electric provider determines that an underground utility location is not practical.

10. Town Review. Model and block diversity will be reviewed by the Town as part of a Block Diversity Plan and each Housing and or Building model shall be distinguishable from one another and shall have at least four (4) of the listed building elements which clearly and obviously distinguish it from other housing models:

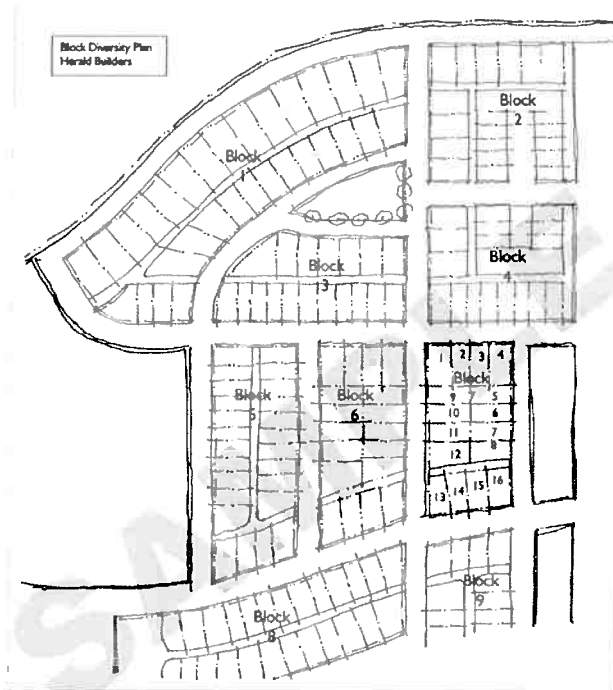
- a. Massing and placement of the building footprint on the lot
- b. Building setback
- c. Porches and front entries
- d. Color palette
- e. Exterior materials (walls, trim, roof)
- f. Garage size, orientation and point of access
- g. Differences in floor plans
- h. Elevations

- i. Creative design alternatives not stated above, upon Town approval

11. Block Diversity Plan. The Block Diversity Plan is an opportunity for applicants to provide the Town with visual and graphic images showing the type of residential architecture that is to be constructed on each block of the proposed development. Applicants shall provide the Town with exterior elevations of proposed residential structures with the location of each structure depicted.

- b. Every phase that would include five (5) or more residential building permits must complete a Block Diversity Plan. The Block Diversity Plan will be submitted as part of the building permit process.
- c. Review of any Block Diversity Plan will be based upon conformance to the intent of the architectural and design policies found in these Lot and Block standards. Review and approval will be conducted and determined by the Town of Keenesburg.

All Block diversity maps submitted shall include a corresponding table depicting the block, lot,



Sample Block Diversity Map
to be submitted by the Builder/
Developer, to illustrate housing
mix.

series, model type, plan number, exterior materials, style, option package (where applicable to building elevation) and color scheme.

architecturally compatible with the surrounding neighborhood, as applicable, in terms of building materials and colors, roof forms, building massing and style and other architectural features, subject to the diversity requirements set forth herein.

1. Material matching made be completed through façade treatment, such as half brick wall, and/or application of material approved by the Town.

13. Garages. Unless otherwise granted by the Town, the following standards shall apply to all new residential development (including PUDs containing residential uses and development on individual lots or parcels).

- a. Garages may make up no more than 65% of the length of the wall face of the associated dwelling, except when such garage doors are located on the side of a dwelling facing a side yard, street or alley, wherein they may comprise up to two-thirds of the street-facing linear building frontage.
- b. For any side-load garage orientation of a length of twelve (12) feet or greater, a minimum of two (2) windows of at least four (4) sq. ft., each must be installed on the street-facing façade.
- c. The front building face of any home and the associated garage may be in the same building plane if a roofed porch integral to the architecture of the residence of at least four (4) feet in width and eight (8) feet in length is constructed along the front façade. If no porch is present, the garage plane must shift at least two (2) feet in any direction from the residential portion of the structure.
- d. Detached garages shall be no bigger, wider or taller as measured in square feet, than the first floor of the primary structure on the lot or the overall size of primary structure on the lot whichever is more restrictive.
 1. Detached garages shall be offset by no less than five (5) feet from the primary structure;
 2. Match the architectural style of the primary structure;
 - i. Material matching may be achieved through a façade treatment, such as a half brick wall, color, building form and/or application of material of similar nature approved by the Town.
- e. **Residential Driveways, R-1, R-2 and R-3 zoning districts:**
 1. All driveways to detached garages shall be of an impermeable nature such as asphalt, cement or other weather resistant material approved by the Town.
 2. Illuminated driveways shall meet all requirements set forth in the Town of Keenesburg municipal code and Lighting standards.
 3. Unless otherwise permitted residential driveways shall be of the following dimensions:
 - i. Single Car Driveway: 9-12 ft. wide
 - ii. Double Car Driveway: 20-24 ft. wide
 - iii. Parking Stall: 10 ft. by 20 ft.
 - iv. Single Car Turn Around: 10 ft. by 20 ft. wide
 - v. Double Car Turn Around: 20 ft. by 20 ft.

- f. **Multifamily Garages:** Garages in Multifamily complexes in the R3 zoning district, shall be of the same architectural style, color and building material of the associated multifamily or mixed-use buildings.
- i. Material matching may be achieved through a façade treatment and/or application of material of similar nature approved by the Town.
 - ii. No garage complex shall be longer or taller than any single multifamily building in a multifamily development, exclusive of the leasing office and/or clubhouse building(s), or contain a single garage with more than eight (8) spaces.
 - iii. All garage complexes in multifamily developments shall have visual breaks in building material every forty (40) feet. Visual breaks in material are:
 - 1. Change in building material
 - 2. Addition of windows and/or false windows or doors
 - 3. Change in roof pitch and height
 - 4. Change in building projection. No projection shall be greater than two feet
 - iv. Vehicular or pedestrian access shall be made of a material of an impermeable nature such as asphalt, cement or other weather resistant material approved by the Town.
 - v. All garage complexes shall have safe and efficient pedestrian access
 - vi. All garage complexes shall meet Town of Keenesburg landscape and lighting standards
 - vii. All detached garages shall be considered an accessory building and shall be subject to review by the Town of Keenesburg for compliance with the Town Code and these standards.
- a. No street-facing façade shall contain more than four (4) garage fronts.
- 1. Resident garages or parking that is internal to the block is encouraged. Resident garages or parking that is internal to the development is encouraged. Marked visitor parking is encouraged.
- b. **Rear Walls of Multi-Family Garages.** To add visual interest and avoid the effect of a long blank wall with no relation to human size, accessibility needs or internal divisions within the building, the following standards for minimum wall articulation shall apply:
- 1. **Length.** Any garage located with its rear wall along the perimeter of a development and within 65 feet of a public right-of-way or the property line of the development site shall not exceed 55 feet in length. A minimum of five feet of landscaping must be provided between any two such perimeter garages.
 - 2. **Articulation.** No rear garage wall that faces a street or adjacent development shall exceed 30 feet in length without including at least one of the following in at least two (2) locations:

- i. change in wall plane of at least six inches,
 - ii. change in material or masonry pattern,
 - iii. change in roof plane,
 - iv. windows,
 - v. doorways,
 - vi. false door or window openings defined by frames, sills and lintels, and/or
 - vii. an equivalent vertical element that subdivides the wall into proportions related to human scale and/or the internal divisions within the building.
- c. Covered parking may be permitted in the R2 and R3 zoning districts under the following stipulations:
 - 1. All landscaping requirements of the Town of Keenesburg have been met
 - 2. All lighting standards, pedestrian, bike and vehicular safety provisions of the Town of Keenesburg Code have been met
 - 3. Covered parking visually relates to the architectural quality and distinction of the related buildings
 - 4. Change of material, roof pitch or height and color every forty (40) feet
 - 5. Covered parking shall be internal to the sight and is not permitted to face main street and or thoroughfares
 - 6. Covered parking shall not be permitted to exceed the length of the associated building or twelve (12) parking bays whichever is more restrictive.
 - 7. Covered parking shall be considered as an accessory building and shall be subject to the Town of Keenesburg municipal code.

14. Carports

- a. All carports shall:
 - 1. Match the color, material and architectural style of the primary structure
 - i. Material matching may be achieved through a façade treatment and/or application of material of a similar nature to the primary structure as approved by the Town
 - 2. Shall be attached to the roof plane of the primary structure
 - 3. All carports that deviate from the above standards shall be approved by the Town of Keenesburg prior to construction, placement or erection

15. Sheds – New Construction

- a. All sheds shall be subject to building and municipal code requirements of the Town of Keenesburg.
- b. Unless otherwise permitted by the Town of Keenesburg, no shed shall be larger than 120 square feet
- c. Sheds shall match the architectural style, color and or material of the primary structure

- i. Material matching may be achieved through a façade treatment and/or application of material of a similar nature approved by the Town.

16. Commercial and Industrial Standards. It is the intent of the Town that commercial and industrial buildings are of visual interest and in alignment with historic patterns of growth of the Town.

- a. Wall articulation.
 - 1. Walls shall not have an uninterrupted length exceeding forty (40) feet. Pilasters, texture transitions, windows, stepping of the wall plane, and/or false doors may be utilized to create visual breaks, every forty feet, of the building face.
- b. Blank walls or service area treatments of side and/or rear elevations visible from to the general public is not allowed unless the Town determines:
 - 1. It is impractical or infeasible to create façade breaks and/or changes in elevation
 - 2. The applicant has demonstrated to the Town that it will be more visually pleasing and less obstructive to the surrounding properties for the side and/or rear elevations to remain blank
- c. All exterior elevations shall maintain the integrity of the adjacent dwellings architectural character and detailing.
- d. Continuous cornice lines or eaves are encouraged between adjacent buildings.
- e. Buildings with flat roofs shall provide a parapet with an articulated cornice.
- f. Façade treatment. The architectural treatment of the front façade shall be continued, in its major features, around all visibly exposed sides of a building visible from adjacent residential and commercial zoned districts. Blank walls at side and/or rear elevations visible to the general public are prohibited adjacent to any residential or commercial zoned district.
 - 1. To the maximum extent possible, building façades shall be used to create visual unison of the structure(s)
- g. Awnings. Canvas is the preferred material, although other waterproof fabrics may be used at the discretion of the Town; metal, wood or aluminum awnings shall not be used unless otherwise approved by the Board.
- h. Screening of HVAC: All air conditioning units, HVAC systems, exhaust pipes or stacks, elevator housing and satellite dishes, other telecommunications receiving devices and any other apparatus placed on the roof of a building or side of building shall be thoroughly screened from view from the public right-of-way and from adjacent properties by using walls, fencing, roof elements, and landscaping.
 - 1. All shipping containers and storage facilities shall be screened and subject to the Town of Keenesburg landscape standards.

VIII. Standard Street Cross Sections

The Town of Keenesburg has developed standard street cross sections that reflect differences in traffic patterns and needs based on the functional classification of the Town's streets. Arterials provide the highest level of mobility, with higher speeds and the potential for increased numbers of lanes, but with greater restriction on access. Local streets provide the highest level of access, but with lower speeds and reduced capacity for traffic movement. Collector streets balance accessibility and mobility. For Keenesburg, both urban and rural arterial and local street sections are included in recognition of the emphases in pedestrian movement and drainage conditions that reflect the different conditions that rural and urban streets reflect.

- ◆ **Arterials** generally convey greater traffic volumes with higher speed limits and the potential for additional travel lanes and limit direct access to homes or businesses with greater intersection spacing. Access to residential and commercial neighborhoods is limited to key intersections, and each neighborhood will provide its own internal network of streets. Arterials are often placed along section line roads to promote ease of movement and outward connections along Town limits.
- ◆ **Collectors** usually connect one portion of Town to another, but at lower speeds and with less traffic volume than arterials. Parking may be provided along collector routes and intersection spacing will allow for greater access to the local streets that serve the Town's neighborhoods. Collectors should provide a continuity of travel route allowing contiguous parcels to connect. Sidewalks and bicycle lanes are provided along collectors to encourage multiple means for people to move within and between neighborhoods.
- ◆ **Local** streets also promote pedestrian and bicycle movement but along street systems that promote a slower flow of traffic. Locals allow for on-street parking and direct access to homes and businesses. Traffic volumes along local streets are limited due to the larger numbers of local streets. Local streets may connect across neighborhoods but may also be of limited continuity and will be designed to promote safe movement of through traffic.

Table 1 summarizes the design characteristics of the Town's arterial, collector and local streets. Figures 1 through 7 depict the standard sections graphically. The standard street sections will also be accompanied by engineering design standards, not addressed herein, that include

horizontal and vertical curve standards, intersection and access spacing, and minimum and maximum slopes. Design of all Town streets will consider pedestrian crosswalk locations to design for safety, and inclusion of ADA-compliant curb ramps.

Table 1. Standard Street Cross Sections

	Arterials			Collectors		Locals	
	Major	Minor	Rural	Commercial	Residential	Residential	Rural
Typical Volume	15,000 - 30,000	5,000 - 15,000	5,000 – 15,000	1,500 – 5,000	1,500 – 5,000	200 – 1,500	200 – 1,500
ROW Width (1)	118'	90'	85'	68'	74'	60'/55'	60'
Road Width	82'	58'	38'	48'	46'	36'/34'	28'
Tree Lawn (2)	10'	10'	NA	5'	8'	5.5'/7'	NA
Sidewalk	8'	6'	NA	5'	6'	5'	NA
Bike Lane	8'	8'	7'	7'	5'	NA	NA
Median	12'	12'	NA	NA	NA	NA	NA
Parking	NA	NA	NA	8'	7'	7'	NA
Speed Limit	45	40	55	30	25	25	30

(1) Right-of-way widths are minimums.

(2) Tree lawn widths are measured from gutter flow line to front edge of sidewalk.

RESOLUTION NO. PC2020-09

**A RESOLUTION RECOMMENDING APPROVAL OF THE TOWN OF KEENESBURG
DESIGN STANDARDS AND OF AN ORDINANCE AMENDING CHAPTERS 16 AND 17
OF THE KEENESBURG MUNICIPAL CODE TO INTEGRATE THE TOWN OF
KEENESBURG DESIGN STANDARDS**

WHEREAS, by Resolution No. PC2020-03, the Planning Commission of the Town of Keenesburg recommended the Board of Trustees adopt design standards for new development within the Town (the “Design Standards”) and approve certain amendments to Chapters 16 and 17 of the Keenesburg Municipal Code to implement the Design Standards; and

WHEREAS, additional amendments to Chapters 8, 16, and 17 have been proposed relating to front yard improved surface restrictions; and

WHEREAS, the Keenesburg Planning and Zoning Commission has held a duly-noticed public hearing to consider such amendments; and

WHEREAS, based on the recommendation of Town Staff, the testimony of the witnesses and the documents made a part of the record of the public hearing, the Planning Commission finds that the proposed amendments to Chapters 8, 16, and 17 of the Keenesburg Municipal Code should be adopted in essentially the same form as accompanies this Resolution.

**NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF
THE TOWN OF KEENESBURG, COLORADO:**

Section 1. The Planning Commission hereby recommends that the Board of Trustees adopt the proposed Ordinance Amending Chapters 8, 16, and 17 of the Keenesburg Municipal Code relating to front yard improved service restrictions and otherwise to incorporate the Town of Keenesburg Design Standards into the Keenesburg Municipal Code.

INTRODUCED, READ, and ADOPTED this 6th day of August, 2020.

TOWN OF KEENESBURG, COLORADO

John Howell, Chairperson

ATTEST:

Teri Smith, Secretary