DISTURBANCE AREAS

MINOR
Characteristics of minor disturbance areas, as indicated, are those areas which received no to little change in grades or soil redistribution through the road building process. Although it may have high vegetation disturbance, generally, cross slope cuts will be under 1’-0” in height.

MODERATE
Characteristics of moderate disturbance areas, as indicated, are those areas that received from between 1’ and 3’ in soil cutting and/or fill material deposition. Substantial disturbance and removal of existing vegetation and the ‘duff’ layer of organic material that, along with plant materials, supports the natural erosion control process.

HIGH
Characteristics of high disturbance areas, as indicated, are those areas that experienced more than 3’ high cuts and/or fill depositions. These areas, not only have great effects on the existing vegetation layer and plant material, but the surrounding slopes have been heavily relocated/modified to the point where the existing slopes may not be easily recognizable.

CURRENT CONDITION IMAGERY

1. EXISTING ROAD CONDITIONS
2. BEGINNING OF NEW BLUFF ROAD
3. MODERATE ROAD CUT/FILL
4. HIGH ROAD CUT/FILL
5. MODERATE ROAD CUT/FILL

SITE DISTURBANCE AREAS

LEGEND

HANGMAN CREEK
200’ SHORELINE JURISDICTION
200’ BLUFF RIDGE SETBACK
TRANSMISSION LINES (NO TREES)
PARCEL BOUNDARY
EXISTING TRAIL
CONSTRUCTION / EQUIPMENT TURNAROUND (1)
IMAGERY SYMBOL

NOTE:
Construction / equipment turnarounds will be field located in open areas to minimize further bluff changes.

L1.1

CITY OF SPOKANE
PARCEL LAND RESTRICTION

BLUFF ROAD RESTORATION PLAN

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THANK YOU FOR YOUR BUSINESS

SPP-02, Sec: 9, Sum: 25
200’ BLUFF RIDGE SETBACK
200’ SHORELINE JURISDICTION
TRANSMISSION LINES (NO TREES)
PARCEL BOUNDARY
EXISTING TRAIL
CONSTRUCTION / EQUIPMENT TURNAROUND (1)
IMAGERY SYMBOL

NOTE:
Construction / equipment turnarounds will be field located in open areas to minimize further bluff changes.
### DISTURBANCE AREAS

**MINOR**
Characteristics of minor disturbance areas, as indicated, are those areas that received no to little change in grades or soil redistribution through the road building process although there may be high vegetation disturbance. Generally, cross slope cuts will be under 0'-0" in height.

**MODERATE**
Characteristics of moderate disturbance areas, as indicated, are those areas that received from between 1' and 3' in soil cutting and/or fill material deposition. Substantial disturbance and removal of existing vegetation and the duff layer of organic material, along with plant materials, supports the natural erosion control process.

**HIGH**
Characteristics of high disturbance areas, as indicated, are those areas that experienced more than 3' high cuts and/or fill depositions. These areas not only have great effects on the existing vegetation layer and plant materials, but the surrounding slopes have been heavily relocated/modified to the point where the existing slopes may no longer be easily recognizable.

### CURRENT CONDITION IMAGERY

- **6. HIGH ROAD CUT/FILL**
- **7. MINOR ROAD CUT/FILL**
- **8. MODERATE ROAD CUT/FILL**

### LEGEND

- **HANGMAN CREEK**
- **200' SHORELINE JURISDICTION**
- **200' BLUFF RIDGE SETBACK**
- **TRANSMISSION LINES (NO TREES)**
- **PARCEL BOUNDARY**
- **EXISTING TRAIL**
- **CONSTRUCTION / EQUIPMENT TURNAROUND (1)**

### NOTE:

1. CONSTRUCTION / EQUIPMENT TURNAROUNDS WILL BE FIELD LOCATED IN OPEN AREAS TO MINIMIZE FURTHER BLUFF DAMAGES.
MINOR DISTURBANCE - CURRENT CONDITIONS

The primary locations of minor disturbance occur at the North and South ends of the road. These areas are at little risk for further erosion, as adjacent vegetation is relatively still intact. Repair will consist of minor grading of the soil accumulations and/or cuts. Where applicable, pedestrian trail crossings will be restored to pre-existing conditions.

MINOR DISTURBANCE - RESTORATION

Repair will consist primarily of the redistribution of current fill soils ‘uphill’ to the cut areas to bring the natural slope back into position. These soils will be lightly compacted as they are reintroduced to their permanent location in order to secure the soil. Heavy compaction will not be allowed. Additional soils may be necessary to completely restore the existing slope to its prior condition. The intent is to mimic the existing soil profile as closely as possible, with the use of a more organic soil that will aid in the seeding and germination process. Specific erosion control measures will be implemented where necessary, such as wattles, silt fences, and existing downed logs.

NOTES:
1. ALL DISTURBED AREAS WILL BE SEEDED WITH A NATIVE SEED MIX TO MATCH EXISTING VEGETATION.
2. WEED FREE TOPSOIL WILL BE IMPORTED, IF NEEDED, THAT IS BLENDED TO MATCH EXISTING SOIL, WITH A WEED FREE COMPOST ADDED TO IMPROVE PLANT SURVIVABILITY.
3. ALL PLANTS SHOWN REPRESENT A 10 YEAR GROWTH SIZE.

MODERATE DISTURBANCE - CURRENT CONDITIONS

MODERATE DISTURBANCE - RESTORATION

Repair for the high disturbance areas, will follow the same process as the previous descriptions, but will be more extensive to address the additional soil. Soils will be lightly compacted again, and stabilized in lifts as necessary to prevent over compaction. Specific erosion control measures will be implemented, where necessary, such as wattles, silt fences, and existing downed logs.

HIGH DISTURBANCE - CURRENT CONDITIONS

HIGH DISTURBANCE - RESTORATION
NEW VEGETATION

Plant material represented in the following three communities will be consistent with the existing vegetation adjacent to disturbed area:

- Community 1 “Open Pine Stand”  *Includes Grass/Forb Mix*  
- Community 2 “Shrub Areas”  *Includes Grass/Forb Mix*  
- Community 3 “Grass/Forb Mix”

**TUBEX PLANT SHELTER**

**TRAIL RESTORATION - DETAIL**

- Fallen trees that are 6” and smaller will be chipped or used to supplement natural erosion control measures on site. The chips will be broadcast and dispersed accordingly.
- Fallen trees bigger than 6” will be utilized on the site. They will be used for wildlife habitat, erosion control, and to direct trail users. The trees will be longitudinally trunk scored to help prevent pine beetles.
- The root wads and stumps will be relocated or removed as appropriate.

**MANAGEMENT OF DOWNED TREES**

- Fallen trees that are 6” and smaller will be chipped or used to supplement natural erosion control measures on site. The chips will be broadcast and dispersed accordingly.
- Fallen trees bigger than 6” will be utilized on the site. They will be used for wildlife habitat, erosion control, and to direct trail users. The trees will be longitudinally trunk scored to help prevent pine beetles.
- The root wads and stumps will be relocated or removed as appropriate.

**TRAIL RESTORATION CONSTRUCTION SEQUENCE**

- RESTORATION CONSTRUCTION SEQUENCE

  Work will be completed in sections and all equipment is intended to be kept on the existing road cut and turnarounds.

  • Set up construction trailer and fence area at 3515 S Inland Empire Way (Avista substation)
  • Install all necessary site/construction signage and fencing
  • Chip all newly downed trees (wood) 6” or smaller
  • Remove or relocate stumps and root wads as appropriate
  • Collect logs to use at onsite location
  • Replace and appropriately compact cut and fill areas
  • Place additional imported topsoil where needed
  • Restore trail crossings to prior conditions
  • Plant trees and shrubs
  • Protect restored areas at cross trails
  • Seed native grasses
  • Install access gate at north end of project
  • Start maintenance and monitoring phase

**MAINTENANCE AND MONITORING**

- After initial project completion, monitoring will be conducted by the City of Spokane, in accordance with their Plant Establishment Plan. This plan may include detailed monitoring recommendations and proposed maintenance activity.

  A photo inspection will take place upon project completion for erosion control effectiveness and plant survivability. Monitoring will occur according to the following schedule:

  2017  June: weekly
  July - Sept: every other week
  Sept - Nov: once per month
  2018-2022  March - Nov: once per month, in accordance with the City of Spokane’s Plant Establishment Plan
  2024  7th year follow up inspection

  Erosion control measures and remedial action, if necessary, are to be addressed within 1 week of identification. Additional erosion control monitoring will occur in the event of heavy rainfall.

- Tubex tree shelters will decompose over time, but may be removed during the monitoring phase, once tree establishment has occurred.

  **Wood Control Programs:***

  • Preserve trees that exist in the adjacent landscape, such as dalmation toadflax, knapweed, sulfur cinquefoil, rush skeletonweed, common buttercup, if identified in the disturbed areas will be controlled through spot spraying and/or mechanical control, to help ensure the establishment of the native vegetation.
MATCH LINE - SHEET L1.2

MATCH LINE - SHEET L1.1

COMMUNITY A - PINE STAND

AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG

PINUS PONDEROSA / PONDEROSA PINE
6"-10" PLUG

SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG

GRASS/FORB MIX
SEED

COMMUNITY B - SHRUB AREA

AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG

CRATAEGUS DOUGLASII / DOUGLAS HAWTHORN
6"-10" PLUG

SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG

GRASS/FORB MIX
SEED

ACHILLEA MILLEFOLIUM / WESTERN YARROW
1% - Hydroseed

BALSAMORHIZA SAGITTATA / ARROWLEAF BALSAMROOT
7% - Hydroseed

ELYMUS LANCEOLATUS PSAMMOPHILUS / STREAMBANK WHEATGRASS
15% - Hydroseed

FESTUCA IDAHOENSIS / IDAHO FESCUE
29% - Hydroseed

KOELERIA MACRANTHA / PRAIRIE JUNEGRASS
15% - Hydroseed

LUPINUS SP. / SILKY LUPINE
4% - Hydroseed

POA SANDBERGII / SANDBERG`S BLUEGRASS
15% - Hydroseed

PSEUDOROEGNERIA SPICATA / BLUEBUNCH WHEATGRASS
15% - Hydroseed

SYMBOL
PLANT COMMUNITY
SIZE

PLANT SCHEDULE

LANDSCAPE NOTES:
1. PLANTING PLAN WAS DEVELOPED BASED ON A HOLISTIC APPROACH TO MIMIC THE EXISTING SITE
CONDITIONS.
2. PLANTS WILL BE PLANTED TO INCREASE PLANT SURVIVABILITY IN A NATURAL SETTING. LARGER PLANT
STOCK WILL HAVE A GREATER MORTALITY RATE, IN A NATURAL SETTING WITHOUT IRRIGATION. THE
SEED BANK WITHIN THE EXISTING SOIL WILL PROVIDE NATURAL REGENERATION OF PONDEROSA
PINE AND OTHER NATIVE SPECIES OVER TIME.
3. GENERAL PLANT PLUG SIZES WILL RANGE FROM 6"-10" IN HEIGHT.
4. ALL PLANTS WILL BE INITIALLY WATERED IN, AT THEIR TIME OF PLANTING.
5. 'TUBEX' PLANT SHELTERS SHALL BE PLACED AROUND PLANTS AT THEIR TIME OF PLANTING.
6. HYDROSEED MIX, DEFINED ON PLANS, TO BE APPLIED AT A RATE OF 30 LBS PER ACRE, WITH
BONDED FIBER MATRIX TACIFIER (OR APPROVED EQUAL). TACIFIER WILL BOND FIBERS TO THE
SOIL FOR INCREASED EROSION CONTROL.

PLANTING PLAN

PLANTING NOTES:
1. PLANTING PLAN WAS DEVELOPED BASED ON A HOLISTIC APPROACH TO MIMIC THE EXISTING SITE
CONDITIONS.
2. CONTRACTOR TO LEAVE TRACK MARKS FROM EQUIPMENT TO HELP COLLECT WATER FOR SEED
GROWTH.

WEED FREE TOPSOIL WILL BE IMPORTED, IF NEEDED, THAT IS BLENDED TO MATCH EXISTING SOIL,
WITH A WEED FREE COMPOST ADDED TO IMPROVE PLANT SURVIVABILITY.

CONTRACTOR TO LEAVE TRACK MARKS FROM EQUIPMENT TO HELP COLLECT WATER FOR SEED
GROWTH.

PLANT QUANTITIES AND DENSITIES WILL BE FIELD LOCATED TO MATCH ADJACENT SITE
CONDITIONS, IN ACCORDANCE TO THE PLANTING PLAN.

PLUGS WILL BE PLANTED TO INCREASE PLANT SURVIVABILITY IN A NATURAL SETTING. LARGER PLANT
STOCK WILL HAVE A GREATER MORTALITY RATE, IN A NATURAL SETTING WITHOUT IRRIGATION. THE
SEED BANK WITHIN THE EXISTING SOIL WILL PROVIDE NATURAL REGENERATION OF PONDEROSA
PINE AND OTHER NATIVE SPECIES OVER TIME.

GENERAL PLANT PLUG SIZES WILL RANGE FROM 6"-10" IN HEIGHT.

ALL PLANTS WILL BE INITIALLY WATERED IN, AT THEIR TIME OF PLANTING.

TUBEX PLANT SHELTERS SHALL BE PLACED AROUND PLANTS AT THEIR TIME OF PLANTING.

HYDROSEED MIX, DEFINED ON PLANS, TO BE APPLIED OR A RATE OF 30 LBS PER ACRE WITH
BONDED FIBER MATRIX TACIFIER (OR APPROVED EQUAL). TACIFIER WILL BOND FIBERS TO THE
SOIL FOR INCREASED EROSION CONTROL.
MATCH LINE - SHEET L1.2
MATCH LINE - SHEET L1.1
MATCH LINE - SHEET L1.3

COMMUNITY A - PINE STAND
AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG
PINUS PONDEROSA / PONDEROSA PINE
6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG
GRASS/FORB MIX
SEED

COMMUNITY B - SHRUB AREA
AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG
CRATAEGUS DOUGLASII / DOUGLAS HAWTHORN
6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG
GRASS/FORB MIX
ACHILLEA MILLEFOLIUM / WESTERN YARROW
1% - Hydroseed
BALSAMORHIZA SAGITTATA / ARROWLEAF BALSAMROOT
7% - Hydroseed
ELYMUS LANCEOLATUS PSAMMOPHILUS / STREAMBANK WHEATGRASS
15% - Hydroseed
FESTUCA IDAHOENSIS / IDAHO FESCUE
29% - Hydroseed
KOELERIA MACRANTHA / PRAIRIE JUNEGRASS
15% - Hydroseed
LUPINUS SP. / SILKY LUPINE
4% - Hydroseed
POA SANDBERGII / SANDBERG`S BLUEGRASS
15% - Hydroseed
PSEUDOROEGNERIA SPICATA / BLUEBUNCH WHEATGRASS
15% - Hydroseed
COMMUNITY A - PINE STAND
AMELANCHIER ALNIFOLIA / SERVICEBERRY 6"-10" PLUG
PINUS PONDEROSA / PONDEROSA PINE 6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY 6"-10" PLUG
GRASS/FORB MIX SEED

COMMUNITY B - SHRUB AREA
AMELANCHIER ALNIFOLIA / SERVICEBERRY 6"-10" PLUG
CRATAEGUS DOUGLASII / DOUGLAS HAWTHORN 6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY 6"-10" PLUG
GRASS/FORB MIX
ACHILLEA MILLEFOLIUM / WESTERN YARROW 1% - Hydroseed
BALSAMORHIZA SAGITTATA / ARROWLEAF BALSAMROOT 7% - Hydroseed
ELYMUS LANCEOLATUS PSAMMOPHILUS / STREAMBANK WHEATGRASS 15% - Hydroseed
FESTUCA IDAHOENSIS / IDAHO FESCUE 29% - Hydroseed
KOELERIA MACRANTHA / PRAIRIE JUNEGRASS 15% - Hydroseed
LUPINUS SP. / SILKY LUPINE 4% - Hydroseed
POA SANDBERGII / SANDBERG'S BLUEGRASS 15% - Hydroseed
PSEUDOROEGNERIA SPICATA / BLUEBUNCH WHEATGRASS 15% - Hydroseed

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PLANT SCHEDULE

COMMUNITY A - PINE STAND
AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG
PINUS PONDEROSA / PONDEROSA PINE
6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG
GRASS/FORB MIX SEED

COMMUNITY B - SHRUB AREA
AMELANCHIER ALNIFOLIA / SERVICEBERRY
6"-10" PLUG
CRATAEGUS DOUGLASII / DOUGLAS HAWTHORN
6"-10" PLUG
SYMPHORICARPOS ALBUS / COMMON SNOWBERRY
6"-10" PLUG
GRASS/FORB MIX

ACHILLEA MILLEFOLIUM / WESTERN YARROW
1% - Hydroseed
BALSAMORHIZA SAGITTATA / ARROWLEAF BALSAMROOT
7% - Hydroseed
ELYMUS LANCEOLATUS PSAMMOPHILUS / STREAMBANK WHEATGRASS
15% - Hydroseed
FESTUCA IDAHOENSIS / IDAHO FESCUE
29% - Hydroseed
KOELERIA MACRANTHA / PRAIRIE JUNEGRASS
15% - Hydroseed
LUPINUS SP. / SILKY LUPINE
4% - Hydroseed
POA SANDBERGII / SANDBERG`S BLUEGRASS
15% - Hydroseed
PSEUDOROEGNERIA SPICATA / BLUEBUNCH WHEATGRASS
15% - Hydroseed
### Community A - Pine Stand

- **Amelanchier alnifolia / Serviceberry** (6"-10" plug)
- **Pinus ponderosa / Ponderosa Pine** (6"-10" plug)
- **Symphoricarpos albus / Common Snowberry** (6"-10" plug)
- **Grass/Forb Mix** (Seeds)

### Community B - Shrub Area

- **Amelanchier alnifolia / Serviceberry** (6"-10" plug)
- **Crataegus douglasii / Douglas Hawthorn** (6"-10" plug)
- **Symphoricarpos albus / Common Snowberry** (6"-10" plug)
- **Grass/Forb Mix** (Seeds)
- **Achillea millefolium / Western Yarrow** (1% - Hydroseed)
- **Balsamorhiza sagittata / Arrowleaf Balsamroot** (7% - Hydroseed)
- **Elymus lanceolatus psammophillus / Streambank Wheatgrass** (15% - Hydroseed)
- **Festuca idahoensis / Idaho Fescue** (29% - Hydroseed)
- **KOELERIA MACRANTHA / Prairie Junegrass** (15% - Hydroseed)
- **Lupinus sp. / Silky Lupine** (4% - Hydroseed)
- **Poa sandbergii / Sandberg's Bluegrass** (15% - Hydroseed)
- **Pseudoroegneria spicata / Bluebunch Wheatgrass** (15% - Hydroseed)