

1. QUALIFICATIONS

The pre-construction digital versatile disk (DVD) documentation shall be done by a responsible commercial firm known to be skilled and regularly engaged in the business of color audio-video construction documentation. The firm shall furnish such information as the Owner deems necessary to determine the ability of that firm to perform the work in accordance with contract specifications. This information may include a complete history of all construction work experience.

2. CONTRACTOR'S RESPONSIBILITIES

The Contractor shall provide all labor, materials, equipment, services and perform all operations necessary to furnish to the Owner a complete color audio-video recording of the surface features within the proposed construction zone of influence including access roads and haul routes. This record shall include, but not be limited to, all audio-videos, DVD storage cases, index labels and logs. The purpose of this coverage shall be to accurately document the pre-construction condition of these surface features.

a. Coverage

The recordings shall include coverage of all surface features located within the construction zone of influence. The construction zone of influence shall be defined (1) as the area within the permanent and temporary easements and areas adjacent to these easements which may be affected by routine construction operations; (2) road R.O.W. (3) as directed by the Owner. The surface features within the construction zone of influence shall include, but not be limited to, all roadways, pavements, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, buildings, landscaping, trees, shrubbery and fences. Of particular concern shall be the existence or non-existence of any faults, fractures or defects.

Houses and buildings shall be identified visually by house or building number, when possible, in such manner that the progress of the recording and proposed construction areas may be located by reference to the house and buildings.

b. Recording Operation

The operator in charge must have experience on at least 25 miles preconstruction work and/or other similar construction work. Apprentice operators may not assume control over any work, but must, in the course of their duties, be continuously supervised by an experienced operator.

c. Recording Schedule

The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site.

d. Delivery

The Contractor shall deliver the DVD recordings to the Owner upon their completion as a whole; or upon request of the Owner, deliver specific DVD recordings of any area to the Owner upon their completion. Upon delivery of the DVDs, transfer of ownership of those DVDs shall be made to the Owner.

e. Unacceptable Documentation

The Owner shall have the authority to reject all or any portion of the DVD documentation not conforming to specifications. Those rejected portions shall be re-done at no additional cost to the Owner.

f. Documentation Additions and Omissions

The Owner shall have the authority to designate what areas may be added to or omitted from DVD documentation.

g. Specification Deviations

Any deviation from these specifications must have the written approval of the Owner/Engineer.

3. PROCEDURAL REQUIREMENTS

The following procedures shall be implemented in the production of pre-construction color audio-DVD documentation. Above all, the documentation shall be executed in a conscientious and professional manner to assure the end product's maximum usefulness to the Owner.

- a. The coverage shall consist of a single, continuous, unedited recording which begins at one end of a particular construction area and continues to the other end of that construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized, interrelated sequence of recordings at various positions along that construction area.
- b. The DVD shall be divided into chapters with a maximum of 10 stations (1,000') per chapter.
- c. **Vehicle Rate of Travel** - The vehicle rate of travel shall be indirectly proportional to the number, size and value of the surface features within that construction area's zone of influence. The following table classifies typical areas and sets the maximum average rates of travel in those areas, shall be used to establish approximate limits on actual average rates of travel:

| RATE OF TRAVEL | | | |
|----------------|--|--|-------------|
| AREA | RATE MAX. | TYPICALLY CHARACTERIZED BY | AVG. |
| (1) | High Density developed subdivision | (e.g. hard surface streets, curbs, drives & sidewalks; 50' lots; very few empty lots | 30 ft/min. |
| (2) | Med. Density partially developed subdivision | (e.g. gravel roads, hard & soft surface drives, no sidewalks culverts and headwalls, 100' lots, few empty lots | 60 ft/min. |
| (3) | Low Density Suburban fringe | (e.g. gravel roads, small fields or woods, occasional houses | 90 ft/min. |
| (4) | Extra Low Density | gravel roads, large fields, sparse number of | 120 ft/min. |

- d. **Visibility** - All recording shall be performed during times of good visibility. No recording shall be done during period of significant precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

No recording shall be performed when more than 10% of the ground area is covered with snow, unless otherwise authorized by the Owner,

4. TECHNICAL REQUIREMENTS

The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project as well as those more subjective requirements of high quality audio and video production. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls, or any other form of picture imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion.

a. **Recording System**

(1) **DVD**

The DVD used for the recordings shall be professional quality 12 cm color DVD media that conforms to either DVD-R or DVD+R recording standards using high quality DVD video and audio bitrates. No DVD's used for any previous recording will be used except when furnished by the Owner.

The recorded DVDs shall be compatible for playback with any standard DVD-R or DVD+R player.

(2) **Recorder**

All video recordings must, by electronic means, display continuously and simultaneously generated transparent digital information to include the date the time of recording, the engineering stationing corresponding to the stationing on the plans or as directed by the engineer, the name of the street, easement or building being documented, the project and time to appear in the upper left hand corner of the picture.

Example: N on First Street W/E
 84 + 20

(3) **Audio Record**

There shall be a corresponding and simultaneously recorded audio recording. This audio recording, containing the commentary of the camera operator, shall assist the viewer orientation and in any needed identification, differentiation, clarification or objective description of the structures being shown in the video portion of the recording.

The audio recording shall be free of any other voice communication.

At the start of production and the beginning of a new street, an identification summary shall be read into the record while at the same time a wide angle view with numeric displays is provided for facial record. Summary to include: DVD Number, Name of Job, Location of Job, Positional Location at start of job date, time, weather and other notable conditions.

(4) Camera

The color video camera used in the recording system shall have a horizontal resolution of 300 lines at center, a luminance signal to noise ratio of 45db, and a minimum illumination requirement of 25 foot-candles.

Camera to be adjusted to factory specifications and f-stop adjusted to optimum contrast. White balance pedestal, level and sync must be adjusted for factory recommended optimum performance under environmental conditions.

a. Camera Height and Stability

When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall be not less than 12 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause an unsteady picture.

b. Camera Control

Camera pan, tilt, zoom-in, and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during DVD playback. In addition, all other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chrome, white balance and electrical focus, shall be properly controlled or adjusted to maximize recorded picture quality.

- (1) A wide angle of area will be shown first, then a series of pans, zooms and tilts as may be necessary to accomplish a comprehensive view. Close-ups will be utilized as necessary to insure sufficient detail of items of interest. Progress shall continue linearly along the field of view, for example, one side of roadway must be completed before commencing recording of the opposite side.
- (2) Camera pans and tilts to be no faster than 90 degrees of arc in a five-second interval, or slower, to assure maximum clarity of scene detail.
- (3) Camera zoom to be no faster than a doubling of focal distance within a 1/2 second interval, or slower. Zoom is capable of 17 to 120 mm, then the minimum time to perform a full zoom is 3/5 seconds.
- (4) Each item of interest shall be clearly indicated in the video record for sufficient time to permit audio discussion and viewer comprehension.

(5) DVD Indexing

a. DVD Identification

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| SPECIFICATIONS FOR COLOR AUDIO-VIDEO RECORDING OF CONSTRUCTION AREAS |
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All DVDs and their storage cases shall be properly identified by DVD index number, project title and general project location.

b. **DVD Logs**

Displayed on the storage case of each DVD shall be a log of that DVD's contents. That log shall describe the various segments of coverage contained on that DVD in terms of the chapters, names and sides of the streets or easements, coverage beginning, direction and endpoints, with corresponding DVD layer counter numbers.

c. **Cumulative Index**

A cumulative alphabetical index correlating the various segments of coverage to their corresponding DVDs shall be supplied to the Owner.

All equipment, accessories and materials to perform this service shall be furnished by the Contractor, except the plans of the proposed area to be televised, which are furnished by the engineer. Measurement will be based on the number of lineal feet of proposed pipe installation including manholes measured horizontally on the centerline thereof as indicated on the contract drawings.

END OF SECTION